

# Microlab<sup>®</sup> STAR<sup>™</sup>

Multifunctionality transforming problems into solutions



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# The New STAR

## AS GOOD AS EVER – ONLY BETTER

Come to stay. The Microlab STAR has always been used in a wide variety of laboratories, universities and institutions. While its design is a testament to excellent engineering, the standout feature of the STAR is flexibility. A variety of features and configuration options ensure that every customer's needs are met. It can be expanded, specialized and individualized.

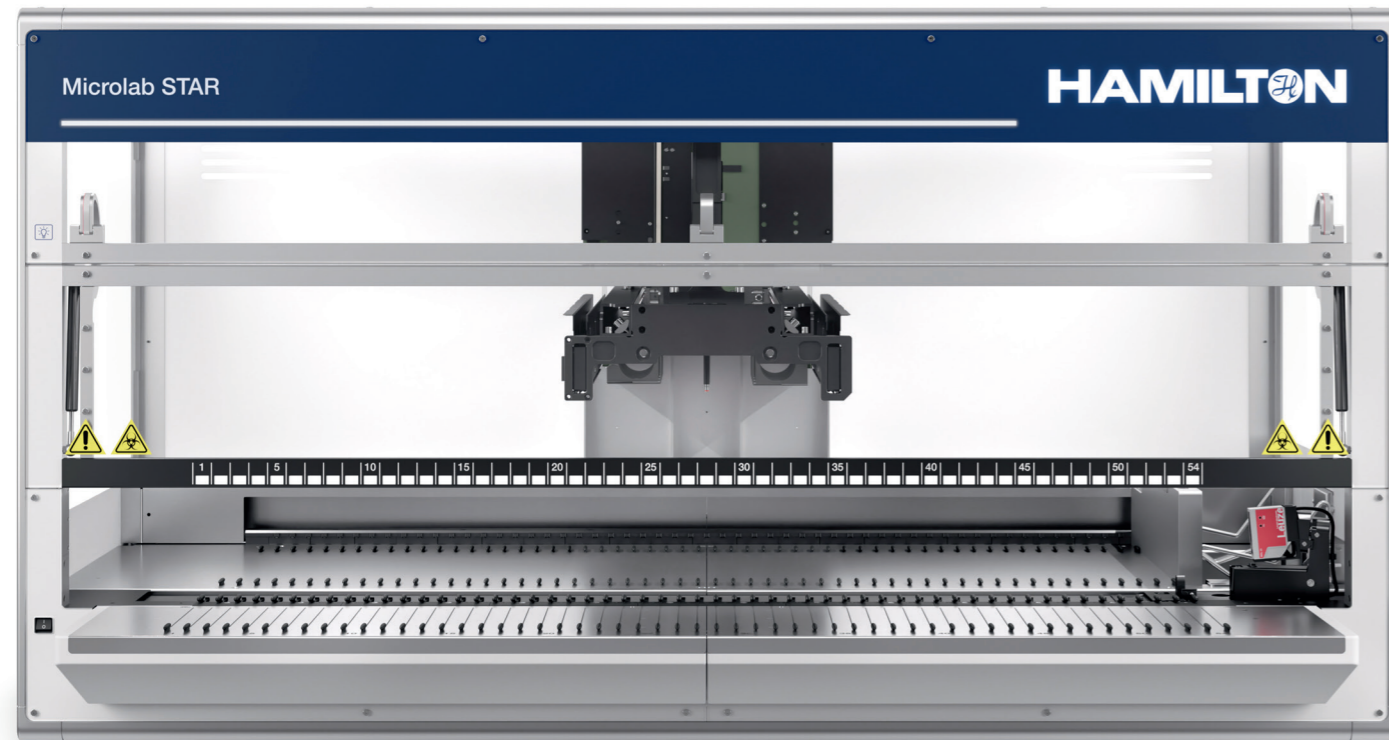
Over the years, the benefits have transformed with the introduction of new modules, carriers, and integrations. The Microlab STAR is constantly developing while increasing its value for users in Life Sciences and Diagnostics. The debut of the new Microlab STAR has achieved another milestone for Hamilton. Practicality, stronger safety measures, and precision make it easy for it to be the STAR in any workplace setting.

*Throughout this brochure, protected product names may be used without being specifically marked as such.*

# The STAR IN YOUR LAB

Tailored to the specific needs of laboratories in Life Sciences and Diagnostics, the Microlab STAR is the ideal companion for the challenges of the future. It can be altered or upgraded throughout its lifespan to accommodate changing lab workflows. The holistic design seamlessly integrates innovative functions, safety, robustness and ease of use, in a minimalistic and transparent appearance. The robotic platform has been updated with current electronics to ensure a smoother workflow in the lab.

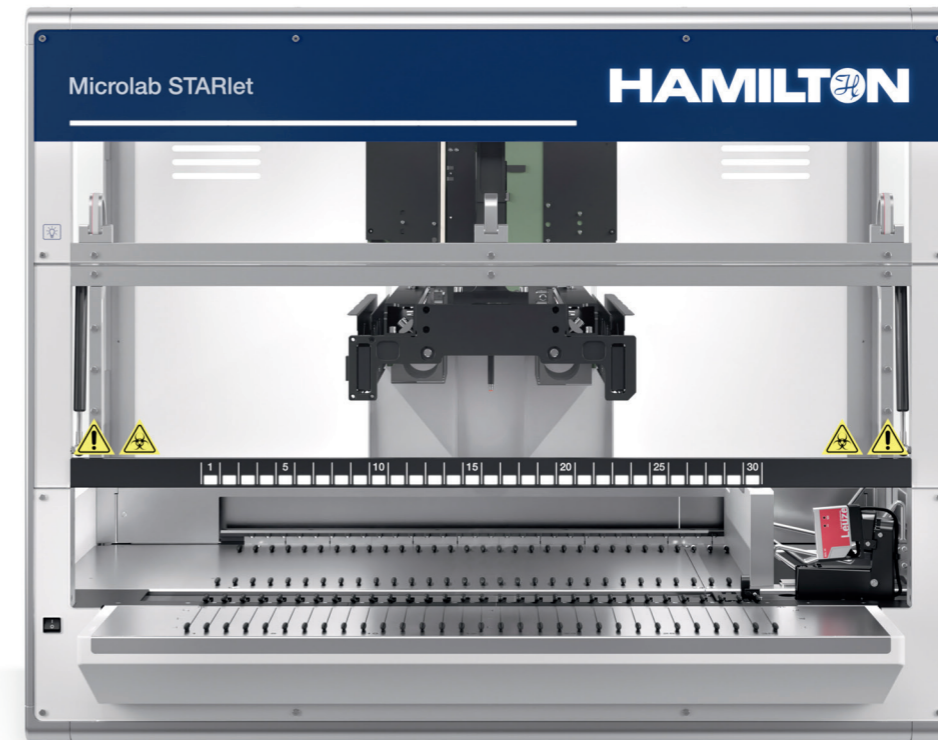
VENUS software Power Steps have been further improved to make programming of routine automation steps more intuitive and efficient. In addition, the new CO-RE II technology makes the pipetting tip positioning even more reliable while simultaneously reducing cost due to reduced service needs.



# Your Lab Becomes SMARTER

Let the centerpiece of your laboratory become an eye catcher. The Microlab STAR not only looks smart, it creates order and provides a sense of awareness in the laboratory. With the multifunctional status light, you can instantly recognize the process status of the STAR, even from a distance. Additionally, the switchable interior light ensures perfect lighting conditions on the deck - adding increased convenience during visual monitoring and user safety during manual intervention when preparing or cleaning the deck.

But it's not just the smart illumination concept that makes your Microlab STAR more convenient - the functional design also protects the operator. Access to the waste bags is now even easier and safer, as the operator is no longer exposed to chemicals and samples, preventing contamination.



# Status LIGHT

- Status information at a glance
- Different colors & different lengths
- Indicates progress of run
- At the front of the instrument
- No need to come to the instrument
- No need to activate the screen of the PC
- Improved process safety
- Add optional status light tower

**Microlab STAR** **HAMILTON**

Ready to Use

**Microlab STAR** **HAMILTON**

Runs Independently

**Microlab STAR** **HAMILTON**

User Action Required

**Microlab STAR** **HAMILTON**

Error Pending

# Interior LIGHT

ENLIGHTEN YOUR DECK - RECOGNIZE ANY DETAIL



Better view of deck components



Illumination of the deck



Intuitive activation

# Software VENUS five

## BETTER USER GUIDANCE AND PROGRAMMING

The new VENUS five software provides basic and advanced programming, offering flexible assay setup without compromising your requirements. Intuitive editors provide full control over every aspect of your method. VENUS five is designed to be as easy as you need, yet powerful enough to provide the flexibility to set up assays exactly the way you want them automated.

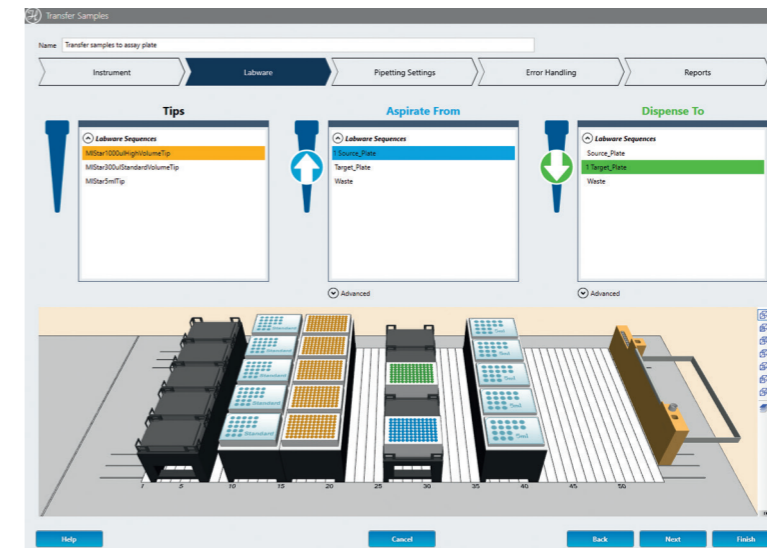
### Power Steps

VENUS' Power Steps offer a quick and easy start into the world of automation, for everyone, and at any time. There are five intuitive visual guides for the most frequently used pipetting tasks:

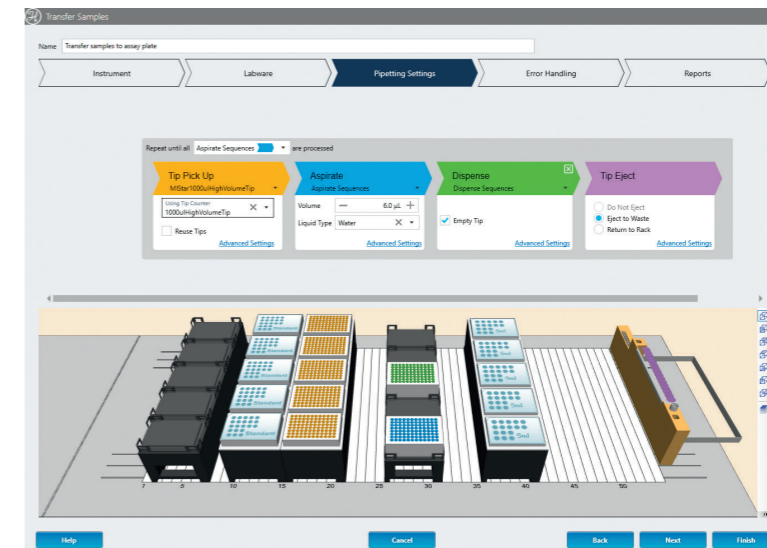
- Transfer Samples
- Add Reagent
- Serial Dilution
- Replicates
- Hit Picking



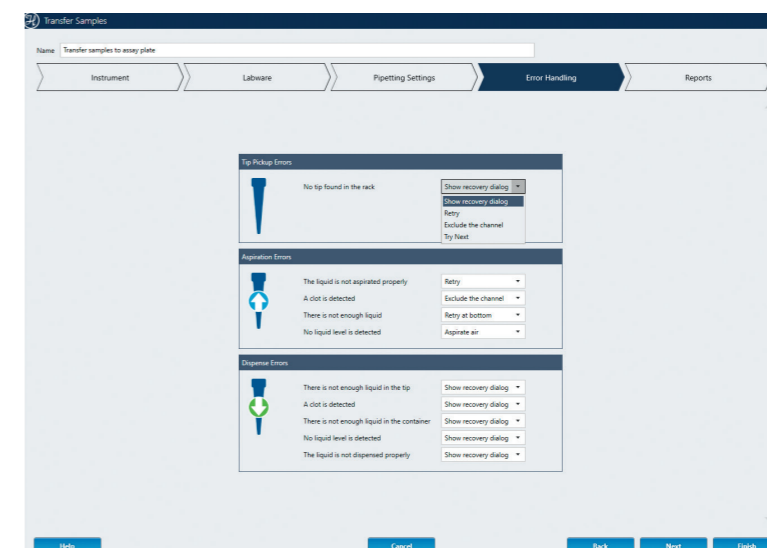
## POWER STEPS – SIMPLIFY YOUR WORKFLOW



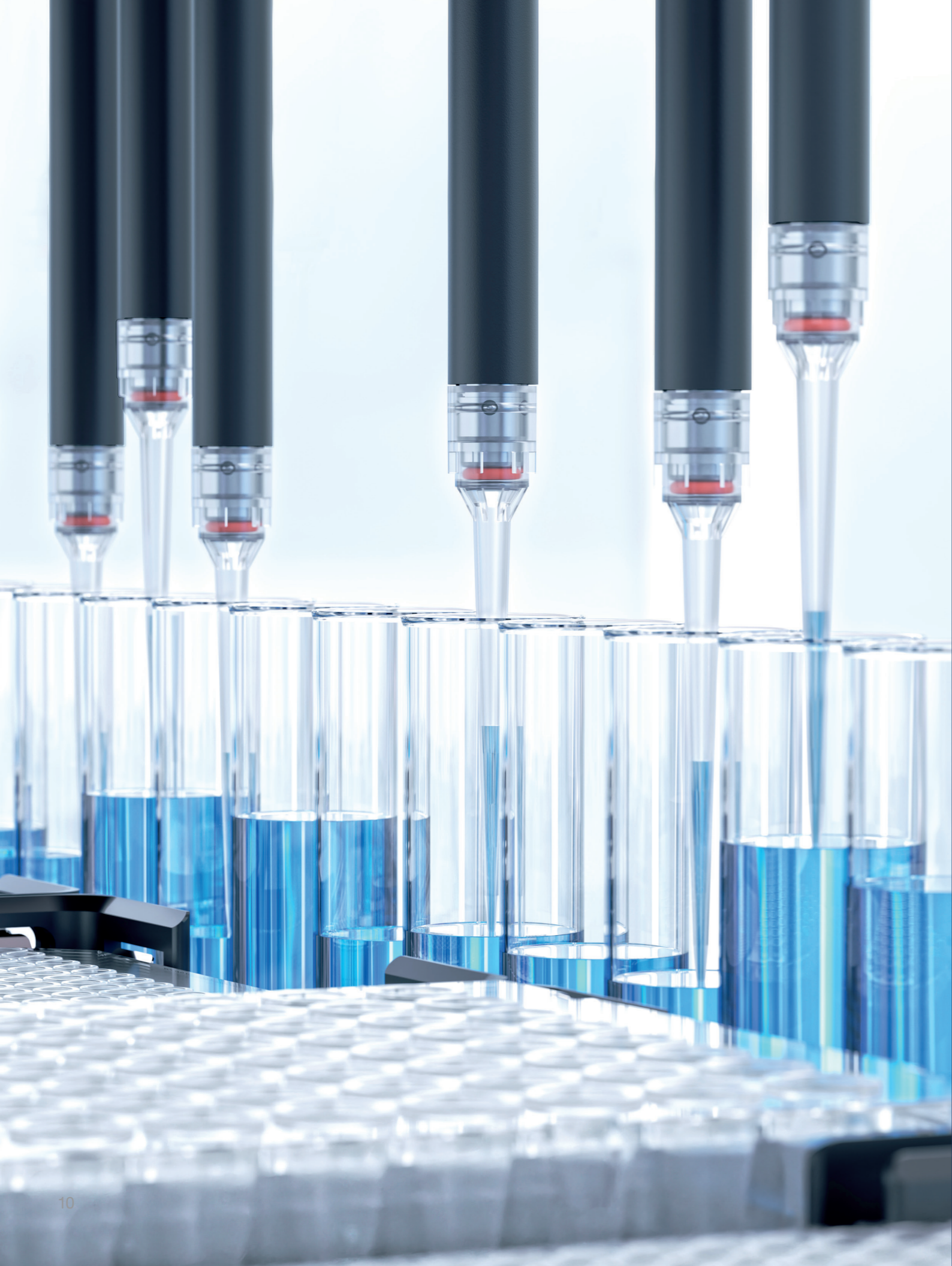
Color codes immediately indicate which tip type is used to aspirate from which source and into which target.



The most important parameters can be seen at a glance, and the volume, liquid and additional handling of the tips (waste/reuse) can be adjusted simply and easily.



Here, the most common reasons for errors can be controlled so that no valuable time is lost, and the workflow runs as smoothly as possible without user interaction.



# State of the ART

## HAMILTON PIPETTING TECHNOLOGIES

For decades, Hamilton has defined the standard for high-precision liquid handling. Quality engineering, unique innovation, and outstanding service and support contribute to precise performance and overcoming liquid challenges. The introduction of CO-RE II technology has also created additional customer benefits.

Combining the patented CO-RE II technology with intelligent software, the Microlab STAR ensures the most reliable and safe liquid handling performance, assuring trustworthy results while lowering costs in laboratory routines.

# Intelligent PIPETTING

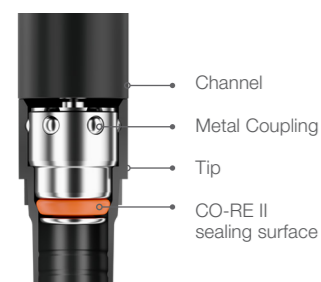
## WITH A TEAM OF TECHNOLOGIES

In the lab, technology and precision are essential in guaranteeing maximum process reliability and to safeguard samples. The smooth interplay between software and mechatronics, coupled with an intuitive user interface makes the liquid handling of the Microlab STAR easy to program and less error prone.

### Even better tip attachment and precision: New CO-RE II technology

The innovative design with its new stop disk and improved CO-RE II tip design offers unique value to the automation community in Life Sciences and Diagnostics.

- Up to 15x life span
- Less wear and tear
- Higher precision pipette tip alignment
- Simplified serviceability and reduced preventative maintenance leads to lower total cost of ownership



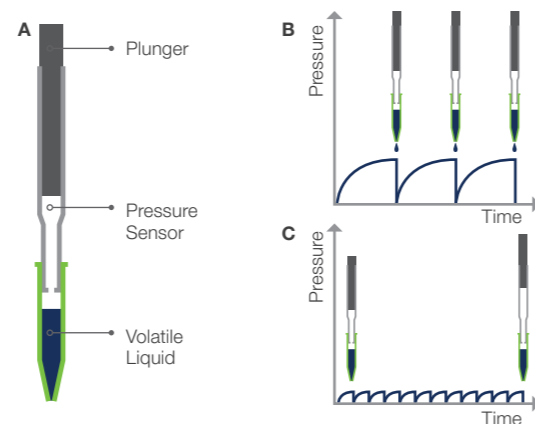
CO-RE II

### Liquids in the tip, not on the tip: Dual Liquid Level Detection (Dual LLD)

Liquid Level Detection (LLD) determines liquid levels in tubes and plates located on the pipetting deck in two modes: capacitive LLD (cLLD) to detect conductive liquids; and pressure-based LLD (pLLD), to detect virtually all liquid types, including foaming liquids and non-conductive organic solvents. No matter what characteristics your liquids have, the Microlab STAR makes sure they're safely pipetted.

### Handles difficult liquids accurately: Anti-Droplet Control (ADC)

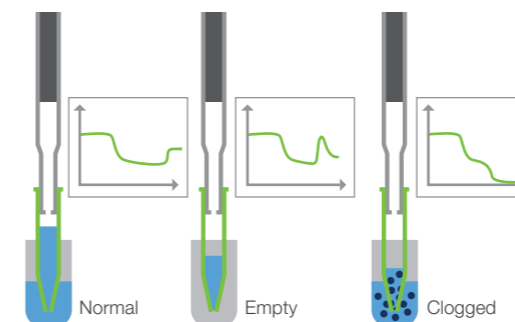
Anti-Droplet Control (ADC) detects and reacts to real-time pressure changes from volatile organic solvents in each pipetting channel to prevent inadvertent dripping.



- A** Schematic sketch showing a pipetting channel with its pressure sensor. The volatile liquid contained in the tip evaporates into the air space.
- B** Pipetting without ADC, as the pressure in the tip increases, a droplet forms at the end of the tip, reducing the pressure in the tip when it falls off.
- C** Pipetting with ADC, pressure differences are detected by the pressure sensor and will be compensated in real-time by plunger movements: droplet formation is prevented.

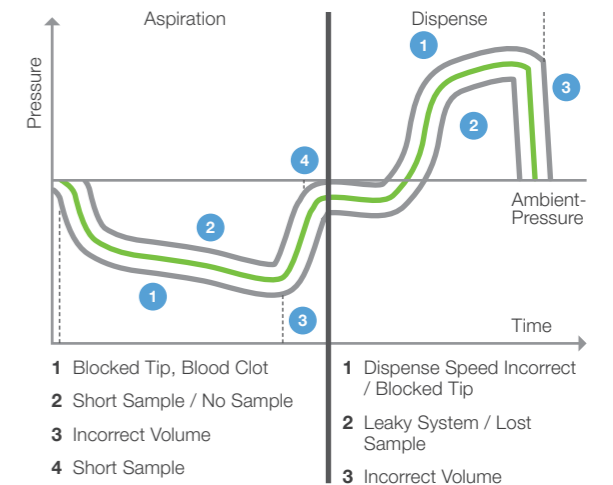
### Aspirates with proof: Monitored Air Displacement (MAD)

Monitored Air Displacement (MAD) detects clots or empty wells with real-time tracking of aspiration performance, and it can also be used to pipette highly volatile solvents.



### Pipettes with proof: Total Aspiration and Dispense Monitoring (TADM)

Total Aspiration and Dispense Monitoring (TADM) offers real-time monitoring of each independent pipetting channel during aspiration and dispensing and verifies sample transfer with a traceable digital audit trail.



# PLATFORMS

## MODULARITY & FLEXIBILITY

Robot-specific needs are just as individual as their users. This dynamic is reflected by the modularity of the Microlab STAR Line - with the ideal configuration for your business.



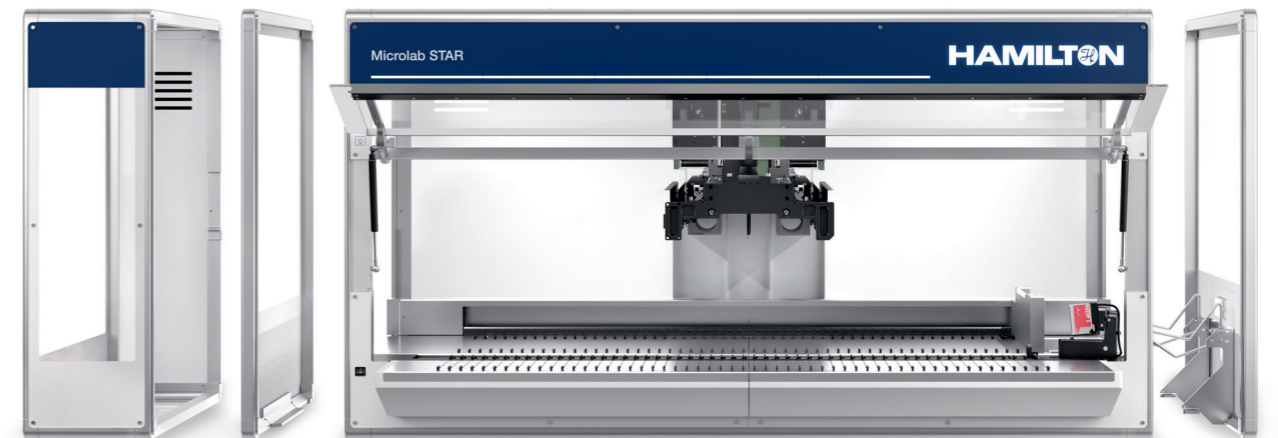
# Housing EXTENSION

## EXTRA SAFETY OPTIONS: KEEP GERMS OUT

Depending on the instrument configuration, several housing extensions support the convenience of working with the instrument:

- Slim left side
- Slim right side
- Wide left side (for use with Multi-Probe Heads)

Additional housing options include UV Kit for easy system disinfection and STAR CAP (Clean Air Protection) that turns any Microlab STAR into a laminar flow hood.





# Standard CARRIERS

Carriers are the base of any workflow. There are various parameters that need to be considered: Capacity, type of consumables, samples, etc. Maintaining flexibility is also important. The ability to adapt is also important to workflow success. In addition to the standard carriers with five identical positions, the Multiflex concept allows you to configure the positions individually.

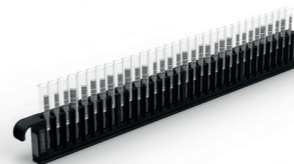
**Tip Carrier**  
Holds up to five racks of tips



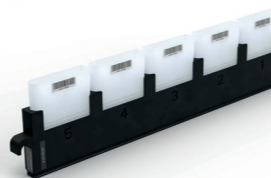
**Plate Carrier**  
For a wide range of plate types



**Tube Carrier**  
Holds tubes up to 18 mm in diameter



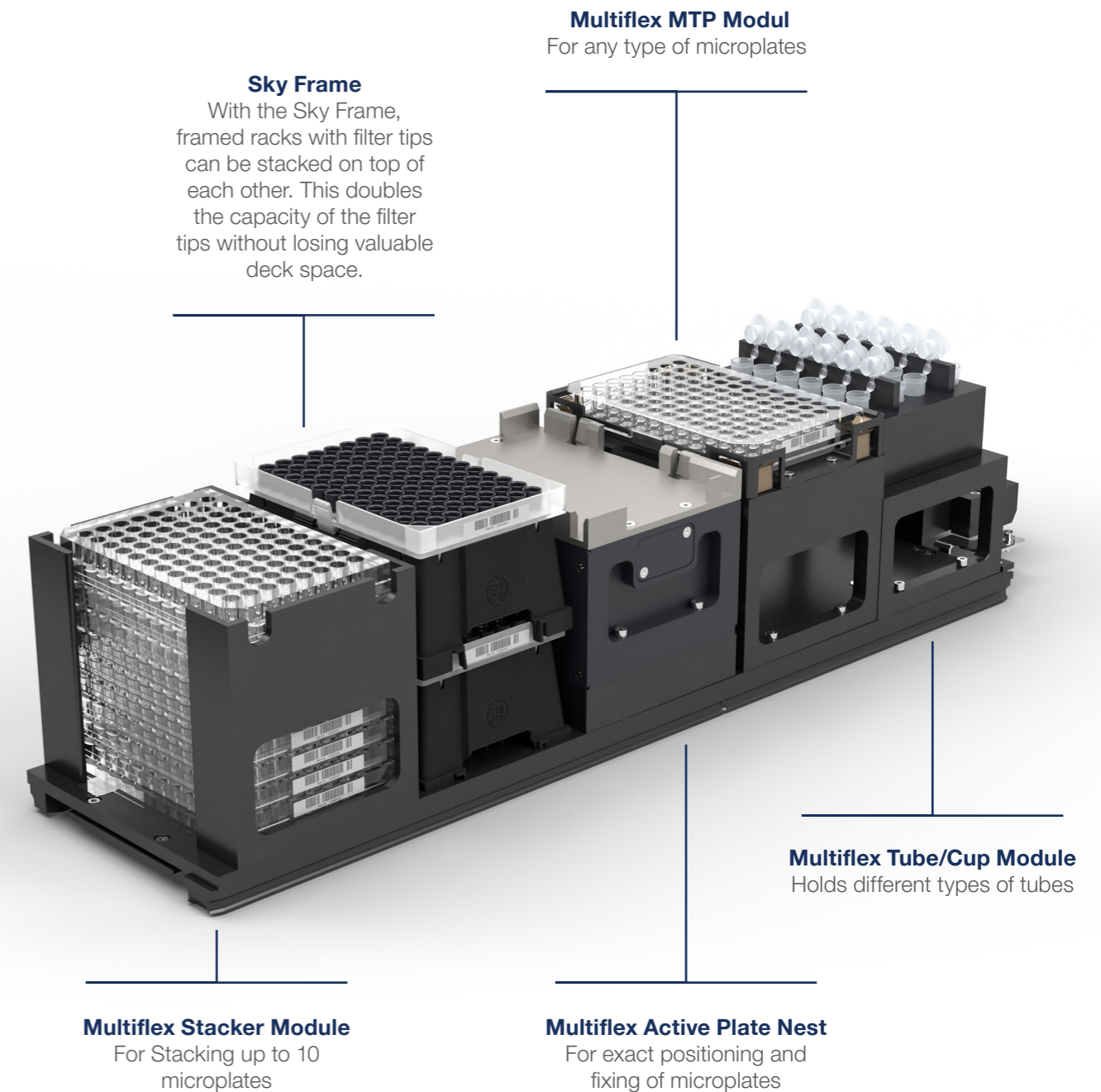
**Reagent Carrier**  
For reagent troughs



**Stacking Carrier**  
Increase deck capacity by stacking up to ten plates



# Multiflex MODULES



# Functional MODULES

## THERE'S NO LIMIT

**Flexibility thanks to modularity:** The Microlab STAR is a platform that can be easily adapted to the needs of the future. A wide range of standard carriers can be used to adapt the system deck to your requirements. Functional modules can be added to achieve an even higher degree of automation, so that every need within the workflow is taken into consideration.

From heating to shaking, to cooling and much more. The expandable modules create added value for every workflow in every laboratory, and also maximize walk-away time. Here you can see a small selection - more modules can be found on our website.

1

### The Hamilton Heater Shaker

The Hamilton Heater Shaker (HHS) automates the heating and shaking of ANSI/SLAS footprint microplates. Multiple units may be integrated and connected via a control box for higher throughput applications.

2

### The Hamilton Heater Cooler

The Hamilton Heater Cooler (HHC) offers wide-ranging and precise temperature control for ANSI/SLAS footprint microplates.

3

### The Liquid Dispenser

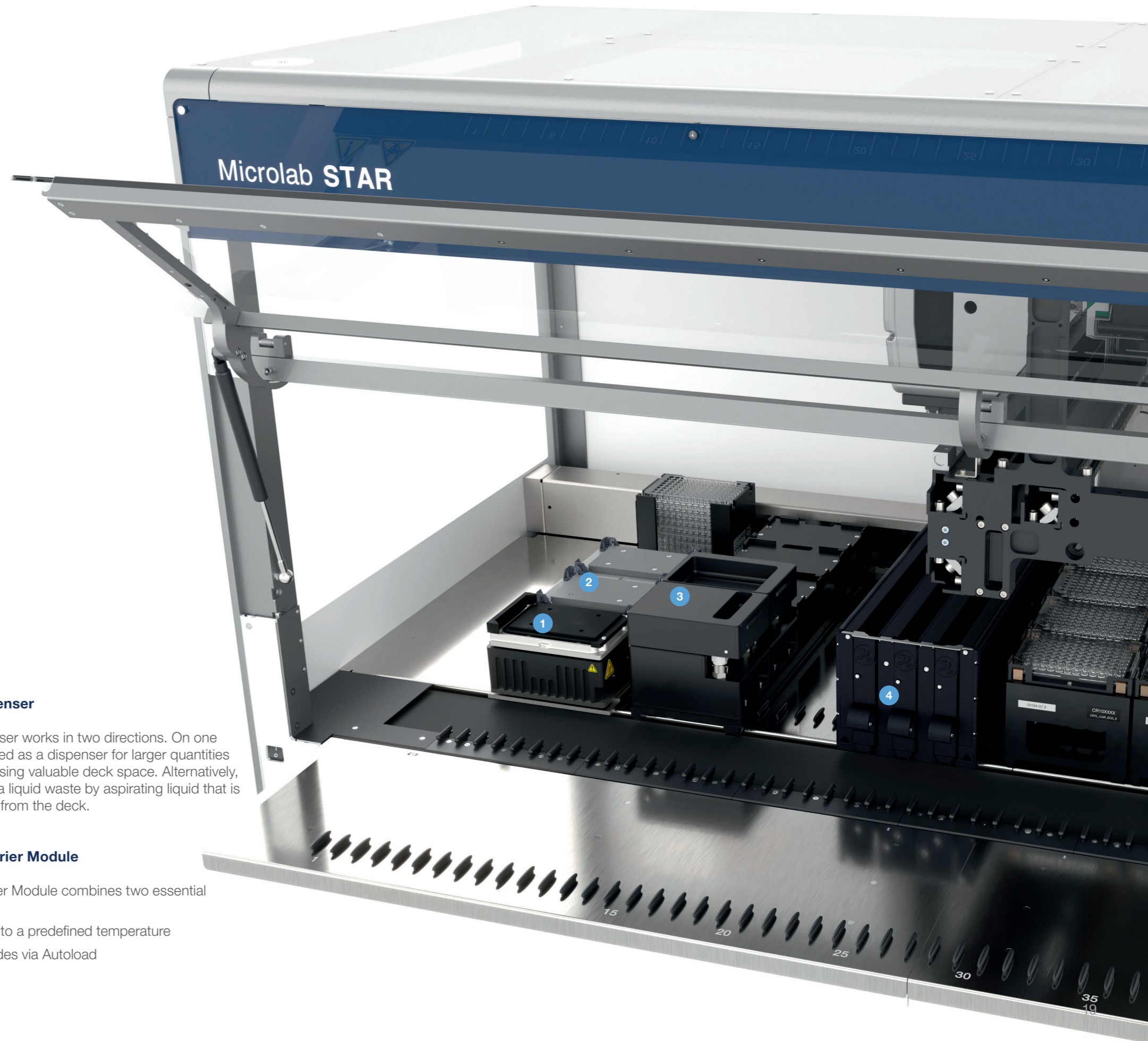
The Liquid Dispenser works in two directions. On one hand, it can be used as a dispenser for larger quantities of liquid without losing valuable deck space. Alternatively, it can be used as a liquid waste by aspirating liquid that is no longer needed from the deck.

4

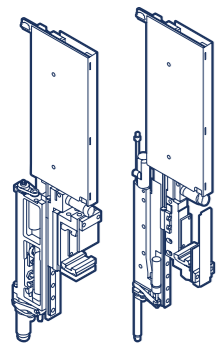
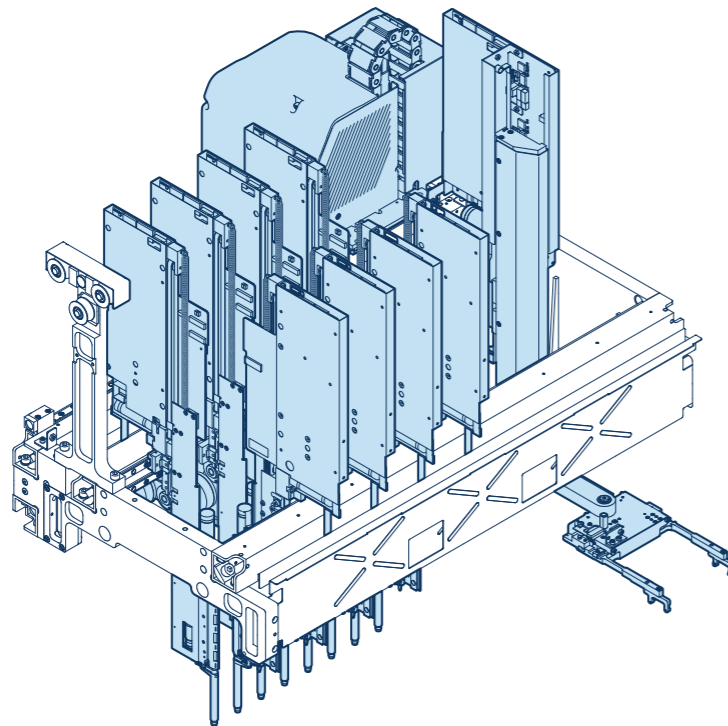
### The Cooling Carrier Module

The Cooling Carrier Module combines two essential features:

- Cool samples to a predefined temperature
- Identify barcodes via Autoload



# Pipetting TOOLS

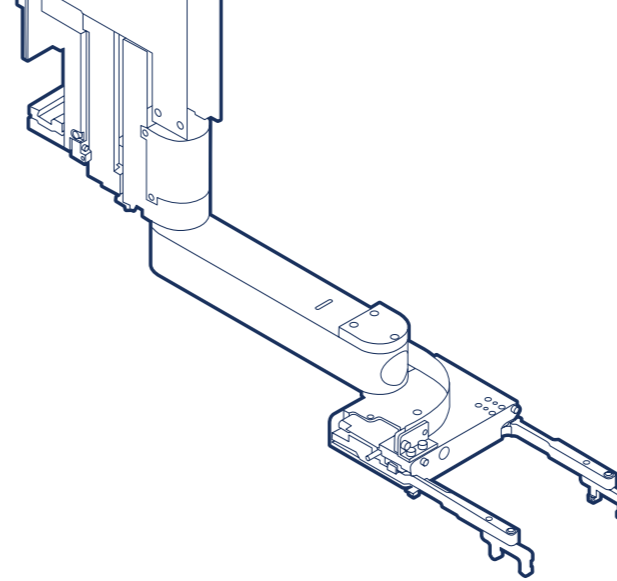
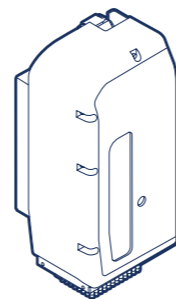


## Individual Channels

The 1000  $\mu\text{L}$  pipetting channels offer a volume range from 1.0  $\mu\text{L}$  up to 1000  $\mu\text{L}$ , while the 5 ml Pipetting Channel covers a volume range of 50  $\mu\text{L}$  to 5000  $\mu\text{L}$ . Both Channel Types allow independent movement with asymmetric spreading. Both combinations allow unrivaled dynamic range for your assays. The unique tip design of the 5 ml channel allows you to use small tubes and plates in your application while still pipetting large volumes, therefore maximizing the instrument's flexibility.

## Multi-Probe Heads

Our CO-RE 96- and 384-Multi-Probe Heads (MPH) allow for the quick pipetting of entire 96 or 384-well plates, or partial plates. Liquid Level Detection ensures reliable liquid handling.



# CO-RE TOOLS

## MORE THAN JUST LIQUID HANDLING

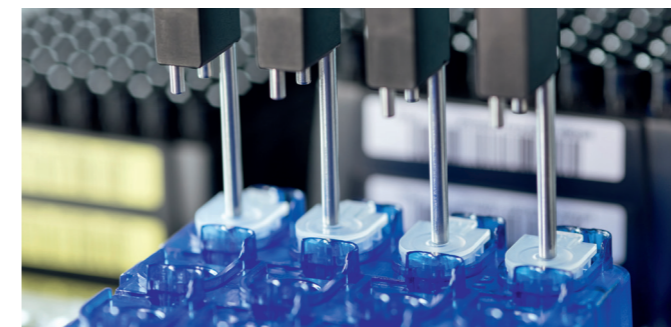
Combined with our CO-RE tools, the pipetting channels allow a variety of functions such as transport and handling of different labware. This multifunctionality not only ensures a more efficient workflow, but also enormously expands the automation options and optimizes the capacity of the labware.

The iSWAP robotic plate handler complements these tools and enables off-deck integration of third-party devices.



## CO-RE Gripper

The CO-RE Gripper is a plate handling tool, picked up by two pipetting channels during a run. It can transport different labware such as microplates, lids of microplates, archive- and filter plates.



## FlipTube Tool

Hamilton FlipTubes are 1.5 ml reagent tubes with a lid attached that closes the tube tightly for reliable preparation, centrifugation and storage of small volume samples. The FlipTube Tool allows for automated fast opening and closing without risk of human interaction and contamination risk.



## Suction Tool

The Suction Tool is a device for picking up and transporting lightweight lids of petri dishes, plates, troughs, reservoirs, and even FlipTubes.

# Applications



- Genomics
- Cellomics
- Diagnostics
- Forensics
- Proteomics
- Biobanking
- Drug Discovery
- Industrial Biotech

There are no limits to your imagination

We created the tool, but the possibilities are endless. Our technology supports you in realizing your vision and attaining your goals through customized solutions and a spectrum of features - no matter what application.

# Focus: SAFETY

## WHEN SAFETY MATTERS

Safety is the core topic in any laboratory; it needs to be considered for users, samples and processes, and your investments. To guarantee a safe process for both you and your samples, we've built-in a number of safety features to give you maximum confidence that processes are performed correctly while maximizing the reliability of generated results:

Racks are identified and loaded automatically, barcodes of samples are tracked, and all pipetting tasks are meticulously recorded. Losing samples is never an option - sophisticated error handling strategies allow assays to run uninterrupted in most scenarios, by offering a clear indication whenever user interaction is needed.

# Safe PROCESS



## THE SAMPLE IN FOCUS

Without process reliability the entire workflow is at risk – because errors can happen. We do everything to ensure those risks are mitigated. Using a variety of sophisticated technologies and solutions, we ensure that all your samples and processes are safeguarded from loading to analysis. This holistic approach guarantees security. The traceability throughout the entire workflow and optimal handling ensures accountability.



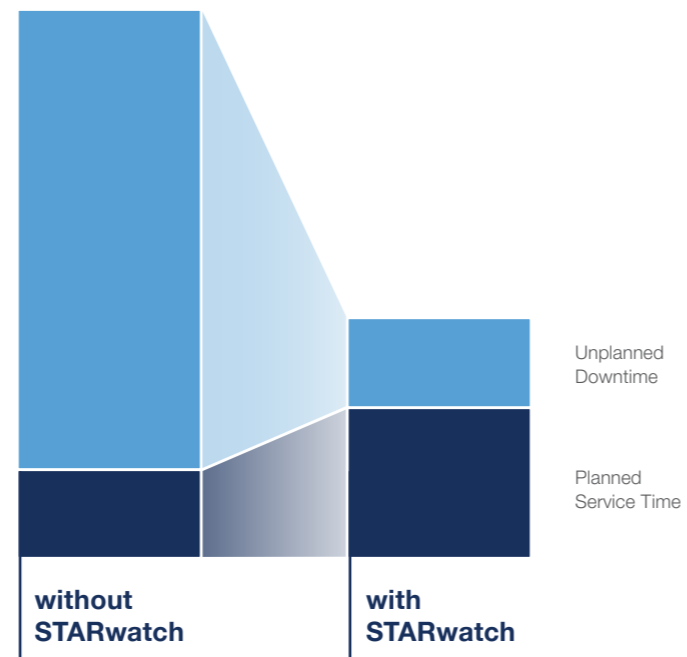
- Worklist Handling
- Badge Number Tracking
- Autoload with Tracking
- Customizable Error Recoveries
- Labware Reporting
- Intelligent Pipetting
- Bi-Directional LIMS Integration
- Status Light
- 2D-Barcode Reading

# STARwatch

## A SYSTEM TO MONITOR YOUR STAR'S HEALTH

STARwatch is a service that significantly increases uptime of your instrument and is exclusively available for Microlab STAR instruments. Running behind the scenes, STARwatch continuously monitors the condition of your instrument. The data captured is automatically analyzed, and when critical patterns are recognized, Hamilton Service is immediately notified to provide proactive intervention. This ensures more planning and process reliability for you. Don't worry about technical details in the background - we do that for you. It's much more important that you can focus on your samples and results.

- Increased system uptime through proactive intervention
- No workflow interruption
- Pre-planned service visits
- Faster service reaction time



### THE TECHNOLOGY BEHIND

STARwatch Collect is a small client, installed on the instrument's computer, which transmits relevant information to the STARwatch Server. Encrypted and compressed data is only sent by a one-way SMTP protocol. Therefore, outside network access is not possible. When dealing with data transfers via the internet, security is a major concern.

With STARwatch Collect, data transfer is highly secure.

- Transmitted data is encrypted and compressed
- The update rate is configurable
- Safe "one way" connection using SMTP





# Safe INVESTMENT

## SERVICE & SUPPORT AND HOW WE UNDERSTAND IT

Our worldwide service organization strives to provide the best service and support in the industry. Local field service engineers are trained by our Hamilton certified trainers and supported by service centers and distributors. Our commitment to high-quality standards goes beyond ISO 9001

certification, and includes continuous training of all authorized service technicians. With us as your automation partner, you can always rely on excellent service and support.



### EXTRA-MILE SUPPORT

- **Always there when you need us**  
Our global field service and support network - from the technical support hotline to local service engineers and application specialists - guarantees fast response times to your inquiries in order to minimize possible downtimes. Whether it's routine maintenance, service or application support, we ensure that you can work as efficiently as possible.
- **Training makes perfect**  
We offer our trainings in the form of standard training sessions, as well as tailor-made to your individual needs - whether on our premises or in your lab.



### HIGHEST QUALITY LEVEL AND THE BEST SERVICE

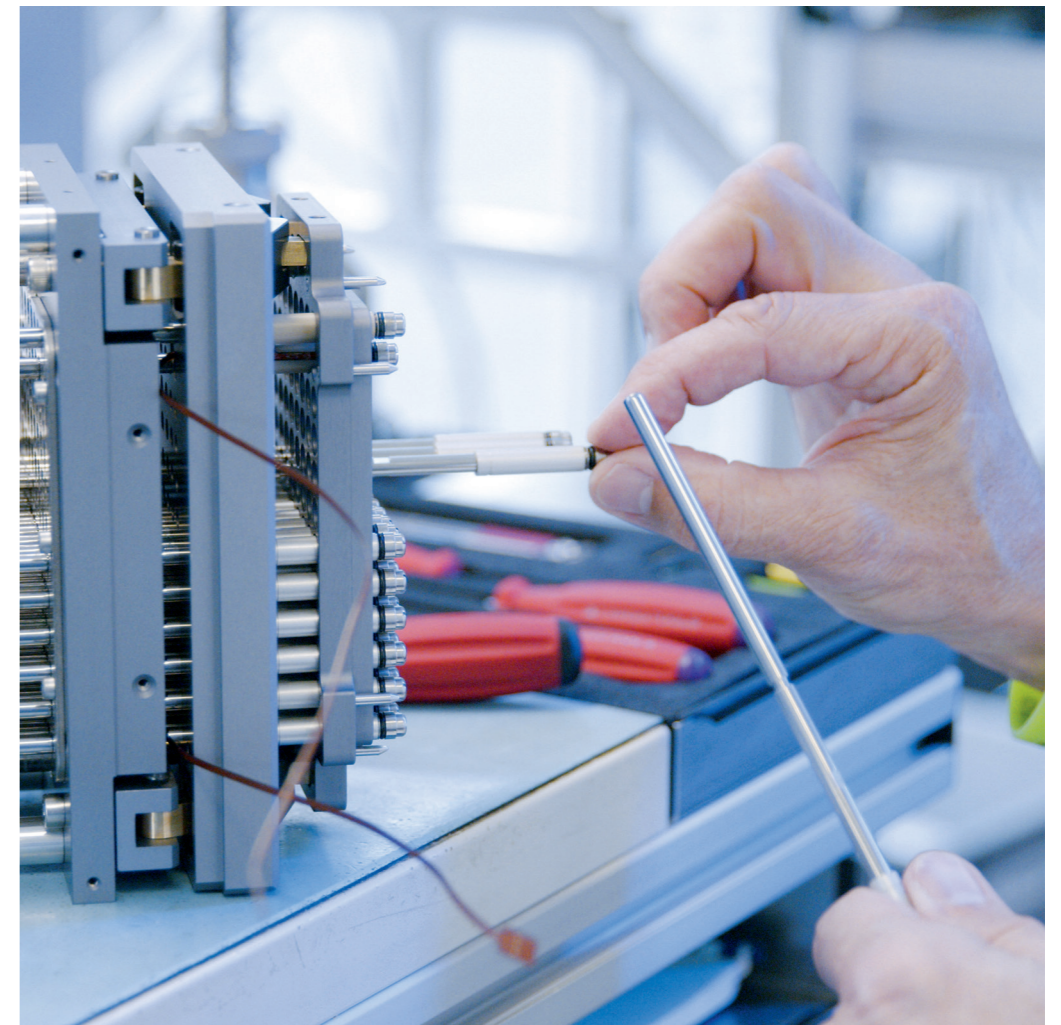
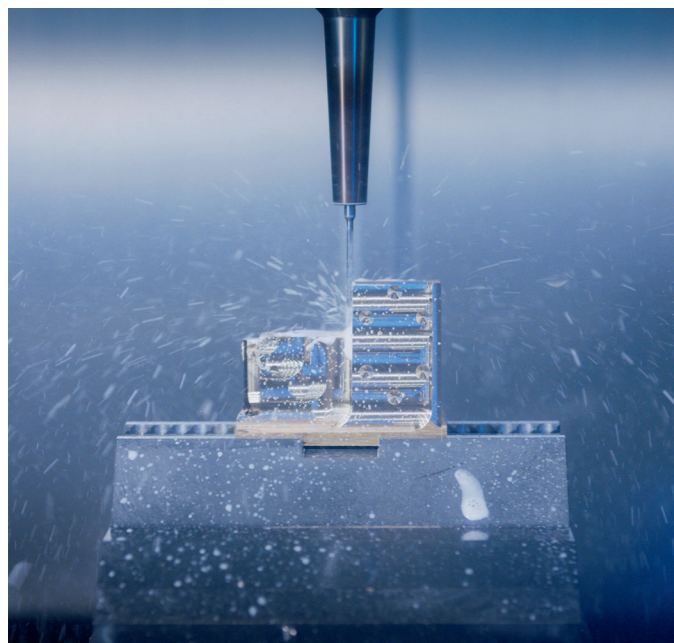
- **Quality from a single source**  
We guarantee the highest standards of quality, reliability and precision for all our products, from our own production and state-of-the-art quality control systems to final inspection.
- **System installation made to measure**  
All Hamilton systems are installed according to strict procedures and in accordance with ISO 9001. Each includes a comprehensive Installation Qualification (IQ) and detailed documentation.
- **Service as individual as you are**  
Ensure the longevity and peak performance of your automated system with a Hamilton service contract, including regular monitoring and preventative maintenance. There are three individual service and support contract levels to choose from.



# In-House PRODUCTION

Everything from a single source. Following this credo, almost all parts are manufactured in-house at Hamilton. As a result, we can react swiftly to developments and changes, complimenting our very high quality standards. In addition to CNC parts, we also produce our own tips and develop our own software. This enables us to react agilely in a market where quality and availability are key.

FOR YOU, THIS MEANS SECURITY IN TERMS OF DELIVERY AND AVAILABILITY OF SPARE PARTS. SIMULTANEOUSLY, WE ARE THUS ABLE TO PRODUCE TAILOR-MADE SOLUTIONS IN-HOUSE.



# Consumables

## BASIS OF EVERY WORKFLOW

They are the essence of every workflow. Nothing works without the appropriate consumables. That's why we offer a whole range of high-quality consumables that provide more security, higher efficiency, and more convenience. We produce our tips in-house in our own production facilities, guaranteeing our idea of quality and a continuous availability of consumables.

- Tips are manufactured to the highest consistency and quality standards
- Automated cleanroom production
- Automatic digital image processing inspections
- Complete, documented traceability
- Production areas in accordance with ISO-14644-1 (Class 8)
- Quality Management System in accordance with ISO 9001: 2015, ISO 13485: 2012, 21 CFR 820 (FDA Quality System Regulation) and EU In Vitro Diagnostics Directive
- Sterile CO-RE tips manufactured in accordance with ISO 11137-1, ISO 11137-2 and ISO 11137-3



# Specifications

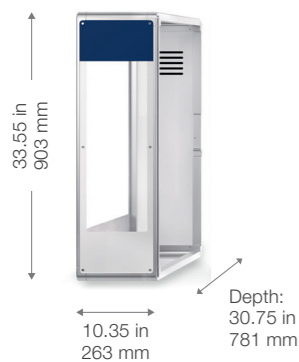
## STARlet



## STAR



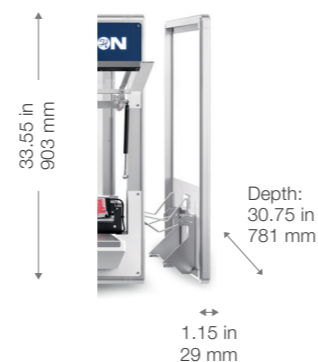
### Housing Extension Multi-Probe Head



### Slim Housing Extension left



### Slim Housing Extension right



### Physical Dimensions

Parameter	Microlab STARlet	Microlab STAR
Width		
without Multi-Probe Head	1124 mm	1664 mm
with Multi-Probe Head	1387 mm	1927 mm
Height	903 mm	903 mm
Depth		
Manual Load	781 mm	781 mm
Autoload	1011 mm	1011 mm
Weight (8 Pipetting Channels)		
without Multi-Probe Head	135 kg	145 kg
with Multi-Probe Head	150 kg	160 kg
Noise Level	< 65 dBA < 46 dBA in standby mode (according to EN 27779)	

### Processing Times

Configuration	Task	Time(s)
8 Pipetting Channels	Filling of one 96-well microplate with 100 µl sample (new tip for each sample)	320
	Aliquot reagent to a 96-well microplate (<90 µl per well)	60
CO-RE 96 Probe Head	Replication of one 96-well microplate: 100 µl, new tips, with cLLD on aspiration	35
	Reformatting of four 96 well microplates to one 384-well microplate: 50 µl, new tips, with cLLD on aspiration	140
CO-RE 384 Probe Head	Replication of one 384-well microplate: 20 µl, new tips, with cLLD on aspiration	35
	Reformatting of 4 - 384 well microplates to one 1536-well microplate: 10 µl, new tips, with cLLD on aspiration	140

### Deck Parameters

Parameter	Microlab STARlet	Microlab STAR
Deck Capacity	30 Tracks (T)	54 Tracks (T)
Modal Precision	x-y-z positional accuracy of 0.1 mm	
Tip Sizes	From 10 µL to 5000 µL For detailed information on the tip size gradations, contact your local Hamilton representative	

### Ambient Conditions

Parameter	Operation	Storage	Transportation
Temperature	+15°C - +35°C	- 25°C - +70°C	- 25°C - +70°C
Relative Humidity	15% - 85% (non-condensing)	10% - 90% (non-condensing)	10% - 90% (non-condensing)
Overvoltage Category	II	II	II
Pollution Degree	2	2	2
Altitude	up to 2000 m/6561 ft. above sea level		
Indoor use only			

### Electrical Data

The maximum power consumption depends on the configuration of the instrument

#### Maximum Power Consumption 600 VA

Operating Data:	Voltage:	100/115 VAC/230 VAC (± 10%)
	Frequency:	50/60 Hz
Delayed Action Fuse:	100/115 VAC:	6.3 A (T6.3AL250)
	230 VAC:	3.15 A (T3.15AL250)

#### Maximum Power Consumption 1000 VA

Operating Data:	Voltage:	115 VAC/230 VAC (± 10%)
	Frequency:	50/60 Hz
Delayed Action Fuse:	115 VAC:	10 A (T10AL250)
	230 VAC:	5 A (T5AL250)

### Labware

All SBS standard plate types up to 1536 wells and most commercially available tube types. Contact your local Hamilton representative for more information.

Maximum height of labware on deck: 140 mm from deck surface

### Carriers

For all standard labware formats and according to customer requirements. Contact your local Hamilton representative for more information.

A modern glass building with a grid pattern, reflecting a mountain landscape. The building is on the left side of the image, and the reflection shows a mountain peak and a forest. The background is a clear blue sky.

**We drive innovation  
to improve people's  
lives**

# Automating your IMAGINATION

## HAMILTON ROBOTICS

We develop and produce state-of-the-art Liquid Handling Systems and laboratory automation technologies. Devote yourself to new ideas, transforming your ideas into reality.

The entire product portfolio is characterized by maximum reliability, maximum efficiency, flexibility and user-friendliness. From production to service and support, the focus is always on your individual needs.

## HAMILTON

Hamilton has stood for Life Sciences and Medical Technology since 1966. A visionary idea developed into a strong global presence. Our spirit has always remained the same: To research, develop and produce with passion, courage and curiosity. The desire to discover new, technological solutions, innovations, and benefit people is our mission too. We strive to set our goals high and continue to meet the measure of excellence.



To find a subsidiary or distributor in your area, please visit, [www.hamiltoncompany.com/support](http://www.hamiltoncompany.com/support).

Web: [www.hamiltoncompany.com/robotics](http://www.hamiltoncompany.com/robotics)  
Email: [infoservice@hamiltonrobotics.com](mailto:infoservice@hamiltonrobotics.com)

**United States**  
+1-775-858-3000  
**United Kingdom, Ireland**  
+44 121 272 92 80  
**Brazil**  
+55 11 95914 5000  
**China**  
+86 21 6164 6567

**Denmark, Norway, Sweden, Finland**  
+46 8410 27 373  
**France**  
+33 184 008 420  
**Germany, Austria, Switzerland**  
+49 89 248 804 804

**Benelux**  
+49 89 248 804 804  
**Italy**  
+39 039 930 06 06  
**Japan**  
+81 3 6435 6850  
**Spain, Portugal**  
+34 930 186 262