

Freedom EVO[®] .

FREEDOM TO EVOLVE IN YOUR LABORATORY



One platform, unlimited options, individual solutions.

Fully automated liquid handling and robotics for life sciences and diagnostics

1 The **Freedom EVO series** is one of the most popular and reliable systems in the market, with more than 5,000 systems installed worldwide. It offers a choice of worktable capacities, each with building-block modularity that brings convenient scalability, proven liquid handling, easy-to-use robotics and advanced process control within reach of every laboratory scientist. This flexible platform enables you to create your system according to your specific needs with the help of our automation specialists, or to select an application package. Operation is straightforward; the intuitive Freedom EVOware® user interface optimally combines pipetting, robotics and scheduling of multiple devices in a single package.

2 UNIQUE EXTENSIBILITY AND UPGRADE PATH
Your Freedom EVO can evolve as your needs change, using up to three arms on one platform to combine liquid handling and robotic resources. Start with liquid handling only, for sample dilution or plate replication, and upgrade with robotic manipulation for full assay automation. All arms can be easily upgraded or exchanged at your site, ensuring that your workstation meets your laboratory needs both now and in the future.

3 FREELY CONFIGURABLE WORK AREA
Tecan offers an extensive range of carriers for positioning standard labware – such as tubes, plates, reagent bottles and slides – on the worktable. Carriers are easily positioned, and can be routinely removed for reloading or to reconfigure the platform.





4 PARALLEL PROCESSING

Parallel processing increases speed, enhances throughput, ensures assay reproducibility and provides efficient use of resources.

5 PLUG-AND-PLAY MODULARITY

Seven types of robotic arm are available: Liquid displacement Liquid handling arm (LiHa), Air displacement Liquid handling arm (Air LiHa), MultiChannel Arm™ (MCA) 96, MCA 384, standard or extended Z-axis Robotic Manipulator (RoMa) and Pick and Place (PnP) arm. Up to three arms (up to two arms on Freedom EVO 100) can be mounted in appropriate combinations, and additional robotic arms can be added or exchanged in the field.

6 LIQUID HANDLING EXPERTISE

Each liquid channel offers optimized pipetting parameters for a broad range of liquid types and volumes, with fast liquid level detection, liquid availability check and preferential non-contact dispensing.

7 VARIABLE TIP SPACING

All LiHa arms offer variable Y-spacing, enabling sample transfers to and from a variety of labware types. Individual channel control allows applications such as hit picking or access to irregularly-shaped reagent vessels. A wide range of high quality disposable tips - from 10 µl to 5,000 µl - are available, providing accurate pipetting of aqueous, organic or biological solutions and suspensions.



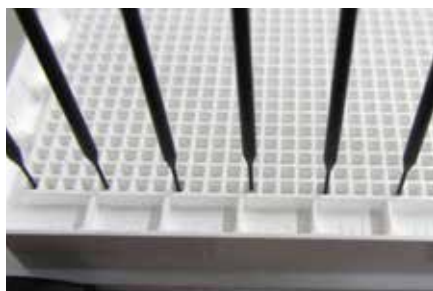
Excellence in liquid handling.



Nested 350 μ l disposable tips maximize your worktable capacity.



Robust liquid level detection in individual sample tubes with fixed tips.



A Liquid LiHa with Te-PS tips pipetting into a 1536-well plate.

LIQUID HANDLING FLEXIBILITY: LET YOUR APPLICATION DECIDE WHICH TECHNOLOGY IS RIGHT FOR YOU

Freedom EVO workstations provide unrivalled flexibility, uniquely offering a choice of pipetting technologies – even allowing you to combine air and liquid displacement – on a single workstation. Two-, four- and eight-channel liquid displacement (LiHa) or four-/ eight-channel air displacement (Air LiHa) pipetting arms are available, offering a volume range from 0.5 to 5,000 μ l or more. Each platform can be equipped with up to two pipetting arms, providing 16 flexible pipetting channels or high density 96- or 384-channel pipetting to significantly increase throughput for plate replication, dilution and whole plate processing.

Liquid displacement offers a choice of washable fixed tips or disposable tips, with a large dynamic range and the option to use alternative system liquids, such as DMSO for priming and bulk dispensing in compound management workflows.

Air displacement eliminates the need for system liquids and associated maintenance operations. Ideal for genomics and cell biology applications, this option uses inline filters for optimal channel protection and process security.

Up to 16 **XP Smart dilutors** – precision syringe pumps ranging from 50 to 5,000 μ l – ensure a perfect match between tip volume and dynamic range.



PRECISION LIHA ARM

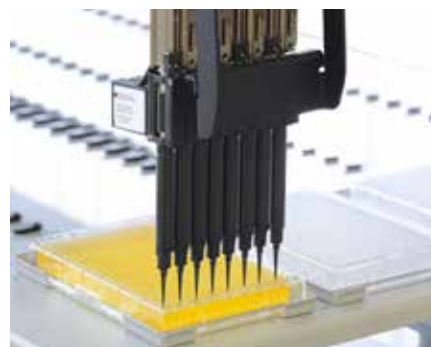
Each liquid-filled, positive displacement channel offers efficient transfers, detecting and tracking the liquid level to avoid over-submergence of the tip or disturbance of sample pellets or precipitates. The LiHa is offered with disposable or fixed tips and with an optional fast wash pump ensuring rapid, thorough washing of fixed tips for total system cleanliness, minimizing sample carry-over.

- Generate positive pressure for fully automated chromatography and protein purification eg. for Media Scout® RoboColumns®.
- Long, thin fixed steel tips provide reliable septa piercing and can reach the bottom of nearly all labware, ideal when working with cell culture vessels.

CONVENIENT AIR LIHA ARM

This innovative air displacement arm provides accurate and reliable pipetting without the need for system liquids, providing greater convenience and lower maintenance requirements for applications using disposable tips. Available with four or eight pipetting channels, it offers a broad volume range from 0.5 to 1,000 µl per channel, with non-contact dispensing down to 0.5 µl. Each pipetting channel has a user exchangeable inline filter which prevents liquid being drawn into the pipetting head, protecting your valuable equipment. Combined with permanent pressure monitoring through Freedom EVOware, this maximizes process security.

- The large volume range ideal for a multi-purpose genomics (nucleic acid purification and normalization, plus PCR set-up), offering more 'freedom' in assay design.



The Air LiHa is able to dispense down to 0.5 µl in non-contact mode.



Versatile liquid level detection in individual labware with disposable tips.



Reliable septa piercing with fixed steel tips enabling long walk away times.

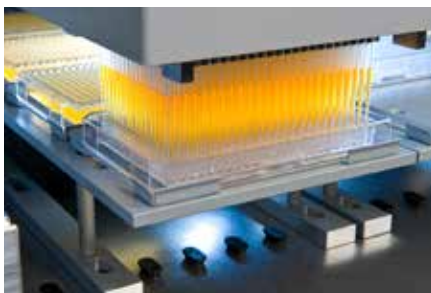
The Tecan advantage.

One platform, unlimited solutions.



The **MultiChannel Arm 96** pipetting with 96 channels in parallel speeding up your assays.

True parallel processing with the **MultiChannel Arm 96**. Simultaneous pipetting of 96 channels provides timely addition of liquids directly into microplates, helping to optimize assay results. The MCA 96 has the flexibility to work with both disposable and washable tips, which can be automatically exchanged during a run. It can also operate as an 8- or 12-channel pipette by picking up a single column or row of disposable tips.



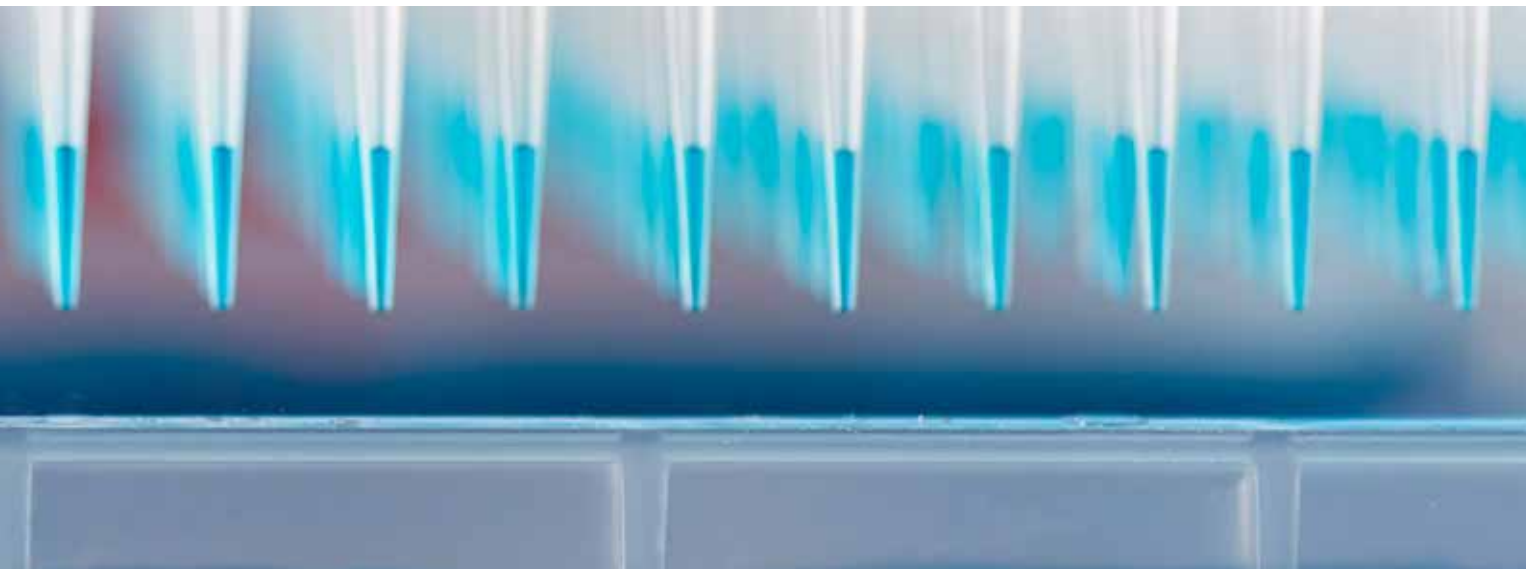
High speed replication with the **MultiChannel Arm 384** ideal in e.g. compound management.

Increased throughput with the MultiChannel Arm 384. Offers a very broad volume range - 0.5 to 125 μ l in 384-well format or 0.5 to 500 μ l in 96-well format - the MCA 384 is designed to increase productivity. Washable and disposable tips can be used interchangeably during a workflow, picking up rows of 12 or 24 tips and columns of 8, 16 or 32 tips if required. For maximum flexibility, adaptor plates with the ability to pick up different disposable tip arrays can be rapidly exchanged during a run.

The **Robotic Manipulator (RoMa)** arm transports microplates and other labware quickly and efficiently between worktable, peripheral devices and labware storage. The **extended range RoMa arm** offers access below the worktable, enabling further integration of devices such as plate readers, washers or centrifuges, as well as additional storage and incubation options.



The robotic manipulator arm assembling a **Te-VacS™** for a fully automated vacuum **solid-phase extraction** operation.



The **Pick and Place** (PnP) arm offers fast and precise single tube manipulation for tube weighing and compound dissolution applications.

PosID™ provides automatic barcode reading for labware and carriers at any position on the worktable. Carriers and labware can be automatically identified before or during processing, confirming the identity of samples, reagents and assay vessels. Both horizontal (eg. side of microplate) and vertical (eg. side of tube or bottle) barcodes can be read, ensuring sample and reagent integrity. Missing tubes are also detected.

The optional **Te-PS™** laser-guided precision positioning system automatically ensures accurate and reliable pipette tip tracking for high density plate formats, such as 1,536-well plates. In-process monitoring and real-time corrections guarantee reliable unattended operation and maximize process security for longer walkaway times.



Tube transfer e. g. to a balance by the Pick and Place arm.



The PosID™ allows barcode identification of tubes or plates.



The laser positioning system evaluating tips in-process.

Flexible options to meet changing needs.

Choice without compromise



Te-Shake integrated on the Freedom EVO worktable.

Te-Shake™ is a highly effective shaker that handles microplates, deep-well plates, microfuge and PCR tubes, with the added option of sample heating.

Te-VacS™ is an automated solution for vacuum solid phase extraction. The system can be assembled by the RoMa arm for fully automated operations, and is ideally suited to DNA/RNA extraction, viral RNA isolation and compound purification. Smooth pressure regulation allows safe sample extractions without contamination.



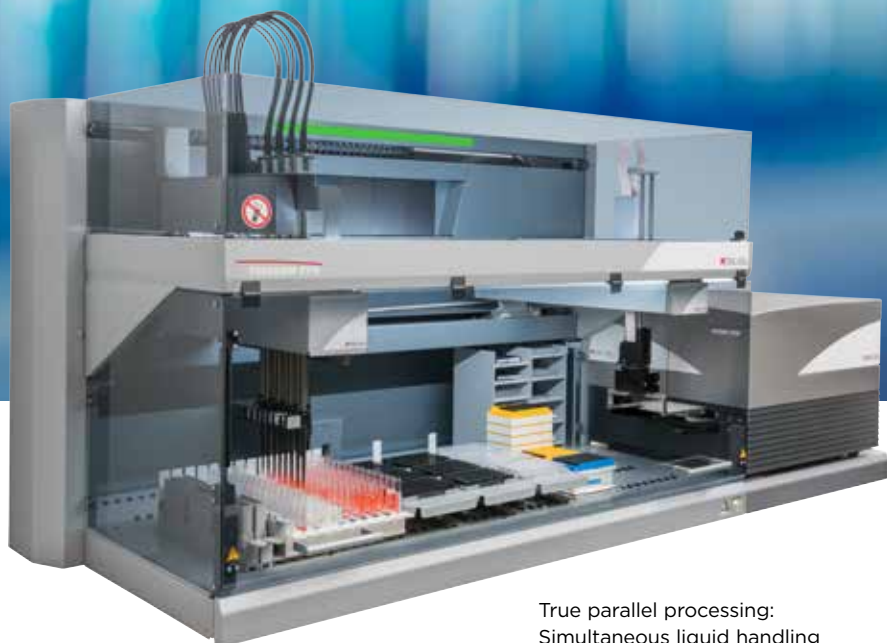
The RoMa moving a new SPE plate to the Te-VacS for subsequent vacuum separation.

Te-MagS™ is a powerful magnetic bead-based separation tool for sample purification. Typical applications include DNA/RNA or protein purification, as well as cell isolation.

Temperature control is crucial for many molecular biology and ADMET applications, both on and off the worktable. **Tecan incubators** (room temperature +5 to 60 °C) provide incubation for four or six microplates on the workdeck, with or without shaking, and are ideally suited to ELISA and cell-based assay applications. Temperature-controlled carriers are also available for reagent and media reservoirs, tubes and plates.



Te-MagS to performs magnetic bead separation.



True parallel processing:
Simultaneous liquid handling
and labware movement to
the integrated Spark reader.

Tecan **microplate readers** – including the Spark® and Infinite® series multimode readers – can be seamlessly integrated for fluorescence/luminescence detection.

Te-Stack™ is an efficient tool for automating the storage, retrieval and fast delivery of microplates and disposable tips.

The **Carousel HS™** provides unmatched speed for random access to microplates (standard, half-height plates and deep-well) and assorted disposable tips.



The RoMa loading a plate into the incubator.



The Te-Stack offers space for up to 50 standard micro plates or up to 40 MCA 96 nested tip racks per column.



Individual random access with the high-speed carousel for up to 280 standard micro plates.

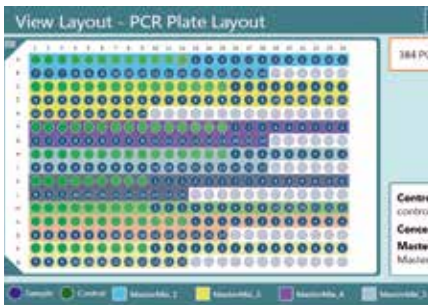
Freedom EVOware:

Simple, intuitive, flexible.

Revolutionary process control.



The Freedom EVOware software is easy-to-use.



Fast creation of different plate layouts (e.g. PCR) with dedicated wizards.



The touchscreen guides you through your daily tasks for efficient operation.

INTUITIVE SOFTWARE

Freedom EVOware is Tecan's software package to control the Freedom EVO for a wide variety of your automation needs. It uses a modern Graphical User Interface (GUI) that allows laboratory staff with minimal IT expertise to create their own scripts and protocols.

FLEXIBLE AND EASY-TO-USE

The software comes with a comprehensive library of carriers, labware, and liquid classes that can be easily adapted to your application. The GUI provides commands for all Freedom EVO options that can be assembled with drag and drop into a script or process. Freedom EVOware can also be extended with add-ons for Touch Interfaces (TouchTools), Scheduling (Freedom EVOware Plus), Sample Tracking as well as application specific wizards such as PCR-Setup, Normalization, Hit-Picking, Buffer Creation and Parallel Chromatography.

STRAIGHTFORWARD INTEGRATION

Freedom EVOware offers a selection of over 75 device drivers that enable 3rd party device integration. The SiLA interface allows integrators to control SiLA compliant devices, and to control Freedom EVOware using a standards based API. For developers, in addition, Tecan offers the Freedom EVOware developer Studio, that allows the creation of drivers and custom user interfaces.

3D SIMULATION

Protocols can be created and simulated in real time, allowing off-line checking of resource allocation and efficiency, as well as troubleshooting and training.

COMPLIANT

Freedom EVOware follows the highest standards and is developed and maintained under IEC 62304. User management, file protection and traceability features make it easier for laboratories to comply with the US FDA's 21 CFR Part 11 Regulations.

Discover the freedom to evolve your key applications.

One source, endless solutions

GENOMICS

The Freedom EVO series fully supports nucleic acid purification, integrated quantitation and normalization, PCR set-up as well as NGS sample preparation – to automate all your genomic workflows. Nucleic acid extraction protocols covering a wide range of sample types were developed in collaboration with companies including Promega, Macherey-Nagel and Life Technologies, and cover magnetic bead-based, vacuum or centrifugal separation. Quantification of the nucleic acids is enabled by an integrated Tecan reader for seamless data transfer to the Freedom EVOware Normalization Wizard and a touchscreen-based PCR wizard allows rapid set-up of constantly changing PCR / qPCR reaction patterns. Qualified Freedom EVO NGS workstation protocols – verified with sequencing data – are available for a range of library preparation and capture kits, increasing reproducibility and data quality.

PROTEOMICS

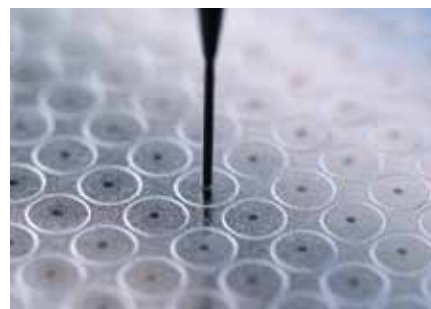
The Freedom EVO supports a diverse range of bioprocessing applications, allowing you to combine various protein purification technologies – including batch processing in plates and individual sample processing in tips, columns and RoboColumns – on a single instrument, as well as performing protein identification and characterization protocols. Numerous optimized solutions are available for protein digestion and MALDI target spotting, as well as precision pipetting methods for protein crystal growth optimization. Each solution is fully scalable to meet different throughput needs.

DRUG DISCOVERY

The Freedom EVO's application portfolio supports every step in the drug discovery chain, from medicinal chemistry, compound management, chemical and biological entity identification/validation, through to a full range of ADMET assays and clinical trial tests, including assay development and screening processes. It offers both, biochemical and cell-based assay solutions (eg. cell permeability and cell migration assays), as well as cell culture maintenance (including 3D cell cultures) and logistical support functions, such as hit picking and library management.



Nucleic acid purification with magnetic bead separation.



Protein digestion and MALDI target spotting.



Maximize laboratory space with vertical access to devices below the worktable for complex drug discovery assays.

Freedom EVO[®] - Freedom to evolve in your laboratory.

FREEDOM EVO 100



Offering state-of-the-art liquid handling capabilities and optional robotic functionality for general purpose pipetting in all small-to-medium throughput laboratories.

FREEDOM EVO 150



Core liquid handling and robotics for small, busy laboratories or medium to high throughput research and diagnostic laboratories.

FREEDOM EVO 200



The largest workstation in the Freedom EVO series, it provides an extensive work area and variable configurations, with a choice of liquid handling and robotic arms.

DISCOVER THE FREEDOM EVO LABORATORY AUTOMATION SOLUTION

To see Freedom EVO in action and learn how it can improve the productivity of your laboratory, contact your nearest Tecan office or visit www.tecan.com/freedomevo

The Freedom EVO is an open automation platform product for general laboratory use. It is intended for routine laboratory tasks, such as general purpose pipetting and general purpose liquid handling and robotic processes. Not all options are available in all markets. Certain options when combined with Freedom EVO are for research use only. Consult your local Tecan office.

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