Here to help

Welcome to the 2009-2010 Tecan product catalog. We are proud to offer you our updated portfolio of innovative products and solutions, continuing to provide the benefits of automation to a range of applications, and making automated systems more accessible than ever before.

“We thrive on strong and productive relationships with our customers and rely on the feedback you give to ensure that our products continue to provide the innovation, value and reliability you need.”

“We are proud to offer you our updated portfolio of innovative products and solutions, continuing to provide the benefits of automation to a range of applications, and making automated systems more accessible than ever before.”

“Tecan is constantly adapting to the changing market, providing you with faster service and better access to our comprehensive range of products, services and consumables.”

Thomas Bachmann
CEO

Kirsti Tavast
Head of Market Unit Asia Pacific

Craig Williamson
Director of Services and Consumables for the Americas

Whether you are looking for a simple stand-alone instrument or a fully integrated and customized platform, you can rely on Tecan.
Our expertise can help you with almost every kind of laboratory automation, for forensic, biopharma and life science processes, applications and software.

Applications for Biopharma

Applications for Diagnostics

Liquid Handling & Robotics

Sample Management

The Components and Detection business segment includes the Tecan business units that manufacture high-volume, mass-produced products, such as pumps and valves, robots, readers, washers and microarray products.

Components

Microplate Readers & Washers/ Microarray Products

A world of OEM expertise

Services

Consumables
### Applications for Biopharma

#### Genomics solutions
- Nucleic acid purification 8
- Nucleic acid quantification and normalization 10
- PCR reaction preparation 12
- Nucleic acid clean-up 13
- In situ hybridization – GenePaint™ 14
- Genotyping 16

#### Protein science solutions
- Protein purification 18
- Protein chromatography 20
- Protein crystallography 22
- Protein digest and MALDI target spotting 24

#### Cell biology solutions
- Antibody production 26
- Process development 28

#### Cell biology solutions
- Cell transfection 30
- Cell line development and cell banking 32
- Cell maintenance 34
- Cellerity™ 36
- Cell suspension culturing 38
- Stem cell culturing 39

#### Drug discovery
- Analytical sample preparation 40
- High throughput screening 42
- ELISA for research 44

#### Clinical diagnostics
- Nucleic acid extraction for veterinary diagnostics 66
- Automated ELISA testing for veterinary applications 68

#### Veterinary
- Automated ELISA testing for food 69

#### Food
- Automated ELISA testing for food 69

### Applications for Diagnostics

#### Clinical diagnostics
- Lab logistics 60
- Sample distribution 62
- Pooling 63
- Automated clinical ELISA testing 64

#### Veterinary
- Nucleic acid extraction for veterinary diagnostics 66
- Automated ELISA testing for veterinary applications 68

#### Food
- Automated ELISA testing for food 69

### Liquid Handling & Robotics

#### Platforms
- Freedom EVO® 72
- Freedom EVO® 75 74
- Freedom EVO® – REMP SSS Factory 75
- Freedom EVO® Clinical family 76
- Freedom EVOlyzer® family 78
- TE500pro™ 80
- TECAN Integration Group 82

#### Technologies
- Flow-Thru™ Technology 84
- Te-Fill™ – DynamicFill™ Technology 85
- Pressure Monitored Pipetting (PMP) 86

#### Modules - Options
- Robotic arms
- Liquid Handling Arm option (LiHa) 88
- MultiChannel Arm™ 96 (MCA™ 96) 89
- MultiChannel Arm™ 384 (MCA™ 384) 90
- Robotic Manipulator Arm option (RoMa) 91
- Pick and Place Arm option (PnP) 92
- 8 Plus 1 Access™ 93
- Labware logistics 94
- Labware Carriers 95
- Carousel™ 96
- Te-Stack™ 97
- AutoLoader™ 98
- Te-Link™ 99
- Barcode sample identification 100
- Positive Identification System (PosID™) 101
- Shakers & mixers 102
- Te-Shake™ 103
- Separation devices 104
- Te-VacS™ Vacuum Separation Module 105
- Te-MagS™ Magnetic Bead Separation 106

#### Incubation devices
- MIO™ Monitored Incubator Option 103
- Balances 104
- Te-PoolSafe™ 105

#### Software
- Freedom EVOware® Standard 106
- Freedom EVOware® Plus 107
- TouchTools Suite™ including Instant Pipetting™ 108
- Common Notification System (CNS) 110
- Freedom EVOware® Sample Tracking 111
- Freedom EVOware® Sample Oriented 112
- Freedom EVOware® Normalization Wizard 113
- Freedom EVOware® Hit-Picking Wizard 114
- Freedom EVOlution™ 115
- i-control™ 116
- Magellan™ 117
- CrysScreen™ 119
## Microplate Readers & Washers / Microarray products

<table>
<thead>
<tr>
<th>Microplate readers</th>
<th>Microplate washers</th>
<th>Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infinite® 200</td>
<td>HydroFlex™</td>
<td>Connect™ microplate stacker</td>
</tr>
<tr>
<td>Infinite® 200 NanoQuant</td>
<td>96PW™</td>
<td></td>
</tr>
<tr>
<td>Infinite® F500</td>
<td>Power Washer 384™</td>
<td>PowerScanner™</td>
</tr>
<tr>
<td>Infinite® M1000</td>
<td>ProfiBlot™ 48</td>
<td>LS Reloaded™</td>
</tr>
<tr>
<td>Sunrise™</td>
<td></td>
<td>HS 4800™ Pro and HS 400™ Pro</td>
</tr>
</tbody>
</table>

## Sample Management

<table>
<thead>
<tr>
<th>REMP automated storage systems</th>
<th>REMP Seal Piercing devices</th>
<th>REMP Thermo-Seal</th>
</tr>
</thead>
<tbody>
<tr>
<td>REMP Mid-Size Store (MSS) and Large-Size Store (LSS)</td>
<td>REMP Capping / Decapping devices</td>
<td>REMP Sample Administration System™ (SAS)</td>
</tr>
<tr>
<td>REMP Small-Size Store™ (SSS)</td>
<td>REMP Tube Punching Module (TPM)</td>
<td></td>
</tr>
<tr>
<td>REMP Plate Sealing</td>
<td>REMP Reatrix™</td>
<td></td>
</tr>
<tr>
<td>REMP Tube Sealing</td>
<td>REMP consumables</td>
<td></td>
</tr>
<tr>
<td>instruments</td>
<td>REMP Seal Technology™</td>
<td></td>
</tr>
<tr>
<td>REMP Tube Technology™</td>
<td></td>
<td></td>
</tr>
<tr>
<td>REMP Storage Plate 384</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Components

<table>
<thead>
<tr>
<th>Tecan Cavro® pumps</th>
<th>Tecan Cavro robotics</th>
<th>Cavro® Smart Valve (SV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cavro® Centris Pump</td>
<td>Cavro® Omni Robot</td>
<td>Cavro® Smart Input / Output Board (IO Board)</td>
</tr>
<tr>
<td>Cavro® XLP 6000 Pump</td>
<td>Cavro® Robotic Sample Processor (RSP)</td>
<td>Cavro® Linear Option Board (LO Board)</td>
</tr>
<tr>
<td>Cavro® XCalibur Pump (XC Pump)</td>
<td>Cavro® Mini Sample Processor (MSP Robot)</td>
<td></td>
</tr>
<tr>
<td>Cavro® XMP 6000 Multi-Channel Pump (XMP Pump)</td>
<td>Cavro® Fusion Software</td>
<td>Tecan Cavro spares, accessories and consumables</td>
</tr>
<tr>
<td>Cavro® XE 1000 Pump</td>
<td>Cavro® Express Software</td>
<td>Tecan Cavro spares, accessories and consumables</td>
</tr>
<tr>
<td>Cavro® MiniWash Pump (MW Pump)</td>
<td></td>
<td>Tecan Cavro components</td>
</tr>
<tr>
<td>Cavro® Smart Peristaltic Pump (SP Pump)</td>
<td>Cavro® Integration Kit</td>
<td></td>
</tr>
</tbody>
</table>

## Services & Consumables

<table>
<thead>
<tr>
<th>Services</th>
<th>Consumables</th>
<th>Sample &amp; reagent containers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Te-Care™ – putting customers first</td>
<td>Quality consumables enable reliable results</td>
<td>Reagent troughs</td>
</tr>
<tr>
<td>Service Contracts</td>
<td>Disposable tips</td>
<td>FE500 consumables</td>
</tr>
<tr>
<td>Product support</td>
<td>Liquid Handling Disposable Tips</td>
<td>ProfiBlot™ trays</td>
</tr>
<tr>
<td>Training</td>
<td>MCA™ 96 Disposable Tips</td>
<td>Te-Flow™ consumables</td>
</tr>
<tr>
<td></td>
<td>MCA™ 384 Disposable Tips</td>
<td></td>
</tr>
</tbody>
</table>

## OEM products

- Compliance – a world of OEM expertise

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Trademarks and legal notices

Abbreviations
Tecan enjoys a prominent position in the biopharma sector, providing innovative, focused solutions to life science laboratories around the world. Our range of off-the-shelf and bespoke systems covers a wide variety of applications, offering the reliability and precision synonymous with the Tecan name, in packages specifically designed to meet all of the important regulatory requirements. Many areas of research, including genomics, proteomics and forensic sciences, are benefiting from Tecan’s extensive experience and flexible approach to creating fully automated, high throughput laboratory solutions.

The products in this section are Research Use Only/scientific instrumentation/general purpose laboratory equipment. Not for use in human clinical or in vitro diagnostic procedures.

Applications for Biopharma

cell biology
nucleic acid separation
nucleic acid normalization
protein crystallography
PCR applications
forensics
genotyping
protein purification
ADME
The Freedom EVO® Nucleic Acid Sample Preparation workstation is a fully scalable and flexible system that allows automated extraction of RNA, mRNA, genomic DNA and plasmid DNA from various sample types, for a wide range of downstream applications. The workstation is compatible with all major nucleic acid purification techniques, from commercially available kits to traditional techniques, allowing you to develop a platform that exactly matches your application requirements.

The Freedom EVO Nucleic Acid Sample Preparation workstation is able to perform extraction protocols using various separation technologies, such as solid phase extraction, magnetic bead separation and centrifugation. The workstation can be used for a wide variety of nucleic acid sample preparation technologies with plasmid DNA, genomic DNA and RNA, as well as PCR clean-up. Many types of commercially available nucleic acid preparation kits can be automated with the Freedom EVO platform, including products from Dynal®, Eppendorf®, Invitrogen®, Macherey-Nagel®, Millipore® and Promega®. The Freedom EVO is equipped with a versatile liquid handling (LiHa) arm, and an advanced fluidic system that offers precise liquid transfer.

The workstation can integrate various additional modules – including multi-channel pipetting, microplate reading, microplate washing and storage options – allowing high throughput sample preparation and consistent, high quality results. The addition of the Te-Fill™ option provides increased functionality, complementing vacuum separation applications. The Te-Fill incorporates large volume dispensing functions into the LiHa arm, enabling bulk liquid transfers of over 50 ml. The Freedom EVO’s unmatched flexibility, combined with Tecan’s wide range of automation options, ensures that the set-up can be tailored to meet all your DNA or RNA extraction requirements.
The Te-MagS™ allows magnetic bead separation for PCR- or microtube-based formats, including heating necessary for elution of purified DNA in some chemistries.

Te-Shake™ assists with the implementation of lysis, binding and washing of nucleic acids during purification.

Te-VacS™ vacuum manifold allows processing of microplate format nucleic acid reagent kits.

The Te-MagS™ allows magnetic bead separation for PCR- or microtube-based formats, including heating necessary for elution of purified DNA in some chemistries.

Integration of Infinite® microplate readers and Freedom EVOware® Normalization Wizard allows automated quantitation and normalization of nucleic acids to a common working concentration.

<table>
<thead>
<tr>
<th>Customizable processes</th>
<th>Purification process can be adapted to suit your labware and batch size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Many pre-tested protocols available</td>
<td>Numerous nucleic acid purification chemistries have already been implemented on the Freedom EVO</td>
</tr>
<tr>
<td>Modular and flexible</td>
<td>System configuration is easy to adapt as assay and throughput requirements change</td>
</tr>
</tbody>
</table>
The Freedom EVO® Nucleic Acid Normalization system automates essential activities of everyday molecular biology procedures, such as DNA or RNA quantitation and dilution. Freedom EVOware®, combined with a specifically designed DNA normalization software package, enables the Freedom EVO robotic workstation to automate all the pipetting and microplate handling steps required for DNA normalization tasks.

The Freedom EVO liquid handling workstation can provide fully- or semi-automated quantitation, dilution and normalization of DNA or RNA. The scalable Freedom EVO Nucleic Acid Normalization workstation is available in 100, 150 or 200 cm base sizes, with various cost-effective packages to meet your laboratory requirements.

The system offers rapid and precise generation of standard curves and controls, and can automatically generate large sample sets of equal concentration for downstream processing. Using Freedom EVOware Normalization Wizard in conjunction with Tecan’s Infinite® series microplate readers and Magellan™ software allows the workstation to normalize sample concentrations, performing all the necessary calculations and pipetting without requiring user intervention. Alternatively, concentration data can be imported from other quantitation methods – such as real-time PCR – or third party microplate readers to determine the dilution required.

The workstation’s temperature-controlled reagent and microplate racks can handle virtually any microtube or microplate format commonly used in this type of procedure, and the workstations can be configured with either fixed or disposable tips.

Extraction and purification  >  Quantitation  >  Normalization  >  Assays using normalized DNA
Reduces hands-on time required for tedious calculations and pipetting.

Flexible programming wizard makes it easy to create or revise procedures as the laboratories’ needs change.

Automating new quantitation methods is fast and convenient.

Calculation, pipetting and data recording errors are eliminated.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automated import of plate layout</td>
<td>Eliminate data duplication, simplifying operation and reducing set-up errors</td>
</tr>
<tr>
<td>from Magellan</td>
<td></td>
</tr>
<tr>
<td>Dye addition and OD 260 analysis</td>
<td>Allows automation of a broad variety of quantitation methods (e.g. PicoGreen®)</td>
</tr>
<tr>
<td>capabilities</td>
<td></td>
</tr>
<tr>
<td>Direct import of results</td>
<td>Interface with Magellan, data reduction software or CSV file formats avoids data transcription errors</td>
</tr>
<tr>
<td>Automated sample dilution to target concentration</td>
<td>Avoids time-consuming calculations and eliminates pipetting errors</td>
</tr>
<tr>
<td>Compatible with Freedom EVOware Sample Tracking</td>
<td>Enhanced traceability, including reports incorporating original sample IDs</td>
</tr>
</tbody>
</table>
Automated PCR preparation matched to your throughput needs

The Tecan Freedom EVO® PCR set-up workstation is a fully scalable and modular system for PCR and sequencing reaction preparation. The pipetting platform offers unsurpassed flexibility to support all reaction preparation needs, regardless of the laboratory’s throughput requirements. The intuitive Freedom EVOware® software makes it easy to program all your pipetting steps, and control both Tecan modules and third party devices according to your application.

The Freedom EVO workstation is the ideal platform to automate set-up for PCR applications. The scalable system is available in four different base sizes (75, 100, 150 or 200 cm), and each platform can be formatted according to the level of automation required. This flexible system can be configured with a liquid handling (LiHa) arm, a robotic manipulator (RoMa) arm and multi-channel devices, including the MCA™ 96 and MCA 384 options, for greater throughput. It also enables integration of devices such as Tecan’s microplate readers for nucleic acid quantification and normalization, as well as storage devices, thermal cyclers and plate sealers. Reactions may be prepared in a variety of compatible labware formats including tubes, and 96- and 384-well microplate formats. Precise and reliable pipetting of low volumes is performed by the workstation’s advanced fluidic system using high performance, low volume tips. The LiHa and MCA liquid handling arms ensure accurate pipetting of template DNA, primers, buffers, enzymes, nucleotides and other reagents, even for the most sensitive amplification procedures.

Ensure sample integrity with 10, 50 and 200 μl Liquid Handling disposable tips, with aerosol-resistant filters (see page 179).

Rapid re-formatting of source DNA to 384-well plates with optional MCA arms.

Integration of plate sealer allows production of thermal cycler-ready plates.
Nucleic acid clean-up

You choose the method

No matter whether you choose to clean up PCR reactions with magnetic beads, solid phase extraction (SPE) or gel filtration, the Freedom EVO® can perform the task.

Many downstream assays using nucleic acids require removal of fragments from previous reactions such as unincorporated nucleotides, oligonucleotide primers and enzymes. Typical purification methods involve either vacuum (filtration or SPE), magnetic particles or gel filtration by centrifugation. Nearly all such methods can be automated on the Freedom EVO workstation.

Tecan offers various modules to suit your preferred method, including the Te-VacS™ for vacuum-based assays, and the Te-MagS™ for processing magnetic assays. Fully automated gel filtration in 96-well formats can also be accomplished through integration of a microplate centrifuge.

Once purification is completed, the Freedom EVO workstation can prepare plates for quantitation, normalize individual samples and plates to a common working concentration, and automate pipetting steps required for the downstream processing.
GenePaint is based on a flow-through technology that automates many of the steps required for performing non-radioactive in situ hybridization (ISH), fluorescence ISH (FISH) or immuno-histochemistry (IHC) on cells or tissues on microscope slides. A laboratory using GenePaint can systematically produce more ISH results without increasing resources, offering results equal or superior to manually-processed slides.

GenePaint eliminates 80% of the manual steps required in conventional non-radioactive ISH analysis, using fully automated hybridization protocols to maximize walkaway time. It is compatible with all common reagent sets for hybridization studies, ensuring consistent, reproducible and high quality results. Tecan’s Freedom EVO® liquid handling workstation is used to automate the GenePaint application, and is capable of processing up to 192 slides simultaneously, dependent on the workstation size. The customizable worktable can be quickly adapted to new application requirements; the system’s Te-Flow™ chamber holds standard 25 x 75 mm microscope slides and achieves optimal flow-through with a chamber volume of just 90 μl, 40% below the industry benchmark. The slide chamber rack allows up to 48 slides to be processed simultaneously, and most ISH steps are performed by the robotic system with minimal user intervention or supervision required, including pre-hybridization, addition of probes, hybridization, washes and antibody-mediated chromogenic reaction.

You can find more information about our Te-Flow consumables on page 185.
Pre-warming probes and wash solutions avoids anomalous results.

Automated ISH, FISH or IHC analysis.

Minimal resource requirements
Allows automation with only 90 μl of hybridization solution, avoiding excess probe consumption

Guaranteed RNase-free
Autoclaving racks are available for sterilizing Te-Flow carriers between runs

Compatible with ISH, FISH and IHC
One platform can yield results for all protocols

Multiple Te-Flow chambers can be used to hybridize at multiple temperatures (see page 185).

Automated processing frees laboratory personnel from tedious slide processing and improves consistency of results.
Genotyping

Automation of any genotyping workflow

The ability to quickly and efficiently screen genomic DNA samples for phenotypically relevant SNPs has become increasingly important to a wide range of disciplines, including pharmacogenomics, population genetics and forensic medicine. The Freedom EVO® workstation provides a scalable and integrated system for automated genotyping of single nucleotide polymorphisms (SNPs), configured to meet your requirements and offering rapid, reliable performance.

The Freedom EVO workstation has become the SNP screening platform of choice for many industry-leading laboratories with high throughput requirements. It offers precise and high performance liquid handling, a flexible configuration and a wide range of modules and peripherals, allowing automation of many genotyping procedures. It can reliably and efficiently perform many essential steps of your genotyping application, such as DNA isolation and quantitation, PCR / sequencing reaction set-up, microplate sealing, amplification and sequencing (using integrated, third party thermal cyclers), PCR sequencing clean-up and assay detection. Modules available for integration with the platform include temperature-controlled cooled and heated racks, incubators, microplate washers, thermal cyclers, microplate readers, microplate storage options and centrifuges. Tecan offers a variety of peripherals for the genotyping pre-processes including the Te-Shake™ microplate shaking option, the Te-VacS™ vacuum manifold and the Te-MagS™ magnetic bead separator. Throughput can be further increased by using the MCA™ 96 or 384 multi-channel pipetting options.

A wide variety of options allows virtually any genotyping protocol to be automated.

Sample tracking software offers easy integration into your LIMS.

Integration of Infinite® series microplate readers provides simple detection for fluorescence-based assays.
Protein purification

Efficient solutions for screening proteins

MultiTrap™ prepacked 96-well filter plates from GE Healthcare are designed and fully tested for screening of recombinant proteins on Freedom EVO® workstations. Combining Tecan’s robotic integration and liquid handling expertise with the versatile MultiTrap platform gives the user a fully automated protein purification system for high throughput applications.

Proteins can be extracted from *E. coli* cultures without centrifugation or filtration, leading to a more efficient workflow. Purification can be carried out either under vacuum or by centrifugation.

The system can process both His- and GST-tagged fusion proteins in 96-well plate format, with low cross-contamination, high reproducibility and robust processing. MultiTrap plates are also available for screening of antibodies, parallel enrichment of the target proteins with immunoaffinity techniques, and desalting/buffer exchange.

Approved applications include:

- High throughput expression screening to identify best-producing clones
- Parallel construct variant screening to improve probability of success for subsequent steps in the workflow, such as X-ray crystallography studies
- Condition screening to optimize yield and allow simple scale up on ÄKTAxpress™

Data and pictures kindly provided by GE Healthcare.
Condition screening
Coomassie-stained SDS-PAGE analysis of eluted His-Nurr1-LBD, using different buffer compositions with varying concentrations of NaCl, glycerol and β-mercaptoethanol. The arrow indicates the position of the target protein.*

Minimal cross-contamination
Clarified E. coli lysate containing two His-tagged proteins (E and K), were applied in a chessboard pattern across a His MultiTrap HP plate, and analyzed by SDS-PAGE.*

Simple scale-up on ÄKTAxpress
MultiTrap screening allows direct transfer of optimized purification conditions (pH, buffer composition, etc.) for simple scale-up on ÄKTAxpress. Chromatogram shows the second polishing step using ÄKTAxpress.*

Highly reproducible results
Low well-to-well variation (3.6 % relative standard deviation) using His MultiTrap HP on Freedom EVO with a Te-VacS™ vacuum separation module for the elution of the target protein.*

Broad range of applications
MultiTrap plates are available for GST- and His-tagged proteins, antibodies and desalting / buffer exchange applications

Consistent results
Automation minimizes cross-contamination for highly reproducible results

Accelerated optimization of purification conditions
MultiTrap plates allow a systematic approach to finding optimal purification, solubility and expression conditions

Simple scale-up
The optimized conditions found with MultiTrap can easily be scaled up on ÄKTAxpress

* First published in brochure 28-9289-59 “The Trap platform and Tecan automation – efficient solutions for screening proteins”. For more information, please refer to the mentioned brochure in the download section on www.tecan.com/proteinpurification.
Automated parallel chromatography using MediaScout® RoboColumns in a 96-well format

This recently introduced solution offers automation of parallel chromatography for the first time ever, entirely removing all manual steps from column equilibration to column regeneration. The system is a powerful new tool for process development, bioreactor monitoring (PAT) and sample conditioning, allowing valid chromatographic conditions to be used without sophisticated LC systems.

MediaScout RoboColumns are individual miniature columns arranged on a 96-well format plate, sealing to the fixed tips of the liquid handling arm through a pressure-tight inlet (patents pending). Flow rate and transfer volumes are controlled with accurate and precise positive liquid displacement to achieve highly reproducible chromatographic separations. Characteristics include:

- Flow rates between 16.2 and 1,000 cm/h
- Gradient simulation using incremental buffer conditions
- Fraction volumes down to 25 µl may be collected, providing sufficient data points to construct a chromatogram
- Simultaneous, parallel processing of eight columns

Applications include:

- Expression screening to select best producing clones
- Cell culture screening for mAb selection
- Condition screening to determine optimum purification conditions
- Resin screening to test different resins in parallel
- Method development to optimize gradient elution for transfer to large scale purification
- Sample conditioning / purification / concentration for downstream applications, such as protein crystallography or MS analysis
- Depletion of abundant components to treat thousands of samples
The Te-Chrom™ module holds the column plate above the collection plate for fully automated parallel chromatography, with a waste option for large volume liquid removal. UV and deep-well plates can be used in the same run.

Superimposed chromatograms for the separation of lysozyme and cytochrome c on cation exchange resin packed in eight 200 μl Atoll columns, demonstrating the excellent reproducibility of the system.*

Dynamic binding capacities of lysozyme at 40 mM (■), 80 mM (▲) and 160 mM (●) NaCl using RoboColumns packed with a strong cation exchange medium, showing the 5% and 10% breakthrough values.**

* For more information, please refer to the * brochure / ** application note in the download section on www.tecan.com/proteinchromatography

| Choice of any commercially available resin | Columns are delivered ready-to-use, packed with the resin of choice to manufacturer’s specifications |
| Low resin and sample consumption | MediaScout RoboColumns are the smallest commercially available chromatographic columns |
| Increased throughput | Parallel screening of up to eight columns in one run |
| Automation of the entire process | Full automation from column equilibration through to column regeneration |
| Simple evaluation | Manually processed starter kits |
Flexible automation of protein crystallography experiments

The Freedom EVO® Protein Crystallography workstation is a highly flexible, fully scalable liquid handling platform that can be configured for semi- or complete automation of hanging drop, sitting drop and microbatch-under-oil protein crystallography experiments. Researchers can efficiently create custom crystallization buffer sets from stock solutions, and the platform’s large dynamic pipetting range allows both mother liquors and precious protein samples to be dispensed with accuracy and precision.

Automated protein crystallography requires a dynamic liquid handling system, and the flexibility of the Freedom EVO is ideally suited to this application. Controlled using the intuitive Freedom EVOware® software, the system has a large dynamic volume range (from 100 nl to 5 ml) for accurate pipetting of both buffers and proteins. A wide range of devices can be integrated into the system, including automated microplate sealers with heat-free, optically inert, adhesive sealing to maintain the integrity of intra-well growth conditions and allow direct imaging of crystals. In addition, robotic incubators can be integrated into the platform for automation of the entire crystallography process.

The protein crystallography workstation simplifies and accelerates creation of crystallization solutions. Mother liquors can be composed in crystallization plates from stock solutions to help reduce use of consumables and high purity chemicals. Pipetting directly into septum-capped vials using washable steel tips helps avoid microbial and chemical contamination.

Both stock solutions and destination vessels can be cooled and lidded on the deck of the workstation to prevent evaporation, and a Te-Shake™ module can be integrated to ensure complete mixing, even for viscous liquids.
The optional integration of automated microplate sealers allows application of heat-free, optically inert, adhesive seals to maintain the integrity of intra-well growth conditions, without preventing direct imaging of crystals.

For fully automated hanging drop experiments, the liquid handling arm simultaneously pipettes protein or mother liquor drops onto four glass cover slips. After pipetting, the cover slips are flipped over and placed onto pre-greased 48-well plates.

The dynamic anti-evaporation cover is moved by the liquid handling arm, only uncovering wells during pipetting, thereby minimizing unwanted evaporation of reagents.

The optional CrysScreen™ software provides easy management of protein crystallography trials, including buffer creation, set-up of experimental conditions, running of experiments, data management and result analysis (please refer to page 119 for further information).

Single instrument for both screen preparation and crystallization experiments

Large volume range (100 nl to 5 ml) offers precise and accurate pipetting of protein and stock solutions

Wide range of experiment types supported

Allows automation of sitting drop, hanging drop and microbatch-under-oil experiments

User-friendly crystallography software

CrysScreen offers straightforward control of the platform, even for infrequent users

Complete process automation

Optional integration of plate sealers, barcode readers and incubators for full automation
The Freedom EVO® protein digest workstation enables fully automated protein digest for subsequent MALDI-TOF analysis, entirely removing all manual steps for destaining of gel plugs, reduction, alkylation, in-gel trypsin digest, peptide extraction and spotting onto MALDI targets. The system allows up to 192 samples to be processed per day, including MALDI spotting.

The entire process, from destaining of gel plugs to peptide extraction, is performed in ABgene® digest plates using special adaptor frames. This system was developed in collaboration with the Max Planck Institute for Experimental Medicine in Göttingen, Germany (see Jahn et al., Anal. Bioanal. Chem. (2006), 386:92-103), and offers:

- Contact-free addition and removal of agents
- Minimal evaporation during incubation steps
- Efficient drying processes
- Cooling of the peptide mixture after digestion

Benefits of the system include:

- Contact-free liquid handling to eliminate piercing of gel plugs
- Maximized protection against keratin contamination
- Optimized protocols for consistent results
- Sensitivity down to 50 fmol of protein per gel plug
- Sequence coverage equal to or better than manual processes
- Improved working efficiency due to low hands-on time
- Cooling capability allows overnight runs
- Robust and reproducible results
MALDI target spotting
MALDI targets from major manufacturers can be spotted using Zip Tips®. Alternatively, fixed tips can be used to reduce consumable costs, with automated washing protocols to prevent cross-contamination.

In-gel digestion stack components
The stack allows automated handling of ABgene digestion plates. Each well has two holes of 250 μm diameter, to allow contact-free removal of reagents using the Te-VacS™ vacuum separation module.

Contact-free liquid handling
The pierceable silicone mat prevents evaporation, and is removed during drying steps by the robotic manipulator arm.

No loss of gel plugs
Contact-free pipetting and removal of reagents prevents impaling the gel plugs with pipetting tips.

Reduced keratin contamination
Contact-free liquid handling and silicone mat reduce risk of contamination.

High sensitivity
Sensitivities down to 50 fmol of protein per gel plug.

High sequence coverage
Sequence coverage equal to or better than manual processes.

Optional dust cover
Offers further reduction in keratin contamination risk.

High sequence coverage
The high performance of the automatic processing (green) achieves results comparable to, or better than, manual procedures (white).
Automating, sample management and detection solutions to cover your complete workflow

Producing antibodies against a large number of antigens is a time-consuming process, and requires a number of complex steps, such as cell fusion, hybridoma clone selection and cell expansion. Throughout the workflow, thousands of potentially valuable clones are created and selected, and tracking every sample, clone and antigen is made easy with Tecan’s specifically tailored software.

Antibodies have become a pillar of functional genomics research, diagnostic marker detection and, increasingly, for therapeutic usage. However, creating those antibodies remains as complex as ever, requiring injection of purified antigen into mice, isolation of the resulting B cells, fusion with immortal myeloma cells and screening of thousands of clones for their antibody production capacity.

The antibody generation process has not changed for many years, and increasing the number of antibodies has traditionally meant employing additional personnel. Automating all, or even just the most labor-intensive, processing steps offers a significant increase in productivity, making it possible for a single facility to produce thousands of monoclonal antibodies annually, thanks to the use of powerful and sophisticated software and hardware combinations.
Cell fusion is performed in 50 ml tubes, which are automatically processed on heated shakers and in robotic centrifuges. The complete process is performed in a HEPA-filtered environment.

Successful clone selection is performed using orthogonal selection strategies, with hybridoma cell culture supernatants automatically prepared for microarray spotting.

High throughput clone selection and cell growth characteristic determination can be performed by combining a Freedom EVO® with an automated imaging platform, such as the Cellavista system from Roche Innovatis.

High throughput ELISA is, in many cases, the method of choice for antibody quality control, as well as the quantification of clone-specific expression patterns. Tecan can offer both plate washing and detection solutions from a single supplier.

Complete workflow

All critical steps in monoclonal antibody production can be automated

Sample and clone tracking

Follow the complete process with software that keeps track of samples, clones and timelines

Orthogonal clone selection

Employ automated technologies to assess the quality of thousands of clones

Professional project management

Tecan has extensive experience in monoclonal antibody production, substantially decreasing your project risks
Chromatographic condition screening on Freedom EVO® workstations

The new PreDictor™ 96-well filter plates, prefilled with GE Healthcare BioProcess™ chromatography media, have been fully tested for screening of chromatographic conditions on Freedom EVO platforms. The combination of Tecan’s robotic integration and liquid handling expertise, together with the versatile PreDictor platform of GE Healthcare, gives the user a fully automated system for high throughput process development.

To ensure robust and reliable processing of PreDictor plates on Freedom EVO workstations, Tecan offers a range of dedicated accessories, designed to support the PreDictor workflow. A filter paper holder allows PreDictor plates to be blotted onto a filter paper prior to incubation on Te-Shake™, removing any droplets present on the bottom of the plate. A PreDictor plate shaker frame is also available, fixing the PreDictor plate onto a collection plate during incubation at 1,100 rpm, and preventing the bottom of the PreDictor plate from coming into contact with the surface underneath.

PreDictor plates shorten time-to-clinic and increase productivity by:

- Reducing experimental time from weeks to hours
- Significantly lowering sample consumption
- Increasing process understanding by enlarging the experimental space

The system has been approved for screening of various chromatographic conditions, including:

- Binding capacity, both time-dependent and time-independent
- Wash and elution conditions
- Evaluation of different chromatography media
- Adsorption isotherms

Data and pictures kindly provided by GE Healthcare.
Automation reduces hands-on time, improves robustness of results and enhances traceability. Manual (B) versus automated (A) processing of PreDictor plates was compared for both preparation time (yellow) and hands-on time (red).*

A relative standard deviation of just 4.5%, well-to-well and over several plates, has been achieved using 2 μl Capto™ S PreDictor plates on a Freedom EVO workstation for chymotrypsin.*

PreDictor plates allow faster data generation, using lower sample volumes. Graph shows time (left) and sample amounts (right) for the above experiment.**

Automation reduces hands-on time, improves robustness of results and enhances traceability. Manual (B) versus automated (A) processing of PreDictor plates was compared for both preparation time (yellow) and hands-on time (red).*

Data obtained by parallel screening of chromatographic conditions using PreDictor Capto S 2 μl plates (left) show good correlation with data from chromatography columns (right), making the plates an excellent tool for screening of process conditions.**

* For more information, please refer to the brochure in the download section on www.tecan.com/processdevelopment
** For more information, please visit www.gelifesciences.com/predictor

<table>
<thead>
<tr>
<th><strong>Shortened time-to-clinic</strong></th>
<th>Reduces experimental time from weeks to hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reduced sample amount</strong></td>
<td>Offers around a 10-fold reduction in amount of sample required</td>
</tr>
<tr>
<td><strong>Increased process understanding</strong></td>
<td>Rapid processing allows enlarged experimental space</td>
</tr>
<tr>
<td><strong>Broad range of applications</strong></td>
<td>Allows screening for binding capacities, wash and elution conditions, adsorption isothermes and chromatography media</td>
</tr>
</tbody>
</table>
Scalable and reproducible cell transfection

Tecan offers a range of cell transfection systems to automate the time consuming and laborious processes of transfecting different cell types. All liquid handling steps are automated, from the preparation of cells and transfection mixes, to incubation of the transfection plates.

The Freedom EVO® Cell Transfection Workstation performs automated lipofection or Nucleofection (a method based on a combination of buffers and electrical parameters). The combination of Lonza’s Nucleofector® 96-well Shuttle® System and Tecan workstations allows automation of high throughput transfection of primary cells (e.g. T cells) and difficult-to-transfect cell lines (e.g. Jurkat cells).

The systems are based on Tecan’s flexible Freedom EVO liquid handling platform, and include all the necessary components and features for unattended cell transfection, such as:

- Solution for biocontainment to protect cells and users from contamination
- Cooling and warming devices to supply cells with media of the right temperature, and keep compounds, enzymes and reagents active
- Disposable tips for DNA / RNA processing and / or washable fixed tips for media transfers
- Integrated CO₂ incubators to maintain cells in a suitable environment
- Detection devices for DNA quantitation, contamination control and cell-based assays

The diagram illustrates the workflow of cell transfection:

1. Cell preparation
2. DNA / RNA quantitation and normalization
3. Preparation of transfection mixes
4. Nucleofection® or lipofection
5. Media exchange and cell incubation
6. Analysis
Small throughput solutions support excellent transfection results by controlling schedules and ensuring robust processes.

Software control provides repeatable timings throughout the entire process.

High throughput solutions allow whole genome knockdown studies to be performed in triplicate, including controls, within days.

Fully automated Nucleofection protocols by combining the Lonza 96-well Shuttle with a Freedom EVO workstation.

<table>
<thead>
<tr>
<th>Reproducible processes</th>
<th>Allows experiments to be compared over time and between laboratories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete process automation</td>
<td>Ensures data traceability and decreases hands-on time</td>
</tr>
<tr>
<td>Lipofection and / or Nucleofection</td>
<td>Standard methods and ‘difficult-to-transfect’ protocols are performed on the same instrument</td>
</tr>
<tr>
<td>Scalable solutions</td>
<td>Identical processes for different throughput requirements</td>
</tr>
</tbody>
</table>
Automated cell line generation and management of cell line inventories

Creating stable producing cell lines for research and production is still, to some extent, a chance process. It requires the generation of a range of suitable constructs, transfection of these into host cells and selection of appropriate clones. These clones must be of single cell origin, express the target protein in the right quality and quantity, and grow rapidly in a simple medium. Achieving an efficient, stable producing cell line can take months, and is critical to the marketability of protein-based therapeutics. Automation can help to decrease this development time, and helps to fulfill the regulatory requirements on data and process documentation.

Cell line development is the centerpiece of any biologically-produced therapeutic. Although the general workflow is well established, each individual case will require adaptations. Tecan, in collaboration with leading suppliers in specific fields, can provide solutions to automate most steps of the cell line development process, as well as automated solutions for cell culture processes, and software and hardware solutions for biobanking applications. Automated cell line development processes include:

- **Cloning:** Automated DNA purification, PCR set-up, PCR clean-up, vector assembly, ligation and transformation of E. coli are standard processes and can be performed with chemistries from leading providers.
- **Transfection:** Automated high throughput lipofection and Nucleofection® are well established (see page 30 ‘Cell transfection’).
- **Selection:** The most critical and variable step of the process is selecting optimal clones from a pool of randomly generated cell lines. Automation can be applied to limited-dilution plating, plate replication, assessing single cell clone origin, clone picking, expression screening using ELISA, protein quantitation and a range of protein characterization methods.
- **Cell expansion:** Can be performed on automation solutions such as Cellerity™.
Identify clones with useful attributes from a large number of clones generated, and ascertain monoclonality by integrating a Roche Innovatis’ Cellavista cell imaging platform into the Freedom EVO® platform.

Web-based cryobanking software – CryoStock – keeps track of master and working cell banks.

Automatically perform many DNA-related processes, including automated Nucleofection, PCR preparation and PCR clean-up.

Tailor-made solutions – specifically matching the requirements of your cell line development process – are designed by you, together with one of Tecan’s experienced project management teams.

Complete workflow

<table>
<thead>
<tr>
<th>Complete workflow</th>
<th>All labor-intensive steps in cell line development can be automated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample and clone tracking</td>
<td>Follow the project through the process with software that keeps track of samples, clones and timelines</td>
</tr>
<tr>
<td>Orthogonal clone selection</td>
<td>Employ multiple automated technologies to assess the quality of thousands of clones</td>
</tr>
<tr>
<td>Professional project management</td>
<td>Tecan’s experience in automation of cell culture processes substantially decreases project risks</td>
</tr>
</tbody>
</table>
Cell plating, media exchange and assay preparation

Cell maintenance workstations automate the major bottlenecks of cell-based assays, such as media exchange, cell plating, incubation and assay preparation. The modular concept of the Freedom EVO® platform allows implementation of solutions to fit the specific requirements of your assay protocol.

Routine cell culture maintenance is a laborious, yet critical, process to ensure repeatable results in downstream assays. Automating such processes helps to ensure:

- Decreased hands-on time for routine cell culture maintenance
- Consistent timings and conditions for maintenance processes
- Well-documented laboratory processes

Cell maintenance workstations from Tecan are based on the modular Freedom EVO liquid handling and robotics workstation, allowing incorporation of:

- Liquid handling systems using 4, 8, 16, 96 or 384 channels, for rapid pipetting and dispensing using disposable or washable fixed tips
- Integrated CO₂ incubators to maintain cells in a suitable environment
- Biocontainment solutions to protect cells and users from contamination
- Cooling and warming devices to supply cells with media at the correct temperature, or to keep compounds, enzymes and reagents active
- Detection instruments for contamination control or cell-based assays
- Labware logistics modules such as carousels, Te-Stack™ and AutoLoader™ to supply disposable tips, plates or flasks.
Cells can be incubated in automation-friendly flasks or plates, in CO₂ incubators with capacities ranging from 4 to 1,000 microplates.

The tilting rack allows you to completely remove residual liquid from large volume wells, for example, for exchanging growth media or transferring cell suspensions.

Cell suspensions can be stirred continuously, preventing sedimentation before plating.

Modular set-up, with washable steel tips and/or disposable tips, allows a choice of labware, e.g. insert plates from all major suppliers.

### Modular solutions
Allow implementation of established assay protocols, based on application-specific modules

### Long-term cell maintenance
Researchers are freed from laborious cell culture work

### Choice of labware
Easy transfer from manual protocols to automation

### Combined cell culture and cell-based assays
Helps to improve process reproducibility
An automated solution for cell culture processing

Whether it is for the production of cell-derived biomolecules, or to provide cells for cell-based assays, the process of manually culturing large numbers of cells is a time consuming, laborious undertaking. Cellerity is Tecan’s solution for automating cell culture processes. It allows fully automated cell maintenance and expansion, and produces cells ready for downstream processes.

Cellerity™

Cellerity allows you to:

- Maintain and automatically expand many cell lines in parallel
- Reliably produce assay-ready cells for your downstream processes
- Prepare cells during out-of-office hours to be ready for assays during working hours
- Dramatically reduce hands-on time used for routine cell culture processes
- Track your cell lines and production schedule
- Document each step in the generation of the cells

Cellerity is a modular system based on industry-proven components:

- Tecan’s Freedom EVO® robotic platform
- A modified liquid handling configuration capable of both rapid bulk media dispensing and precise low volume pipetting
- An integrated robotic CO₂ incubator
- A cell counter for determining cell number and viability
- Devices for supplying consumables such as plates, troughs or flasks
- Refrigerated media storage for up to eight different bulk media, with in-line warming immediately prior to dispense
Long-term scheduling of different cell line production and maintenance processes supports availability of cells when they are needed, in the quantity needed.

Automated cell culturing using Cellerity can improve the repeatability of your processes, while maintaining the high quality of manual cell culturing.

Automating tedious tasks, such as cell counting or passaging, frees cell biologists to pursue higher value research tasks.

The CellGEM™ (Cell Growth Expansion and Maintenance) software guides the user through all cell culturing processes and maintenance actions. Each cell line is processed with its own specific protocol.

Fully automated cell culturing
Consistent supply of high quality cells for downstream applications

Scheduling of all tasks by CellGEM software
Have cells available on time, any time

Parallel processing of many different cell lines
Prepare cells for different assays on one instrument

Robotics-friendly cell culture flasks
Allows use of standard laboratory equipment, such as readers, stackers or incubators
Cell suspension culturing

Suspended cell cultures have become increasingly important with the advent of high-titer producing cell lines, and the need for media optimization in a high throughput format. In addition, the need to process and expand hybridoma cell cultures requires new solutions for handling cell culture suspensions.

Suspension cell cultures are becoming increasingly important for their enhanced volumetric production capacity and easier technological handling. Tecan’s solutions for culturing of cell suspensions are based on the flexible Freedom EVO® workstation, incorporating various modules to allow typical cell culturing processes, including:

- Centrifuge for separating media from cells
- Automated cell counters for exact subculturing
- Heated and cooled racks for media and additive storage
- Tilting carrier to minimize dead volumes
- Adapters for tube and plate processing

Tecan has a wealth of experience in both adherent and suspension cell cultures, and it is possible to process both culture types on a single instrument. Using either microplate or tube format, cell suspension culturing and processing can be performed with cultures up to 50 ml in volume. Existing applications include:

- Mammalian cell upstream process development
- Hybridoma monoclonal antibody production
- Yeast culturing in food and biofuel applications

Suspension and adherent cell culturing on the same platform.

Integrated centrifuge to separate cells from spent media.

Automated cell counting (e.g. Roche Innovatis Cedex system) allows precise sub-culturing protocols.
Stem cell culturing

Stem cell research is in continual flux, and Tecan’s solutions offer the flexibility you need to adjust to the changing requirements of the field.

Tecan’s stem cell solutions offer:

- Automated cell isolation, integrating liquid handling workstations with automated optical detection tools, colony pickers and centrifugation modules
- Cell expansion in plates, tubes or automation-friendly cell culture flasks
- Cell plating using an array of liquid handling options
- Software and hardware systems for stem cell differentiation which guarantee repeatable, defined timings for addition of growth factors, cytokines and other media additives
- Separation of feeder cells from stem cells, e.g. using insert plates
- Detection devices to study gene expression during cell differentiation, such as the Infinite® 200 microplate reader with NanoQuant Plate™ designed for low volume applications

Stem cell differentiation and expansion

Stem cells hold great promise in research and regenerative medicine. However, many applications are hampered by poor availability of high quality, well-defined stem cells due to the fact that culturing these cells is highly dependent on the operator. Automation of processing steps helps reduce variability, leading to more reproducible stem cell production and improved control of differentiation protocols.

Cell isolation → Expansion → Plating → Differentiation → Analysis

Automated expansion can be performed in plates, tubes or flasks on the same workstation.
Simple separation of stem cells from feeder cells using insert plates such as Millipore Millicell®.
Scheduling software ensures repeatable process and incubation times.
Save time and resources with automated sample preparation

Tecan offers a range of systems based on the Freedom EVO® liquid handling platform to automate various sample preparation processes performed in analytical laboratories. The outstanding flexibility of the Freedom EVO makes it ideal for applications such as sample dissolution, homogenization of cells and tissues, solid phase extraction, liquid-liquid extractions, centrifugation, automated weighing and re-suspension. Samples can be tracked and processed in a variety of formats.

The Freedom EVO platform offers numerous options for a wide range of sample preparation applications, and can be customized to meet your specific needs. Functions include automated sample dissolution with integrated sonication options. Preparation of cellular material and tissue is performed with built-in homogenizers, and integrated pH measurement enables automation of titrations. The system provides orbital, vortex and magnetic mixing options, as well as various ovens, incubators and racks for integrated heating and cooling during evaporation and synthesis steps.

A variety of syringe sizes and tips allows accurate and precise pipetting of volumes ranging from 0.5 μl to 50 ml. Teflon®-coated and disposable tips are available, as well as other tip options including liquid level sensing tips to allow liquid-liquid extractions and septum-piercing coaxial tips. For high throughput applications, the MCA™ multi-channel pipetting options can process 96- or 384-wells simultaneously. Automated sample extraction and purification modules include the Te-VacS™ option for solid phase extraction processes and several centrifugation options that cover different throughput and volume ranges.
• Integrated centrifugation for sample separation
• Compatible with both microplate and tubular labware formats

• Automated tube and vial capping
• Sample preparation for HPLC or UPLC
• Sample distribution for solubility assays

• Automated weighing station
• Tube and vial handling
• Hundreds of samples weighed and re-suspended
• Automatic labeling

• Vortexing of tubes or vials
• Allows liquid-liquid extraction processes
• Enables solubility determination
• Tube handling
• Integrated vacuum separation

Multiple processes on a single platform
Combination of modules allows implementation of different worksteps

Easy reconfiguration
Providing a versatile analytical workstation that changes with your needs, allowing multiple operations on the same platform

Integration of multiple devices
Not dependent on stand-alone analytical or preparative technologies, protecting your investment when technology changes

Traces your samples
Easy sample tracking and record keeping using the powerful Freedom EVOware® software
Full automation for walkaway screening

High throughput screening (HTS) is well established as a key part of the drug discovery tool box. With the ever-changing assay formats and readouts, it has become increasingly important to have a platform that can be easily reconfigured for different assay requirements. Time and cost pressures make it essential to screen sub-sets of large compound collections, and the ability to integrate a tube store to cherry-pick these sub-sets is an important part of the overall process, combining sample management with automated liquid handling and detection.

Tecan has the tools to provide solutions to all aspects of the HTS process. Sample storage solutions using REMP Tube Technology™ include the REMP Large-Size Store™ (LSS) and Mid-Size Store™ (MSS) for large sample numbers, and the REMP Small-Size Store™ (SSS) for local automated storage. Liquid handling is performed by versatile Freedom EVO® workstations with a selection of liquid handling arm options available, including 4- and 8-channel options for addition of controls and standards, hit-picking and generation of IC50 plates, and the MCA™ 96 and MCA 384 MultiChannel Arm™ options for high speed plate-to-plate and reservoir-to-plate transfers. With the dynamic scheduling power of Freedom EVOware® Plus, complex assays can be timetabled to ensure every plate is treated consistently, and plates can be added to a run while it is in progress. To add to the power and flexibility of your Tecan HTS platform, it is also possible to incorporate the Infinite® M1000 multimode microplate reader. This instrument uses premium Quad4 Monochromators™ technology, and has already been accredited for many assays, including LanthaScreen™ from Invitrogen, HTRF® from CisBio Bioassays, Transcreener® Far Red FP from BellBrook Labs and DLReady™ from Promega.
- Flexibility with choice of liquid handling arms
- Fixed or disposable tips
- On-the-fly changing of heads with MCA384
- Integrated gripper

- Enhanced disposable tip logistics using the MCA 96 with nested tips (see page 180)
- Improved throughput and walkaway time
- Reduced waste

- Powerful dynamic scheduling with Freedom EVOware Plus
- Strictly defined incubation times for plate-to-plate consistency

- Integrated multimode Tecan detection
- Including assay in 1,536-well plate format
- Data analysis and sample tracking

<table>
<thead>
<tr>
<th>Flexible and scalable</th>
<th>The versatility of the Freedom EVO with integration of readers, washers, shakers and incubators for multi-format HTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closed-loop screening for complete workflow automation</td>
<td>Full integration of sample logistics, liquid handling and detection</td>
</tr>
<tr>
<td>Multimode detection</td>
<td>Choice of integrated Tecan microplate readers</td>
</tr>
</tbody>
</table>
ELISA for research

Scalable integration of automated ELISAs

Tecan has more than 20 years of experience in the field of enzyme-linked immunosorbent assays (ELISAs) and still offers the most powerful systems on the market. The scalable Freedom EVO® liquid handling workstation is capable of handling a variety of automated microplate tests.

The Freedom EVO is capable of preparing and running almost any assay requiring incubation, washing and reading steps including ELISAs, enzyme immunoassays (EIAs), radio immunoassays (RIA) without detection, fluorescence immunoassays (FIA), and heterogenous and homogenous assays. The workstation can be configured to exactly meet your assay and throughput requirements, providing the flexibility for the development of novel assay protocols and producing optimal results without having to compromise.

Modules such as shakers, incubators, readers and washers can be seamlessly integrated onto the workstations and controlled by Freedom EVOware® Plus scheduling software. This enables walkaway automation, from distribution of the sample to detection of the assay signal. The entire process can be displayed graphically, with definable incubation times, volumes, washing steps and final detection analysis. In addition, the software is capable of dynamically scheduling multiple different processes, ensuring optimal usage of the robotic resources and assay runtime.

- Single vendor solution
- Seamless integration of washers and readers
- Full software control
- Including dynamic scheduling
- Hands-free automation
- Scalability
- Multiple arms for high throughput
- Configurable for your precise assay requirements
Cherry-picking

Many workflows require the ability to cherry-pick specific, randomly placed samples from a collection in either tubes or plates. The source samples may need to be picked from an automated store or from samples manually placed on the liquid handling platform. A key aspect of cherry-picking is the ability to take worklists from a number of different sources and create the parameters for the liquid handler. This allows transfer of source samples to the specified locations in the destination plates with full sample tracking and documentation.

Tecan has a wide variety of tools available to support cherry-picking operations, including the fully automated REMP stores. Using REMP Tube Technology™, these allow walkaway cherry-picking from a few thousand to millions of samples, avoiding freeze-thaw cycles during the workflow. The fully integrated Freedom EVO® and REMP Small-Size Store™ (SSS) Factory illustrates how automated cherry-picking and liquid handling can be combined to provide a complete walkaway process, including integrated sample tracking for volumes, concentration and sample IDs.

The Freedom EVOware® hit-picking wizard is a powerful tool for control of sample cherry-picking and generation of screening assay plates.

Cherry-picking of cell line clones is an important part of the biologics workflow and, with the integration of an imaging based detection system, such as Cellavista from Roche Innovatis, allows integrated clone identification.

Fully integrated automated cherry-picking and liquid handling with the Freedom EVO-SSS Factory.

Hit-picking wizard for easy assay plate set-up, including addition of standards and controls.

Clone selection via the integration of the Cellavista from Roche Innovatis.
High throughput ADME screening systems

Tecan has created a range of automated ADME (absorption, distribution, metabolism and excretion) screening systems which maximize the efficiency and throughput of these processes. These workstations are based on our flexible and scalable Freedom EVO® liquid handling platform, in combination with Tecan microplate readers. Applications include automated cell permeability, compound characterization, in vitro drug metabolism and cell culturing processes.

Our range of Freedom EVO ADME systems are specifically designed to perform most of the ADME assays encountered in today’s drug discovery laboratories. Almost any assay or throughput requirement can be met using our flexible platforms and wide variety of integrated devices and options.

The Cell Permeability Workstation has been configured for Caco-2 or Madin-Darby canine kidney (MDCK) cell assays. It is also suitable for artificial membrane permeability and active transport assays, as well as compound efflux measurements.

The Drug Metabolism Workstation routinely performs a variety of in vitro assays, including metabolic stability, cytochrome P450 inhibitions, isoform identification, metabolite identification, protein binding and cytochrome P450 induction assays.

Workstations for microsome or hepatocyte metabolic stability assays, include a choice of temperature-controlled shakers that keep microsomes or cells in suspension, and temperature-controlled racks or reagent carriers to handle pre-incubation or post-incubation processing steps.
• Detection integration  
• Single vendor solution  
• Fully integrated software  
• Flexible reader positioning on the left, right, under or at the back

• Integration of environmentally-controlled incubators allows cells to be maintained for Caco-2 assays

Multi-channel head for:
• Parallel processing  
• Fast detection plate set-up  
• On-the-fly head change  
• Single column or row pipetting

Modular approach allows:
• Maximum benefit from investment  
• An expandable system as throughput increases

Flexible configuration  
Allows multiple ADME assays to be run on the same workstation

Power of Freedom EVOware®  
Easy integration of both Tecan and third party devices needed for ADME assays

Scalability  
The workstation can grow in line with your throughput needs
pION PAMPA and solubility assays

High throughput solubility and permeability assays

Tecan has teamed up with pION INC to provide an automated solution for running high throughput drug permeability and solubility screening, using the pION Double-Sink™ parallel artificial membrane permeability (PAMPA) and uSOL solubility assays. The flexibility of Tecan’s Freedom EVO® workstation and Infinite® M200 microplate reader, combined with pION’s Gut-Box™ microplate stirrer and PAMPA Evolution™ technology, provides a complete solution for drug candidate screening.

The permeability and solubility of drug candidates are very important parameters that can affect the cost and success rate of development of candidates. Too high or low permeability could significantly affect the candidate compound’s potency and potential side effects. Variable pH, hydrophilicity, active transport and passive uptake all affect the permeability of the drug. Synthetic models for passive permeability screening allow flexible, simple and reproducible studies, and can significantly accelerate throughput of samples.

Using PAMPA Explorer™ with Tecan’s Infinite M200 microplate reader gives access to pION’s cutting-edge, validated software and assay protocols to offer fast and robust analysis in a manual setting.

For full automation, pION’s PAMPA Explorer can be used in combination with a Tecan Freedom EVO workstation, incorporating the MCA™ 96 option and Infinite M200, to provide a high throughput integrated solution.

Sample management
Solubility assay
Permeability (no cells)
Metabolism CYP450
Permeability (cells)

Experimental flexibility for high throughput PAMPA and solubility.
Automated analysis and reporting, with visual data reporting for fast interpretation.
Scalability.
Automated cell-based screening

Cell-based screening has become a key tool in the drug discovery portfolio, helping to speed up both the selection of valid leads and the profiling of medicinal chemistry compounds against cellular targets. The ability to automate robust solutions for running cell-based assays is key to the success of screening campaigns.

Tecan offers solutions for all steps of automated cell-based screening. The flexibility of the Freedom EVO® platform, including an integrated reader configured for bottom reading or injection for kinetic assays is ideally suited to a wide range of cell-based assays, allowing one instrument to run both assay development and routine production assays.

A number of liquid handing options are available, including 4- and 8-channel pipetting with disposable or fixed tips — for the addition of controls or standards — and parallel multichannel MCA96 and MCA384 heads for plate-to-plate compound transfers and cell additions.

Integration of automated environmentally-controlled incubators allows cell plates to be incubated on the system prior to assay, as well as implementation of assays with long incubation times, without the need to manually transfer assay plates to external CO₂ incubators.

Sample distribution to assay plate  >  Cell additions to assay plate  >  Incubation  >  Plate washing  >  Detection
siRNA screening

Automated *in vivo* RNAi experiments

siRNA screening studies have become a standard experimental approach for target identification and target validation in drug discovery, and siRNAs and miRNAs are even being discussed as potential therapeutical agents. The success of such experiments depends on the robustness of the protocols applied and reproducibility of the experimental procedure.

Tecan offers solutions to automate all steps of siRNA studies. As researchers will need to follow their own optimized protocols, or those of the specific kit or reagent suppliers, we offer tailored solutions based on the Freedom EVO® liquid handling workstation, in combination with specialized modules and detection devices.

Reproducibility of results is of particular importance to this application, and Tecan’s automated solutions ensure identical conditions and scheduling for each experiment. Benefits include:

- Repeatable timings for cationic liposome-RNA complex formation
- Rapid and low CV plating of cells over assay plates
- Low temperature variations over whole process with integrated robotic incubators, fast media exchanges and experiment readouts

Tecan workstations have a proven track record for automation of siRNA screening, minimizing your process risk and ensuring valuable material is not lost. Published studies using Tecan instruments include:

- Screening for infectious virus entry into mammalian cells
- Protein expression knockdown in human T-cells
- Identification of primary cancers

Rapid knockdown and target validation studies using parallelized processing.

Easy and repeatable scheduling with Freedom EVOware® Plus.

Temperature-controlled hotels and carriers maintain stability of RNAs throughout the process.
High content screening

Cell-based, high throughput screening is now routinely supplemented with sophisticated optical assays to investigate the cellular response to stimuli, such as small molecules, miRNAs, antibodies or other compounds. Reproducible control of assays is key to the success of these high content screening processes, ensuring reliable results.

High content screening allows rapid assessment of individual cellular responses to external stimuli, such as the addition of a compound. This approach permits statistical analysis of responses, incorporating variables such as cell cycle phase. Individual cellular response to stimulus is often very small, and highly dependent on sample or cell culture preparation, making reproducible pre-screening procedures critical. Automation of high content screening processes helps to reduce variability between samples and users.

Tecan offers a range of solutions for automation of high content screening experiments, including:

- Integration of users’ choice of high content reader into the Freedom EVO® platform
- Automation of standard cell culture processes including incubation, harvesting, plating and media exchange
- Repeatable, scheduled timings for all processes
- Integration into LIMS
- Professional project management by an experienced team

Live cell imaging during addition of compounds.

High throughput optical imaging of fixed cells.

Cell culture preparation for high content screening.
Tecan provides flexibility for your PAT solutions

With the continuing expansion of the biopharmaceutical market, there is a growing need to automate analytical assays for both process development and production monitoring. The ability to control and document critical parameters of biological processes within bioreactors is crucial to efficient process development. Automation of the process allows a wide variety of factors to be investigated, aiding the design of experimental methodology.

Tecan’s flexible Freedom EVO® platform can be configured to carry out sample preparation for any number of assays. The bioreactor extracts can be quenched and components separated, concentrated and distributed into sample vessels for downstream processing. Analytical tools can be integrated into the platform, or samples removed for offline analysis. A variety of modules can be integrated into the platform, including tools for cell counting, cell viability determination, metabolite and pH measurements, and microbial contamination assessment.

Integration of an automated microplate reader from the Infinite® series of detection devices allows a range of assay formats to be run, using a range of certified kits.

The Freedom EVOware® Sample Tracking option allows samples to be tracked throughout the process. The built-in web server allows interactive browsing of data from past runs, and you can easily recreate reports in PDF, CSV or XLS formats, to ensure that you can quickly find the information that you need.
Streamlined forensics with automated DNA analysis

Newly introduced legislation, enhanced funding opportunities and increases in property crime have placed forensic DNA laboratories under pressure to increase productivity and reduce sample turnaround time. Applied Biosystems and Tecan have collaborated to help laboratories meet that challenge, by developing the HID EVOlution System, designed specifically to streamline routine sample workflows for Human Identification (HID) applications.

You won’t find two better partners than Tecan and Applied Biosystems. Tecan’s Freedom EVO® liquid handling workstation sets the standard for automated liquid handling platforms, and Applied Biosystems’ human identification solutions deliver the most trusted, reliable and robust results to improve productivity.

Put them together and you have a superior solution to meet the challenges faced by forensic DNA laboratories today. You also have access to experienced professionals, with extensive training in forensic DNA analysis methods, who can provide you with expert support, training and assistance.
Intuitive, purpose-built graphical user interface designed for forensic analysts.

Optimized deck layout accommodating samples, reagents, heaters, shakers, magnetic separators, tips and barcode readers.

Hardware and software safety features to protect sample chain of custody.

Developmental validation performed by Applied Biosystems.

**Configured for HID applications**
Specially designed worktable is organized for fast, easy sample processing

**Automated labware barcode identification**
Confirms components and labware are correctly positioned

**Disposable pipetting tips and automatic tip-ejection**
Minimizes cross-contamination and aerosol formation

**Validated and optimized protocols**
Facilitates quick start-up and implementation of PrepFiler™, Quantifiler® and AmpFSTR® kits

**Customized software wizards**
Intuitive software makes operation effortless
High productivity DNA profiling

Tecan has developed a range of optimized automation packages designed to increase the productivity of DNA laboratory analysis, performing routine pipetting so your analysts can focus on other tasks. These include DNA extraction packages, designed to turn lysates into eluted DNA, automation packages for qPCR and STR reaction plate set-up, and automation of plate set-up for capillary electrophoresis.

These automation packages have been developed using chemistries and protocols commonly found in DNA identification laboratories, and eliminate the time necessary to develop robust protocols on off-the-shelf liquid handlers. The throughput capabilities of these instruments are already documented, allowing you to determine which parts of the process to automate first, based on how much analyst time this will liberate, and simplify integration of automated processing into your workflow. Tecan works closely with many providers of DNA extraction, qPCR or STR chemistries already serving the forensic community, ensuring you receive the support you need from experts in forensic laboratory automation.

Tecan’s forensic packages are based on the highly flexible Freedom EVO® platform, guaranteeing that, together with our partners, we can adapt to future technical developments. The Freedom EVO workstation has already been integrated with most LIMS systems used in forensic laboratories, with sophisticated sample and barcoding options available – such as the PosID™ module – to make LIMS integration faster and less expensive. The Freedom EVO includes innovative features such as disposable tip sensing, liquid level detection and a user management system to ensure confidence in results.
Forensic applications

Automation in forensics

Tecan’s automated liquid handling systems are present in many forensic toxicology laboratories, and are used for varied applications, such as processing assays for drugs of abuse, sample preparation for mass spectrometry and forensic DNA applications. Tecan’s flexible liquid handling systems, with full integration of Tecan detection instruments, modules and software options, provide a powerful tool for increased productivity.

Tecan’s automated liquid handling and detection products offer a flexible solution to increase sample throughput requirements in forensic laboratories, both today and in the future. Many options are available to ensure security and traceability of samples, and the platform is easy to integrate with laboratory LIMS systems, further increasing productivity through improved information flow.

Tecan automated systems are commonly used in a variety of forensics applications, with many providers of ELISA-based assay kits for drugs of abuse recommending Tecan platforms to their customers. In addition, sample preparation for mass spectrometry-based assays is frequently automated on Tecan liquid handling workstations, and many other laboratories are using the ProfiBlot™ system for automation of Western blot quality control samples.

Tecan also offers several packages for DNA forensics (see pages 54 to 56), providing a complete range of forensics solutions to match your laboratory requirements.
Applications for Diagnostics

Tecan has many years of experience in automated clinical diagnostic testing, giving us an unsurpassed understanding of the needs of today's diagnostic laboratory. Our liquid handling and assay solutions are designed to fit effortlessly into your laboratory's workflow, providing high throughput and a safe working environment for the handling of potentially infectious samples. Our expertise in automated liquid handling and detection ensures highly reliable, reproducible results, and can help you through stringent guidelines and regulations.

Not all applications, options and products in this section have been cleared for use in all countries. If you have questions or concerns please contact your local sales office for specific information.

- sample preparation
- sample distribution
- pooling
- nucleic acid extraction
- fully automated ELISAs
- veterinary applications
- food applications
Pre-analytical sample handling applications

You can fully automate all of your pre-analytical sample handling requirements on a single, compact and versatile instrument. The FE500pro™ is a modular, front-end automated workstation, that fits into existing laboratory set-ups to manage the most labor-intensive and error-prone procedures. Its pre-analytical functions include sample sorting, sample volume inspection, centrifugation, decapping, secondary tube supply, aliquoting, destination sorting and archiving.

Automating pre-analytical sample handling processes improves the safety and accuracy of your laboratory workflow, as well as reducing costs and expanding your testing capacity. The modular FE500pro pre-analytics system can handle varying throughputs, and can be tailored to suit your requirements, using a range of available modules.

Samples can be pre-sorted for streamlined workflow and enhanced productivity. Up to 80 tubes can be accommodated at one time with the tube loading unit, which accepts primary tubes from major manufacturers. Sample volumes are checked with the tube inspection unit, which scans tubes to reliably identify different separation layers. Patented technology allows the module’s unique built-in optical beam to penetrate up to three overlapping layers of labels on a tube.

Fully automated centrifugation can be integrated into the workflow. The weights of the samples are automatically determined using a patented method, and loaded and unloaded from the centrifuge below the deck. The automated decapping feature is compatible with primary tubes from major manufacturers and accepts standard and screw caps. It ensures maximum processing safety by decapping away from the track, where a unique stainless steel shield minimizes contamination and the risk of infection.
The workstation generates secondary tubes automatically, using a thermo-transfer printer for precision label printing, with user-definable text and high quality barcode labeling. The aliquoter performs primary and secondary barcode label verification before processing, to ensure positive sample identification. Operators can assign priorities and define aliquot volumes as required, with the easy-to-use software. The software’s archiving options allow full separation of samples using primary and secondary tubes. After sample volume is measured by the tube inspection unit, labeled secondary tubes are prepared to receive the corresponding aliquots and the remnant sample for archiving, and the tubes are then moved to defined unloading positions. Destination sorting and sample racking is carried out for all tubes into as many as 31 separate workgroups, and is suitable for a multitude of different analyzer racks.

**Aerosol-protected decapping**
Tube decapping away from transport lane maximizes patient and staff security

**Accurate pipetting**
Reliable production of secondary tubes frees staff and resources for more important tasks in your lab

**Analyzer-specific sorting of tubes**
Minimizes manual interaction
Sample distribution

Safe, effective solutions for preparing samples

Automated robotic handling of sample distribution and assay preparation, for a wide range of clinical applications, relieves laboratory scientists from tedious manual work and improves safety. The Freedom EVO® Clinical pipetting platform is ideal for this approach, easily dealing with repetitive steps like sample dilutions, reagent addition, and preparation of controls and calibrators. Samples can be processed in batches, using the same process for all samples, or individually according to worklists.

The Freedom EVO Clinical is a customizable open platform with a wide range of pipetting modes for pre-analytical sample distribution, including:

- Common pre-dilutions
- Parallel pipetting and sample splitting
- Single or multi-dispensing
- Single and multi-aspirating
- Reagent addition
- Handling of calibrators and controls
- Strip handling
- Replicates

The Freedom EVO Clinical offers high performance features, such as continuous loading and scheduling, plus a wealth of enhanced safety features, including liquid level detection and clot detection. Automated sample distribution and handling also brings significant cost savings, by optimizing the use of diluents, reagents and consumables.

Flexible scalable robotic platforms for pre-analytics applications.

Enhanced safety standards for data, patients and users.

Designed to meet full regulatory compliance.
Pooling

Automated pooling for clinical samples

When testing samples for a specific reaction, such as in blood banks and nucleic acid testing (NAT) laboratories, pooling of multiple specimens in a single tube saves time and costs if most of the samples are negative. During pooling, portions of several samples can be pipetted and mixed together, then submitted to a test procedure such as nucleic acid testing.

Freedom EVO® Clinical workstations can be used to automate the pooling process, which is executed by the Freedom EVOware® Sample Oriented software (SOE). SOE provides an interface for different commercially available third party pooling management software that handles all of the logistics processes associated with pooling, including worklist generation, sample tracking, pool resolution, sample history and result generation.

Additionally, Tecan offers the Te-PoolSafe™ module for Freedom EVO Clinical workstations. This liquid arrival check system allows blood banks and NAT laboratories to monitor and evaluate the performance of their pooling application.

The module improves safety in all pooling applications by ensuring full sample traceability and documented proof of performance, leaving users confident that the appropriate amount of liquid has been pipetted from each sample into the pool.

In combination with SOE, several different pooling methods can be used:
- Primary pooling
- Sub-pooling
- Cross-pooling
- Pool resolution

Tecan does not offer clinical applications for blood pooling and blood banks to customers in the U.S. and Canada.
Automated clinical ELISA testing

Flexible automation of ELISAs for routine diagnostics

Tecan’s IVD-D compliant platforms for automation of clinical diagnostics applications offer high quality, reproducible results, while ensuring regulatory compliance. The Freedom EVOlyzer® meets the requirements of Directive 98/79/EC-IVD, and has been listed in the USA as a Class 1, 510(k) exempt medical device for diagnostic use in hospitals and clinical laboratories, as well as veterinary institutes and clinical research laboratories.

The Freedom EVOlyzer has been designed to optimize processing of ELISA assays for clinical diagnostics, achieving consistent results while ensuring the highest standards of operator safety.

This fully automated ELISA processing station integrates all the modules necessary for your applications into a single system, and combines heated and ambient temperature incubators, a plate washer and a microplate reader with built-in process security features for full sample traceability throughout the process. The platform is available in three sizes and can be configured to suit a variety of different laboratory requirements, from small-scale laboratories testing low numbers of samples, to high throughput facilities that analyze thousands of samples a day.

The open worktable design can accommodate a variety of labware, and performs a broad range of standard ELISAs from different manufacturers. This allows parallel processing of multiple assays, with optimized scheduling to ensure highly reproducible results with a variety of sample types, including serum, plasma, liquor and solubilized stool.

Wizard-guided software, with touchscreen capabilities, guides the operator through the whole process. Multiple plates can be processed simultaneously, with a host of features designed to optimize processing and increase throughput, including continuous loading, multiple strip assays on a single microplate frame, parallel reagents pipetting and dynamic scheduling.

The ASTM module allows bi-directional communication with your Laboratory Information System (LIS/LIMS), and the PosID™ barcode reader offers full tracking of samples, reagents and microplates on the worktable through processing.

You can rely on the Freedom EVOlyzer to perform automated procedures consistently, rapidly and to high standards. Flexibility is a key feature of the Freedom EVOlyzer, which can easily handle changes in sample loads and processing requirements.

The Freedom EVOlyzer is compliant with Directive 98/79/EC-IVD, and is an Annex III-compliant open system for ELISA processing.
Automated nucleic acid extraction for avian influenza testing

Reliable diagnosis of biological threats, such as avian influenza, requires isolation and identification of the virus, followed by determination of viral pathogenicity. Tecan has collaborated with Macherey-Nagel to automate nucleic acid sample preparation, including purification, normalization, PCR set-up and amplification, for diagnosing avian influenza.

Automated nucleic acid extraction and sample preparation for avian influenza diagnostics has been validated at customer site on the Freedom EVO® 200 liquid handling workstation, using Macherey-Nagel NucleoSpin® Viral RNA kits. This configuration was specifically designed to meet Directive 92/40/EC on diagnostic procedure requirements.

The Freedom EVO is equipped with an 8-channel liquid handling arm, using disposable tips and the lower tip ejection option, a PosID™ barcode reader for sample identification and a robotic manipulator (RoMa) arm.

The workstation’s layout and configuration minimize the risk of cross-contamination, and samples are tracked throughout the process. Nucleic acid yields are optimized to allow detection of dilutions of 10^{-6} to 10^{-7}.

During a typical workflow, samples are lysed with the NucleoSpin Viral RNA Kit lysis buffer and stored in 1.5 ml Eppendorf® tubes. Samples are then pipetted from the sample tubes into deep-well plates using disposable tips. Disposable tip racks are held in automation-compatible carriers, and can be reloaded by the RoMa arm during processing.

A cooled carrier controls the microplate temperature while the liquid handling arm pipettes samples from the deep-well plates to the vacuum station.

Automated nucleic acid extraction is performed using the Macherey-Nagel NucleoSpin kit, with a Te-VacS™ vacuum extraction module applied to the Macherey-Nagel extraction block. The Te-VacS is equipped with a specially designed solid phase extraction protection plate that prevents cross-contamination during extraction.

Additional modules include hotels and shelves for storage of deep-well plates and disposable tips, as well as trough carriers for reagents.

This set-up can extract 96 samples in parallel in 1.5 hours, using four to six disposable tip racks (96 tips each) per sample batch.

Alternatively, the magnetic bead separation module Te-MagS™ and a heating shaker can be integrated on to the workstation as an additional option.
Designed to ensure sample integrity

Enhanced safety with minimal risk of cross-contamination

Flexible workstation layout and integration options

Compatible with a variety of commercial kits to process different sample types

Scalable, automated liquid handling platform

Fully automated platform for avian influenza and other viral disease diagnostics

Samples are loaded in 1.5 ml sample tubes, and tracked throughout the whole process.

Integrated Te-VacS module for vacuum extraction.

Worktable layout is designed to avoid cross-contamination.
Automated ELISA testing for veterinary applications

Process automation for animal disease testing

Monitoring of livestock and control of zoonotic diseases have become integral parts of livestock management over the past decade. Efficient test programs prevent financial losses and ensure safety of animal products. In order to cope with increasingly complex and ever-changing test programs, Tecan provides flexible and reliable automated solutions for ELISA-based diagnostics.

Tecan’s Freedom EVOlyzer® workstation automates all steps of ELISA assays, increasing the productivity, reliability and efficiency of diagnostic laboratories.

The flexibility of the Freedom EVOlyzer makes it possible to perform both a wide range of assays with a low number of samples, and a limited range of standard assays on larger sample sets. The platform can be quickly adapted to daily changes in sample load, which is particularly important during disease outbreaks, when laboratories must quickly deal with changing demands in throughput and the range of tests required.

Monitoring of various porcine livestock diseases – including classical swine fever, Aujeszky’s disease and porcine reproductive and respiratory syndrome (PRRS) – has been validated at customer sites on the Freedom EVOlyzer. ELISA-based testing for PRRS is performed with IDEXX Laboratories’ HerdChek® PRRS 2XR antibody test kit, and can be used to both monitor herds at risk and check whether animals have been successfully vaccinated.

For this application, the Freedom EVOlyzer has the following configuration:

- 150 cm worktable
- Four fixed pipetting tips
- Storage shelves for 24 microplates
- Ambient temperature incubator
- Heated incubator
- Microplate washer
- Microplate absorbance reader
- Sample tracking throughout the process to ensure maximal process security

Depending on the required throughput and the diagnostic test design, a 200 cm platform is also available, with options for 8-channel pipetting using fixed or disposable tips, and incubators with integrated shakers.

Alternatively, comparable configurations can be achieved using the Freedom EVO® liquid handling platform to allow integration of additional Tecan devices – e.g. a Power Washer 384™ equipped with 96-channel wash-head – or third party devices such as dispensers, offering the ability to scale up processing to match any throughput requirement.
Automated ELISA testing for food

Automated quality assurance of food

As part of the initiative for quality assurance in food, Salmonella testing for meat and meat products is now a legal requirement in many countries. Tecan has automated the whole process of enzyme immunoassay testing for the screening of Salmonella in meat-derived samples.

Tecan has established an automated solution to facilitate the monitoring of Salmonella contamination in meat-derived samples. The automated ELISA assay is based on the Freedom EVOlyzer® workstation and IDEXX Laboratories’ HerdChek® Swine Salmonella test kit, an immunoassay for the detection of Salmonella spp. serogroups B, C1 and D.

The automated Salmonella testing is set up with the following components:

- Freedom EVOlyzer instrument with liquid handling arm and robotic manipulator arm
- 37 °C incubator
- Room temperature incubator
- Sunrise™ microplate reader with Magellan™ calculation software
- Columbus™ microplate washer
- Software for Freedom EVOlyzer
- Racks to place samples, control vials and reagents
- Carrier for the microplates

This set-up offers a complete automated system, for ELISA processing with a throughput of close to 100,000 samples in a year, comfortably exceeding manual capabilities while maintaining the same quality of results.

The ELISA test consists of 12 different steps, including pipetting the samples and controls, and measuring the OD of the assay in the Sunrise microplate reader. The automated system using the Freedom EVOlyzer is capable of processing 12–15 complete ELISA plates per day, achieving a throughput three times higher than when it is manually performed, and with greater walkaway time. The system can be operated by a single person, and also provides an overnight protocol which further increases efficiency and flexibility.
Our innovative liquid handling technologies are flexible and reliable. Their advanced designs will bring improved efficiency and safety to almost any life science laboratory workflow. Our extensive product line for automation is suitable for applications within the life science and diagnostic markets. We offer the most flexible pipetting platforms available today, providing you with the tools you need to automate your laboratory research. In addition, we provide numerous standardized and validated packages for specific applications.

Not all applications, options and products in this section have been cleared for clinical use in all countries. If you have questions or concerns please contact your local sales office for specific information.
Automated liquid handling with the freedom to evolve

The Freedom EVO series of versatile liquid handling workstations serves an extensive range of life science applications and builds on over 20 years of Tecan experience to deliver reliable, flexible and expandable automation solutions. Each modular workstation can be equipped with a choice of robotic arms, liquid handling tools and other devices to meet your requirements. With the easy-to-use Freedom EVOware® software, each system can successfully automate applications in drug discovery, veterinary and forensic laboratories.

The Freedom EVO series of workstations is available in four different sizes (75, 100, 150 and 200 cm), and can easily be tailored to your laboratory’s requirements with a range of automation-friendly devices, including:

- High-precision liquid handling (LiHa) arms with independent control for up to eight channels
- Fast transfer robotic manipulator (RoMa) and tube handling arms (PnP) for moving plates, tubes and other labware, plus optional RoMa arm with extended vertical reach for integrating larger modules below the worktable
- Multi channel parallel pipetting options (e.g. MultiChannel Arm™ 96 or 384)
- Detection instruments (e.g. Infinite® series and Sunrise™ microplate readers)
- Vacuum solid phase extraction devices (e.g. Te-VacS™)
- Magnetic bead-based separation tools (e.g. Te-MagS™)
- Incubators and shakers (e.g. MIO™ series and Te-Shake™)
- Barcode reading and labelling devices (e.g. PosID™)
- XP Smart™ dilutors with syringe combinations from 50 – 5,000 μl
- Carousels, hotels, stackers and other labware storage devices (e.g. Te-Stack™)
- A variety of standard labware carriers
- Integration of different third-party devices upon request

The choice of different robotic arms allows robotic and liquid handling functions to be performed in parallel, ensuring the highest throughput and optimizing the process flow. LiHa arms may be fitted with one, two, four or eight pipetting channels, each capable of independent vertical axis movement and automatic spacing for simultaneously accessing vessels between 9 mm and 38 mm apart. Each channel can use one of a range of different disposable or washable fixed tips, allowing optimization of the application and minimizing the running costs. In addition, automatic liquid level detection, using Tecan’s conductive or pressure-based detection technologies, ensures high precision liquid detection and transfer. The Te-Fill™ option greatly extends the liquid volume range up to 50 ml, while application-oriented tips optimize the lower volume range.

On site reconfiguration of the flexible instrument (e.g. exchange of arms) ensures that each system can evolve as application or capacity requirements change, providing long term protection of the laboratory’s investment.

All Freedom EVO workstations are controlled with the flexible Freedom EVOware software, a revolutionary and easy-to-use package that combines pipetting actions with scheduled operation of devices for incubation, detection, mixing or other process steps. User management, file protection and traceability features provide the ability to comply with the FDA’s 21 CFR Part 11 regulations.
High performance through high parallel pipetting
Equipped with its latest module, the MultiChannel Arm 384, the Freedom EVO is turned into a fast and flexible workstation.

Reliable and reproducible system
Using its Te-PS™ positioning system, Freedom EVO can reproducibly and reliably access high density plate formats, even with disposable tips.

Faster assay results through ultimate parallel processing
Up to three arms can be used in parallel, working independently.

Superior flexibility
With the Freedom EVO, you can integrate many different kinds of devices on, around and even underneath the worktable.

Reliability and precision
The Freedom EVO’s robotic liquid handling arm combines reliability and high throughput with advanced pipetting precision, down to the sub-microliter range.

Modularity and flexibility
A choice of over 90 different arm configurations combines pipetting and robotic functionalities, using washable fixed or disposable tips, in a volume range extending from 100 nl to over 50 ml.

Parallel processing
Maximize the use of available resources by using up to three arms in parallel and independently on a single Freedom EVO workstation.

Configurable work area
Integration of devices on, around and even beneath the instrument worktable.

Powerful, easy-to-use software
Freedom EVOware offers total control, from simple tasks such as plate replication, through to complex applications requiring scheduled events and sub-processes.
State-of-the-art compact pipetting robot

The Freedom EVO 75 is a compact liquid handling platform for low to medium throughput applications in genomics, proteomics and drug discovery. The compact size of the Freedom EVO 75 makes it the perfect solution for laboratories with limited space. The Freedom EVO 75 is the smallest of the series, and shares the excellent liquid handling performance, reliability and flexibility of the larger members of the Freedom EVO family.

This compact liquid handling platform automates a variety of repetitive liquid transfer tasks, either as a stand-alone instrument or linked through automation to an analytical system. The Freedom EVO 75 is not only popular in small life science laboratories, academia, biotechnology research and analytics, it is also widely used in large pharmaceutical or agrochemical companies for optimizing processes off-line.

The compact workstation is a truly open platform, with countless worktable layout possibilities, offering unrivalled ease-of-use and flexibility for routine pipetting protocols. The system is capable of highly precise and reproducible liquid transfer from 1µl to 5 ml using either disposable or washable fixed tips, with one or two channel pipetting, variable pipetting speeds and advanced controls to allow multiple assay scheduling. Alternatively, the 8 Plus 1 Access™ tool combines eight channel parallel pipetting with access to individual samples, offering greater flexibility and speed using disposable tips. The Freedom EVO 75 rapidly and efficiently performs basic liquid handling routines such as sample distribution and dilution, archiving, aliquoting and sample normalization, as well as processes such as DNA separation, PCR set-up and ELISA.

A wide variety of Tecan options and modules — including the Te-Shake™, Te-VacS™ and Te-MagS™, plus detection instruments such as the Infinite® and Sunrise™ microplate readers — can be seamlessly integrated into the workstation, ensuring the system is freely configurable and adaptable to the evolving needs of laboratory scientists.

Small and easy-to-use, yet powerful.

Superior intra- and inter-assay reproducibility.

Scalable and upgradable.
Combined sample storage and sample processing

Tecan has integrated the REMP Small-Size Store™ (SSS) with the Freedom EVO liquid handling workstation, creating a fully automated liquid handling and sample management platform that utilizes the REMP Tube Technology™. The combination allows walkaway operation of sample check-in, retrieval and processing, including cherry-picking within the store’s controlled environment. Samples are easily transferred to and from the workstation using an integrated plate shuttle for processing.

The Freedom EVO series is available with different worktable sizes and options to offer precise liquid handling, easy-to-use robotics and advanced process control, and can be integrated with various REMP sample management products.

The REMP SSS offers storage for any of the REMP Tube Technology formats or with ANSI/SBS-compliant microplates. Tubes can be cherry-picked within the unit’s storage environment at temperatures down to −20 °C. Tecan has integrated these two instruments with a simple slide mechanism for a full, round-trip automation of sample storage and retrieval workflows. Freedom EVOware® and the REMP Sample Administration System™ (SAS) smoothly transfer and data using the Freedom EVOware-SAS integration suite.

The Freedom EVO-SSS platform is ideal for a number of research laboratory applications within the life sciences, including compound logistics, DNA logistics, sample preparation and genomics.

During compound logistics, for example, the Freedom EVO performs weighing, dissolution, adjusting concentrations, reformatting, capping or sealing, while the SSS takes care of storage, reformatting and retrieval of compound solutions. The system is also well suited to storing genomic DNA samples, where the extraction and normalization steps can be automated on the Freedom EVO, together with aliquoting for storage.

REMP Tube Technology
Unique, efficient and highly-automatable solution for managing samples.

Tube Punching Module
Cherry pick sample at −20 °C avoiding unnecessary freezing and thawing of samples.

Secure data tracking
Track the location, volume and concentration of all stored samples.
Customizable open platform for clinical applications

The Freedom EVO Clinical is an open, configurable liquid handling and robotics platform, developed to support a broad range of in vitro diagnostic applications, and is compliant with Directive 98/79/EC-IVD. The Freedom EVO Clinical enhances the quality, safety and performance of clinical diagnostic applications, such as enzyme immunoassay (EIA) preparation, sample distribution and molecular diagnostics and has been listed in the USA as a Class 1, 510(k) exempt medical device the diagnostic use in hospitals and clinical laboratories, as well as veterinary institutes and clinical research laboratories.

Thanks to Tecan’s considerable experience in laboratory automation, the Freedom EVO Clinical is an easy-to-use and reliable platform, with features and technologies to offer new standards in performance, safety and reliability. The Freedom EVO Clinical comes in 100, 150 and 200 cm desk sizes, with many integrated options available to provide a fully customizable worktable layout, for all laboratory space and throughput requirements. Applications available on this platform are shown on page 62 and 63.

The Freedom EVO Clinical supports the needs of customers across a full spectrum of essential clinical diagnostic applications, including the integration of diagnostic kits from various manufacturers. The Freedom EVO Clinical enables a wide range of easily defined pipetting modes via the graphical user interface, through either Freedom EVOware® or Freedom EVOlution™.

From the very start, the Freedom EVO Clinical has been designed to meet the requirements of Directive 98/79/EC-IVD. With Tecan’s commitment to safety, the Freedom EVO Clinical includes a range of features that offer improved safety, security and efficiency, such as:

- The new PMP (pressure monitored pipetting) option to monitor pipetting quality, and quickly detect faults
- The Te-PoolSafe™ option, a liquid arrival check system, to monitor and record the performance of pooling applications the integrated PosiID™3 identification system for unrivalled security in decoding barcode labels, with an advanced sensor system to prevent manual manipulation of tubes during processing
- Standard features including larger safety panels, shielded carriers, door locks linked to the pause/resume switch and an integrated status lamp, all to help provide superior user safety
- Tracking sample IDs throughout the whole process to enhance data safety, flagging erroneous samples and unexpected events
- Three user group levels and electronic signatures to prevent unauthorized manipulation

The Freedom EVO Clinical is ideally suited to blood pooling applications in blood banks, as well as pre-analytical sample preparations. Pipetting performance can be monitored and documented, in combination with the Te-PoolSafe option, ensuring confidence in the pipetting accuracy of each and every sample in the pool.

Tecan does not offer clinical applications for blood pooling, and blood banks to customers in the U.S. and Canada.
**Intuitive user interface**  
Easy to implement methods with the innovative drag-and-drop graphical user interface

**Enhanced safety features for data, patients and users**  
Built-in pipetting control, sample tracking, audit trails and user access controls

**Directive 98/79/EC-IVD**  
Support of customers’ application validation
Tailor your platform for fully automated ELISA processing

The Freedom EVOlyzer is a dedicated platform for automating ELISAs from start to finish. The instrument provides extensive flexibility for laboratories with different throughput requirements, in terms of both sample numbers and assay types. The workstation performs all common ELISA steps, including sample pre-dilution, sample distribution, reagent pipetting, incubation, plate washing, optical density reading and result generation, without compromising operator safety. The Freedom EVOlyzer has been developed to meet the requirements of Directive 98/79/EC-IVD and has been listed in the USA as a Class 1, 510(k) exempt medical device for diagnostic use, providing an automated solution for chromogenic ELISAs in 96-well microplate format.

The Freedom EVOlyzer is a validated platform with an open worktable layout, allowing the workstation to be adapted to individual laboratory requirements. The Freedom EVOlyzer can be matched to your laboratory’s routine diagnostic workflow, from processing thousands of samples with a limited range of assays, to performing many assays in parallel for a lower sample number.

The platform integrates the HydroFlex™ microplate washer, and the Sunrise™ absorbance reader with Magellan™ Tracker software for generation and evaluation of results. The plates can be incubated at 37, 40, 42 or 46 °C, or at room temperature, with or without shaking.

Liquid handling can be performed with either the standard Teflon®-coated washable tips, disposable tips or a combination of both. The worktable is available in 100, 150 and 200 cm sizes, and all use the same hardware and software components, as well as being operated via the same Freedom EVOlution™ Run Time software.

The Freedom EVOlyzer includes a range of safety features for increased process control and secure data handling:

- All input and output files are electronically signed, and assay configurations can be frozen to prevent unauthorized changes
- User management supports CFR 21 Part 11 compliance, with three user group levels
- Safety panels and door locks restrict access to the instrument during processing
- Monitoring of liquid levels of samples, reagents and wash buffers, as well as system liquid and waste containers
- Evaluation of barcode content, including lot expiry date, ensures reagent consistency
- Liquid sensors to detect liquid levels, available volumes, and potential clots
- Automatic barcode scanning and evaluation of samples, reagent troughs and plates enhance process safety
The intuitive Freedom EVOlution Run Time software is optimized for the touchscreen operation, and designed to be simple to use, requiring minimal training. The graphical user interface guides the operator through the whole procedure, step by step. Loading and unloading of samples and consumables is guided by on-screen instructions, and monitored by the Worktable Loading Interface, with audible warnings and flashing alerts when manual intervention is required.

The Freedom EVOlyzer can work from worklists, via ASTM, or in batch mode, with long walkaway times achieved through optimized assay scheduling and checking of reagent volumes prior to processing. Useful features for workload management include continuous sample loading, assay prioritization, sample pre-dilution, assignment of multiple dilution factors for the same patient sample, and parallel pipetting of samples and reagents.

The Freedom EVOlyzer is the first choice workstation for ELISA processing in terms of reliability, flexibility and usability.

- Modular design with an open worktable layout: Customized workstations to meet the individual throughput requirements of ELISA kits from various manufacturers
- Process security: Full traceability of samples for enhanced reliability of results
- Guided operation with the intuitive software: Loading interface and graphical loading instructions facilitate assay processing
- Shopping list mode: The software calculates the reagent volumes needed for processing
- Built-in bi-directional ASTM communication module: Easy integration with the local laboratory information system

Both standard fixed tips and disposable tips can be used with the Freedom EVOlyzer.

Open platform offers flexibility for sample and reagent placement on the worktable.
The FE500pro™ combines all pre-analytical functions on a single, compact platform. This modular, front-end workstation fits into existing automated set-ups to manage sample processing and sorting functions. The worktable is completely configurable and its functions include:

- Pre-sorting of samples
- Sample volume inspection
- Centrifugation
- Decapping
- Secondary tube labeling
- Aliquoting
- Destination sorting and sample racking

Samples are pre-sorted with the tube loader, which can accommodate 80 tubes and has a continuous loading function. It is compatible with common barcode formats, and accepts primary tubes from all major manufacturers.

The platform's patented tube inspection unit reliably identifies different separation layers, and its unique optical beam can penetrate up to three layers of labels. Centrifugation can be easily integrated, and samples are automatically loaded, balanced and unloaded. The FE500pro's decapper function accepts both push-fit and screw cap tubes and, for maximum safety, tubes are decapped away from the track with stainless steel casings to minimize contamination and infection hazards. The platform can also sort samples into 31 separate workgroups using analyzer racks from different vendors. Barcode labels are verified before aliquoting and the system's flexible software allows operators to assign priorities to the aliquoter function. Serum volume and clot detection checks can also be performed.

Walkaway, pre-analytical sample handling

The FE500pro is a front-end, pre-analytical sample handling workstation that quickly and efficiently automates a range of sample sorting and processing functions, freeing up laboratory personnel and reducing the risk of manual handling errors. This incredibly versatile instrument is surprisingly compact, and can be integrated into existing laboratory workflows and adjusted to handle varying throughput capacities.
Customized laboratory automation

Scientific research often needs tailor-made systems to ensure optimum performance and efficiency. To achieve the required results in a specific application, novel processes and approaches may be needed that are adapted specifically for the individual scientific challenge. The Tecan Integration Group’s competency in understanding your application needs allows it to be responsive to your requirements and provide the best solution, from new pieces of hardware to fully integrated systems.

Tecan’s customized systems are tailored to your specific requirements that may not be met by standard, off-the-shelf equipment. You are closely involved with our team of integration experts and engineers throughout the whole project, from defining the first requirements to the system’s final completion.

The integration group provides you not only with the required instrumentation, but also with a fully integrated system that combines hardware, software and applications set-up; all exclusively designed for your laboratory, featuring newly developed hardware and software technology in addition to Tecan’s proven quality parts and third party components.

The Tecan Integration Group’s main disciplines are integration, engineering, software and application set-up, and our team of full-service technology consultants has a broad range of experience, from mechanical engineering to molecular biology.

Our integration specialists plan, develop and integrate the complete system according to your requirements, and the engineering team designs new hardware to extend platform functionalities and reach your required performance levels. Our team of programmers write drivers, as well as supporting programs or user interfaces, to precisely map your process onto the automated system.

Our team develops innovative and competitive solutions within a very short period of time and, for each customer, a Tecan project manager is assigned to control and supervise all aspects related to the design and implementation of the system. Clearly defined responsibilities and milestones help to ensure successful investment of all your resources.

In addition, you benefit from Tecan’s certified Quality Management System. This assures that customized systems are compliant to EEC directives, IEC and other standards (where applicable).
Our consulting helps you to find your own solution...

- professionally planned and engineered...

- including innovative new products...

- to the final customized system, tailor-made to your needs.

<table>
<thead>
<tr>
<th>Customized solution</th>
<th>Specific automation solutions save time and money through increased throughput and longer walkaway periods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consulting</td>
<td>Experienced TIG staff support you in defining your system specifications, while you focus on your scientific core competencies</td>
</tr>
<tr>
<td>Professional project management</td>
<td>Every customized solution is managed with clear defined milestones: Order – Factory acceptance – Delivery – Site acceptance</td>
</tr>
<tr>
<td>Innovation</td>
<td>Missing links are closed by innovative products to eliminate compromise</td>
</tr>
<tr>
<td>Experience</td>
<td>Work with the most experienced partner in the market, with more than 500 successfully installed projects around the world</td>
</tr>
</tbody>
</table>
Flow-Thru™ Technology

Your solutions flow with Tecan technologies

Flow-Thru Technology offers unrivaled advantages for assay automation, and for over 25 years Tecan has been providing automated laboratory solutions using this powerful technology.

The Freedom EVO® robotic workstation is the foundation for all liquid handling in Tecan’s product portfolio. This versatile liquid handling platform can be configured with a wide choice of high precision pipetting arms, as well as 96- and 384-channel devices, to allow liquid transfer with a wide variety of labware formats. In addition, the Freedom EVO’s flexible design permits seamless integration of separation and detection devices, incubators, washers, shakers and barcode readers to enable automation of your entire application.

A variety of washable fixed tips, as well as disposable tips, can be utilized on the Freedom EVO platform, offering you the flexibility you need for your assay. You are neither committed to a single source of tips, nor tied to the associated high cost of consumables.

Tecan’s Dynamic Fill™ Technology offers the widest dynamic pipetting range, enabling bi-directional transfer of liquids to and from the worktable in volumes from 0.5 µl to 50 ml and higher. An optional selector valve can also be integrated to allow dispensing of up to six different reagents.

Manufacturers of air-filled hand-held pipetting technologies offer decontamination protocols to ensure internal system cleanliness. Manufacturers of automated systems cannot do this because of the complexity of their system designs. With Flow-Thru Technology, you can ensure a clean system, and Tecan offers a two-step process to clean both the exterior and interior of your tips.

We invite you to see for yourself how Flow-Thru Technology can reduce your running costs, and automate special aspects of your assays which are not possible with other technologies.

Flexibility in tip selection. Largest dynamic range. System cleanliness for peace of mind.
Te-Fill™ – DynamicFill™ Technology

The Te-Fill is an option for Freedom EVO workstations equipped with the LiHa pipetting arm. The Te-Fill is based on Tecan’s DynamicFill Technology. The bi-directional pump of the Te-Fill module enables the delivery, as well as removal, of large volumes of liquid. Throughput for large volume liquid transfer can be more than doubled using the Te-Fill. In addition, the user can easily switch between large volume dispensing using the pump and standard pipetting using the dilutors, which helps to enable a large dynamic range – from 0.5 μl up to over 50 ml and even higher – without loss of performance. To maximize flexibility, an optional selector valve allows dispensing of up to six different reagents. Each channel of the LiHa can be configured independently, allowing any number of channels to be used with the Te-Fill option.

The Te-Fill option and the six-way valve are fully integrated into Freedom EVOware® software, making it easy to add Te-Fill commands to your scripts and processes using the intuitive user interface. Existing Freedom EVO 100, 150 and 200 platforms equipped with a LiHa arm can be upgraded to use the Te-Fill option, with no observable difference to your workstation’s pipetting performance.

Fast delivery of large volumes

The Te-Fill integrated dispenser brings added functionality to your Freedom EVO® liquid handling arm, offering a solution for fast delivery of large volumes to enhance genomic, forensic and drug discovery research.

Improved throughput for large volume pipetting.

Large dynamic range from 0.5 μl to over 50 ml and even higher.

Minimized reagent usage.
Pressure Monitored Pipetting (PMP)

Monitor and analyze pipetting for improved security

PMP is a sophisticated online tool for real-time quality control of the liquid transfer process. Integration of the PMP tool into the Freedom EVO® series of liquid handling workstations increases process security, particularly for the transfer of liquids prone to clotting.

Controlled by the Freedom EVOware® software, the PMP option measures and records the pressure in the pipetting channel during aspiration and dispensing, and instantly compares the measured profile to the real-time simulated profile. PMP then interprets the differences between the two profiles and reports any problems which could potentially lead to incorrect volume dispense.

Common sources of pipetting errors in laboratories, such as occluded tips or air aspiration, are instantly detected and flagged. Error recovery is achieved through the error handling user interface, or through a pre-defined error recovery scheme. The software also includes pre-defined parameters for serum, aqueous solution and DMSO, or can be easily adjusted for other liquids.

PMP is not intended for quantitative dispense volume verification.

Simple to use.

Optimized to detect the maximum number of errors, while avoiding false error alerts.

Able to handle variations in sample viscosity.
Liquid Handling Arm option (LiHa)

Precision pipetting for Freedom EVO® workstations

The LiHa arm is the standard pipetting option for Freedom EVO liquid handling workstations, with up to eight channels to offer precise and reliable parallel pipetting. Various fixed and disposable tip options are available to ensure that this flexible liquid arm is suited to a wide range of applications.

The Freedom EVO liquid handling workstations can be fitted with many different combinations of up to three independent robotic arms chosen from the high precision liquid handling (LiHa) arm, the robotic manipulator (RoMa) arm, the pick and place (PnP) arm and the MCA™ 96 or MCA™ 384 multi-channel arms, bringing true parallel processing to your application. For example, using both an independent RoMa arm and the LiHa arm means the pipetting channels of the LiHa can pipette while the RoMa arm simultaneously moves the next piece of labware, ready for subsequent pipetting processes.

The LiHa arm is the standard pipetting option for Freedom EVO liquid handling workstations. The LiHa arm has two, four or eight pipetting tips per arm, each of which can be raised and lowered independently to detect and pipette different liquid levels in parallel, maximizing the flexibility of the option. The distance between pipetting tips can be adjusted to offer equidistant tip separation of between 9 mm and 38 mm (0.31 in. and 1.15 in.), to suit a variety of labware formats.

Each channel includes automatic liquid level detection, using Tecan’s conductive- or pressure-based detection technologies, to ensure safe and correct liquid volume transfer over a spectrum of different liquid types.

The LiHa arm can be used with various fixed or disposable tips to allow a broad range of pipetting tasks. Standard fixed tips are precision manufactured in stainless steel with a number of interior and exterior coatings to offer accurate and reliable pipetting with minimal costs. In addition, the LiHa arm is compatible with several series of Tecan’s disposable tips, avoiding any cross-contamination. Specialized fixed and disposable tips are available for various low sample volumes, as well as high density microplate applications (e.g. 1536-well microplates), ensuring the right solution for your laboratory.

You can find more information about our Liquid Handling disposable tips on page 179.
The Freedom EVO liquid handling workstations can be fitted with many different combinations of up to three independent robotic arms chosen from the high precision liquid handling arm (LiHa), the robotic manipulator arm (RoMa) and the MultiChannel Arm 96 or 384, bringing true parallel processing to your application. For example, using both an independent RoMa arm and the MCA 96 means the 96-channel head can pipette while the gripper arm simultaneously moves the next piece of labware, ready for subsequent pipetting processes, turning the Freedom EVO into a high throughput robotic system.

The MCA 96 can access the whole worktable, in up to 44 different positions, while having plenty of space beneath the head for other Freedom EVO modules. This option optimizes your automated set-up, making your pipetting processes faster and more efficient, significantly increasing your throughput, as well as offering a greater degree of flexibility and multi-functionality for your workflow.

An optional gripper can be mounted on the pipetting head to allow moving plates and tip racks, or to assemble and disassemble Tecan’s SPE module (Te-VacS™). The 96-channel head can operate as an 8- or 12-channel head as desired. You can instruct the MCA 96 to pipette into just one row or column within a 96-well plate – e.g. when performing in-plate serial dilution for IC50 assays. The MCA 96 works with both disposable and washable fixed tips, and can even automatically exchange these during a run, allowing you to switch to disposable tips whenever necessary.

You can find more information about our MCA 96 disposable tips on page 180.
MultiChannel Arm™ 384 (MCA™ 384)

Flexibility and speed for all your applications

The MultiChannel Arm 384 offers higher productivity to automated liquid handling processes with Freedom EVO® workstations, increasing the efficiency and speed of pipetting processes for higher throughput in pharmaceutical and biotechnology applications.

The MCA 384 is Tecan’s 384-channel head for the Freedom EVO liquid handling workstations, offering higher productivity to automated liquid handling processes. The pipetting arm can be mounted onto Freedom EVO 100, 150 or 200 liquid handling workstations, increasing the efficiency and speed of pipetting processes for better throughput, and delivering a greater level of flexibility. The MCA 384 offers:

- Pipetting with 384 or 96 tips, or even with individual rows or columns of tips
- Flexible automatic exchange between disposable and washable fixed tips
- A broad volume range from 0.5 µl to 125 µl
- Parallel processing with other arms to increase throughput
- Flexible multi-channel pipetting powered by Freedom EVOware® application software

The head features a very broad volume range of 0.5 µl to 125 µl. It works with both disposable tips and washable fixed stainless steel tips, which can be automatically interchanged during a run. Alternatively, the head can rapidly mount 96 tips, just a row of 24 or 12, or a column of 16 or 8 tips, for pipetting controls or conducting in-plate serial dilutions.

An optional gripper can be mounted on the pipetting head to move plates or tip racks, for added functionality. This flexible tool is a great asset for all your pipetting applications. In addition to the MultiChannel Arm 384, up to two other independent arms can be fitted onto the Freedom EVO at the same time, offering multi-functionality and true parallel processing. The new 384-channel head is fully compatible with all Freedom EVO options, and many third party devices.

You can find more information about our MCA 384 disposable tips on page 181.
The Freedom EVO liquid handling workstations can be fitted with many different combinations of up to three independent robotic arms chosen from the high precision liquid handling arm (LiHa), the robotic manipulator arm (RoMa), the pick and place arm (PnP) and the 96- or 384-MultiChannel Arms, bringing true parallel processing to your application.

For example, using both an independent RoMa arm and the MCA 384 means the 384-channel head can pipette while the RoMa simultaneously moves the next piece of labware, ready for subsequent pipetting processes turning the Freedom EVO into a high throughput robotic system.

Parallel tasking for higher productivity

The robotic manipulator arm extends the flexibility of Freedom EVO® workstations by transporting microplates and other labware efficiently and quickly between the worktable, peripheral devices and labware storage.

Freedom EVO platforms can be equipped with up to two RoMa arms to allow parallel logistical tasking and enhance throughput without compromising assays. With a choice of grippers available, this versatile module can maneuver SBS format labware such as microplates, deep-well plates, tip racks and reagent blocks around the worktable, as well as importing and exporting labware from external storage devices.

To further increase productivity, the RoMa arm is also available with an extended Z-axis to allow access to the space below the worktable, offering the possibility to integrate larger devices such as readers, washers, centrifuges, and plate storage and incubation devices.
The Freedom EVO liquid handling workstations can be fitted with many different combinations of up to three independent robotic arms chosen from the high precision liquid handling (LiHa) arm, the robotic manipulator (RoMa) arm, the pick and place (PnP) arm and the MCA™ 96 or MCA™ 384 multi-channel arms, bringing true parallel processing to your application. For example, using both an independent PnP arm and the LiHa means the LiHa can pipette while the PnP simultaneously moves the next piece of labware, ready for subsequent pipetting processes, turning the Freedom EVO into a high throughput robotic system.

Freedom EVO platforms can be equipped with a PnP arm to enable rapid, efficient and error-free handling of sample tubes. The arm can transport sample tubes from all major manufacturers, with a diameter between 11 and 18 mm (0.43 and 0.71 in.) and a maximum weight of 100 g (3.52 oz.).

Reliable, error-free tube handling

Tecan’s tube handling arm, the Pick and Place arm, is specifically designed for transport of sample tubes quickly and efficiently around the worktable of Freedom EVO® platforms, allowing pipetting and movement of samples to occur in parallel for higher productivity.

In addition, the PnP arm is able to transport sample tubes to a stand-alone barcode reader, rotating the tubes to allow barcode identification.

Another standard application of the PnP arm is transportation of tubes to a balance, in order to weight empty tubes or powder samples prior to a defined dilution procedure.

Other functions of the PnP arm include automated vortexing of tubes to ensure complete compound dissolution, or transport of special tubes to modules such as crimping units.

This flexibility ensures compatibility of the Freedom EVO workstation with your laboratory workflow, avoiding the labor-intensive task of manually transferring samples between different robotic systems.
8 Plus 1 Access™

Greater pipetting flexibility for the Freedom EVO® 75

The 8 Plus 1 Access is an 8-channel liquid handling arm for the Freedom EVO 75 robotic workstation, designed to bring speed to your reagent distribution, serial dilution, plate reformatting and plate replication tasks.

The 8 Plus 1 Access tool is a clever and cost-effective 8-channel arm, bringing together two functionalities in one tool. This unique arm allows fast and flexible pipetting with disposable tips on the Freedom EVO 75 robotic workstation, combining eight tip pipetting across a microplate and access to individual samples with a single versatile tip. This option features the best of Tecan’s liquid handling experience, offering:

- Secure liquid level detection, down to 50 µl of conductive liquid (first tip only)
- The flexibility of a large volume range from 2 to 1,000 µl
- Efficient multi-pipetting with 1,000 µl tips
- The reliability and precision of the Freedom EVO series

The 8 Plus 1 Access arm makes routine pipetting tasks, including reagent distribution, serial dilutions and plate reformatting, fast and easy to set up, and is ideal for applications such as ELISA, PCR set-up and nucleic acid extraction. For example, fitting a Freedom EVO 75 with this new option and a robotic manipulator (RoMa) arm offers a very economical solution for semi- or full automation of ELISAs, reducing the time-consuming reagent addition steps by more than 80% compared to using a single tip instrument. The simple and efficient Freedom EVO 75 can be equipped with on-board incubation, plate storage, plate washing and plate reading, all controlled seamlessly through our easy-to-use Freedom EVOware® software.

The 8 Plus 1 Access further enhances the outstanding liquid handling performance, reliability and flexibility of the Freedom EVO 75, which is the perfect solution for laboratories with limited space, and for those taking the first steps towards automation.
Labware Carriers

Carrying labware for any life science application

Tecan provides labware carriers to suit the widest possible range of sample tubes encountered in a life science laboratory. Labware carriers can be placed at any position on the worktable and are simple to mount using the grid system, with virtually any combination of carriers possible to allow easy platform customization.

Tecan offers a complete range of labware carriers suitable for sample tubes, microplates, reagents and disposable tip boxes. The automation-friendly carriers are designed to be fully compatible with Tecan’s robotic devices and can be placed at any position on the worktable, increasing flexibility and enhancing any laboratory workflow. Carriers are simple to locate using the numbered grid system, and carriers can be easily removed without interfering with instrument’s workspace.

Sample tube carriers are available for a wide range of tube diameters, and are also available for smaller tubes such as Eppendorf® tubes, Cryovials® and PCR tubes. Microplate carriers can accommodate any SBS-format labware including 24-, 96- or 384-well plates, reagent troughs, MALDI targets and microscope slide adapters. Special carriers are also available to position high density formats, such as 1,536-well plates and crystallography plates. Disposable tip carriers support various tip racks for easy pick-up and aerosol-free disposal of tips. For temperature sensitive applications, temperature-controlled carriers are available to heat or cool reagents, microplates and tubes.

Tecan also has a range of microplate hotels designed for storing numerous SBS-footprint items, including deep-well plates or solid phase extraction cartridges, ready for automatic loading onto the worktable with the RoMa arm option. The hotels use the same grid positioning system as the labware carriers, but are placed at the rear, side or front of the worktable to optimize use of space.

Enhanced flexibility.

Specifically customized carriers to fulfill your assay needs.

Save money through high storage capacity on the deck.
Carousel™

High speed access to your microplates

The Carousel is a fast access storage system which gives users increased walkaway time and is ideal for high throughput applications in genomics, drug discovery and proteomics. The Carousel is compatible with all Freedom EVO® liquid handling instruments and can handle all microplates and disposable tips with a standard SBS footprint.

The Carousel provides Freedom EVO workstations with a medium storage capacity for SBS-footprint labware, including most types of microplates and selected disposable tips in parallel.

To enhance flexibility, the module allows random access to 220 standard plates, with an average access time of just 11 seconds per plate, to offer a comfortable walkaway time.

The Carousel is made up of ten stacks, each of which can be transferred from one carousel to another and configured for different types of labware.

It can handle stacks with various shelf spacing to allow storage of different types of labware (microplates or disposable tips), and a barcode option is also available to identify and track samples throughout the complete workflow.

Faster assay results.

Increased walkaway time.

Enhanced flexibility.
Te-Stack™

Automatic handling of microplates and disposable tips

The Te-Stack module gives life science laboratories an efficient and affordable way to automate the storage, retrieval and delivery of microplates and disposable tips, in a wide range of applications.

The Te-Stack option handles microplates, cell flasks, deep-well plates, half-height plates and PCR plates, as well as a range of disposable tip formats, speeding up process workflows by retrieving and delivering plates and tips in less than five seconds. Te-Stack integrates quickly and easily onto all Freedom EVO® and Genesis™ liquid handling systems, including those equipped with Te-MO™ multi-channel pipetting options.

The Te-Stack column is compatible with several other Tecan options and devices, including Connect™ and AutoLoader™, allowing easy and rapid transfer of columns full of plates or tips between instruments. Each module holds up to 50 standard microplates, 15 deep-well plates, 12 tip boxes or 40 racks of nested tips, and more than one Te-Stack can be used for even greater processing speed and capacity. On Freedom EVO and Genesis systems, up to eight Te-Stack columns can be added, plus up to three on Te-MO units, giving a total capacity of up to 11 columns on a single platform.
Stacking, dispensing and sorting of plates and tips

The AutoLoader is an automated stacker system for microplates and disposable tips that complements Tecan’s Cellerity™ and Aquarius™ multi-channel pipetting systems. The AutoLoader’s six stacker columns significantly increase the flexibility of platforms and provide a large plate capacity, improving throughput and reducing user intervention. The AutoLoader follows the same design principles as the Aquarius, with a compact footprint for efficient use of space.

The AutoLoader stores, dispenses, and collects various types of labware including microplates, disposable tip boxes and cell flasks for Cellerity systems and Aquarius multichannel pipettors. The AutoLoader option optimizes processing time and increases throughput by allowing simultaneous pipetting and loading / unloading of plates.

Its six stacker columns can store 96-, 384- and 1,536-well microplates, cell flasks, deep-well plates, half-height plates and PCR plates, as well as disposable tip boxes. These columns significantly increase the capacity of your system, allowing complete walkaway operation of the instrument.

The stacker columns are compatible with Tecan’s Te-Stack™ for robotic platforms, and with Connect™ systems for detection instruments. Tecan’s positive identification barcode scanning option is also available with the system. The AutoLoader is part of Tecan’s Cellerity system, and can be easily integrated into Aquarius pipettors.
The Te-Link can be mounted in any position on or at the rear of the Freedom EVO worktable, interfacing to the front, rear or side of another platform to create a modular system. Very easy to upgrade and implement, Te-Link expands your capacity to perform varied applications by increasing the available robotic resources, and eliminates the need to add expensive and complex stand-alone robots.

The Te-Link allows the interlinking of related process steps, with the RoMa option transferring plates to and from the Te-Link module, and the LiHa arm able to pipette directly to a microplate on the Te-Link within the work area. By combining different Freedom EVO platforms, you will get the most flexible system on the market. For example, the Te-Link option can be used to transfer plates from a sterile cell culture station – dedicated to temperature-controlled incubation and media exchange – to a station tailored to specific assay protocols, which may then be further linked to other analytical set-ups.

Another important example of this modular approach is the separation of pre- and post-nucleic acid amplification steps, which some laboratories prefer to run in segregated areas. The Te-Link allows plates to be automatically transferred between a sample preparation station and an amplification station, through the smallest of access gaps.

The powerful Freedom EVOware® software package allows integrated and co-ordinated control of each workstation, with perfect synchronization between the systems, ensuring optimized workflows and making user intervention unnecessary.

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**Superior modularity**

Connect your Freedom EVO to existing systems, increasing your robotics capacity without extra cost

**Enhanced flexibility**

By combining different Freedom EVO platforms you will get the most flexible system on the market

**Easy installation**

Te-Link is simple to install on existing systems by just placing it on the worktable
Barcode scanning for sample identification

The positive identification system scans barcodes on standard labware – such as tubes, microplates, deep-well plates and gel cards – prior to and during sample processing. The system operates with the Freedom EVO® workstations and can be used to complement security requirements in any diagnostic or biopharma application.

The positive identification system provides increased process security by identification of barcoded labware throughout sample processing. Using either the PosID robotic system or a stand-alone scanner module, the positive identification system can read nearly all types of labware barcodes, maximizing flexibility in the choice of labware used. By routinely reading and logging the barcode of labware carriers, you will gain a higher process security and improve traceability of samples during processing.

The PosID module is mounted at the rear of the worktable on Freedom EVO 100, 150 or 200 workstations, monitoring labware carrier positions and automatically identifying the codes of numerous labware types. It can identify if a position is empty, and obscured or missing barcodes are logged as unidentifiable. After reading the barcodes, the PosID shifts the carriers back to the worktable for further processing.

The barcode scanner is a stand-alone module which, due to its compact design, can be mounted at any convenient point on or near the worktable, such as on the top of a hotel. For identification, labware is transported across the scanner’s beam by the workstation’s RoMa or PnP arm, depending on the labware type.

Tecan’s high speed Carousel™ and Te-Stack™ modules also have integrated barcode reader options, enabling automatic labware identification during loading or unloading.
The Te-Shake™ orbital mixer is fully compatible with Tecan’s pipetting platforms, and offers software-controlled shaking and heating options for microplates, deep-well plates, PCR plates and tubes. With multiple configurations available, the Te-Shake is sure to fit your laboratory’s specific application needs.

The Te-Shake can accommodate almost any type of microplate or deep-well block, and is easily integrated into Freedom EVO® workstations, without the need for an external power supply.

The module is available in various configurations to address specific requirements of your laboratory, such as heated mixing and/or multiple microplate shaking, and can be easily upgraded should your needs change. Pipetting directly to or from the Te-Shake during shaking steps or between shaking cycles allows for timely addition of liquids, helping you to obtain better assay results. Plates can be automatically transported to and from the shaker by the workstation’s RoMa arm.

The fully adjustable shaking speed and rotation settings allow you to achieve optimal mixing results, even for delicate re-suspension tasks. Due to its small footprint, multiple Te-Shake options can be used in parallel on one workstation, with full software control of all relevant shaking and heating parameters to achieve greater assay reliability.

Applications for the Te-Shake module include:
- Cell lysis processes
- Bead-based extraction methods
- Cell metabolism assays
- Enzymatic assays
- Solubilization and homogenization tasks
Te-VacS™ Vacuum Separation Module

Fully automated vacuum separation

The Te-VacS system is a versatile vacuum separation module for Tecan pipetting platforms, designed to fully automate cartridge-based filtration and solid phase extraction processes. The module can be used independently or in combination with other modules on Tecan pipetting platforms, thereby eliminating cost-intensive manual intervention by laboratory personnel.

The Te-VacS is a high performance vacuum separation module, providing two separate vacuum positions, with separate vent lines per channel to prevent aerosol cross-contamination. The module can easily be integrated into the Freedom EVO® workstations without the need for an external power supply, and is able to host virtually any microplate-type extraction cartridge. The two separate vacuum positions can be used to improve throughput by allowing independent functions, such as washing and elution, to occur simultaneously without the risk of cross-contamination.

Straightforward operating and control of the device is enabled by Tecan’s pipetting software packages, like Freedom EVOware®. To avoid foam formation during separation, it is also possible to control the mode of vacuum formation, and the vacuum level, via software commands.

Laboratory processes can easily be scaled up by using multiple Te-VacS systems in parallel on one workstation.

The Te-VacS can be used for all nucleic acid purification applications, such as:
- Extraction of plasmid DNA
- Purification of PCR products and cycle sequencing products
- Purification of genomic DNA from blood, body fluids, cells, tissue, micro-organisms, food or plants
- Isolation of viral nucleic acids from blood plasma or serum

Its use, however, is not limited to nucleic acid processing, and the Te-VacS is also valuable for other applications, including filtration and ultra-filtration, as well as complex separations, such as extraction of drugs from blood plasma.

Faster separations through two independent vacuum positions.

Full software control for better assay results.

Enhanced flexibility.
Magnetic, bead-based sample separation

The Te-MagS module provides easy and effective automation of your magnetic bead separation methods on Tecan liquid handling workstations, ideal for any life science or clinical laboratory that needs to improve its throughput.

The Te-MagS module is suitable for automating a wide variety of magnetic-bead based separation applications, and is easily integrated into Tecan’s Freedom EVO® liquid handling workstations. The module is specifically designed for the isolation of nucleic acids, proteins and whole cells from complex mixtures, and is compatible with a range of magnetic bead-based kits from numerous vendors, to allow fully automated process set-up.

The Te-MagS can be used with either 96-well microplates or up to 48 1.5 ml Sarstedt® tubes, automatically exchanging plates or tubes, and allowing multiple batch processes without user intervention. It includes moveable magnets for bead separation, as well as an optional heating block for temperature-dependent lysis or elution steps. Its unique magnetic mixing function increases throughput and reduces disposable tip consumption.

The Te-MagS can be used in conjunction with numerous magnetic bead-based kits from vendors such as Promega® and Dynal®. Applications include purification of genomic DNA from blood, body fluids, cells, tissue, micro-organisms, food and plants. It is also suitable for isolation of viral nucleic acids from blood plasma or serum, and for accumulation of cells or cellular components by antibody-coated beads. Other purification processes include polyA+ mRNA by oligo-dT beads, recombinant proteins with His-Tag® or Gst-Tag™ magnetic beads, PCR products and cycle sequencing products.

The Te-MagS is simple to control, including definition of magnetic movements and block heating, using Tecan’s pipetting software packages.
MIO™ Monitored Incubator Option

Precise control of microplate incubation

Accurate and precise control of the environment is critical to many experiments. Tecan’s Monitored Incubator Option (MIO) series for the Freedom EVO® workstations provides the highest levels of flexibility in a compact size, for a range of life science applications.

Tecan’s choice of incubator options is designed to suit specific environmental conditions and varying microplate capacities, for a wide range of automated life science and diagnostic applications. The MIO series is suitable for standard microplates, as well as half-height plates – such as cell permeability plates with inserts – and lidded plates.

The incubator is available in six- or four-slot capacity modules, with or without microplate shaking. Several incubator modules may be combined together to provide different temperatures and environmental conditions.

Incubators can be placed on any Freedom EVO liquid handling workstation. MIO modules can be positioned at the side, behind, in front of or even below the worktable to save valuable laboratory space, and can be loaded and unloaded by the RoMa arm.

The incubation time is precisely controlled by the software – Freedom EVOware® scheduling software or FACTS™ multisystem control software – to ensure that incubation is accurately scheduled, and that the temperature is monitored and logged, guaranteeing the same process steps for each microplate.

For larger scale applications, Tecan instruments can link seamlessly with higher capacity incubators of 40, 200, 500 or even 1,000 microplates.

Enhanced flexibility through accommodation of different labware types.

Saves deck capacity due to compact size.

Ultimate modularity.
Te-PoolSafe™

Fast and sensitive liquid arrival check

Sample pooling is an essential pre-analytical step for cost-effective nucleic acid testing (NAT) processes. The Te-PoolSafe option is a liquid arrival check system that allows blood banks and NAT laboratories to monitor and compare every single dispense made with pre-defined, required volumes. It improves safety by ensuring full sample traceability and documented proof of performance, leaving users confident that the appropriate amount of liquid has been pipetted from each sample into the pool.

The Te-PoolSafe option consists of a very fast and sensitive balance module with a 16-position tube holder. It can be easily integrated with existing Freedom EVO® Clinical liquid handling platforms, and was designed to meet Directive 98/79/EC-IVD. Its in-process verification monitors each pipetting step, and mis-pipetted samples can be identified and re-pipetted. It can omit weighing of pools at the end of the pooling process if required, and provides complete and consistent process documentation for audits.

The software measures and evaluates each dispense from primary samples to the sample pool, to confirm liquid arrival, and results are displayed to the system operator or, alternatively, may be transferred to the LIMS for automated processing. The option integrates seamlessly with Tecan Freedom EVOware® software package to control the application process and to support full documentation of raw data and results. The module is calibrated by built-in and external adjustment weights, and a calibration service is available for re-certification according to GMP/GLP requirements.

Tecan does not offer clinical applications for blood pooling and blood banks to customers in the U.S. and Canada.
The Freedom EVOware application software sets new ease-of-use standards by offering script-based control of the Freedom EVO series of liquid handling workstations in a single, scalable software package. The intuitive graphical user interface simplifies operations for new or occasional users, while providing the advanced control required by experienced automation specialists.

The Freedom EVOware start-up wizard guides you directly to the features you need, but can also be disabled allowing experienced users direct access. Deck layout is defined by dragging icons from a library of standard carriers and labware onto the worktable, and can be saved as a template for later use. Carrier definitions are provided with pre-defined robot vectors, allowing point-and-click labware transfers.

The labware library can be extended either by teaching new labware to the robot, or importing definitions using the export/import tool. Freedom EVOware’s realistic 3D simulator allows scripts to be developed away from the Freedom EVO, maximizing productivity. Freedom EVOware’s restart wizard allows scripts to be restarted if they are stopped, with loop counters, variables and the restart position adjustable to allow seamless continuation of the run.

The package offers a library of over 30 standard drivers for detection, separation, robotics, plate handling, storage devices and REMP modules, as well as many third party device drivers. System customization is supported through a variety of open interfaces for device drivers, automation, worklisting and messaging delivery at all levels. The software also provides full support for laboratories working under the FDA 21 CFR part 11 regulation, requiring multi-level user management, full audit trail, electronic records and electronic signatures.
Workloads vary on a daily basis and, with changes in the number of required assays or volumes of samples in compound plates, it is difficult to estimate the time for each task. The Freedom EVOware Plus application software includes a number of features that build on Tecan’s state-of-the-art Freedom EVOware Standard package, including:

- Advanced dynamic scheduling
- Process-oriented protocol definition
- Simplified scale-up for multi-plate runs
- Repeatability of optimized schedules

Every five seconds, the Freedom EVOware Plus application software looks to see whether a task has been completed sooner than planned, and the dynamic scheduler re-schedules to take advantage of any gained time. It does not compromise the assay as all critical timings, such as between washing and reagent addition steps, are kept.

The application software allows you to add another process when the Freedom EVO® workstation is already running, and it re-calculates schedules for varying workloads. It learns from your processes through its calibration function, which records the time each action takes to perform, and uses this information to adjust the scheduling for the next run.

The application software takes advantage of the Freedom EVO’s multi-arm capabilities by scheduling the robotic manipulator arm to fetch the next plates for processing while the liquid handling or multi-channel arms are pipetting, optimizing throughput and efficiency. Script-based pipetting routines are seamlessly integrated into Freedom EVOware Plus and variables can easily be passed between scripts and other process steps.
TouchTools Suite™ including Instant Pipetting™

Control at your fingertips

The TouchTools Suite provides a new way to make Tecan’s automated systems even more accessible, particularly for users who are not familiar with writing software scripts. TouchTools functions are accessed through a simple and appealing touchscreen user interface that allows easy control of the pipetting platform.

**Application Starter** offers a selection of methods from a graphical list, guiding the user through the start procedure and providing on-screen instructions for loading the worktable.

**QuickStart** presents buttons on the touchscreen that can be linked to specific scripts, so that chosen applications can be started immediately, literally at the touch of a button.

**Instant Pipetting** is a unique, patent pending module for direct, real-time control of pipetting workstations. This innovative feature allows the user to perform common pipetting operations, like sample distribution, reagent addition and serial dilution, in an easy and interactive way. Even without programming skills or a pre-defined script, the user can immediately start pipetting without help from an automation specialist. Instant Pipetting essentially provides a new way of defining pipetting and implementing applications onto an automated system.

The pipetting actions are graphically defined and executed by just touching the screen. Any pipetting can be repeated with the touch of a button, or even be saved as a script in Freedom EVOware®. The script can then be recalled directly through QuickStart, the Application Starter or in Freedom EVOware.

By increasing use of the pipetting platform and reducing its idle time, return on investment can be improved. Instant Pipetting can also reduce the number of repetitive tasks for laboratory staff, freeing up time for more interesting and intellectual tasks.

Instant Pipetting virtually turns your Freedom EVO® liquid handling workstation into an automated hand pipette. There is no need for complicated programming, just use the touchscreen and the Freedom EVO will perform the requested action in real time.

TouchTools Suite requires Freedom EVOware.
Repeats and saves pipetting actions

Provides a new way of programming the liquid handling workstation

Direct real-time control

No need for a pre-defined script

Intuitive functions

Brings automation closer to users without programming experience

Simple, attractive user interface

Easy touchscreen control of automated pipetting platform

Makes automation accessible for everyone.

Offers a truly new way of defining pipetting.

Simple touchscreen control.

Increases productivity of your pipetting instruments.
The Common Notification System (CNS) allows the user to monitor an instrument’s status through any networked computer or mobile device with a web browser. The status of the system is immediately visible and the user can easily see if any interaction is needed.

Remote monitoring can be particularly useful if the instrument is in a cleanroom, biosafety cabinet or coldroom and laboratory access is difficult or could risk assay contamination.

The new Freedom EVO® Remote, available on the iPhone™ App Store, allows convenient monitoring through an iPod touch® or an iPhone. The application displays a list of all instruments in the network and their respective status, as well as detailed run information. This is useful not only for the operator running a system, but also for laboratory managers needing an overview of their instruments.

Stay connected

The Common Notification System in Freedom EVOware® allows the user to monitor an instrument’s status remotely, notifying them of unexpected events, thereby increasing walkaway time and process security.

Increased walkaway time and process security.

Convenient monitoring of difficult-to-access instruments.

Monitor the status of networked Freedom EVO robotic platforms.
Freedom EVOware® Sample Tracking offers full process security with traceability of samples and pipetting actions. One-click integration with Tecan’s Magellan™ reader software enables effortless export of sample IDs and import of results, providing enhanced data security, flexible reporting and reduced LIMS integration costs.

Freedom EVOware Sample Tracking records the messages that Freedom EVOware generates for each action performed, making it a true and accurate reflection of what really happened. All labware is identified with a scanning device, such as PosID™, and the software also records volumes and concentrations in each piece of labware in real time, as the Freedom EVO® pipettes into them. The interactive Quick-viewer allows you to progress within a plate, or zoom in to see the status of an individual well, and using optional plate map files provides additional data such as sample IDs, volumes, concentrations and units for samples.

The software offers a variety of standard templates for sample- and plate-based reporting, printed and saved as PDF and CSV file formats.

Alternatively, the Report Designer allows you to add data and formatting (including logos) to reports as required. Freedom EVOware Sample Tracking’s built-in web server allows interactive browsing of data from past runs, with the option of regenerating reports in PDF, CSV and XLS report formats, ensuring that you can quickly find the information that you need.

Freedom EVOware Sample Tracking is available in three configurations to suit your needs:

- **Freedom EVOware Sample Tracking Embedded** generates simple plate-based PDF and CSV reports at the end of a run
- **Freedom EVOware Sample Tracking Stand-alone** tracks samples over multiple runs, and features enhanced reporting functions
- **Freedom EVOware Sample Tracking Multi-instrument** allows five Freedom EVO workstations to be linked in a single network

Automated sample tracking throughout your workflow

Freedom EVOware Sample Tracking makes it easier than ever to track your samples. Simply register the samples you wish to track, and choose from a variety of standard plate- and sample-based reports for enhanced process security throughout your applications.
Freedom EVOware® Sample Oriented

Wizard-driven, sample-based pipetting

Freedom EVOware Sample Oriented is a wizard-driven solution to set up assay plates requiring sample-based pipetting procedures. The software reduces the time needed to create complex pipetting procedures, and increases the productivity and efficiency of your Freedom EVO® workstation.

Freedom EVOware Sample Oriented offers straightforward, wizard-guided definition of pipetting procedures for biopharmaceutical applications, using the software’s graphical user interface to allow easy and rapid definition of plate layouts. With comprehensive drag and drop tools, the user can quickly identify where controls, calibrators and samples are to be dispensed, as well as providing full control over serial dilutions and pre-dilutions with a choice of diluents and user-defined volumes. To maximize throughput, protocols can be optimized on a PC using Freedom EVOware’s 3D simulator before transfer to the workstation.

Freedom EVOware Sample Oriented has many additional features developed specifically for biopharmaceutical research, offering the flexibility to allow continuous development of protocols for common tasks such as:

- preparation of IC50 curves
- sample-specific dilutions
- multi-parameter ELISAs
- dilutions or pre-dilutions in plates or tubes, with a choice of diluents and user-defined volumes for each step

Freedom EVOware Sample Oriented also supports pooling applications such as primary pooling, sub pooling and cross pooling, from both tubes and plates.

To avoid operating errors, the software graphically guides loading of the workstation, and automatically schedules and alerts the user of maintenance requirements. Integration of Tecan’s PosID™ module allows labware barcodes to be confirmed on the workstation and this, combined with the software’s advanced input and output control options, offers enhanced process security for valuable samples.

Pooling applications not included in software sold in the US and Canada.
The Freedom EVOware Normalization Wizard is suitable for normalization applications in genomic, protein science and drug discovery laboratories. The wizards integrate seamlessly into the Freedom EVOware GUI, and is divided into two components.

The Quantitation Wizard works in conjunction with Tecan microplate readers to quantify samples, and the concentration of samples is determined by Tecan’s Magellan™ software. This wizard also permits dilution of highly concentrated samples prior to the final measurement.

The Normalization Wizard allows all the samples to be normalized to the same concentration into a single microplate, using data imported directly from the Quantitation Wizard during the same script run. Data can also be easily imported from previously generated data files, as well as files from third party devices, such as real-time PCR instrumentation, or LIMS databases.

The Normalization Wizard automatically chooses the most appropriate disposable tips to ensure superior precision and accuracy over a wide dilution range, and also pre-dilutes high concentration samples.

Together these wizards create a fully automated walkaway system, ideal for laboratories working in highly regulated environments. Automated solutions result in improved productivity and decreased operator intervention, reducing risks for contamination and errors.
Integrating seamlessly into Freedom EVOware’s intuitive graphical user interface (GUI), the wizard leads you through the steps to set-up common hit-picking and re-arraying applications. Simply choose source and destination plate locations, define plate maps and pipetting options and you are ready to go.

Plate maps are graphically defined, allowing serial dilutions and controls to be pipetted onto each plate and creating assay-ready plates for IC50 studies.

Hit lists use a simple CSV file format containing the source barcode and position in plate, making it easy to interface with a wide variety of LIMS and workflow management software packages.

Freedom EVOware® Hit-Picking Wizard

Fully-automated hit-picking on the Freedom EVO®

The Freedom EVOware Hit-Picking Wizard extends the functionality of Freedom EVOware for the set-up of hit-picking and cherry-picking applications without the need for custom software.

Freedom EVOware Hit-Picking Wizard allows the user to define how hits are diluted, with the option to vary the volume of compound and diluent in each step, simplifying plate set-up.

The wizard’s automatic plate handling brings source and destination plates to the deck from a variety of storage devices, including carousels, stackers and hotels, increasing throughput and optimizing deck usage. Lid handling and third party devices, such as plate sealers, can also be integrated.
Freedom EVOlution is state-of-the-art software for clinical diagnosti
cal applications. The software enables a range of diverse liquid handling procedures on Tecan’s Freedom EVO Clinical and Freedom EVOlyzer workstations. Freedom EVOlution Run Time operating software is available in several languages, and enables the following routine clinical operations:

- Pre-analytical sample distribution
- Sample splitting and archiving
- Assay preparation
- ELISA processing

Freedom EVOlution is capable of numerous process-oriented liquid handling tasks; with single, multiple and parallel pipetting to automate standard operations such as sample dilution (in the pipette tip, 96-well microplates or tubes), preparation of assay controls, dispensing of reagents and creation of archive plates. To ensure compatibility with existing laboratory workflows, the user can choose between batch, worklist or ASTM operating modes. Barcoded samples, reagent troughs, control vials and plates are automatically tracked, providing process traceability for a comprehensive audit trail.

Clinical diagnostics software for sample processing

Freedom EVOlution is the versatile software package designed to control routine liquid handling and processing tasks in the clinical laboratory. Driving both of Tecan’s clinical diagnostics platforms, the Freedom EVO® Clinical and the Freedom EVOlyzer®, Freedom EVOlution has been developed to meet the requirements of Directive 98/79/EC-IVD.

The easy-to-use software offers optimized processing conditions, long walkaway times and maximum throughput for highly reliable results. The main features include:

- Graphical user interface includes on-screen guidance for loading of samples, reagents and plates
- Reagent volumes checked prior to processing, with automatic calculation of reagents volumes and number of plates
- Parallel processing of different sample dilutions within the same run
- Splitting of source tubes into multiple secondary tubes*
- Residual sample pipetting to minimize loss of material*
- Dynamic scheduling to maximize throughput
- LIS/LIMS connection

For full automation of ELISA assays using Freedom EVOlyzer workstations, the software is able to integrate several other Tecan technologies including the HydroFlex™ microplate washer, Sunrise™ microplate absorbance reader, Magellan™ Tracker data reduction software and microplate incubators.

* Freedom EVO Clinical only
Intuitive, workflow-oriented software

i-control is the software interface for operation of all Tecan’s Infinite® microplate readers. The flexible design allows creation of application-oriented measurement scripts for whatever combination of processing steps is required, with the workflow clearly visible to the user.

The Infinite series of Tecan readers (Infinite 200, Infinite F500 and Infinite M1000) come complete with the easy-to-use i-control software, to allow users to quickly and simply set-up their measurements. i-control supports all detection modes integrated into the instruments, offering effortless single wavelength and spectra scanning measurements of absorbance, fluorescence and luminescence for endpoint, kinetic, ratiometric and multiplex assays.

Creating new workflows is easy using a simple ‘drag and drop’ menu to build command sequences, and graphically define measurement ranges according to assay protocols. Numerous workflows can also be saved on the system for future use.

Online data presentation provides immediate review and analysis of your measurement data, with enhanced data management and straightforward export of data to Windows®-compatible formats (e.g. Excel®). i-control can also interface with the Connect™ stacker system for batch processing, and to Tecan’s automated liquid handling workstations.

i-control has been designed, tested, verified and validated according to certified quality standards, ensuring the technical compliance and integrity of the data generated.

<table>
<thead>
<tr>
<th>Simple and flexible</th>
<th>Allows measurement scripts to be set up quickly, providing any combination of applications your workflow requires</th>
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<tbody>
<tr>
<td>Graphical data presentation</td>
<td>Provides immediate review of data with the workflow clearly visible to the user</td>
</tr>
<tr>
<td>Certified software</td>
<td>i-control complies with ISO 13485:2003 requirements and meets all relevant industry standards</td>
</tr>
</tbody>
</table>
Magellan™

Comprehensive reader control and data analysis software

Magellan is a universal software package for the complete range of Tecan microplate readers, enabling quick and easy measurement of samples for first-time and expert users alike. A versatile user interface and powerful data analysis capabilities allow optimization of sophisticated experimental work as well as routine tasks.

- 21 CFR Part 11
- Directive 98/79/EC-IVD

Magellan is ideal for a wide range of microplate-based applications. Magellan enables comprehensive data reduction and analysis for ELISAs, kinetic assays, screening, multi-label and spectra scanning experiments, combined with all possible detection techniques. The intuitive, wizard-guided user interface is available in several languages and allows seamless process control, automated data import functions in variable formats and automated data export. Color-coded results give a clear overview of multiple measurement points or high-density plate readings. Multi-level user management with password protection and documentation of changes assure full traceability, data security and integrity at any time.

Magellan enables smooth integration or system expansion for full data analysis through compatibility with the Connect™ stacker, Freedom EVOlyzer® and Freedom EVO® automated workstations.

Magellan is available in the following versions:

**Standard** — intended for research use offering high flexibility for endpoint, kinetic and multi-label assays in pharmaceutical, biotechnological, life science, food analysis and veterinary applications.

**Tracker** — designed to meet all functionality for compliance with the FDA regulation 21 CFR part 11 for electronic records and signatures, as well as Directive 98/79/EC-IVD.

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**Getting started easily**
Attractive wizard-guided user interface available in different languages; example files and learning videos for easy access

**Powerful data reduction**
Ideal for many microplate-based applications such as ELISAs, kinetic assays, ratiometric assays, spectra scanning experiments

**Compatible**
Compatible with Tecan’s robotic devices and all microplate readers; fully backwards compatible
Easy control of protein crystallography experiments

Tecan’s CrysScreen software package provides crystallographers with an intuitive user interface that helps to manage the complexities of protein crystallography. The software guides users through all the critical steps in automated protein crystallography trials, including buffer creation, set-up of experimental conditions, running experiments, data management and result analysis.

The close integration of CrysScreen with Tecan’s Freedom EVOware® instrument control software allows efficient and reproducible pipetting and microplate handling on Freedom EVO® liquid handling workstations. The intuitive software offers effective control of the platform, even for infrequent users. CrysScreen offers full support of all Tecan hardware options, and allows you to:

- Import recipes for both commercial screening kits and user-designed sparse matrix screens
- Automatically re-format commercial screens into different labware
- Create and pipette mother liquors and pH gradients from stock solutions
- Run an automatic feasibility check of stock solution concentrations
- Execute crystallization experiments such as hanging drop, sitting drop and microbatch-under-oil
- Result analysis, including time-saving tools for the definition of follow-up screens
- Control and review project management using the powerful project tree
- Export data as CSV format spreadsheets

Enhanced worklist generator allows parallel pipetting for higher throughput.

Complete robotic control is simple and efficient, even for infrequent users.

Results analysis tool allows easy definitions of follow-up screens.
Tecan’s cutting-edge range of flexible, automated microplate and microarray instruments include multifunctional, modular and upgradeable systems, that offer laboratories the flexibility to grow with the demands and complexities of research, whatever your technology and throughput requirements. The open systems address automation and performance needs in the workflow of various microarray platforms and applications, from sample logistics and sample preparation down to assay processing, detection and analysis. Automated sample tracking, process and experimental quality control are covered during the entire workflow.

PowerScanner™, LS Reloaded™ and HS 4800™ Pro and HS 400™ Pro hybridization stations are Research Use Only/scientific instrumentation. Not for use in clinical diagnostics. The other products in this section are Class 1, 510(k) exempt devices for general purpose use.

Microplate Readers and Washers
Microarray products

- multifunctional
- modular
- absorbance
- fluorescence
- luminescence
- automated plate washing
- automated microarrays
- automated hybridization
Infinite® 200

Infinite flexibility in a scalable microplate reader

The Infinite 200 series offers an affordable and easily upgraded line-up of flexible and scalable microplate readers, incorporating all main detection methods and for all applications. The unique modular design and adaptability of the Infinite 200 series provides a choice of either Tecan’s advanced Quad4 Monochromators™ or a filter-based system, and you can tailor the instrument’s detection modes to suit your requirements.

The easy-to-use and modular Infinite 200 series microplate readers can be integrated into Tecan’s Freedom EVO® liquid handling workstations, and feature an injector system that can handle up to two reagents for triggering fast kinetic reactions such as ion studies. The instruments can be used with a variety of labware, including 6- to 384-well plates, half-area plates, PCR plates and cuvettes, and support the following detection modes:

- Fluorescence intensity top and bottom reading
- Fluorescence resonance energy transfer (FRET)
- Time-resolved fluorescence (TRF)
- Fluorescence polarization (Infinite F200 only)
- Luminescence or flash and glow
- Dual-color luminescence (including filter for BRET 1 & BRET 2 applications)
- Absorbance

The Infinite M200 uses advanced Quad4 technology with four monochromators to provide excellent sensitivity. Users can access all wavelengths and change from top to bottom reading for easy measurement of multiplexed assays at the touch of a button, with a cuvette module also available.

The Infinite F200 uses a patented and intelligent filterslide system, with integrated lifetime monitoring of the filters. The optimized filter sets offer a cost-efficient alternative for routine applications at fixed wavelengths, and its fluorescence polarization module is perfectly equipped for binding studies in homogenous mix and read assays.

The Infinite 200 series is controlled by i-control™ software that allows you to easily define the workflow for each application, and is compatible with Tecan’s Magellan™ software package for more advanced data processing.

The Infinite 200 series has been specifically developed for absorbance applications with low volumes and high sensitivity. Used in conjunction with Tecan’s quartz-based NanoQuant Plate™, the system is capable of simultaneously measuring up to 16 samples from just 2 μl sample volumes.

<table>
<thead>
<tr>
<th>First microplate reader designed for 2 μl sample volumes</th>
<th>NanoQuant Plate for low sample volume measurements</th>
</tr>
</thead>
<tbody>
<tr>
<td>High sensitivity absorbance mode</td>
<td>Specifically developed instrument for absorbance applications with low volumes and high sensitivity</td>
</tr>
<tr>
<td>Unlimited flexibility for a wide range of biological assays and measurements</td>
<td>Infinite 200 can read 6- to 384-well plates, cuvettes and NanoQuant Plate with eight different detection modes</td>
</tr>
<tr>
<td>Modular and upgradeable instrument</td>
<td>The unique modular design allows researchers to tailor the instrument’s detection modes for their individual needs</td>
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</table>
Infinite® 200 NanoQuant

A powerful tool for nucleic acid applications

The Infinite 200 NanoQuant is the first microplate reader to be developed specifically for absorbance applications with volumes as low as 2 μl, and is the ideal solution for a broad range of applications including DNA- or RNA- quantification, quality control and labeling efficiency measurements.

The Infinite 200 NanoQuant is the first multimode microplate reader to be developed specifically for absorbance applications with low sample volumes. The instrument represents a simplified version of the standard Infinite 200, delivering excellent sensitivity, multiplexing capability and high format flexibility, and guaranteeing outstanding performance and a high rate of reproducibility.

The instrument is available with Tecan’s NanoQuant Plate™, a sensitive quartz optic that can measure up to 16 samples simultaneously from just 2 μl sample volumes, and detect DNA concentrations as low as 1 ng/μl. The NanoQuant Plate is compatible with multichannel pipettes and gives high measurement reproducibility. The plate offers quick and easy cleaning to reduce the risk of cross-contamination, and can even be cleaned in an ultrasonic water bath for improved cleaning efficiency. The NanoQuant plate is compatible with an 8-channel pipette for easy dispensing of the samples on to the 16 positions of the tool. The NanoQuant Plate is also available for standard Infinite 200 instruments.

The Infinite 200 NanoQuant reader is available with Quad4 Monochromators™ (Infinite M200 NanoQuant) that provide high wavelength accuracy for endpoint measurements over the entire spectral range, or with new 260 and 280 nm filters (Infinite F200 NanoQuant) with a UV-stable coating that provide exact central wavelengths and narrower bandwidths. The instrument can perform absorbance measurements with standard microplates (6- to 384-wells), as well as half-well 96-well plates, and is easy to run with the latest i-control™ software. This software features tools for rapid DNA/ RNA quantification, and includes application-oriented features, helping the user to run established methods with minimum manual intervention.

The Infinite 200 NanoQuant can be upgraded with the additional detection modes that are available with the standard Infinite 200 as required.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
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<tbody>
<tr>
<td>First microplate reader designed for 2 μl sample volumes</td>
<td>NanoQuant Plate for low volume measurements of up to 16 samples</td>
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<tr>
<td>Modular and upgradeable instrument</td>
<td>The unique modular design allows researchers to add additional detection modes as required</td>
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</table>
Infinite® F500

Top class filter-based detection

The Infinite F500 is Tecan’s most sensitive filter-based multimode microplate reader. This versatile and easy-to-use instrument is based on the latest technological developments to provide a multifunctional and modular detection system. It rapidly analyzes all your fluorescence- and luminescence-based assays at outstanding sensitivity levels, supporting a wide variety of measurement modes and functions.

The fast and sensitive Infinite F500 is suitable for a wide range of measurement modes routinely used in drug discovery, life sciences and academic research institutes, including top and bottom reading fluorescence intensity, absorbance, luminescence, fluorescence polarization (FP), fluorescence resonance energy transfer (FRET), time-resolved fluorescence (TRF) and TR-FRET assays.

The Infinite F500 is capable of reading 6- to 1,536-well microplates and supports a broad range of microplate-based detection assays, such as selected biomolecular screening assays, enzymatic assays, reporter gene assays, molecular binding studies, calcium-based assays, TR-FRET-based assays and flash luminescence measurements in combination with optional injectors.

Low weight filter slides allow very fast switching between excitation and emission filters and the programmable filter slides with electronic chips facilitate the filter definition.

The basic configuration offers top-reading fluorescence intensity (UV/VIS), TRF and absorbance measurements, as well as shaking, temperature control and automatic Z-focusing in all top-reading modes to improve the measurement quality for different plate formats/well shapes and low sample volumes. Additional measurement options include fluorescence intensity bottom (UV/VIS), fluorescence polarization, TR-FRET, luminescence, 1,536-well top optics, injectors and barcode identification.

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<table>
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<tr>
<th>Excellent sensitivity and speed</th>
<th>High-end, modular, filter-based microplate reader for fluorescence, absorbance, luminescence, FRET, TRF and TR-FRET measurements</th>
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<tr>
<td>High speed switching between filters</td>
<td>High speed switching between excitation and emission filters with programmable, low weight filter slides</td>
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<tr>
<td>Optional integrated injectors</td>
<td>Up to two injectors can be integrated into the instrument to facilitate rapid reaction measurements</td>
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Infinite® M1000

Top class performance with premium Quad4 Monochromators™

The Infinite M1000 is Tecan’s multimode, premium Quad4 Monochromators-based flagship microplate reader, specifically designed to offer outstanding flexibility and performance for demanding applications in drug discovery, life sciences and research.

The Infinite M1000 offers top-of-the-range quality and performance with robust and innovative new technology, and is the successor to Tecan’s high performance Safire2™ microplate reader. It has been specifically designed and built with the highest quality components and detection modules to ensure optimum performance, robustness and innovation for even the most demanding researchers in drug discovery, the life science industry and advanced research institutions. The high-end detection system gives excellent flexibility and performance through its next generation premium Quad4 Monochromators, and the platform’s modular concept allows upgrades to new detection modes at any time if further applications are required.

Apart from multi-channel absorbance measurements, the fully loaded platform offers you a wide range of detection modes such as fluorescence intensity top and bottom measurements, time-resolved fluorescence (TRF), fluorescence resonance energy transfer (FRET), time-resolved fluorescence resonance energy transfer (TR-FRET), fluorescence polarization (FP) and luminescence.

Tecan has introduced special on-board control functions for the Infinite M1000 that allow, for example, pre-programmed measurement workflows to be initiated at the touch of a button on the instrument itself, avoiding the need to go back to your PC in between workflows.

The Infinite M1000 has an optional state-of-the-art injector module, with variable volume and speed settings, that allow the use of up to two injectors for dispensing reagents to replace a manual pipetting step or trigger fast kinetic reactions in fluorescence, luminescence and absorbance modes.

The instrument can be easily combined with a stacker module for batch processing of up to 50 microplates. Alternatively, the Infinite M1000 can be fully integrated with an automated liquid handling workstation from Tecan’s Freedom EVO® series.

| Equipped with premium Quad4 Monochromators | Excellent performance for flexible wavelength selection and adjustable (fluorescence) bandwidth settings |
| Provides access to a wide range of detection modes and plate formats | Modular design, Z-focus capability and free definition of plate formats up to 1,536 wells |
| Optional injectors | Add-on injector module provides up to two injectors with adjustable volume and speed settings |
The Sunrise™ is a flexible absorbance reader for 96-well plates, ideal for numerous applications in diagnostic, pharmaceutical and research laboratories. Its sophisticated design features a 12-channel optical module which ensures fast measurements and high quality results.

- Directive 98/79/EC-IVD
- 21 CFR Part 11

The Sunrise measures absorbance for a range of microplate-based assays, including enzyme immunoassays and kinetic assays. This flexible reader measures a 96-well plate in up to six seconds, features advanced temperature control up to 42 °C, and uses a four-position, six-position or a gradient filter for wavelength selection.

The Sunrise is designed to meet Directive 98/79/EC-IVD, and has a compact and space-saving design which can easily be integrated into robotic systems such as the Freedom EVOlyzer®.

A new mini-PC* interface offers user-friendly data processing through Tecan’s Magellan™ software, for straightforward instrument control and office tasking.

Alternatively, Magellan can be used via the color touchscreen option of the Sunrise reader to provide PC-independent instrument control and data analysis.

Magellan has been designed to meet the FDA regulation 21 CFR part 11, and offers comprehensive data reduction and plate-to-plate QC, as well as user administration, electronic records and electronic signatures.

Before any measurements are taken, a self-check system ensures that all major components of the Sunrise reader are fully functional. An optional QC-Pac2 package allows periodic checking of reader function and an IQ/OQ package is available to document instrument qualification results.

*mini-PC not included

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<table>
<thead>
<tr>
<th>Intuitive interface via mini-PC</th>
<th>Cost-effective solution for data reduction and office tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced 12-channel optics</td>
<td>Combines speed and sensitivity by processing 12 wells in parallel</td>
</tr>
<tr>
<td>Magellan software tutorials</td>
<td>Walk-through examples help you get started quickly</td>
</tr>
<tr>
<td>QC-Pac2 and IQ/OQ package available</td>
<td>Easy-to-use, documented performance testing</td>
</tr>
<tr>
<td>Three year-warranty</td>
<td>Low running costs via proven quality</td>
</tr>
</tbody>
</table>
The HydroFlex 3-in-1 plate washer provides increased productivity and sparkling results by accelerating key washing processes for a range of applications including:

- ELISA washing with online process control
- Gentle washing of cell-based assays
- Washing of assays using magnetic beads
- Automated vacuum filtration of assays using non-magnetic beads and PCR clean-up
- Washing of protein arrays spotted into the wells of a microplate

Its outstanding control system sets new standards for plate washing, with options including a process control manifold that monitors overflow wash steps online, and a liquid level detection system to monitor filling levels in wash buffer and waste bottles.

Very low residual volumes (less than 2 μl per well) and multiple aspiration points for flat-bottom wells ensure consistent, high quality washing.

The system offers tuneable wash parameters to allow washing of ELISA assays and cells, with a gentle drop-wise dispense mode and adjustable aspiration positions to minimize cell detachment, even with weakly adherent cell lines. This flexibility also allows complex washing protocols, such as those required by multiplexed assays using magnetic beads.

The instrument is easily operated as a stand-alone instrument with its built-in keypad, or using the intuitive HydroControl™ software. It fulfils user administration requirements, including electronic records and signatures, necessary to meet the FDA regulation 21 CFR part 11. Additionally, the HydroFlex configured for ELISA washing has been designed to meet Directive 98/79/EC-IVD.

<table>
<thead>
<tr>
<th>Advanced wash monitoring system</th>
<th>Process safety and traceability controlled online</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proven reliability</td>
<td>Quality benchmark MTTF-value of over 40,000 plates</td>
</tr>
<tr>
<td>Tuneable wash parameters</td>
<td>Simplified ELISA washing and gentle cell washing</td>
</tr>
<tr>
<td>Advanced magnetic bead washing</td>
<td>Ready for multiplexed assays using magnetic beads</td>
</tr>
<tr>
<td>Upgradeable application modules</td>
<td>Ready for new application trends, via cost-effective updates of installed instruments</td>
</tr>
</tbody>
</table>
The solution for high throughput washing of ELISA assays

The 96PW is a high performance 96-well microplate washer that gives you the best of both worlds, high throughput and outstanding washing efficiency. The 96PW processes all wells of a 96-well microplate simultaneously, dramatically reducing the total processing time to just a couple of seconds. With its excellent washing performance and reliability, the 96PW is the ideal choice for research applications requiring higher throughput.

The 96PW’s sophisticated design incorporates 96 aspiration and 96 dispensing needles within a single wash-head, allowing the simultaneous processing of all wells of a 96-well plate. This high-end approach provides excellent wash performance and reduces wash times of 96-well plates to just a couple of seconds. With a dispensing accuracy CV of less than 2% over the whole plate, and a minimum residual volume of less than 2 μl per well, the 96PW is an excellent choice for a range of research applications.

For process control, the 96PW is equipped with a bubble sensor system for automated detection of air bubbles in the feeding line. Furthermore, the wash-head of the 96PW is fitted with an aerosol shield to protect the user from potentially infectious aerosols during the wash procedure.

The 96PW provides full control over speed settings for dispensing and aspiration steps, as well as wash-head positions for research applications to allow the fine-tuning of critical wash parameters. The built-in keypad provides an easy-to-use interface for programming and controlling the 96PW, and an additional on-board memory allows the storage of up to 20 wash protocols. For hassle-free cleaning, the 96PW is equipped with easy-to-use, pre-defined rinse modes ensuring reliable daily operation.

<table>
<thead>
<tr>
<th>Sophisticated wash-head design</th>
<th>High throughput washing of all 96 wells in parallel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated process control</td>
<td>Air bubble sensor to detect when wash buffer bottle is empty</td>
</tr>
<tr>
<td>Aerosol shielded</td>
<td>User protection during wash procedure</td>
</tr>
<tr>
<td>Pre-defined cleaning protocol</td>
<td>Easy maintenance and reliable operation</td>
</tr>
</tbody>
</table>
Power Washer 384™

Ultra-fast processing of 96- and 384-well microplates

The Power Washer 384 is Tecan’s high performance washer for 96- and 384-well microplates. It sets new standards for performance and application flexibility by combining ultra-fast processing with excellent handling of enzyme- and cell-based assays in a single, compact instrument. The robust and reliable washer is easy to control using its integrated keypad or with the WinWash™ plus software.

The Power Washer 384 is ideal for enzyme immunoassays and cell-based assays, in either 96- or 384-well microplate formats. It has advanced wash-heads for simultaneous processing of all wells in either format, reducing the overall plate processing time to just a couple of seconds and enabling maximum throughput.

Additionally, the PW384 is fitted with an aerosol shield to protect the user from potentially infectious aerosols, and productivity is further increased by automated switching between up to three different buffers.

Wash parameters such as dispense and aspiration speed, vertical aspiration position and vacuum level can be fine-tuned to ensure the best results for your application using the simple WinWash plus package, and up to 20 different washing programs can be stored.

The Power Washer 384 is fully compatible with Tecan’s Freedom EVO® liquid handling workstations and the Connect™ microplate stacker system. Alternatively, the washer can be operated as a stand-alone instrument and is straightforward to program using the integrated keypad.

The instrument is easy to maintain and comes with fully automated cleaning procedures, ensuring high reliability. To further improve walkaway time and process security, the instrument can be fitted with options including large volume bottles and liquid level control for both buffer and waste bottles.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Sophisticated wash-head design</td>
<td>Fast parallel washing of all wells for both 96- and 384-well plate formats</td>
</tr>
<tr>
<td>Integrated application flexibility</td>
<td>No hardware change needed to switch between applications such as ELISA and gentle cell washing</td>
</tr>
<tr>
<td>Automated switching between three buffers</td>
<td>Increased productivity and minimized user error</td>
</tr>
<tr>
<td>Aerosol shielded</td>
<td>User protection during wash procedure</td>
</tr>
<tr>
<td>Pre-defined cleaning protocol</td>
<td>Easy maintenance and reliable operation</td>
</tr>
</tbody>
</table>

www.tecan.com/384pw Readers & Washers / Microplate washers
On-the-spot, automated Western Blot analysis

The ProfiBlot 48 is an automated Western Blot analyzer capable of processing up to 48 strips per run, and is used in clinical diagnostics for applications, such as the confirmation of infectious and autoimmune diseases, as well as for screening of allergies.

Directive 98/79/EC-IVD

The ProfiBlot 48 provides reliable, simple, and fully automated Western Blot analysis, for example for the confirmation of infectious and autoimmune diseases, as well as allergies. The system has been designed to improve safety and reliability, and has been designed to meet Directive 98/79/EC-IVD.

The entire assay is performed in a disposable tray within an enclosed environment to minimize human exposure to potentially infectious samples.

Product highlights include:
- Automated processing of up to 48 samples per run
- Fast washing of three assay strips in parallel for high throughput
- Controlled timing also for short incubation steps
- On-board operation and BlotWare™ software for easy programming
- Color-coded reagent delivery system for up to seven fluids
- Reagent saving feature minimizes dead volumes and running costs
- Auto-calibration of dispense volumes eliminates tedious manual procedure
- Separate collection of toxic and biohazardous waste minimizes waste treatment costs
- Pre-defined cleaning protocols for easy maintenance

The ProfiBlot 48 is easily pre-programmed using BlotWare PC-software or the on-board keypad. Dispense volumes, channel selection, shaking speed and wash parameters can be arranged in any combination within a protocol, and up to 20 different methods can be stored on board. Once programming is complete, the PC can be disconnected and the ProfiBlot 48 will perform the assays under stand-alone operational conditions.

You can find more information about our ProfiBlot trays on page 184.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Advantage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parallel washing of multiple assay strips</td>
<td>Increased throughput and good reproducibility</td>
</tr>
<tr>
<td>Separate collection of toxic and biohazardous waste</td>
<td>Minimized waste treatment costs</td>
</tr>
<tr>
<td>Pre-defined cleaning protocol</td>
<td>Easy maintenance and reliable operation</td>
</tr>
<tr>
<td>Auto-calibration of dispense volumes</td>
<td>Rapid procedure without tedious weighing steps</td>
</tr>
</tbody>
</table>
Connect™ microplate stacker

Walkaway processing for microplate readers and washers

The Connect microplate stacker system offers fast and reliable, walkaway batch processing for many Tecan readers and washers. Connect is easy to use, and can be easily added to existing stand-alone instruments for rapid loading of microplates.

Connect provides a simple and effective solution for batch processing with many of Tecan’s readers and washers, improving throughput and minimizing the need for manual intervention.

The module is very easy to use and, after an initial calibration run, requires just a single click of the mouse to initialize a batch. Microplates are delivered to the host instrument quickly and smoothly every time, and throughput is scalable according to application needs with a selection of stacks for 30 to 50 plates per run.

Connect is designed to offer easy cleaning and maintenance, minimizing downtime and manual intervention. Connect is also fully compatible with the Te-Stack™ module, using the same stack system, to eliminate the need for tedious manual unstacking and re-stacking of plates. Simply remove the cassette from Te-Stack and slide it into Connect.

A barcode reader is also available for positive microplate identification, as well as a very simple and shatter-proof dark cover for protection of light-sensitive samples.

Connect is compatible with the following Tecan readers and washers:
- Infinite® 200 series microplate readers
- Infinite F500 microplate reader
- LS Reloaded™ laser scanner device
- PW 384™ microplate washer

<table>
<thead>
<tr>
<th>Selection of stacks allowing 30 to 50 plates per run</th>
<th>Scalable throughput according to application needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optional light protection shielding for plate stacks</td>
<td>Protection of light sensitive assays during batch processing</td>
</tr>
<tr>
<td>Easy teaching mechanism</td>
<td>Reliable operation</td>
</tr>
<tr>
<td>Compatibility with Te-Stack columns</td>
<td>Intersystem compatibility for easier automation</td>
</tr>
</tbody>
</table>
The new generation of multi-purpose, high resolution microarray scanner

The PowerScanner provides an ozone-protected environment for your valuable open platform microarrays, and offers state-of-the-art resolution, sensitivity, accuracy and reliability for automated processing of up to 48 slides in one run.

As the new flagship of Tecan’s ‘microarray suite’ range, the PowerScanner is a compact, high resolution microarray scanning system. This next generation, automated microarray scanner provides an ozone-protected 48-slide magazine and offers image resolution from 2 to 40 μm for general purpose analysis of regular and ultra-high density microarrays of nucleic acids, proteins and tissues, using transparent, opaque or reflective substrates. The system’s integrated performance and alignment calibration functions, its low fluorescence detection limit, and low intra- and inter-array CVs, represent a quality benchmark in the microarray industry.

The compact slide loader provides easy-to-use, automated scanning and analysis, with scan parameters optimized for each slide. The intuitive GUI offers fast access to scan definitions and online data display, and the system’s input and output data formats are compatible with almost all major brands of microarray products, offering you industry-leading performance for all your scanning applications.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone-protected 48-slide magazine</td>
<td>Automated batch processing without the risk of ozone interference leading to biased results</td>
</tr>
<tr>
<td>Industry benchmark</td>
<td>Industry-leading performance with built-in calibration, low detection limits, high resolution and reproducibility</td>
</tr>
<tr>
<td>Individual optimization for each slide</td>
<td>Scan parameters are optimized every time to ensure reliable, high quality results for all types of glass slides</td>
</tr>
</tbody>
</table>
Flexible automated microarray scanner

The LS Reloaded laser scanner provides remarkable flexibility and reproducibility for a wide range of microarray applications and format sizes. With its automation-ready design, the LS Reloaded scanner greatly accelerates fluorescence laser scanning.

Aided by the built-in Array-Pro® Analyzer software, the LS Reloaded scanner enables unlimited image batch analysis, increasing throughput and multiplexing capabilities for scanning microarrays and other formats to offer savings in both time and resources.

The instrument provides every conceivable image analysis tool a researcher might need to achieve maximum signal / noise ratios, reproducible results and quantitative accuracy. The comprehensive user interface also allows customized formats and methods which cannot be achieved with standard microarray scanners.

Designed with automation and high throughput in mind, the LS Reloaded scanner has a wealth of features including:

- Parallel dual-channel detection to minimize run-time
- Up to four excitation lasers and 20 emission filters
- The ability to handle many different sample formats – slides, microplates, membranes, gels, blots, colony plates and micro-channel chips
- A pre-autofocus system which automatically compensates for position and height in variable samples
- Three pinhole settings to provide better background suppression in thin samples
- A patented four-slide holder to allow safe and easy slide loading, and automatic sample loading from stacking devices, for scalable throughput for batch processing of up to 200 slides or 50 microplates
- Automated performance and quality control with built-in LaserCheck™ tool
- Automatic gain control to balance fluorescence signal levels between scans within a batch
- Adjustable angle of incidence of laser beam to enable evanescent resonance scanning of up to two dyes
- Automatic barcode reading of slides to ensure sample tracking

<table>
<thead>
<tr>
<th>Comprehensive user interface and broad functionality</th>
<th>Allows customized formats and methods which cannot be achieved with standard microarray scanners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automated sample loading and scanning parameter optimization</td>
<td>Save resources and time for maximum throughput</td>
</tr>
<tr>
<td>Up to four lasers housed in a single system</td>
<td>Ensures compatibility with a wide range of dyes and multi-dye microarray technologies</td>
</tr>
<tr>
<td>Barcode scanning and operation quality control kit</td>
<td>Enhanced process security to ensure optimal performance</td>
</tr>
</tbody>
</table>
HS 4800™ Pro and HS 400™ Pro hybridization stations

Ultimate quality and reproducibility for your microarrays

The HS Pro series of hybridization stations represents the very latest technology for performing fully automated, highly sensitive and reproducible processing of single- and multi-segmented microarray slides. The HS 4800 Pro and HS 400 Pro hybridization stations provide highly consistent and reliable results from sensitive microarray experiments, enhancing productivity in microarray laboratories and helping to maximize the value of genomic and proteomic research.

The HS 400 Pro is the ideal instrument for small to medium laboratories, while the HS 4800 Pro offers higher capacity (up to 48 slides per run) to meet even the most demanding throughput requirements. The systems are designed for full automation, from pre-hybridization and on-board denaturation to automatic slide drying with OSND™ (on slide nitrogen drying) technology, ensuring maximum walkaway time. The unique ABS™ (active bubble suppression) system minimizes bubble formation during hybridization, helping to eliminate artefacts and enhancing data quality.

Other features of the HS 4800 Pro and HS 400 Pro include:

- Chambers of different sizes for compatibility with common microarray formats
- Low chamber volume to help save precious samples
- Dual chambers allowing fully automated processing of two independent sub-arrays per slide
- Novel QuadChamber™ fourfold segmented chamber for fully automated processing of microarrays
- Total elimination of cross-contamination between segments
- Up to six liquid agitation modes including modes for viscous hybridization buffers
- Up to three different temperature protocols run in parallel (HS 4800 Pro)

The HS 400 Pro and HS 4800 Pro hybridization stations offer outstanding performance in a variety of microarray research applications:

- **Genomics** – gene expression profiling, gene regulation (ChIP), array-based comparative genomic hybridization (aCGH) and microRNA profiling
- **Proteomics** – processing of protein, peptide and antibody arrays
- **Other applications** – semi-automated in situ hybridization (ISH) and fluorescence in situ hybridization (FISH).

**Fully automated hybridization**
Processes from pre-hybridization, to bubble-free hybridization and on slide nitrogen drying with OSND

**High format flexibility**
Single, dual and QuadChamber options are easily interchangeable.
No cross-contamination between the sub-arrays.

**Improved reproducibility**
Active bubble suppression minimizes artefacts for superior quality data
Sample Management

Our REMP products allow easy management of libraries containing hundreds to millions of chemical compounds or biological samples. These fully automated, scalable sample storage and retrieval systems improve the efficiency and safety of sample handling, and can be integrated with our automated liquid handling products. With our range of cutting-edge REMP technological devices, consumables, software and services, we can improve the quality and workflow of all your laboratory applications.

The products in this section are Research Use Only/scientific instrumentation/general purpose laboratory equipment. Not for use in human clinical or in vitro diagnostic procedures.
REMP Mid-Size Store™ (MSS) and Large-Size Store™ (LSS)

Powerful sample management on an industrial scale

Compound management laboratories in the life science and biotechnology industries must have reliable, robust and user-friendly storage systems to cope with the vast numbers of stored samples. Tecan’s fully automated REMP LSS and MSS storage and retrieval systems ensure high quality management of high quantities of samples, and are scalable for customer needs.

The REPM MSS and LSS are complete storage systems offering reliability and quality for fully automated sample management, and the ability to adapt to ever-changing compound numbers and have throughput according to your laboratory’s requirements.

The MSS is a robust, industrial scale sample store with one aisle and one robot. Its standard size fits most existing laboratory facilities, and the length of the store can be selected according to capacity requirements. The LSS offers larger-scale sample management and, depending on capacity and throughput requirements, can be built with one or two aisles, each with one or two robots. The height of the system can also be adjusted according to available space.

The REPM store robot is a sophisticated, moving workstation that pulls storage racks out of shelves onto the robotic platform, from where the required vials, tubes, etc. are moved to the REPM transfer racks. This system minimizes the number of freeze-thaw cycles by only delivering the requested samples.

The system can be configured to work with a variety of sample storage formats, including microplate racks, mini-tube racks, glass vials, any of the REMP Tube Technology™ formats or a combination of formats. Samples are easily managed with the Sample Control Software and REMP Sample Administration System™ (SAS).

Other MSS and LSS features include:

- Input-output buffer (IOB) to hold requested transfer racks at storage temperature until removed by the operator
- Cooling systems for typical storage temperatures (-20, -5 and +4 °C)
- Built-in dehumidifier units
- Optional air filter systems
- Maintenance rooms, providing a convenient climate for human operators to maintain robots.

<table>
<thead>
<tr>
<th>Reliability</th>
<th>Redundant cooling system to support storage and retrieval of millions of samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexible</td>
<td>Compatible with REPM’s tube technology and other SBS-footprint compliant consumables or vials.</td>
</tr>
<tr>
<td>Cherry-picking inside storage environment</td>
<td>Reduces freeze-thaw cycles to a minimum by only delivering requested samples</td>
</tr>
<tr>
<td>Sophisticated technology</td>
<td>Many successfully operating installations worldwide. References can be given on request</td>
</tr>
</tbody>
</table>
The REMP SSS brings the proven sample storage and retrieval technologies used by the REMP Mid-Size Store™ and Large-Size Store™ to smaller research laboratories. The compact system is easy to install and can handle samples in tubes, including the REMP Tube Technology consumables, or microplate formats.

Using REMP Tube Technology consumables, the SSS’s integrated unique REMP Tube Punching Technology is able to directly transfer individual tubes from storage tube racks into delivery tube racks for collecting and reformatting. This technique is faster and more reliable than conventional pick-and-place methods, and greatly reduces handling errors because the transfer is performed by a single axis movement. This cherry-picking of individual tubes is performed within the environmentally-controlled storage system, eliminating the need for multiple freeze-thaw cycles and reducing the potential for cross-contamination or dilution effects. The capacity of the SSS is also scalable by the addition of extension units, should your storage requirements increase.

The SSS can be operated as a stand-alone system, where samples are loaded and unloaded manually, or it can be integrated with any compatible automated liquid handling system, such as Tecan’s Freedom EVO® workstations. It is easily controlled using PC-based software and is compatible with the REMP sample tracking using an Oracle®-based database provides enhanced process security, and it can also be integrated with other software via REMP’s Open Data Interface web services.
REMP Plate Sealing instruments

Uniform sealing quality for all throughput needs

A range of plate sealing instruments is available to provide laboratories with a reliable and secure means of heat-sealing numerous types of labware, offering ease of use and consistent high quality sealing.

Each model of plate sealer is designed with similar components to allow control of sealing temperature, time and pressure, ensuring the same high quality seal for any type of labware. Three models are available to suit any throughput requirements and bench space, including:

**REMP EasySealer™** – A compact, semi-automated instrument designed for low throughput applications and limited bench space.

**REMP Portrait Heat Sealer™** – Geared towards users with moderate throughput, this device can be integrated into automated workflows on either Freedom EVO® workstations or third party robotic systems.

**REMP Stacking Heat Sealer™** – Capable of fully automated sealing of up to 50 standard microplates in less than 15 minutes, this instrument is ideal for users with high throughput requirements. This efficient, self-contained device incorporates an integrated plate stacking system to maximize walkaway time.

A variety of REMP Thermo-Seal consumables are available for use with the entire range of the plate sealing instruments, including both pierceable and removable aluminum foil seals. Most of the range is resistant to DMSO and other common solvents*, and can withstand temperatures ranging from -80 °C up to 120 °C. In addition, a dual-layer laminate Clear Thermo-Seal is also available, offering very good optical characteristics to allow photometric assays without removing the seal.

*For specific solvents please contact your local sales office.

---

**Temperature, time and pressure controlled**  Ensures consistent high quality sealing

**ANSI/SBS-format compatible**  Compatible with virtually all ANSI/SBS consumables including microplates, half-well plates and deep-well plates

**Range of consumables**  Various Thermo-Seal consumables are available to suit your application
REMP Tube Sealing instruments

Quality sealing for various throughputs

The complete range of tube sealing instruments offers researchers a unique, efficient and secure means of storing samples using the REMP 384 or 96 Tube Technology™ consumables. The proven REMP Thermo-Seal heat-sealing technology offers numerous advantages over other sealing and capping methods.

The REMP range of Cutter Sealer Punchers (CSPs) meets various throughput needs and space constraints, and each model is designed with similar components, allowing for the control of sealing temperature, time and pressure to ensure that each tube is securely and consistently sealed to the same high quality. The instruments use Pierceable Thermo-Seal, which is resistant to DMSO and other solvents*, and can withstand storage temperatures from -80 °C to 120 °C.

The REMP CSP384-LT™ and REMP CSP96-LT™ are compact and easy-to-use, semi-automated instruments designed for low throughput sealing applications, using 384 and 96 Storage Tube Racks respectively. Storage Tube Racks are sealed using the REMP EasySealer™, then placed into the CSP384-LT or CSP96-LT for die-cutting to produce individually sealed tubes.

The REMP CSP384-RS™ and REMP CSP96-RS™ are designed for automated sealing of a large number of Storage Tube Racks, for users with high throughput needs. The CSP384-RS and CSP96-RS offer researchers reliable and secure storage of their current sample tubes while keeping pace with the influx of new sample tubes. The CSP384-RS and CSP96-RS are equipped with integrated stacking systems to allow sealing of up to 38 and 27 Storage Tube Racks respectively, for maximum walk-away time.

*For specific solvents please contact your local sales office.

<table>
<thead>
<tr>
<th>Individually sealed tubes</th>
<th>Compatible with REMP 96 and 384 Tube Technology, producing racks of individually sealed tubes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature-, time- and pressure-controlled</td>
<td>Ensure consistent high quality reproducible sealing</td>
</tr>
<tr>
<td>Reduced dilution effects</td>
<td>Excellent sealing characteristics minimize moisture uptake and/or evaporation effects during storage</td>
</tr>
<tr>
<td>Throughput matching</td>
<td>Automated and semi-automated devices available to suit all applications and workflow requirements</td>
</tr>
</tbody>
</table>
REMP Seal Piercing Lids offer an inexpensive alternative to the traditional fixed-pin seal piercing heads, are available in 96-pin and 384-pin formats, and are compatible with the majority of microplates on the market. Compared with fixed-pin methods, the larger opening made by the Seal Piercing Lids allows easier access for liquid handling instruments to avoid tip coating damage and minimize sample carryover.

The Seal Piercing Lids minimizes the need for a wash / dry cycle, reducing the time it takes to pierce plates to just a few seconds. The Seal Piercing Lids can also be used as an effective temporary seal after piercing, offering a tight seal to avoid the risk of contamination, as well as minimizing the effects of moisture uptake or evaporation prior to further processing.

All plate piercing instruments are capable of piercing the seals of many different types of standard microplates and deep-well plates, as well as the 384 and 96 Storage Tube Racks.

The seal piercing family of instruments has been designed to match the requirements of your laboratory workflow, and includes:

**REMP Manual Plate Piercer™ (MPP)** is ideal for low throughput piercing applications, with a simple and easy-to-use lever-operated design.

**REMP Universal Plate Piercer™ (UPP)** uses a semi-automated piercing process to offer greater flexibility for laboratories with moderate throughput needs.

**REMP Automated Plate Piercer™ (APP)** is suitable for any throughput requirement and provides fully automated plate piercing. The APP can function as either a stand-alone instrument or be integrated into a robotic workflow to maximize laboratory throughput.

<table>
<thead>
<tr>
<th>Disposable Seal Piercing Lids</th>
<th>Enables rapid access to samples without fixed piercing tips for improved throughput and process security</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduced risk of contamination</td>
<td>Disposable Seal Piercing Lids eliminate cross-contamination associated with traditional fixed tip piercing methods</td>
</tr>
<tr>
<td>Improved liquid handling</td>
<td>Wells are completely opened to maximize well access, resulting in improved liquid handling</td>
</tr>
<tr>
<td>Reduced risk of evaporation</td>
<td>Seal Piercing Lids can act as temporary seals to minimize dilution and evaporation effects during processing</td>
</tr>
</tbody>
</table>
Rapid and easy access to individual samples

REMP Tube Technology™ offers a unique, efficient and unprecedented solution for managing and securing samples. It minimizes the risk of sample degradation arising from multiple freeze-thaw cycles by allowing rapid selection and arrangement of just the required samples. These samples can be capped and uncapped multiple times using either manual or automated devices of the capping / decapping family of instruments.

Unlike traditional capmats, REMP Capmat96 caps are designed to remain securely in place during freeze-thaw cycles or under elevated internal gas pressures. These caps can be easily and repeatedly removed and re-applied for access to samples. The capmat can be applied to either 300 or 900 μl tubes within a 96 Storage Tube Rack, using a simple, lever-operated REMP Manual Capmat Applicator™ (MCA).

To access samples, there is a choice of three reliable and straightforward instruments:

- **REMP MCD1™** single-position, pen-like manual capper / decapper for individual tubes.
- **REMP MCD8™** eight-position, lever-operated device which removes and applies caps from a row of eight tubes.
- **REMP ACD96™** fully automated simultaneous capping / decapping for all tubes within a 96 Storage Tube Rack. The ACD96 can temporarily hold caps during processing to minimize use of consumables, and can be used as either a stand-alone device or integrated into an automated workflow.

### Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimizes freeze-thaw cycles</td>
<td>Only required samples are cherry-picked and retrieved from storage, avoiding unnecessary freeze-thaw cycles</td>
</tr>
<tr>
<td>-80 °C compatible</td>
<td>Cap design optimized for low temperature storage, making it ideal for +4, -20 and -80 °C storage applications</td>
</tr>
<tr>
<td>Re-cappable upwards of 50 times</td>
<td>Ideally suited to low temperature multi-access applications</td>
</tr>
<tr>
<td>Fast decapping</td>
<td>The ACD96 is one of the fastest decapping devices on the market, with a cycle time of only six seconds</td>
</tr>
</tbody>
</table>
The TPM allows tubes to be cherry-picked at any time, leaving the destination tube racks within the storage environment until instructed otherwise. It can be used within a wide temperature range, from -20 °C to +30 °C and is the preferred technology for many applications, due to its reliable robotic handling and full traceability of every sample.

The TPM’s single-axis transfer technology is superior to traditional pipetting or pick-and-place methods, offering enhanced sample integrity by eliminating:

- Carryover effects
- Dilution effects
- Exposure to air
- Water uptake
- Unnecessary freeze-thaw cycles
- Disposable tips or wash cycles

The TPM can be easily integrated into fully automated systems or used as a stand-alone unit. Alternatively, equip the TPM with plate stackers or carousels, a barcode scanner and a manipulator robot to create a fully functional tube punching workstation with a scalable capacity, from just a few to hundreds of tube racks.

Small-scale automation of individual sample selection

The TPM is a compact, benchtop device for PC-supported selection of 96 and 384 format tubes, using REMP Tube Technology™. The TPM transfers tubes directly from storage tube racks into delivery tube racks, using a unique punching technique that is faster and more reliable than conventional pick-and-place methods. The TPM is fully compatible with REMP automated storage systems (LSS™, MSS™, SSS™), offering an ideal entry into the innovative Tube Technology format.

<table>
<thead>
<tr>
<th>Uses REMP Tube Technology</th>
<th>Compatible with all capped and sealed REMP Tube Technology formats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhanced system reliability</td>
<td>Single axis transfer directly from source to destination racks is more reliable than other cherry-picking technologies</td>
</tr>
<tr>
<td>Wide operating temperature</td>
<td>Can be operated at -20 °C within a REMP automated storage solution, minimizing freeze-thaw cycles</td>
</tr>
<tr>
<td>Optional integration</td>
<td>Can be used as a stand-alone device, or integrated into pipetting platforms and REMP automated storage solutions</td>
</tr>
</tbody>
</table>
The REMP Reatrix is a 2D DataMatrix™ scanner for REMP 96 Tube Technology™ consumables. The scanner rapidly reads the barcodes of 96 Storage Tube Racks and individual tube codes, providing live, on-screen results. The easy-to-use software provides reliable tube identification, sample tracking and redundant tube verification.

In addition to scanning the codes of individual tubes, row by row, the system also scans the code of 96 Storage Tube Racks, with an average read time of 13 seconds per rack, and results are displayed live on screen.

The scanner is easily operated with intuitive control software, and results are saved in ASCII text file format. The device can be connected to any PC with two RS232 serial ports, and can be operated as a stand-alone instrument or as part of a fully automated workflow.

REMP Reatrix™

Reliable tube tracking

The REMP Reatrix scanner reads the individual DataMatrix code on the base of each REMP 96-format tube for identification, verification and tracking of individual samples. The technology’s 10-digit numerical coding provides more than 10 billion code combinations, ensuring reliable sample tracking.

The scanner is easily operated with intuitive control software, and results are saved in ASCII text file format. The device can be connected to any PC with two RS232 serial ports, and can be operated as a stand-alone instrument or as part of a fully automated workflow.

REMP Tube Technology-compatible

Compatible with dot-coded REMP 96 Tube Technology tubes

Reliable tube identification

Can decode difficult and even partially damaged codes, using decoding algorithms and looped re-read functionality

Easy-to-use

Intuitive operation in both manual and automated modes
REMP Tube Technology consumables are individually sealed or capped tubes secured in specially designed tube racks, and are available in 96- and 384-tube formats. This technology offers numerous benefits, including:

- Minimizing sample freeze-thaw cycles
- Eliminating cross-contamination, dilution effects and exposure to air
- Reducing costs and faster processing than other cherry-picking methods

REMP Tube Technology consumables conform to several ANSI/ SBS microplate standards. The tubes are made of inert, medical-grade polypropylene, resistant to DMSO and most other solvents*, and can be used at temperatures ranging from ambient to -80 °C.

The unique tube transfer technology allows random, rapid access to individual samples, and greatly improves tube handling reliability. Tubes can be accessed and transferred under environmentally-controlled conditions within all REMP storage systems, or under ambient conditions using the REMP Tube Punching Module™. This technology is also ideal for sample re-formating for sample profiling, secondary hit confirmation and target-focused sub-libraries, as well as primary screening, genomics, forensics or other applications.

Tubes can be individually heat-sealed for optimal sample protection, and piercing lids are available to full open wells for reliable liquid handling using disposable tips. In addition, the REMP Reatrix scanner can be used to identify the DataMatrix™ code on each tube for redundant tube verification and sample tracking.

*For specific solvents please contact your local sales office.
Secure and reliable sample storage forms an integral part of many automated laboratory processes, and compatibility of storage solutions with existing robotic platforms is essential to high throughput workflows. The REMP Storage Plate 384 is a high density storage solution, and has square wells with a working volume of 110 μl and a maximal volume of 128 μl. Each well has a pyramidal well bottom designed to ensure easy sample retrieval, and a discrete raised rim to allow for effective heat sealing.

To maximize compatibility with your systems, the plates conform to standard SBS-format, and are manufactured from inert, translucent, medical-grade polypropylene material resistant to DMSO and most other solvents* used in storage and combinatorial chemistry. Plates are available in a range of colors to meet your storage requirements, and can be used at temperatures ranging from ambient to -80 ºC.

All plates are manufactured in ISO class 9 clean rooms and are available barcoded to offer maximum flexibility to your automated sample management.

*For specific solvents please contact your local sales office.
Heat-sealing is a proven technology offering a number of advantages over other plate sealing methods, including exceptional seal integrity, particularly at low temperatures, and greater resistance to solvents. Used with Tecan’s range of plate sealing instruments, this provides a quicker and more cost-effective method than other sealing systems, ideal for PCR and storage applications.

The REMP Thermo-Seal range of materials has been specially developed to offer superior performance under a range of conditions, for various applications. The absence of adhesives virtually eliminates the possibility of interference with the sample, and the rapid sealing time minimizes heating of samples during the sealing process, making REMP Thermo-Seal suitable for even temperature-sensitive samples, such as enzymatic reactions.

The REMP Thermo-Seal range includes:

- **Pierceable Thermo-Seal**  Aluminum foil
- **Removable Thermo-Seal**  Aluminum foil
- **Extra-durable Thermo-Seal**  Aluminum foil
- **Removable Thermo-Seal** for PS-plates  Aluminum foil
- **Clear Thermo-Seal**  Dual-layer laminate

Most of the range is resistant to DMSO and other common solvents*, and can withstand temperatures ranging from -80 ºC up to 120 ºC. In addition, the Clear Thermo-Seal offers very good optical characteristics to allow photometric assays without removing the seal.

*For specific solvents please contact your local sales office.

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<table>
<thead>
<tr>
<th>Range of materials</th>
<th>Most Thermo-Seals are available as removable or pierceable foils and are available in rolls for automated plate sealers or as sheets for manual sealing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exceptional seal integrity</td>
<td>Aluminum sealing foils offer excellent seal integrity and tightness characteristics that minimize moisture uptake and/or evaporation effects on samples during storage</td>
</tr>
<tr>
<td>Proven solvent resistance</td>
<td>Most Thermo-Seals are resistant to DMSO and other common solvents*, and can withstand temperatures ranging from -80 ºC up to 120 ºC</td>
</tr>
</tbody>
</table>
REMP SAS is a configurable and scalable sample management solution, and will meet your workflow requirements as they grow. The basic SAS package supports a range of hardware modules, from single manual stores and balances to a complete cluster of automated storage systems, and is capable of a number of essential sample storage and retrieval processes, including:

- Sample registration – suitable for solid and liquid samples, and able to be linked to chemical or inventory databases
- Solution preparation – can be linked to automated capping/decapping devices, automated weighing systems and manual weighing stations
- Plate production – interfaces with automated plate replication systems and a variety of pipetting and plate handling devices to produce daughter plates
- Sample ordering – performs sample ordering and check-out, selecting samples by names, synonyms or library names
- Sample inventory

REMP SAS can work with a variety of sample formats, including vials, microplates, tube racks and the REMP Tube Technology™ consumables. It provides full traceability of sample history, and its housekeeping functions include removal of obsolete samples, replacement of low content containers, and compression by defragmentation of partially used racks. User management features include definable access rights, with limits of order volumes and concentrations.
Components

Tecan’s name is synonymous with excellence in the world of OEM components. Our innovative and reliable Cavro® brand pumps, valves, robotic sample processors and consumables provide quality liquid handling for any instrument design, in almost any application within life science, clinical diagnostic and analytical chemistry laboratories. Tecan Cavro OEM components are designed and manufactured to the highest quality standards, including Directive 2002/95/EC - RoHS. You can have confidence in the performance of our products.

All products described in this section are components that will be further integrated in a system.

mini-sample processors
syringe pumps
liquid handling modules
stepper motor-driven valves
stepper motor-driven pumps
low maintenance
high performance
reliability
flexibility
ruggedness
A new level of accuracy and precision

The Cavro Centris Pump is a compact syringe pump module for use in OEM laboratory instruments, setting new standards of accuracy, reliability and precision. It offers a broader working volume range from a single syringe size than comparable pumps, enabling you to do more with one pump than ever before.

The Cavro Centris Pump's simple and rigid mechanical design, with fewer moving parts, ensures reliability, so the pump is relatively maintenance-free and expensive downtime is kept to a minimum. With precision-paired ceramic parts, there is almost no resistance or wear, resulting in unbeatable longevity compared to conventional syringe pumps.

The Cavro Centris Pump achieves superior accuracy and precision through its elegant drive mechanism, and features long-life ceramic components, unique in a syringe pump of this design. The pump's high efficiency stepper motor and drive mechanism enable excellent liquid handling performance at small volumes, yet still have the necessary speed and power to achieve high volume performance. In addition, programmable flow rates from under 5 nl/sec up to 5 ml/sec ensure performance across a broad application range. The pump is available with syringe volumes of 250 μl, 1.25 ml and 5 ml, with various valve options.

Customized parts and optimized motor drive electronics have resulted in quiet operation, especially for slow dispense applications. The compact dimensions of the Cavro Centris Pump give it the smallest footprint of any OEM syringe pump, and the optional mounting kit provides maximum flexibility for easy hardware integration.

The Cavro Centris Pump is a UL-recognized (standard UL 61010A-1) component and bears the UL designation label.
The pump has been designed for ease of integration and low maintenance, for shorter time to market and greater customer satisfaction. Excellent accuracy and precision is achieved over a wide range of speeds, with pump resolution of 6,000/48,000 increments per stroke.

The new hardware and firmware automatically detects the communication interface (RS 232, RS 485, or CAN) and communication protocol (OEM, Data Terminal). The Cavro XLP 6000 Pump also allows the user to reconfigure the pump to run different valve types, at different baud rates, and the two digital inputs and three outputs for TTL level signals can be used for synchronization with external devices. Multi-pump communication is possible through RS 485 or CAN interface, addressing up to 15 modules through a single communication.

The Cavro XLP 6000 Pump family of products is UL-recognized (standard UL 61010A-1) and bears the UL designation label.

The most versatile 60 mm stroke OEM syringe pump

The Cavro XLP 6000 Pump is a programmable 60 mm stroke syringe pump that can be used as a stand-alone moduled, or controlled by an external computer or microprocessor, to automate pipetting, diluting and dispensing operations in the 5 μl to 25 ml range.
The Cavro XCalibur Pump is a compact, high performance syringe pump designed for precision liquid handling operations in the 5 μl to 5 ml range. It is programmable to operate as a stand-alone module, or controlled by an external computer or microprocessor, to automate pipetting, diluting and dispensing operations.

The pump’s hardware and firmware automatically detect the communication interface (RS 232, RS 485, or CAN) and communication protocol (OEM, Data Terminal). The user can also reconfigure the pump to run different valve types and different baud rates. The Cavro XCalibur Pump provides two digital inputs and three outputs for TTL level signals that can be used for synchronization with external devices. Multi-pump communication is possible through RS 485 or CAN interface, addressing up to 15 modules through a single communication.

The Cavro XCalibur Pump family of products is UL-recognized (standard UL 61010A-1) and bears the UL designation label.
The design of the Cavro XMP 6000 Pump offers a compact solution for parallel liquid handling applications, minimizing logistical restrictions in your instrument design. By choosing Cavro brand pumps, your instruments will benefit from the long life and low maintenance requirements of our robust and reliable pumps, helping to maintain your reputation and, ultimately, leading to greater customer satisfaction.

The Cavro XMP 6000 Pump is available with 100 μl, 250 μl, 500 μl, 1.0 ml, 2.5 ml and 5.0 ml syringe volumes, and features individual valve control per channel. The pump has 6,000 / 48,000 increment resolution per stroke to provide a flexible and cost effective solution for increased liquid throughput.

The pump is offered with either a standard inlet / outlet valve configuration, or a bypass valve option to allow rapid flushing, charging and priming of the system with external liquid handling units. This offers significant time gains in set-up and maintenance operations, without excessive syringe pump operation or loss of liquid handling precision.

The Cavro XMP Pump family of products are UL-recognized (standard UL 61010A-1) components, and bears the UL designation label.

Economical parallel liquid handling

The Cavro XMP 6000 Pump is a 60 mm stroke OEM multi-channel syringe pump for liquid handling applications in the 10 μl to 5 ml range. The unit is available in 2-, 4-, 6-, and 8-channel configurations, and is ideal for multi-probe liquid handling tasks, such as sample transfer, dilutions, mixing, reagent addition and plate re-formatting.
The Cavro XE 1000 Pump has been designed for liquid handling applications in the 5 μl to 5 ml volume range. This compact, lightweight pump has been designed for ease of integration, and uses an anodized cast aluminum frame for easy mounting onto a panel.

The Cavro XE 1000 Pump can communicate singly, or in a multi-pump configuration with up to 15 modules, through an RS 232, RS 485 or CAN interface. The pump also provides an auxiliary input and output for TTL level signals, that can be used for synchronization with external devices.

The Cavro XE 1000 Pump is UL-recognized (standard UL 61010A-1) and bears the UL designation label.

Compact, economical and easy to integrate

The Cavro XE 1000 Pump is Tecan’s entry level syringe pump. This rugged, low maintenance pump offers the lowest cost of ownership over the life of the product.

Good value without sacrificing robustness and reliability.

Compact dimensions allow for economical use of space.

Easy to integrate.
Continuous-flow diaphragm pump

The Cavro MiniWash Pump is a compact and easy-to-use continuous-flow diaphragm pump for fast system priming, tip washing or bulk fluid dispensing, with flow rates of up to 150 ml/min.

The module has many uses, including aspirating or dispensing fluids with a wash head (plate washing), rapidly pumping fluids through a dispense probe (probe washing), and as a pump for moving fluids in and out of an active wash station. The Cavro MiniWash Pump is controlled via a TTL signal from an output port, and up to four of the modules can be configured together using a special ribbon cable.
The Cavro Smart Peristaltic Pump is a compact 8-roller, single-channel unit for continuous flow applications, designed to provide highly reproducible flow rates with minimum pulsation. The Cavro Smart Peristaltic Pump has been designed to integrate easily into any liquid handling platform, and have auxiliary device inputs and outputs to facilitate integration.

The compact OEM pump module is stepper motor-driven, using a single 24 V DC power supply, and contains an optical encoder for initialization and step-loss detection. Head speeds range from 0.375 to 435 rpm. Tecan Cavro peristaltic pump heads are also available separately. The pump features PharMed® tubing and nylon barbs for long life of all fluid contact surfaces.

The firmware provides error reporting and other diagnostics to make troubleshooting easy. It is an intelligent device and can communicate singly or in a multi-device configuration of up to 15 modules, through an RS 232 or RS 485 interface. For both RS 232 and RS 485, baud rates of 9,600 and 38,400 are supported. The Cavro Smart Peristaltic Pump has both a DA-15 connector and an edge connector to handle power and communications.
Cavro® Omni Robot

Flexible liquid handling robotics component

The Cavro Omni Robot is a highly versatile general purpose liquid handling robotic component for a wide range of applications. The modular design of the Cavro Omni Robot is unique among laboratory automation components, and offers superior flexibility, making it easily configurable for many different customer needs.

The Cavro Omni Robot has flexible mounting options and a standards-based ethernet interface to allow easy installation, making it the ideal choice of OEM robotics component. The Cavro Omni Robot offers a high payload, which opens up a broad range of capabilities for automation solutions, such as grippers for plate transfer. Various combinations of lengths and orientations of all three axes are available and can be customized and assembled to order, ensuring that the robot has been built with the features you require to optimize your solution.

Compact linear motion slides provide high precision performance with smooth, linear movements. Industry-proven stepper motors and self-lubricating bearings add to the durability of the Cavro Omni Robot. The closed-loop positioning system provides you with the security and assurance of knowing exactly where the pipetting probe is located at all times. The simple design of the Cavro Omni Robot promises the same high levels of reliability and reduced maintenance that you are accustomed to finding in other Tecan Cavro products.

The Cavro Omni Robot is fully encased so that all working parts are hidden, providing a professional appearance. Custom colors can be chosen to match the look and feel of your product, as an option for OEM volume orders.
Cavro® Robotic Sample Processor (RSP)

Flexible OEM XYZ component

The Cavro Robotic Sample Processor is the perfect base unit to automate OEM liquid handling applications. It is flexible in size and configuration to meet a wide variety of application needs, and is available with a range of liquid handling options that can be configured to meet your requirements.

The module is available with one or two arms, liquid level sensing, and step-loss detectors on all axes. A variety of fixed and disposable probes, including a cap-piercing probe and an 8-channel probe head, are available to support virtually any application. The Central Control Unit (CCU) provides onboard handling of parameters like rack and tube positions, single point worktable calibration and arm collision avoidance. The Cavro Robotic Sample Processor is compatible with a wide variety of other Tecan Cavro components, allowing easy integration.

The component is self-contained, is easily integrated into any system, and features an RS 485 communication interface for control of auxiliary devices including dilutors, valves and peristaltic pumps. Labeling and paint finish can be customized to match the design of your product line or corporate design, as an option for OEM volume orders.

The component is controlled through an RS 232 communication port using low-level ASCII commands. Alternatively, the Cavro Express software package is available to provide higher level control and functionality.
Cavro® Mini Sample Processor (MSP Robot)

Automated assays and sample preparation

The Cavro Mini Sample Processor family of laboratory robots offers a complete line of liquid handling automation tools, including application development software for OEMs. The processors are available in two compact sizes, to suit a range of laboratory needs, and feature a rugged, dependable design.

Cavro Mini Sample Processors are available in standard or custom configuration, and are designed for easy integration with a variety of Tecan Cavro liquid handling modules and probe options, for excellent performance and reliability.

A modular construction and choice of one or two robotic arms make customization for specific sample handling applications quick and easy. Robotic arms are available with various probe options, including reusable Teflon®-coated probes, cap-piercing probes, a disposable tip option, and an 8-channel probe assembly.

The small footprint of the sample processors allows easy placement in most laboratory fume and laminar flow hoods, to give your customers more bench space. The instrument labeling and finish can be customized to match the design of your product line or corporate design, as an option for OEM volume orders.

Cavro Mini Sample Processors are suited to many applications, including:

- Genomics and proteomics research
- Compound discovery
- LC analysis/separation
- MS sample preparation
- Mother-daughter plate replication
- Sample injection
- General laboratory automation.

Short time to market.

Scaleable to specific applications.

Reduced risk in development.
Cavro® Fusion software

Command and operate all connected devices via your own PC

The Cavro Fusion software application gives users the ability to connect to and operate Tecan Cavro liquid handling modules easily on a Windows®-based PC.

This software is sold as a component for a system, and the intended use should not exceed the definition of Class I general purpose device.

The Cavro Fusion software includes both a graphical user interface (GUI) for beginners to perform discrete tasks, and a scripting environment for advanced users for writing automated scripts, bench testing, application testing and to enable on-site troubleshooting. The Cavro Fusion software automatically identifies the communications interface port to which your Tecan Cavro component is connected, and automatically recognizes the device.

Tecan’s software packages have been designed to complement and optimize the performance of your Tecan Cavro components. The software packages provide complete solutions to get the most out of the automation capabilities of your OEM components.
Intuitive software to simplify your robot integration

Cavro Express software has been designed to simplify integration of your robotic components, and provide convenient tools to speed up the development of software intended to control the Cavro Mini Sample Processor and Cavro Robotic Sample Processor robotic hardware and derivatives.

This programming tool uses Microsoft® Visual Basic® for Applications (VBA) and a convenient graphical interface to help define your worktable, select your liquid handling tools, and provide libraries of information such as liquid classes, ensuring that you get the results you need. This approach minimizes the effort required to make global changes, and reduces the risk of introducing inconspicuous mistakes that often require a significant debugging effort.

The object-oriented design means that the programmer does not have to re-invent code that is common to liquid handling applications, and both application and developer formats are available to meet individual needs.

Tecan’s software packages have been designed to complement and optimize the performance of your Tecan Cavro components. The software packages provide complete solutions to get the most out of the automation capabilities of your OEM components.

This software is sold as a component for a system and the intended use should not exceed the definition of Class I general purpose device.
Cavro® Integration Kit

Have your components running in minutes

The Cavro Integration Kit provides all necessary items for you to start evaluating Tecan Cavro components quickly and easily, letting you focus on operating the component, rather than how to connect it. Pumps and robots can even be run simultaneously, and you can command and operate all connected devices via a PC through the intuitive graphical user interface (GUI).

The Cavro Integration Kit includes a power supply, cables, communications interface (USB) and Cavro Fusion software, and is compatible with all current Tecan Cavro pumps, valves, robots and other components.

The kits are available in three configurations. The Basic kit operates up to three pumps; the Power kit is able to operate up to three pumps, or one RSP plus two pumps, and includes a Cavro RSP interface cable is also included. The Ethernet kit supports a single arm Cavro Omni Robot with up to two pumps.

In the Basic and Power kits, the communications interface and the power supply for your Tecan Cavro component are combined in the Cavro hub, which allows easy connection of your component through a USB port.

Compatible with all Tecan Cavro components.

Quick and easy to use.

Shortened time to market.
Economical modular valve for OEM instrumentation

Cavro Smart Valve devices have been designed to integrate easily into any instrument platform for liquid handling applications. The component is available in many valve configurations, from 3 to 12 ports.

The Cavro Smart Valve is a compact, stepper motor-driven valve module. It is an intelligent device that can communicate singly or in a multi-device configuration of up to 15 modules, through an RS 232, RS 485, or Controller Area Network (CAN) interface. For RS 232 and RS 485, baud rates of 9,600 and 38,400 are supported. For CAN, baud rates of 100K, 125K, 250K, 500K, and 1M are supported. Other features of the Cavro Smart Valve include device diagnostics, self-test and error reporting.

The module operates using a single 24 V DC power supply, and has both a DA-15 connector and an edge connector to handle power and communications.

The Cavro Smart Valve is available with a variety of plastic and ceramic valve configurations for chemical compatibility and long life, and supports a broad range of applications for chemical compatibility and long life.

The Cavro Smart Valve is a UL-recognized (standard UL 61010A-1) device and is built with components that meet the requirements set by the European Union’s Directive 2002/95/EC on the Restriction of Hazardous Substances (RoHS).
To streamline input and output

The Cavro Smart Input/Output Board provides an easy way to connect and control TTL level input/output ports. The microprocessor-driven PC board allows operation of a number of I/O ports from an external serial line.

The board uses the standard Cavro OEM communications protocol and includes 16 inputs, 16 outputs and four analog inputs. The Cavro Smart I/O Board is available as a PCBA module or integrated into a Cavro Mini Sample Processor-compatible mounting panel.

The board is programmable using our software:
- To expand input/output capability
- To add an additional control board for external devices
- To include device diagnostics and error handling

### Table: Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Compatibility</strong></td>
<td>Easy integration with all Tecan Cavro components</td>
</tr>
<tr>
<td><strong>Economical</strong></td>
<td>Helps expand input and output capability</td>
</tr>
<tr>
<td><strong>Reliable</strong></td>
<td>Built using extensive Tecan know-how</td>
</tr>
</tbody>
</table>
Cavro® Linear Option Board (LO Board)

Motor-drive electronics under your control

The Cavro Linear Option Board is a single-axis motor controller for one stepper motor, with both logic and motor-drive electronics on a single board.

Using the familiar Tecan Cavro command set, the board has inputs for one homing sensor and one step loss sensor, complete with additional auxiliary inputs and outputs.

Operating from a single 24 V DC power supply, the board is designed to be easily integrated into any electronic laboratory system, and includes device diagnostics, self-test and error reporting for full auditing and reporting functions.

The board is programmable through our software:
- For an additional driver board for external devices
- For absolute, relative or endless moves, with user-defined speed and acceleration
- For embedded command strings to operate without a host PC

<table>
<thead>
<tr>
<th>Compatibility</th>
<th>Easy integration to control all Tecan Cavro components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economical</td>
<td>Single board with both logic and motor-drive electronics</td>
</tr>
<tr>
<td>Reliable</td>
<td>Built using extensive Tecan know-how</td>
</tr>
</tbody>
</table>
Dependable Tecan quality

Tecan Systems offers a complete line of products and services to keep your OEM automation solution in tip-top condition during its life.

**Tecan Cavro valves**
The wide assortment of space-efficient Tecan Cavro valves has been designed to help to configure the pumping system to meet your needs. Valves made from different materials, including ceramic, KEL-F, PEEK, PPS and UHMWPE, are available for applications requiring longer life or higher pressures, or to provide the necessary chemical compatibility. Solenoid valves are also available for the multi-channel pumps.

![Cavro ceramic valves.](image)

![Cavro plastic valve.](image)

**Tecan Cavro syringes**
A full range of syringes has been specifically designed for Tecan Cavro OEM syringe pumps. These syringes are the heart of the pumping system and, combined with Tecan Cavro pumps, provide the superior performance that our customers have relied on for over 35 years. Maintenance kits, consisting of replacement seals and O-rings, help to keep your syringes in tip-top shape.

![Cavro ceramic syringes.](image)

![Cavro glass syringes.](image)
**Tecan fittings, tubing/tubing assemblies**
A variety of tubing options are available, and tubing material (including Teflon®), length, fittings and end-style can be customized to suit any application. Fittings come in 1/4-28 and M6 formats, and can be custom-labeled to help your tubing management.

**Tecan probes**
A range of probes are available to help you optimize your application, including wide bore, mid-range, small I/D, dual lumen, disposable tip, cap-piercing and 8-channel probes. Most of the probes are made of Teflon-coated stainless steel and have liquid detection capabilities.

**Tecan liquid handling disposable tips**
High quality LiHa disposable tips are available in 10 μl, 50 μl, 200 μl, and 1,000 μl, with or without filter. These tips have been manufactured to the highest standards for precise, reliable and safe pipetting, and are compatible with Tecan’s proprietary liquid level detection system (see page 179).

**Tecan racks**
Tecan racks are designed to hold vessels in position during automated processing. A variety of racks are available for tubes of various sizes, microplates (in portrait or landscape orientations), reagent containers, disposable tip carriers, deep-well plates and micro-centrifuge tubes. Custom racks are available for your proprietary liquid carriers.
Customer satisfaction is at the heart of all Tecan activities, and that’s why we are committed to excellence in the broad range of services, support and training we offer. With continued and rapid support from our highly skilled and experienced field service and application specialists, we can help you to protect your investment in Tecan products.

Services

Te-Care™
Service contracts
product support
training
Service provision is one of Tecan’s core competencies. Our certified and experienced service engineers deliver timely, efficient and high quality services to ensure that our customers around the globe receive the best return on their investment.

We maintain subsidiaries worldwide to ensure strong relationships with our customers and provide regulatory compliant, verified and validated value-added services.

We offer a comprehensive range of Te-Care services, including:

- Installation
- Calibration and validation
- Training
- Service contracts
- Preventive maintenance
- Upgrades
- Repair services
- Helpdesks
- Technical and application support
- Spare parts
- ... and more
Te-Care™ Service Contracts – designed to give you peace of mind

Tecan offers a flexible range of globally available Te-Care Service Contracts, designed to suit the needs of our customers in the life science research, forensics, clinical diagnostics and academic markets. Our service contracts help to ensure optimal reliability and lifetime of your Tecan system, and give you access to our broad network of experienced and knowledgeable certified field service engineers and application specialists.

Choose the contract that best suits your needs

Te-Care Complete Contract
- Optimizes the performance and uptime of your system, with regular maintenance
- Covers maintenance and repair
- Eliminates unplanned service expenses
- Offers preferential response times

Te-Care Maintenance Contract
- Regular product maintenance ensures performance and reduces downtime
- Planned maintenance visits reduce administration costs

Te-Care Repair Contract
- Offers preferential response times
- Can extend your instrument’s initial warranty by 1–2 years

Ask about a service contract when you buy your Tecan instrument, or contact your local Tecan office or representative. Find also more information about the Te-Care service contracts on our webpage under www.tecan.com/service_contracts.
We provide:

- **Installation**: Our certified field service team supports you throughout the installation of your newly purchased Tecan equipment, and in setting up your applications.

- **Preventive maintenance**: Keep your instrument in top condition with our regular preventive maintenance service, which helps to maintain the high standards of accuracy and precision that your applications need, as well as minimizing instrument downtime. Regular maintenance also helps to increase the lifespan and productivity of your Tecan instrument.

- **Repair services**: A full range of repair services is available, should the need arise, and our qualified and certified specialists provide timely and efficient support for your Tecan instruments.

- **Helpdesk**: As the first point of contact, helpdesks are maintained at all Tecan subsidiaries worldwide, with trained specialists who speak your language available to assist you.

- **Upgrades**: Upgrades are an important part of keeping up with the latest developments, at minimal cost and without compromising on quality. Our highly qualified service engineers will make any technical upgrades that are required.

- **Calibration and validation services**: Our experienced field service engineers and application specialists support you in your efforts to calibrate and validate your applications on a Tecan system.

Te-Care™ product support – our qualified field staff are happy to support you!

Our product support services can be tailored according to your needs, either as part of our Te-Care Service Contracts or provided on demand.
Tecan training courses are run by certified trainers, in small groups, at Tecan production sites in Switzerland and Austria, as well as at most of our Tecan subsidiaries worldwide. Tecan can also offer customized training at customer sites upon request.

Our courses are focused on ensuring that students get plenty of direct, hands-on experience with the instruments and software during their training.

Te-Care™ training – get trained by certified experts

Tecan offers a comprehensive training program to provide our customers the skills needed to optimize the productivity and performance of their Tecan instrument.

Each Tecan training course covers the following main areas:

- Introduction to the Tecan instrument, including how to set up and operate the equipment most efficiently and safely
- Software concepts and program implementation
- Hands-on training
- Basic maintenance procedures
- Basics in liquid handling or detection technologies
- Final assessment and certification

A complete list and detailed information on all the training courses available can be found on our website (www.tecan.com/training) or in the latest training catalog, which may be downloaded from the website or ordered via your local helpdesk.
Consumables

Tecan offers a wide range of consumables that are designed and optimized for use with our automated liquid handling, detection and sample management products. Outstanding quality and precise fit of consumables allow you to achieve greater reliability for applications run on Tecan systems. The design, high production standards and stringent quality control of our consumables support exceptional performance of your automated laboratory processes.

Not all products in this section can be used in the clinical environment. If you have questions or concerns please contact your local sales office for specific information.

quality
Liquid Handling Disposable Tips
MCA™ 96 Disposable Tips
MCA 384 Disposable Tips
FE500 consumables
Te-Flow™ consumables
ProfiBlot™ trays
reagent troughs
During the production process, computer-controlled manufacturing systems, state-of-the-art production processes and integrated quality control procedures are used to meet mechanical, chemical and purity specifications.

Tecan has a certified quality management system according to EN ISO 9001.

Quality consumables enable reliable results

Tecan consumables are designed, developed and produced to maximize reliability and performance of Tecan instruments.

Purity levels glossary

| RNase-/DNase-/DNA-free | In genomics research or forensics applications, consumables products have to be free of RNase ($<1 \times 10^9$ Kunitz units), DNase ($<1 \times 10^6$ Kunitz units) and human DNA ($<30$ pg). For products labeled as DNA-, RNase- and DNase-free, Tecan certifies both the product and its production processes. |
| Sterile | Many applications (e.g. cell-based protocols), require sterile consumables. For consumables labeled as sterile, Tecan guarantees a Sterility Assurance Level (SAL) of $10^6$ defined by ANSI / AAMI / ISO 11137-2, certifying both the product and its production processes. |
| Endotoxin- and pyrogen-free | For consumables labeled as endotoxin- and pyrogen-free, Tecan guarantees the absence ($<0.06$ EU/ml) of endotoxins and pyrogens based on LAL testing, and certifies both the product and its production processes. |
Liquid Handling Disposable Tips

Disposable tips for use with the Liquid Handling (LiHa) arm

Tecan offers a complete range of reliable conductive liquid handling disposable tips. Our LiHa disposable tips are carefully designed, developed, validated and produced for optimal performance of the liquid handling (LiHa) arm on liquid handling instruments.

- Wide volume range from 1 μl to 1,000 μl
- Optical inspection of every tip during production ensures maximum quality
- Colored trays for visual tip volume recognition
- Filtered and non-filtered options
- Box or blister packaging
- Disposable tips for the PMP (Pressure Monitored Pipetting) option

### LiHa disposable tips overview

<table>
<thead>
<tr>
<th>Features</th>
<th>non-filtered</th>
<th>filtered</th>
<th>non-filtered</th>
<th>filtered</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 μl</td>
<td></td>
<td></td>
<td>Part no. 10 612 516</td>
<td>Part no. 10 612 517</td>
</tr>
<tr>
<td>50 μl</td>
<td></td>
<td></td>
<td>Part no. 30 032 115</td>
<td>Part no. 30 032 114</td>
</tr>
<tr>
<td>200 μl</td>
<td>Part no. 10 612 510 or 10 612 552 (PMP)</td>
<td>Part no. 10 612 511 or 10 612 553 (PMP)</td>
<td>Part no. 30 000 627</td>
<td>Part no. 30 000 629</td>
</tr>
<tr>
<td>1000 μl</td>
<td>Part no. 10 612 512 or 10 612 554 (PMP)</td>
<td>Part no. 10 612 513 or 10 612 555 (PMP)</td>
<td>Part no. 30 000 630</td>
<td>Part no. 30 000 631</td>
</tr>
</tbody>
</table>
These tips are available either with or without filters, and come in either single-stack or 8-stack nested format. All MCA 96 disposable tips are free of DNA, DNase, RNase, pyrogens and endotoxins.

- Improved throughput and walkaway time due to nested format
- Increased flexibility due to SBS-format
- Significant waste reduction
- Cost-effective

MCA™ 96 Disposable Tips

Disposable tips for use with MultiChannel Arm™ 96 option

Tecan offers a new range of natural SBS-format MCA 96 disposable tip products in three different volume sizes, with sterile or filtered options.

MCA 96 disposable tip portfolio overview

<table>
<thead>
<tr>
<th>Features</th>
<th>Non-sterile</th>
<th>Sterile</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>non-filtered</td>
<td>non-filtered</td>
</tr>
<tr>
<td>50 µl</td>
<td>Part no. 30038609</td>
<td>Part no. 30038606</td>
</tr>
<tr>
<td>100 µl</td>
<td>Part no. 30038614</td>
<td>Part no. 30038611</td>
</tr>
<tr>
<td>200 µl</td>
<td>Part no. 30038619</td>
<td>Part no. 30038616</td>
</tr>
</tbody>
</table>

* maximum pipetting volume of 150 µl
Disposable tips for use with MultiChannel Arm™ 384 option

Tecan MCA 384 disposable tips are carefully designed, developed and produced for optimal performance with the Freedom EVO® MultiChannel Arm 384 option.

All MCA 384 disposable tips are manufactured according to high quality standards for:

- Improved seal integrity and reduced maintenance costs due to unique patented sealing system
- Optimized deck space due to option for either 384-well pipetting or four times 96-well format pipetting
- Quick and simple identification of tip volume through color-coded SBS-format racks
- 125 µl tip design allows full-depth access in deep-well plates

MCA 384 disposable tip portfolio overview

<table>
<thead>
<tr>
<th>Features</th>
<th>Non-sterile</th>
<th>Sterile</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 µl</td>
<td>available in near future</td>
<td>available in near future</td>
</tr>
<tr>
<td>50 µl</td>
<td>Part no. 30032031</td>
<td>Part no. 30032034</td>
</tr>
<tr>
<td>125 µl</td>
<td>Part no. 30032032</td>
<td>Part no. 30032035</td>
</tr>
</tbody>
</table>
Reagent troughs for use with the Freedom EVO®, Genesis™ and Aquarius™ instruments

Tecan’s reagent troughs are produced to high quality standards, using computer-controlled manufacturing systems to provide reliable products for use with all Tecan instruments.

Reagent troughs provide:
- Optimized fast and clean handling of liquids on Tecan liquid handling platforms
- Innovative design to ensure maximum liquid withdrawal
- Large volume range optimized for a wide field of applications

**Reagent troughs for single-row pipetting for Genesis and Freedom EVO series**

<table>
<thead>
<tr>
<th>Part no.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 520 629</td>
<td>25 ml disposable trough for reagents, natural with cover, packaging of 100 troughs</td>
</tr>
<tr>
<td>10 613 102</td>
<td>25 ml disposable trough for reagents, natural without cover, packaging of 100 troughs</td>
</tr>
<tr>
<td>10 613 048</td>
<td>100 ml disposable trough for reagents, natural, packaging of 108 troughs&lt;br&gt;Purity levels: DNA-, DNase/RNase-, PCR inhibitors-, ATP- and endotoxin-free, sterile</td>
</tr>
<tr>
<td>10 613 049</td>
<td>100 ml disposable trough for reagents, gray, packaging of 108 troughs</td>
</tr>
<tr>
<td>10 760 646</td>
<td>200 ml disposable trough for reagents, natural, packaging of 32 troughs</td>
</tr>
<tr>
<td>10 612 548</td>
<td>Cover for disposable troughs, black, packaging of 6 covers, compatible for disposable troughs for reagents 25 ml (part no.: 10 613 102, 10 520 629) and 100 ml (part no.: 10 613 048, 10 613 049)</td>
</tr>
</tbody>
</table>

**Reagent troughs for multi-channel pipetting (Te-MO™, Aquarius, GenMate™ and MultiChannel Arm™ 96 and 384 options)**

<table>
<thead>
<tr>
<th>Part no.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 619 196</td>
<td>125 ml disposable trough for reagents, natural, packaging of 50 troughs, compatible with reagent trough part no. 10 619 190. For use with 96-channel pipetting heads</td>
</tr>
<tr>
<td>10 619 191</td>
<td>250 ml disposable trough for reagents, natural, packaging of 50 troughs, compatible with reagent trough part no. 10 619 190. For use with 96-channel pipetting heads</td>
</tr>
<tr>
<td>10 619 686</td>
<td>200 ml disposable trough for reagents, natural, packaging of 50 troughs, compatible with reagent trough part no. 10 612 071. For use with 384-channel pipetting heads</td>
</tr>
</tbody>
</table>
FE500 consumables for the Genesis FE500™ and FE500pro™

Tecan provides all required consumables for efficient and reliable operation of the Genesis FE500 and FE500pro workstations. To ensure reliability, Tecan recommends that only consumables from the original manufacturer are used.

FE500 consumables are:
- Tested and validated for optimized operation of the Genesis FE500 and FE500pro workstations
- Manufactured according to high quality standards under controlled conditions

**FE500 consumables overview**

<table>
<thead>
<tr>
<th>Part no.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 621 001</td>
<td>secondary tubes, natural, 5 ml, packaging of 2,180 tubes</td>
</tr>
<tr>
<td>10 621 004</td>
<td>caps for secondary tubes, blue, packaging of 10,000 caps, compatible with secondary tubes (part no. 10 621 001)</td>
</tr>
<tr>
<td>10 621 003</td>
<td>STL label set, pack containing two printer ribbons and 6 x 8,500 labels</td>
</tr>
<tr>
<td>30 041 604</td>
<td>STL label set, pack containing three printer ribbons and 6 x 7,500 labels for new printer ETS/2 300/T</td>
</tr>
<tr>
<td>10 621 002</td>
<td>waste bags for disposable tip discard, packaging of 100 bags</td>
</tr>
</tbody>
</table>
ProfiBlot™ trays

Western and Southern Blot sample trays for use with the ProfiBlot 48 range of instruments

Tecan trays are produced to the highest quality standards to ensure robustness and manufacturing accuracy. Each tray is comprehensively inspected to ensure consistent product quality.

For ProfiBlot instruments we offer:
- The choice from a range of Tecan trays offering different throughput levels, liquid volumes and colors
- The black 48-well tray (part no. 30020700), which is labeled as an IVD device according to Directive 98/79/EC-IVD and validated with ProfiBlot 48 and ProfiBlot T48 processors

### ProfiBlot consumables product overview

<table>
<thead>
<tr>
<th>Image</th>
<th>Description</th>
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<tbody>
<tr>
<td><img src="image" alt="Part no. 30 020 700 — black 48-well tray, max. 3 ml, IVD compliant" /></td>
<td>Part no. 30 020 700 — black 48-well tray, max. 3 ml, IVD compliant</td>
</tr>
<tr>
<td><img src="image" alt="Part no. 30 020 748 — white T 30-well tray, maximum 3 ml" /></td>
<td>Part no. 30 020 748 — white T 30-well tray, maximum 3 ml</td>
</tr>
<tr>
<td><img src="image" alt="Part no. 30 020 749 — white T 24-well tray, maximum 2 ml" /></td>
<td>Part no. 30 020 749 — white T 24-well tray, maximum 2 ml</td>
</tr>
<tr>
<td><img src="image" alt="Part no. 30 020 770 — white T 30-well tray, maximum 2 ml" /></td>
<td>Part no. 30 020 770 — white T 30-well tray, maximum 2 ml</td>
</tr>
<tr>
<td><img src="image" alt="Part no. 30 015 417 — white N 30-well tray, maximum 3 ml" /></td>
<td>Part no. 30 015 417 — white N 30-well tray, maximum 3 ml</td>
</tr>
<tr>
<td><img src="image" alt="Part no. 30 020 860 — white S 36-well tray, maximum 3 ml" /></td>
<td>Part no. 30 020 860 — white S 36-well tray, maximum 3 ml</td>
</tr>
</tbody>
</table>
Te-Flow™ consumables

Tecan Te-Flow consumables for use with GenePaint™

Tecan’s Te-Flow consumables are designed and manufactured according to high quality standards, under controlled conditions. The consumables are designed for use with the GenePaint chamber, which minimizes the loss of precious hybridization reagents for reproducible and reliable results.

Te-Flow consumables offer:
• Excellent quality results through reliable and reproducible automated processing of samples
• Extended walkaway time through unattended hybridization protocols
• Increased throughput through automated in situ hybridization (10 times higher throughput than manual methods)
• Flow-through chamber protects tissues from physical disruption

Te-Flow consumables overview

Part no. 10 760 815 — spacer for Te-Flow option, packaging of 500 spacers

Part no. 10 760 813 — back plate for Te-Flow option

Part no. 10 760 801 — bottle of Te-Flow additive containing 250 ml concentrate of microbiological inhibitors

www.tecan.com/consumables
Compliance – a world of OEM expertise

Your partner for OEM components and systems

The unique combination of our core competencies and skill set in engineering and application knowledge, as well as our first-hand experience of working directly with laboratories and research companies, make Tecan the ideal OEM partner; whether that’s providing fluidic pump and XYZ robotic components, supplying private label versions of a standard or modified Tecan device, or the complex development of dedicated analyzers from the ground up.

With more than 25 years’ experience in the OEM and end-user arenas, Tecan is completely familiar with your world and has the experience and knowledge to fully understand not only your needs but, just as importantly in an OEM partnership, those of your customers.

Tecan provides automation solutions, not just instrumentation, and has the expertise to assess and resolve even the most complicated workflow challenges with the latest technologies available today.

Whatever the size or scope of project, Tecan works intensely to ensure all the customers’ needs are met. The business relationship is documented in agreements covering development, supply, quality, service and support.

Technical expertise where it counts
Tecan has built an impressive portfolio of skills and technologies to deliver OEM solutions across various markets and for a wide range of applications, including:

- Liquid Handling and Robotics
- Detection
- Sample Management
- Components
- Software
- System Integration

Tecan’s OEM business is based on its in-depth knowledge of development, regulatory issues, logistics and production in a process-driven organization.

Quality – a mindset
Quality is an integral part of the complete Tecan organization whenever we talk about development, production and servicing. Our goal is to continuously improve the quality of our products and processes in an environment that promotes compliance, integrity and teamwork.

Our Management System is laid out to fulfill the requirements provided by EN ISO 9001, EN ISO 13485 and 21 CFR Part 820 (QSR) / cGMP. This ensures a high level of compatibility to almost all countries around the world.

Regulatory compliance
It is Tecan’s responsibility to ensure that effective market intelligence is collected for all countries where Tecan is operating, now and potentially in the future. Upon new or changed information, we will identify what is
necessary to adapt to changing requirements. We react immediately to any new requirements that might hinder Tecan’s ability to operate in some countries.

Environment protection
The requirements provided by the Directives 2002/96/EC - WEEE and 2002/95/EC - RoHS are implemented to ensure the significant reduction of risks to health and the environment relating to hazardous substances.

Development
Our development process follows a milestone-based approach throughout the complete life cycle of a product, placing a strong emphasis on extensive testing, verification and validation steps, but without adversely affecting the speed of development.

Reliability in production and manufacturing
Tecan is committed to sharing best manufacturing practice, continually improving quality at all levels worldwide, and satisfying relevant local, national and international legal and regulatory standards.

Our processes and products are designed with both production and customer service considerations in mind. Our knowledge and expertise in global sourcing and procurement ensure that you have access to good value components and engineering.

Service and support
If required, Tecan can assist OEM customers who have not established a global service and support organization, with the installation, service and support of the OEM instruments.

Tecan is an Original Equipment Manufacturer of record. Skilled teams manage product development according to your expectations on the safe grounds of Tecan’s expertise, core competencies, technologies and operative excellence.

### Expectations – Market – Requirements – Application – Time-to-market – Costs – Regulations

<table>
<thead>
<tr>
<th>Design input</th>
<th>Product development</th>
<th>Production</th>
<th>Product Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Market knowledge</td>
<td>• Engineering excellence</td>
<td>• Operational excellence</td>
<td></td>
</tr>
<tr>
<td>• Skill set</td>
<td>• Core competencies</td>
<td>• Audited processes</td>
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</tr>
<tr>
<td>• Engineering expertise</td>
<td>• Technologies</td>
<td>• Global sourcing</td>
<td></td>
</tr>
<tr>
<td>• Application expertise</td>
<td>• Time-to-market</td>
<td>• Supplier management</td>
<td></td>
</tr>
<tr>
<td>• Regulatory expertise</td>
<td>• Validation support</td>
<td>• Quality control</td>
<td></td>
</tr>
</tbody>
</table>

**Iterative approach**

*Core competencies – Technologies – Library of modules – Skill set – Application expertise – Regulatory expertise*

**Supported by a dedicated quality, regulatory and program management team**
## Trademarks and legal notices

<table>
<thead>
<tr>
<th>Company</th>
<th>Product Name</th>
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<tr>
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</tr>
<tr>
<td>Registered trademark of REMP AG, Oberdiessbach, Switzerland</td>
<td>REMP®</td>
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<td>Nucleofector®, Nucleofection®, 96-well Shuttle®</td>
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<td>Registered trademark of BellBrook Labs, Madison, WI, USA</td>
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<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
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<tbody>
<tr>
<td>°C</td>
<td>degrees Celsius</td>
</tr>
<tr>
<td>2D</td>
<td>two dimensional</td>
</tr>
<tr>
<td>3D</td>
<td>three dimensional</td>
</tr>
<tr>
<td>AAMI</td>
<td>Association for the Advancement of Medical Instrumentation</td>
</tr>
<tr>
<td>aCGH</td>
<td>array-based comparative genomic hybridization</td>
</tr>
<tr>
<td>ADME</td>
<td>absorption, distribution, metabolism and excretion</td>
</tr>
<tr>
<td>ANSI</td>
<td>American National Standards Institute</td>
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<tr>
<td>API</td>
<td>application programming interface</td>
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<tr>
<td>ASCI</td>
<td>American Standard Code for Information Interchange</td>
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<td>American Society for Testing and Materials</td>
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<td>ATP</td>
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<td>BRET</td>
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<td>Caco-2</td>
<td>colorectal carcinoma cells</td>
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<td>fluorescence immunoassay</td>
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