

Tecan Cavro[®]

components overview.

TECAN CAVRO INNOVATION IS EVERYWHERE





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Introduction.

Tecan Cavro brand components provide innovative and reliable liquid handling for instrument designers in almost any application in clinical diagnostics, life sciences research or analytical chemistry.

Tecan Cavro OEM components are designed and manufactured under a Quality Management System which is ISO13485 certified and meet the EU RoHS directive. We are a world-leading supplier of OEM pumps, robotics and other liquid handling components for laboratory automation, so you can have confidence in the performance, workmanship and dependability of Tecan Cavro products.

Cavro Pumps.



CAVRO PUMPS**Precision liquid handling for every job**

Cavro Air Displacement Pipettor (ADP).

COMPACT, AIR DISPLACEMENT PIPETTING SOLUTION FOR EASY INTEGRATION AND ADVANCED PROCESS SECURITY

- Pipetting range: <math><1-1,000\ \mu\text{l}</math>
- Resolution: 25 nl/increment
- Process security: Disposable tip detection and ejection, with integrated pressure sensor for liquid level detection and streaming of pressure data
- Tip compatibility: Tecan disposable tips in 10, 50, 200, and 1,000 μl volumes



Cavro Centris Pump.

COMPACT, HIGH PERFORMANCE SYRINGE PUMP WITH A BROAD WORKING RANGE

Designed with precision-paired long-life ceramic components for longevity. Programmable flow rates from 5 ml/s down to under 5 nl/s. Ideal solution for high-precision slow flow applications such as cytometry or microfluidics.

- Resolution: 181,490 increments
- Ceramic valve options:
 - Non-distribution: 3-port, 4-port, 4-port dual-loop
 - Distribution: 3-port, 6-port, 6-port chamfer, 9-port, 12-port
- Plastic valve options:
 - Non-distribution: 3-port, 4-port, 4-port dual-loop
 - Distribution: 3-port
- Glass syringe options: 50 μl , 100 μl , 250 μl , 500 μl , 1 ml, 2.5 ml, 5 ml, 12.5 ml

CAVRO PUMPS

Precision liquid handling for every job



Cavro XCalibur Pump.

LOW-PROFILE, HIGH PERFORMANCE SYRINGE PUMP

- Resolution: 3,000 increments (24,000 increments in micro-step mode)
- Ceramic valve options:
Non-distribution: 3-port, 4-port, 4-port dual-loop
Distribution: 3-port, 6-port, 6-port chamfer, 9-port, 12-port
- Plastic valve options:
Non-distribution: 3-port, 4-port, 4-port dual-loop, T, Y-block
Distribution: 3-port, 4-port
- Glass syringe options: 50 μ l, 100 μ l, 250 μ l, 500 μ l, 1 ml, 2.5 ml and 5 ml



Cavro XLP 6000 Pump.

THE MOST VERSATILE SYRINGE PUMP

- Resolution: 6,000 increments (48,000 increments in micro-step mode)
- Ceramic valve options:
Non-distribution: 3-port, 4-port, 4-port dual-loop
Distribution: 3-port, 6-port, 6-port chamfer, 9-port, 12-port
- Plastic valve options:
Non-distribution: 3-port, 4-port, 4-port dual-loop, Y-block
Distribution: 3-port, 6-port, 9-port
- Glass syringe options: 50 μ l, 100 μ l, 250 μ l, 500 μ l, 1 ml, 2.5 ml, 5 ml, 10 ml, 25 ml and 50 ml

CAVRO PUMPS**Precision liquid handling for every job**

Cavro XMP 6000 Pump.

THE ECONOMICAL SOLUTION FOR PARALLEL PIPETTING

- Two-, four-, six- and eight-channel configurations with individual valve control for each syringe channel
- Resolution: 6,000 increments (48,000 increments in micro-step mode)
- Solenoid valve options: 3-port, 3-port with bypass, 3-way (input/output), 3-way with flow through syringe bypass, 3-port distribution (three (3) input/output tubing parts)
- Glass syringe options: 100 μ l, 250 μ l, 500 μ l, 1 ml, 2.5 ml and 5 ml



Cavro XE 1000 Pump.

THE ENTRY LEVEL SYRINGE PUMP

With a rugged, low maintenance design, this pump delivers a low cost of ownership over the life of the product.

- Resolution: 1,000 increments
- Ceramic valve options:
 - Non-distribution: 3-port
 - Distribution: 3-port
- Plastic valve options:
 - Non-distribution: 3-port
 - Distribution: 3-port
- Glass syringe options: 50 μ l, 100 μ l, 250 μ l, 500 μ l, 1 ml, 2.5 ml and 5 ml

CAVRO PUMPS**Precision liquid handling for every job**

Cavro Pulssar PBC Pump.

INDUSTRY LEADING PISTON PUMP PERFORMANCE

The Cavro Pulssar PBC series of OEM piston pumps offers best-in-class performance, ensuring high precision and accuracy for pipetting, diluting and dispensing applications. You can rely on PBC pumps to provide outstanding low-volume precision and reliability without need for any calibration to eliminate unit-to-unit variation.

Available with a range of market-leading options – such as integrated valves, control electronics and a pressure sensor – the pumps ultra-low maintenance design offers exceptional process security. This compact unit can be supplied in a range of materials including acrylic, PEEK™* and 316L stainless steel, making it ideal for use with aggressive and abrasive liquids such as NaOH. The pump's modular design allows it to be easily configured for numerous applications, providing straightforward integration into your instrument design.



Cavro Pulssar PSR Pump.

LONG LIFE, MAINTENANCE-FREE PERFORMANCE

Cavro Pulssar PSR OEM piston pumps provide unmatched reliability for automated diluting and dispensing applications. This fully programmable pump features integrated solenoid valves and control electronics – allowing it to act as a standalone module.

The pump's stepper motor-controlled rack and pinion drive design offers an excellent combination of high resolution and high drive forces, making it suitable for both dispensing and rinsing applications. This is combined with virtually maintenance free operation.

*PEEK is a trademark of Victrex USA, Inc.

CAVRO PUMPS

Precision liquid handling for every job



Cavro Smart Peristaltic Pump (SP).

EIGHT-ROLLER SINGLE-CHANNEL PERISTALTIC PUMP FOR CONTINUOUS FLOW APPLICATIONS

- Resolution: 3,200 micro-steps per pump head revolution
- Tube ID options: 2 mm and 3 mm
- Flow rate: 0.2-175 ml/min (with 3 mm ID tubing)



Cavro MiniWash Pump (MW).

EASY-TO-USE CONTINUOUS FLOW DIAPHRAGM PUMP FOR FAST SYSTEM PRIMING, TIP WASHING OR BULK FLUID DISPENSING

- Standard MW: 290 ± 50 ml/min
- Universal MW: ≥ 80 ml/min
- Small MW: 140 ± 40 ml/min



Comparison view of pumps

Cavro Robotics.



CAVRO ROBOTICS

Robotics for integrated laboratory automation solutions

Cavro Omni Flex.

The Cavro Omni Flex configuration is available with a wide range of options and modules to match your liquid handling requirements and instrument design.

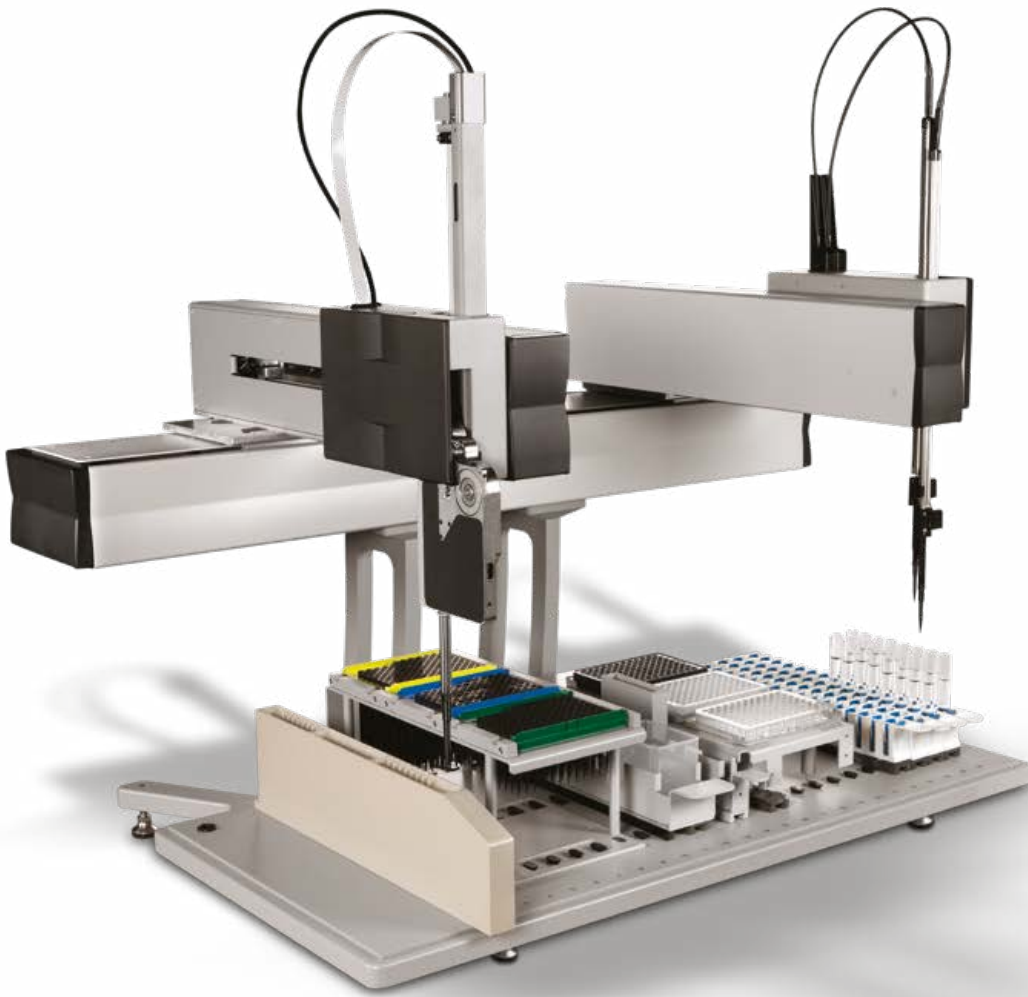


EXPLORE OUR ONLINE CONFIGURATOR TOOL AND DESIGN THE LIQUID HANDLING SOLUTION TO MEET YOUR NEEDS.

- Configurable
- Scalable
- Simple
- Off the shelf Integrated Solution

<http://www.tecan.com/cavroomniconfigurator>



CAVRO ROBOTICS**Robotics for integrated laboratory automation solutions**

Cavro Omni Robot.

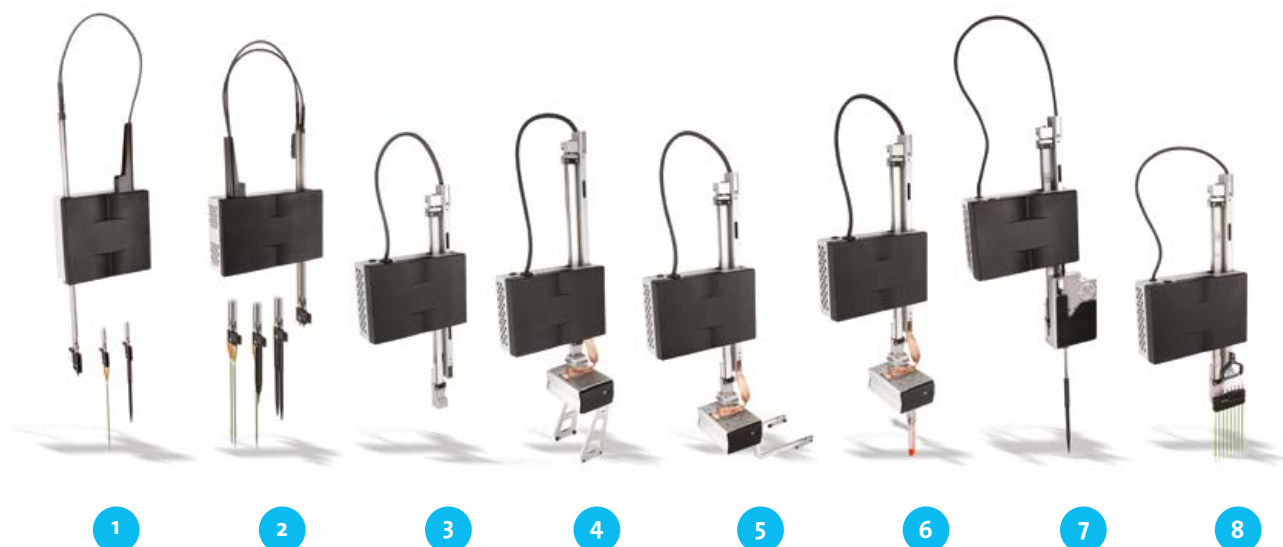
HIGHLY VERSATILE GENERAL PURPOSE LIQUID HANDLING ROBOT

Modular design offers superior flexibility for a wide range of OEM applications:

- Easy integration
- Closed-loop positioning
- Finished, professional appearance
- One and two arm options
- Probe options: standard Tecan probes and disposable tips
- Standard travel length for X-axis: 500 mm, 750 mm, 1250 mm
- Standard travel length for Y-axis: 150 mm, 300 mm
- Standard travel length for Z-axis: 210 mm
- Standard colors: gray
- Dual Arm enables higher productivity
- 8-Channel Head enables multichannel dispensing
- Omni with ADP, integrated pipetting solution
- Gripper enables tube and plate handling

CAVRO ROBOTICS

Robotics for integrated laboratory automation solutions



CAVRO OMNI ROBOT OPTIONS

- 1 **Standard Z axis** for most liquid handling applications using a pipetting probe or disposable tips.
- 2 **Dual Z axis** enables the liquid handling functionality of two standard Z-axes on the same arm. Capacitive liquid level detection (cLLD) is provided for pipetting probes or disposable tips.
- 3 **Universal Z** for payloads of up to 1.5 kg. Available with or without liquid level detection.

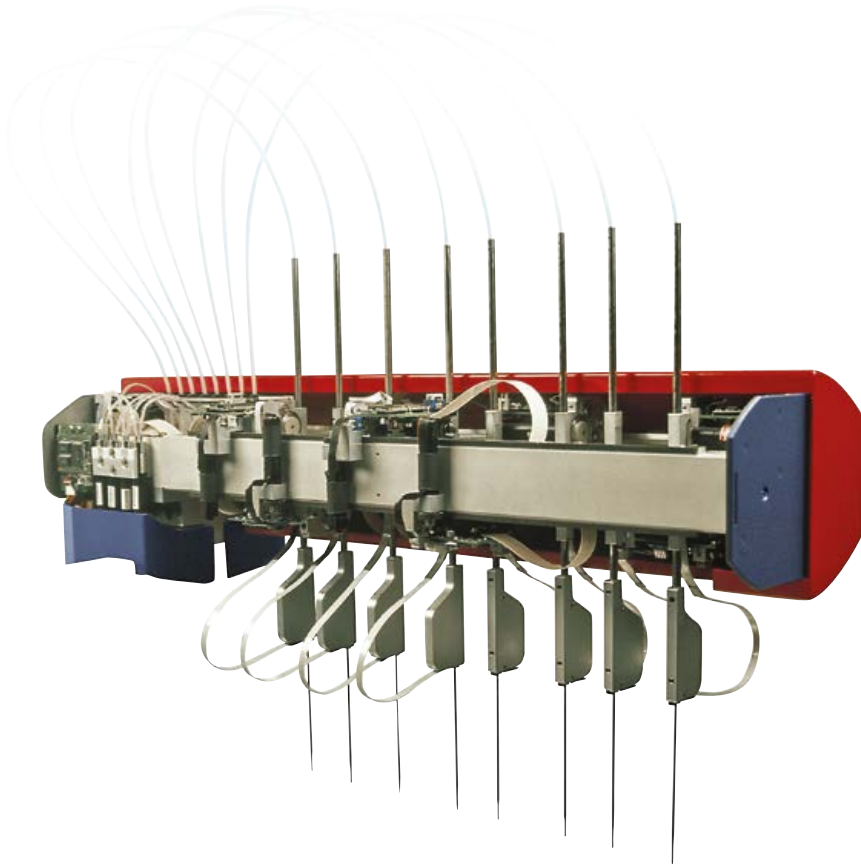
With no Liquid Level Detection:

- 4 **Universal Z axis for Gripper.** For plate handling tasks using gripper with concentric fingers, for improved productivity when using microplates.
- 5 **Universal Z for Gripper.** For plate handling using gripper with eccentric fingers, for improved productivity when using microplates.
- 6 **Universal Z axis for Gripper.** For tubes handling using gripper with fingers for tubes ranging from 10 to 16 mm in diameter.

With Liquid Level Detection:

- 7 **Universal Z axis for ADP**
- 8 **Universal Z axis for eight-channel pipetting head***

*XMP Pump with 8-Channel Pipetting head is currently not supported in Omni Flex Configurations. This limitation is due to the height of the XMP pump. Using individual, shorter pumps is a valid configuration.

CAVRO ROBOTICS**Robotics for integrated laboratory automation solutions**

Xantus[®] Pipetting Arm.

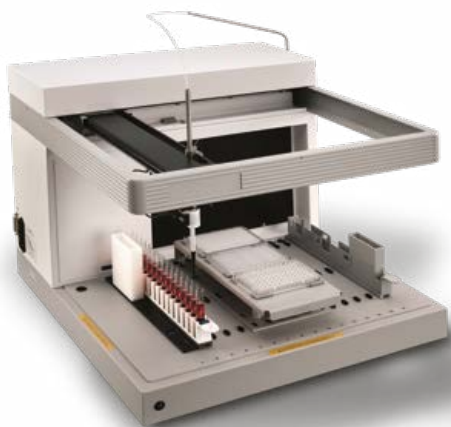
HIGH PERFORMANCE LIQUID HANDLING ARM FOR EASY INTEGRATION

The Xantus Pipetting Arm is an ideal solution for integrated liquid handling. Its unique design incorporates all liquid handling components directly on the arm itself, making it compact and highly versatile, offering maximum flexibility for OEM projects:

- 1-8 independent pipetting channels
- Flexi-span tip spacing (independent Y-spacing)
- X-Rail option available up to 3 m in length
- Micro-annular gear pumps:
 - Large volume range
 - Very compact design
 - Continuous dispensing of bulk fluids (eg. diluent) possible
 - Maintenance free
- All liquid handling components contained inside the pipetting arm, to simplify integration
- Large range of washable or disposable tip options including mixed configurations
- Customizable Arm cover colors
- CAN communication interface
- Versatile software development kit

CAVRO ROBOTICS

Robotics for integrated laboratory automation solutions

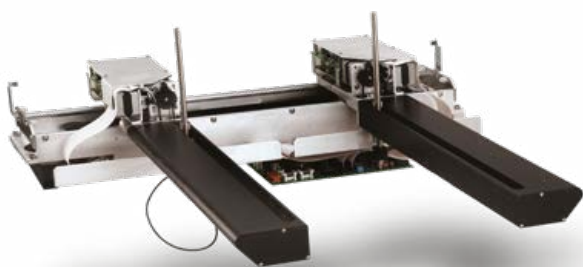


Cavro Mini Sample Processor (MSP).

AUTOMATED SAMPLE PROCESSORS

Designed for OEM manufacturers of analyzers or reagent systems to automate sample preparation or assay methods.

- Two sizes available
- One and two arm options
- Probe options: Standard, cap piercing, multi-channel and disposable tips
- Compatible with most standard Tecan racks
- Controls up to eight Tecan Cavro pump modules
- RS232 communication interface



Cavro Robotic Sample Processor (RSP).

DEPENDABLE GENERAL PURPOSE LIQUID HANDLING ROBOT

Flexible in size and configuration, it offers a range of liquid handling options and liquid handling processing options.

- Multiple configurations of x, y and z ranges are available
- One and two arm options
- Probe options: standard, cap piercing, multi-channel and disposable tips
- Controls up to eight Tecan Cavro modules
- RS232 communication interface

Cavro Accessories, Consumables and Software.



CAVRO ACCESSORIES, CONSUMABLES AND SOFTWARE

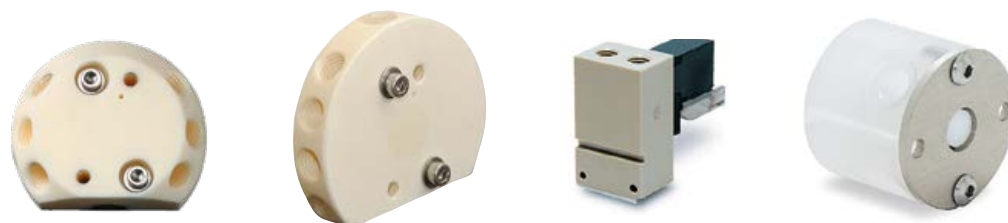
Options and accessories for your OEM components



Cavro Smart Valve (SV).

THE COMPACT STEPPER MOTOR-DRIVEN VALVE MODULE

- Ceramic valve options:
Non-distribution: 3-port, 4-port, 4-port dual-loop
Distribution: 3-port, 6-port, 6-port chamfer, 9-port, 12-port
- Plastic valve options:
Non-distribution: 3-port, 4-port,
Distribution: 3-port, 4-port, 6-port, 12-port
- Selectable direction of rotation



Cavro Valves.

A wide assortment of Tecan Cavro valves helps you to configure the pumping system to meet your needs. The most common valve configuration is a rotary valve made of PTFE and PCTFE but, if your applications require longer life or specific chemical compatibility, Tecan offers valves made of various materials, including ceramic, PEEK™, PPS and UHMWPE.

Solenoid valves are available for the multi-channel pumps. These space efficient valves are designed for easy access and minimal pumping action.

CAVRO ACCESSORIES, CONSUMABLES AND SOFTWARE

Tailor your OEM product to specific applications



Cavro Syringes.

Tecan provides a full range of glass syringes specifically designed for Tecan Cavro syringe pumps.

Combined with Tecan Cavro's syringe pumps, they provide the superior performance that our customers have relied on for years.

Tecan Cavro syringes are the heart of our syringe pumping system and are available in different options* for a range of life expectancy, chemical compatibility and running conditions:

- PTFE or UHMWPE plunger seal material
- Standard stainless steel or customized PEEK end-cap and plunger rod
- Standard lubrication or customized dry interface
- And more*...

Cavro Probes.

Most of our probes are made of PTFE-coated stainless steel and have liquid detection capabilities.

Tecan has a wide range of probe selections to help you optimize your application:

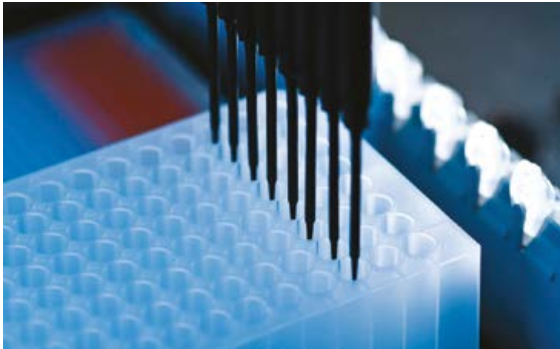
- Probes with different grade of coating outside only or both sides
- Wide bore, mid-range and small ID probes
- Cap-piercing probes
- Low volume probes
- Probes at different length



*Customized options are subject to availability and minimum order quantities. More features and options are available; contact your Tecan representative to discuss your application needs.

CAVRO ACCESSORIES, CONSUMABLES AND SOFTWARE

Tailor your OEM product to specific applications



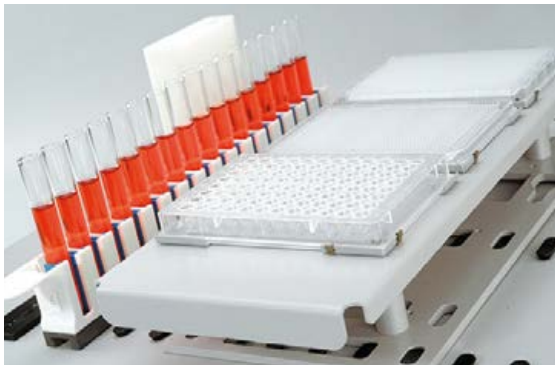
Cavro Disposable Tips.

Tecan offers high quality disposable tips, manufactured to the highest standards, for precise, reliable and safe pipetting. Compatible with Tecan's proprietary liquid level detection technologies, disposable tips are available in either clear or conductive materials. They also come in multiple sizes, with and without filter, and with different level of sterilizations as follows:

- Tecan Standard: ELISA, sample handling, biochemical screening
- Tecan Pure: Genomics research, forensics, molecular diagnostics
- Tecan Sterile: Cell biology, microbiology, cell-based screening

In addition, standard OEM friendly packaging or customized branding options available upon request*

*Availability and minimum order quantity subject to specific customized configurations.

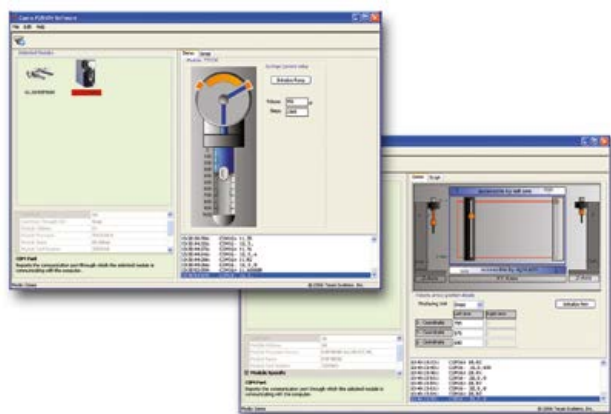


Tecan Racks.

Ready to dispense into a microplate? Need to pierce a test tube cap? Choose from a variety of Tecan racks and carriers to meet the needs of your application.

- Racks for various tube sizes
- Microplate racks in portrait or landscape orientations
- Reagent racks
- Disposable tip racks
- Deep-well racks
- Microcentrifuge tube racks

Cavro Fusion Software.



CAVRO FUSION SOFTWARE ENABLES EASY CONNECTION AND OPERATION OF TECAN CAVRO MODULES THROUGH A WINDOWS®-BASED PC

The graphical user interface (GUI) allows new users to perform basic tasks, while advanced users have access to a scripting environment for bench testing, script testing and on-site troubleshooting. The software also automatically identifies the communications port used for connection of Tecan Cavro components and other installed devices.

Cavro Fusion Software is supplied as an evaluation tool and is not intended to be used as application software.

Cavro Integration Kit.

PROVIDES ALL NECESSARY ITEMS FOR YOU TO QUICKLY START EVALUATING TECAN CAVRO COMPONENTS

Kits include a power supply, cables, communications interface and Cavro Fusion Software. Compatible with current Tecan Cavro pumps, valves, robots and other components.



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