



Fluent<sup>®</sup> Gx

for regulated environments.

ADVANCED LIQUID HANDLING WORKSTATION FOR CLINICAL, GLP AND QC FACILITIES



 **TECAN.**

# Regulated environments.

# Empowered.

## AUTOMATION FOR CLINICAL AND REGULATED ENVIRONMENTS

Tecan has used its extensive knowledge of clinical and regulated environments – as well as years of expertise in the field of automation – to bring you the **Fluent Gx**, the fastest and most flexible, open platform we've ever made for these highly controlled applications.

## SIMPLIFYING REGULATORY COMPLIANCE

The Fluent Gx Automation Workstation is designed specifically to meet the needs of regulated laboratories, with all the advanced process security features required for applications in clinical, GMP and QC facilities. It combines all the liquid handling and workflow benefits already familiar to Fluent users – high on-deck capacities, fast processing and intuitive operation – with the Fluent Gx Assurance Software, a suite of software features needed to comply with stringent regulatory requirements, including FDA 21 CFR Part 11.

Regulation and typical applications	GMP	Clinical
EN 62304 Medical device software (life cycle processes)		✓
ISO 13485 Medical Devices Quality Management System / 21 CFR 820 Quality System (US FDA)	✓	✓
Enabling 21 CFR Part 11 (Tecan software is developed under ISO 13485, and offers multi-level user management, supporting compliance to 21 CFR Part 11 electronic records/signatures)	✓	✓
EN 14971: Medical devices – application of risk management to medical devices		✓
EN 61010 applicable parts: safety requirements for electrical equipment for measurement, control and laboratory use	✓	✓
EN 61326 applicable parts: EMC requirements	✓	✓
EN 62366 usability engineering (human factors)		✓

Note: This is not a comprehensive list. For more information contact your local sales engineer.

# Regulatory support.

Need help implementing Fluent Gx in your laboratory?

The Fluent Gx provides the tools you need to build success.

## AUDIT TRAIL AND AUDIT TOOLS

FluentControl™ offers all the tools you need to prove your system was – and continues to be – used in a compliant fashion, should the need arise. Electronic signatures provide an audit trail that tracks all system and electronic record changes. The Data Audit Tool and File Version Checker prove that no external manipulations, additions or deletions to the system or record have occurred.

## SAMPLE TRACKING LINKS SAMPLE IDS WITH RESULTS

Scanned primary tube barcodes can be linked with destination plate positions and pipetting results using a single command. Real-time pipetting information can be viewed, tracking samples as they are transferred from primary tubes to intermediate dilution plates, to quantification and final plates.

## NEED TO PREVENT UNAUTHORIZED CHANGES?

User management offers three default user groups, and can be directly linked to your lab's Windows® Active Directory

- **Operators** can run the instrument, but cannot make changes to pipetting parameters, carriers or anything else that will have an impact on the defined protocol.
- **Key operators** can use the Method Approval feature to release new or edited methods. Once approved, FluentControl will watch for alterations, flagging if the method itself or any of its components have been changed.
- **Administrators** may add new users, assign access rights and enable or disable existing accounts.



Data Audit Tool gives automatic documentation of audit trail status



Automated barcode reading provide full sample tracking



Individual user management ensures adherence to SOP and prevents unauthorized changes to protocols

# Fast, flexible, and designed to comply.

The Fluent Gx Automation Workstation is designed specifically to meet the needs of regulated laboratories, with all the advanced process security features required for applications in clinical, GMP and QC facilities.





### 1 MORE FUNCTIONALITY IN LESS SPACE

Fluent Gx's patented **Dynamic Deck™** allows the high capacity worktable to be freely configured and easily reconfigured. The cabinet-mounted option lets you take full advantage of the system's in-deck and below-deck access, expanding capacity and functionality without extending the instrument's footprint.

### 2 INTUITION BUILT RIGHT IN

Every Fluent Gx comes with a dedicated **touchscreen interface**, with a unique, run-only environment that can be individually tailored to specific applications and personalized for each user. Users require minimal training, as the interface clearly defines every action for more straightforward, consistent operation.

### 3 DEVICE INTEGRATION FOR FULLY AUTOMATED WORKFLOW

Enjoy true walkaway operation with Fluent Gx's seamless integration of complementary peripherals, all fully managed with FluentControl™ software for maximum throughput and minimum operator input.

### 4 EXECUTE PROTOCOLS MORE QUICKLY, EFFICIENTLY AND RELIABLY

Perform multiple tasks simultaneously with fast, independent, task-specific arms that work in parallel. Tecan's patented **Path Finder™** technology automatically calculates the optimal route for each arm, every time, ensuring that runs are completed quickly and efficiently.

### 5 LOAD. CHECK. RUN.

Embedded DeckCheck cameras identify and highlight discrepancies between the loaded deck at run time and the expected layout to reduce loading errors and ensure successful runs.

### 6 GREATER PEACE OF MIND

Ensure the integrity of your results with a broad array of fully integrated technologies and capabilities:

- 1D/2D barcode reading for efficient sample identification
- Liquid level detection for reliable pipetting performance
- Plate move confirmations
- User interaction logs

### 7 FLEXIBILITY TO DEAL WITH THE UNEXPECTED

Fluent Gx's **Active Stop and Resume** function enables the operator to instantly access the workdeck during a run – allowing set-up errors or omissions to be corrected – simply by opening the door. Once the action is finished simply close the door and resume the program, which will pick up where it left off.

### 8 SAVE REAGENTS AND SAMPLE

For optimal liquid handling performance, Fluent Gx is equipped with sensitive liquid level sensing that provides real-time aspiration monitoring and liquid arrival checks, enabling the use of smaller sample volumes and reducing dead volumes, as well as exceptional automated error handling.

### 9 FAST AND EASY METHOD TRANSFER BETWEEN INSTRUMENTS

Fluent Gx's outstanding precision and unique Zero-G capability simplify the set-up of channel positions for 96, 384- and 1,536-well microplate formats. Methods can be easily transferred between platforms simply by exporting and importing scripts, without the need for time-consuming set-up of individual instruments.

# Flexibility to suit your needs.

Combine standard protocols with lab developed tests.

**FluentControl provides a powerful set of tools to quickly and easily set up and run challenging assays, even in regulated laboratories.**



Operation at a touch of your finger



Use pictures, videos and text to support the operator preparing a run



DeckCheck highlights differences to the expected worktable

## A PERFECT FIT FOR OPERATORS AND PROGRAMMERS

FluentControl software meets the needs of both day-to-day operators and system programmers, without compromise. Assay development and configuration is quick and easy using a dedicated programming environment. A special run-time mode presents a clear and simple interface on the built-in touchscreen, which guides users through daily tasks for fast, consistent and efficient operation.

## CONSISTENT, REPRODUCIBLE AND RELIABLE OPERATION

Fluent Gx has a unique touchscreen interface that simplifies daily activities by guiding scientists through routine set-up and operation of the system for consistent, reproducible performance. Using built-in cameras to identify common loading errors, it can provide graphical instructions and prompts for every step of the set-up process.

- Visual guides for complex tasks
- Easier compliance with standard operating procedures
- User-specific assay permissions
- Faster start-up for new operators
- Status and run-time progress indicators
- Method Recovery allows a process to be easily recovered, even after a fatal error such as a power outage

## EVERY RUN SET UP FOR SUCCESS

**DeckCheck™** highlights loading mistakes during worktable set-up, drawing attention to potential problems before they occur to make sure every run is a success. The system uses built-in cameras and an advanced software algorithm to compare a live picture of the worktable to a reference image, displaying discrepancies and allowing manual corrections in real time during instrument loading and worktable set-up.

- Common loading mistakes corrected before they cause problems
- Increases number of successful runs
- Exceptionally easy to use
- Saves money and maintains productivity
- Increases user confidence for all applications

# Tecan Consumables.

**Performance assured. Quality assured. Application assured.**

**Tecan consumables** are manufactured within a controlled environment, using state-of-the-art production processes and integrated quality control procedures. The Installation and Operational Qualifications of your Fluent Gx are executed together with your choice of Tecan disposable tips. The performance of the entire system is dependent on every aspect, right down to each individual tip, which is why every lot of Tecan Pure and Tecan Sterile tips is tested by an independent laboratory to guarantee the purity.

## WHATEVER YOUR APPLICATION, WE HAVE A PURITY LEVEL TO SUIT

	Tecan Standard	Tecan Pure	Tecan Sterile
Application examples	ELISA Sample handling Biochemical screening	Genomics research Forensics Molecular diagnostics	Cell biology Microbiology Cell-based screening
Tecan Standard quality	✓	✓	✓
Human DNA free	-	✓	✓
PCR inhibitor free	-	✓	-
RNase/DNase free	-	✓	✓
Pyrogen/endotoxin free	-	-	✓
Sterile	-	-	✓



MCA 384 with disposable tips pipetting to 1,536-well microplate

### TECAN DISPOSABLE TIPS

Portfolio includes:

- Liquid Handling (LiHa) disposable tips in standard trays, ANSI/SLAS-format boxes and nested racks
- MCA 96 disposable tips in ANSI/SLAS-format boxes and nested racks
- MCA 384 disposable tips in ANSI/SLAS-format boxes



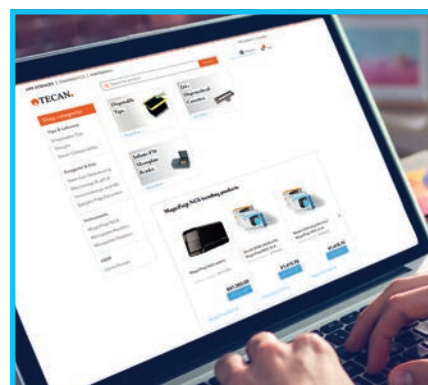
A variety of volumes and purities to fit your applications needs on Tecan liquid handling platforms

### LABWARE

Tecan offers a wide range of disposable troughs to optimize the performance and productivity of its liquid handling platforms.



For more information visit  
[www.tecan.com/consumables](http://www.tecan.com/consumables)



### TECAN E-SHOP\*

Save your time and easily order your consumables online!

\* The e-shop is currently only available in certain regions.



Visit our shop at  
[shop.tecan.com](http://shop.tecan.com)

# A world of automation possibilities.

## Exceptional versatility for regulated environments

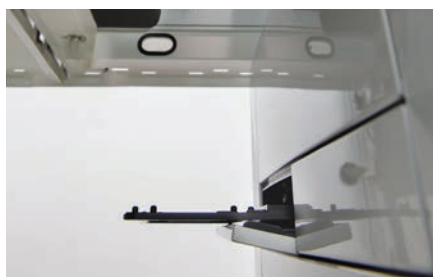
Fluent Gx's flexible worktable and configurable options provide the tools needed to address a vast array of assays. Tecan's application experts can help you optimize your workflow, freeing up staff time and maximizing your productivity. FluentControl's dynamic Scheduler option can further enhance efficiency for scheduling multiple plates in complex workflows.



Pipetting directly into thermocycler\*

## NEXT GENERATION SEQUENCING

Rapid technology advances have made NGS a cost-effective alternative to PCR or array-based techniques for many applications, allowing pooling of hundreds of samples in one sequencing run. The speed, accuracy and precision of Fluent Gx make the system ideally suited to preparing NGS libraries from multiple 96- or 384-well plates.



A view from below, a reader integrated under the worktable

## FASTER NUCLEIC ACID PURIFICATION; INTEGRATED QUANTIFICATION AND NORMALIZATION

Fluent Gx provides scalable solutions to match your throughput needs, with the flexibility to switch between random access samples, 96- and 384-well formats as required. FluentControl makes easy work of fully automated quantification and normalization, whether you use fluorometric or bead-based technics. Integrated readers and software wizards enable virtually any genomics application.



A view from the top, through fast and light arms onto impressive deck capacity

## SAMPLE ALIQUOTING AND ASSAY PREPARATION

Even common laboratory routines benefit from Fluent Gx's amazing speed, phenomenal deck capacity and process security features. Fluent Gx is Tecan's fastest, highest capacity, open platform for regulated environments. It enables more tubes per run in less time, together with full tracking of sample IDs, real-time liquid level detection, in-process viability checking and comprehensive reporting of all pipetting activities.

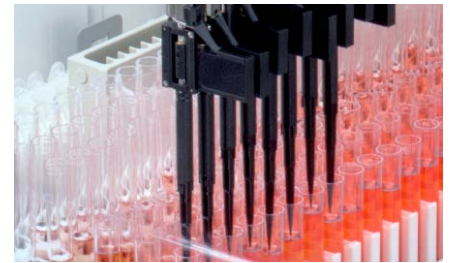
\* On Deck Thermal Cycler is a product of Inheco GmbH, Martinsried Germany



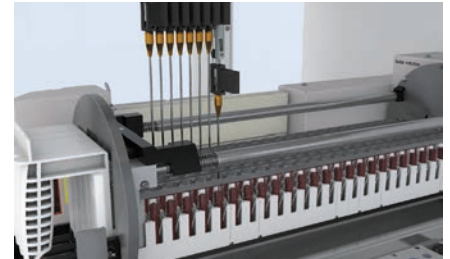
## FLEXIBLE CHANNEL ARM™ – AIR OR LIQUID DISPLACEMENT

Configure to your application's demands:

- Disposable tips to eliminate cross-contamination concerns
- Fixed, washable tips to pierce seals and septa
- Piercing Tips eliminate tedious and contamination-prone tube de- and recapping steps and allow consistent sample mixing with the Tube Rotator between the individual pipetting steps
- Automatically adjustable tip spacing to suit tubes, plates and troughs
- Minimize dead volumes, with liquid level detection down to 2  $\mu\text{l}$  in PCR plates
- Individual channel movements for varying, unknown liquid levels
- Huge dynamic ranges from 200 nl to 5 ml
- Fluent Gx can be configured according to your assay needs, and is not limited to one pipetting technology
- Phase Separator™ technology enables parallel 8-channel detection of liquid-liquid interfaces to offer:
  - Precise control of liquid separation, reducing the risk of cross-contamination
  - Fast aspiration of a liquid of choice, such as plasma for buffy coat separation



Pipetting tube to plate with disposable tips and air displacement



Piercing of capped tubes with Piercing Tips and liquid displacement Flexible Channel Arm



Multiple Channel Arm picking up 96 500  $\mu\text{l}$  disposable tips



Multiple Channel Arm picking up one row of 24 50  $\mu\text{l}$  tips

## MULTIPLE CHANNEL ARM (MCA) – A DYNAMIC WONDER

High flexibility, high productivity plate pipetting:

- MCA384/96 swaps head adapters in seconds to switch from fixed to disposable tips or from 96- to 384-channel formats with a volume range from 200 to 500  $\mu\text{l}$
- The MCA96 with an extended volume range from 1 to 1,000  $\mu\text{l}$  in free dispense with cLLD on each tip
- Pick up rows or columns to pipette serial dilutions, titrations, standard curves, controls, and more!
- Pipette into 96-, 384- or even 1,536-well plates

## ROBOTIC GRIPPER ARM – LOGISTICS WITH SPEED AND REFINEMENT

One arm, two fingers and amazing possibilities:

- Move tubes and plates to and from readers, washers, incubators, magnets, vacuums, balances or other modules integrated onto your Fluent Gx
- Use an optional arm-mounted barcode scanner for high speed labware identification
- Optional Finger Exchange System offers the unique ability to handle tubes or plates with one arm in a single run – switching on the fly



Tube handling with Robotic Gripper Arm



Plate handling with barcode reading



Fluent 780 with carousel (right side) and stacker (left side) maximizes walkaway time

**Fluent Gx is designed to simplify your daily tasks by bringing together all the modules and devices required for complete workflow automation.**



Exchange deck segments for flexible assay set-up, device integration and reconfiguration

### **DEVICE INTEGRATION FOR FULLY AUTOMATED WORKFLOWS**

Fluent Gx's patented Dynamic Deck ensures exceptional capacity in a compact footprint. This allows integration of peripheral devices on, around or below the workdeck without compromising on instrument throughput – making it easier to get more done, more quickly.

#### **Incubators**

The compact Monitored Incubator Option (MIO™) holds up to six microplates. Several Incubators, with individual temperature and shaking settings, can be accommodated on the deck periphery – enhancing overall system capacity.

#### **Magnetic and vacuum separation**

Fluent Gx supports both magnetic bead-based and vacuum separation workflows. These devices, ideally suited to nucleic acid extraction and genomic sample clean-up activities, offer fully-automated separation for multi-well formats. Several separation modules can be placed on the high capacity deck to enable parallel processing of multiple plates.

#### **Readers and washers**

Tecan offers a range of multimode readers and washers designed specifically with complete automation in mind. From rapid absorbance measurements for DNA quantification to advanced cell-based and biochemical assays, there is a Tecan reader or washer to suit almost any assay requirements.



Robotic Gripper Arm with Infinite® plate reader, HydroFlex™ washer and Te-Shake™

### **ACCURATE NUCLEIC ACID QUANTIFICATION AND QC WITHOUT SAMPLE LOSS**

The Frida Reader™ module offers a unique approach to UV-based concentration and purity assessment of nucleic acids. Designed to work in combination with the platform's Air FCA, this patented approach performs measurements in a hanging drop, avoiding the consumption of rare and precious genetic material by aspirating the sample back into the tip for further processing after measurement.



Frida Reader offers in-process absorbance measurement free of any sample loss

# Do more in less time and less space.



Fluent Gx 480 with integrated laminar flow hood

## Laminar flow hood\*

An integrated laminar flow HEPA hood with UVC light maintains a clean environment throughout the workdeck, ensuring environmental protection for cell biology applications. The integrated UVC lamp can be used to ensure the cleanliness of deck area is maintained.

## Fluent ID

Scan tube barcodes while loading the worktable. Get instant LED feedback and straightforward touchscreen guidance. Handle errors and start your run the moment all tubes are loaded onto the deck. No waiting for error handling or mechanical manipulation, just load and go. This innovative module complements an array of other barcode reading options - including arm-mounted and 2D flatbed scanners - to maximize process security.

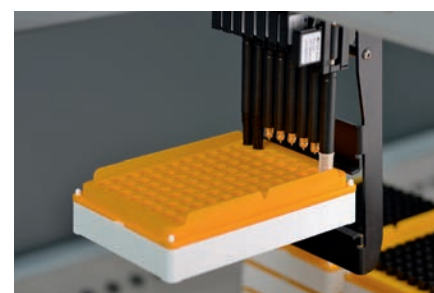
## Third-party devices

FluentControl offers straightforward integration of third-party devices, with an ever-increasing library of drivers - including support of SiLA devices. The implementation of these devices can be simplified with Fluent Gx's Zero-G one-touch teaching set-up.

[**Note:** Integration of some third-party devices can affect the system's intended use.]



Fluent ID offers rapid sample identification and error handling

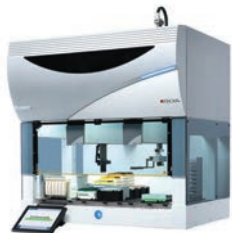


Maximize your deck capacity with the Tecan nested tips and unique transfer tool for the tip racks

\* Laminar flow HEPA hood is a product of Bigneat Ltd., Waterloo, UK.

# It's fast. It's flexible. It's Fluent Gx.

## FLUENT Gx 480



30 plate positions

## FLUENT Gx 780



48 plate positions

## FLUENT Gx 1080



72 plate positions

### DISCOVER THE FLUENT Gx AUTOMATION SOLUTION

To see Fluent Gx in action and learn how it can improve the productivity of your laboratory, contact your nearest Tecan office or visit [www.tecan.com/fluentgx](http://www.tecan.com/fluentgx)



The Fluent Automation Workstation is a carbon neutral product. The calculated carbon footprint covers all relevant emissions over the product lifecycle – including raw materials for assembly, energy for manufacture, inbound and outbound logistics, in-service usage and end of life disposal.

**Australia** +61 3 9647 4100 **Austria** +43 62 46 89 330 **Belgium** +32 15 42 13 19 **China** +86 21 220 63 206 **France** +33 4 72 76 04 80 **Germany** +49 79 51 94 170  
**Italy** +39 02 92 44 790 **Japan** +81 44 556 73 11 **Netherlands** +31 18 34 48 17 4 **Nordic** +46 8 750 39 40 **Singapore** +65 644 41 886 **Spain** +34 93 595 25 31  
**Switzerland** +41 44 922 89 22 **UK** +44 118 9300 300 **USA** +1 919 361 5200 **Other countries** +41 44 922 81 11

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The FLUENT Gx is an open automation platform product for general laboratory use. It is intended for routine laboratory tasks, such as general purpose pipetting and general purpose liquid handling and robotic processes. Configuration of options may impact intended use – please consult your local Tecan office.

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