

# $\mu$ Xact<sup>3</sup><sup>®</sup> Digital Syringe Driver



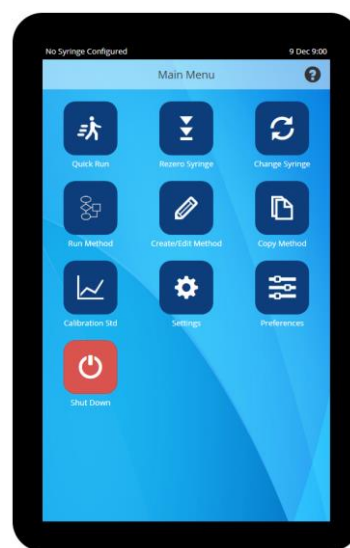
**Programmable for Workflow sequence and repeatability**  
simple to program and operate

# Introduction

The  $\mu$ Xact<sup>3</sup> is a portable digital syringe driver designed for precise liquid dispensing at pressure. Applications include; programmed sequence liquid dispensing, flow kinetic studies, micro HPLC and SPE, filtration, membrane separations, and MS introduction. It is ideal for pre-automation workflow develop. Developed methods moved to ePrep Sample Preparation Workstation to process large sample batches.  $\mu$ Xact<sup>3</sup> uses analytical syringes that can dispense of aqueous, organic and volatile liquids from 0.1  $\mu$ L to 10mL with high accuracy and precision.

## Key Features

- **Precise dispensing of aqueous and organic liquids**
- **Volume range of 0.1 $\mu$ L to 5mL at <1% RSD** (syringe dependant)
- **“High” pressure capabilities**
- **Simple touch-screen programmable software**
- **Handheld or in-stand operation**
- **Extensive functions: method programming, interchangeable syringes, user settings, WiFi connection, and calibration standards routines.**



## $\mu$ Xact<sup>3</sup> Handle and Controller

### The Controller

The  $\mu$ Xact<sup>3</sup> Controller features a 7-inch touch screen and in-built micro-processor. App style software provides simple and comprehensive tools for programming methods, adjusting variables, changing settings and using the  $\mu$ Xact<sup>3</sup>. Communication to the handle is via a Wireless connection. A cable is required between the Controller and handle to provide power for the handle motor.

$\mu$ Xact<sup>3</sup> is fitted with WiFi, enabling automated software update and feature additions.

### The Handle

The Handle can be manipulated manually or fixed in the optional  $\mu$ Xact<sup>3</sup> stand. Syringes can be easily interchanged using ePrep's rapid syringe XCHANGE technology. A manual 'Run' button provides the user with the option of triggering functions either from the Controller screen or the Handle. The Handle features a high-performance plunger drive motor capable of high forces and accurate plunger positioning; making it suitable for micro separation and filtering applications.

### Stand

A stand is available for mounting the syringe handle during operation.

The flex-arm stand allows the user to operate the  $\mu$ Xact<sup>3</sup> in a fixed position. It also assists in moving and holding the syringe to a stationary vial and can be rotated to 90° to bring the needle to a Mass Spectrometer interface.



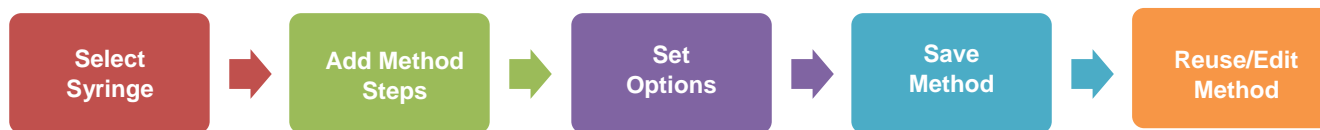
## Analytical Syringes for Precision, Accuracy and High Pressure

The use of Analytical syringes in the  $\mu$ Xact<sup>3</sup> provide accuracies and reproducibility of  $\leq$  1%. The use of analytical syringes also allows for sealed sample vials, improving sample integrity and reducing user exposure during operation.

$\mu$ Xact<sup>3</sup> positive displacement syringes can also handle organics and high viscosity samples with ease. This is not possible with a pipette system due to air vacuum solvent boiling and small capacity. Positive displacement syringes (where plunger contacts sample) allows for high forces to be applied to the sample, providing high-pressure functions. This is particularly useful for techniques such as  $\mu$ SPEed, filtering and membrane applications where higher pressures can improve resolution, time, and reaction kinetics.

## Ease of Use

Use of  $\mu$ Xact<sup>3</sup> propriety touch screen software is **independent of user skill** featuring method validation checking, error feedback, screen-by-screen 'help' guides, and user input or prompt options within methods.

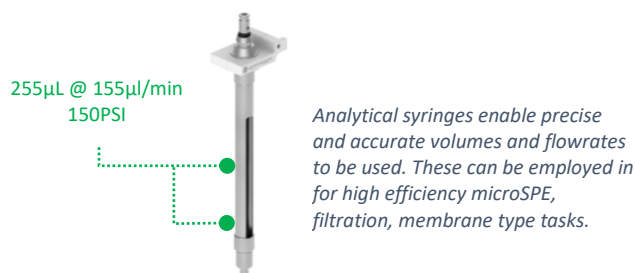


## Sample Preparation Applications

The  $\mu$ Xact<sup>3</sup> can automate most Chromatography Laboratories for sample preparation tasks.

Example applications include:

- Precise Calibration Standard preparation
- Dilution
- Aliquot Sample
- Filtering
- Reagent Addition
- Mixing
- Micro SPE
- And more...



## $\mu$ Xact<sup>3</sup> Features

### STATUS LIGHTS

Boot-up and Wireless connection status of  $\mu$ Xact<sup>3</sup> is provided by an LED at the front of the handle.

### TOUCH BUTTON

Handle touch button is an alternative trigger to the Run, Start and Abort functions on the Controller screen.

### WIRELESS COMMUNICATIONS

Controller-to-Handle Wireless communications provides constant visual feedback of step progression on the screen.

### TOUCH SCREEN CONTROLLER

Powerful touch-screen controller enables simple onscreen operation and method programming.

### PROGRAMMING

Quick Run (for quick and simple methods), Method Run (for more customised, saved and complex methods) and Settings (with basic preference adjustments, software updates, re-zeroing of plunger and changing the syringe).

### POWER CABLE

$\mu$ Xact<sup>3</sup> uses a 24-volt power motor which provides high force/pressure capabilities. Power is carried from the controller box to the handle via a 1.3 metre cable.

### SIMPLE TOOL CHANGE.

XCHANGE<sup>®</sup> technology enables simple exchange of differing syringes to change volumes or avoid contamination.

### SYRINGE RANGE

A range of syringe types and volumes are available for the  $\mu$ Xact<sup>3</sup>. Volumes and flowrates for available syringes are pre-programmed into the software

### STAND

The stand features solid platform base, goose neck flex arm, 360° universal rotation head, and handle saddle. Enables hands free syringe operation.

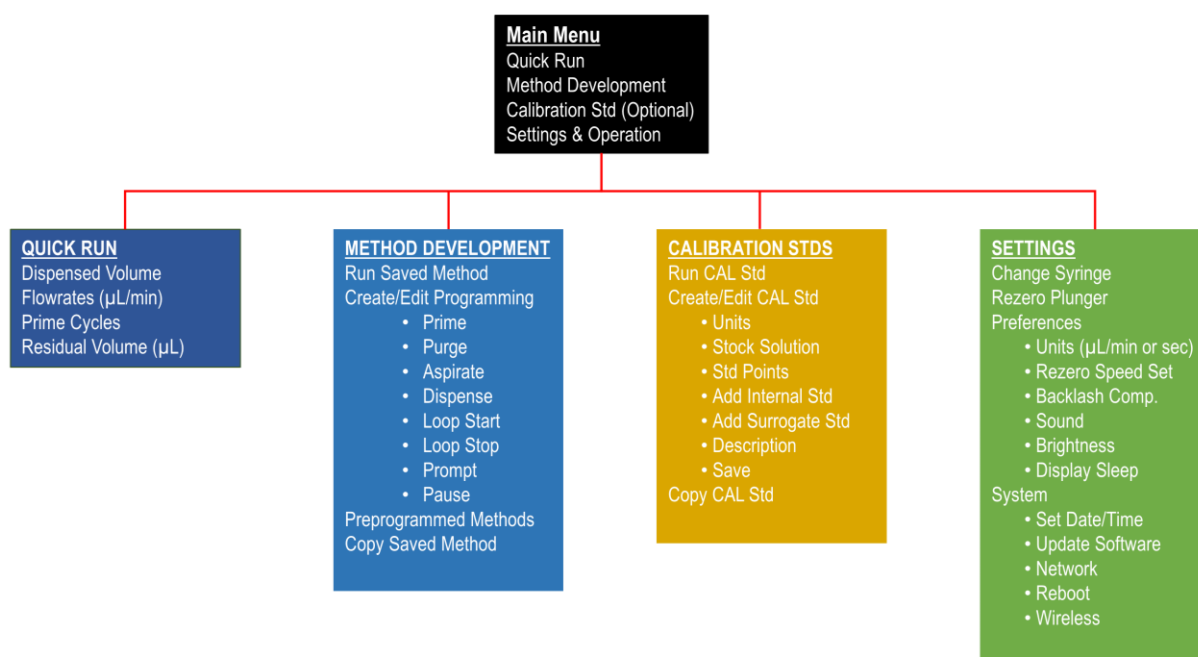
# Software Functions

By including a variety of functions with adjustable variables, the  $\mu$ Xact<sup>3</sup> software is intuitive to program, edit and run. The software is designed to build 'Methods' made up of the differing functions called 'Steps'.

The software has 3 standard menu types: Quick Run (for quick and simple methods), Methods (for creating, editing, copying and running saved and more complex methods) and Settings/Preferences (with basic preference adjustments, software updates, re-zeroing of the plunger and changing the syringe).

The Calibration Standards menu is a purchased optional extra allowing for the creation, copying and running of unique calibration standard methods.

## Programmable Functions Modes



### Quick Run

Quick Run has been designed for simplicity and efficiency. It allows the user to quickly create and execute a basic process with the  $\mu$ Xact<sup>3</sup> and can be as simple to use as picking up a manual syringe while providing extreme precision and pressure made possible with the  $\mu$ Xact<sup>3</sup>.

### Methods

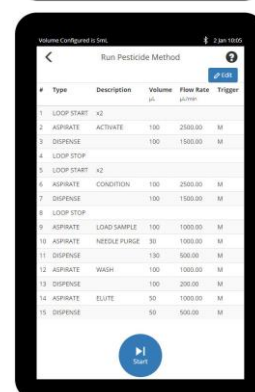
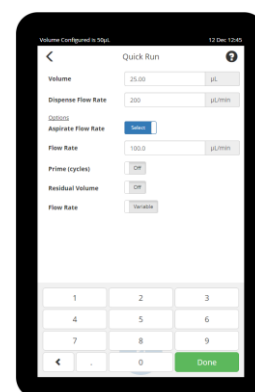
Creating new methods, saving, editing or copying existing methods can all be easily achieved using the  $\mu$ Xact<sup>3</sup> software. Methods may include a range of functions including Prime, Purge, Aspirate, Dispense, Loop, Prompt and Pause. Variables can also be adjusted to control parameters such as volume, flowrate, priming, pausing and setting residual volume for each step of the method. Even  $\mu$ SPE processes can be programmed. Build methods with multiple steps and save them for future use.

### Settings/Preferences

Access options to change syringe, re-zero plunger and basic preferences on the Settings or Preferences menu. Settings also include time and date, brightness, sleep settings, sound levels, Wi-Fi connection, and updating software.

### Calibration Standards (Optional Add-on)

Calibration Standards include pre-programmed, multipoint, standard dilution profiles. Take the pain and error out of preparing calibration standards.



# Technical Specifications

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**Model:**  $\mu$ Xact<sup>3</sup>, P/N 01-08100-01

## LIQUID HANDLING AND SAMPLE PREPARATION

### Liquid handling precision

Liquid: <0.5% RSD dispensed at 5% total syringe volume  
Mechanical:  $\pm$ 0.01mm plunger displacement precision.  
(0.016 $\mu$ L for a 50 $\mu$ L syringe and 0.5 $\mu$ L for a 1.25mL syringe)

### Liquid handling accuracy

< 1.0% RSD of total syringe volume with an uncalibrated syringe.  
Syringes can be calibrated for greater accuracy

### High Pressure

Depending on the syringe volume and type selected, the  $\mu$ Xact<sup>3</sup> is capable of very high pressures using positive liquid displacement.

### Volume range

Minimum volume: 1 $\mu$ L per dispense (precision of lower volumes is based on operating conditions).  
Maximum volume: 5mL per dispense.

### Flow rates

2 $\mu$ L/min to 100mL/min depending on the installed syringe.

### Plunger stroke/Scale Length

37mm/30mm syringe scale length

### Plunger Force

Syringe pressure max: 50 $\mu$ L = 4300psi, 250  $\mu$ L = 870psi, 1.25mL = 175PSI and 10mL(5mL eff) = 44psi. Above these pressures the motor will stall stopping the plunger moving.

Motor stall detection included providing two correction modes: i) reduce flowrate by 10% steps or ii) stop dispense with overpressure error.

### $\mu$ Xact<sup>3</sup> XCHANGE SYRINGE

50 $\mu$ L, 250 $\mu$ L, 1.25mL  $\mu$ Xact<sup>3</sup> and 5mL (1/2 x 10mL) ePrep syringe

## OPERATIONAL INFORMATION

### Function

Handheld, high force digital syringe driver designed for liquid dispensing at the pressure

### Command Set

Settings, Quick Run, Method Operation and (Optional) Calibration Standards

### Operational Functions

Operation commands available in Method sequences. (See Software Operation for additional details.)

### Environment

Needled syringes enable sealed vial operation. A well ventilated and climate controlled environment is recommended. If using toxic materials take appropriate safety precautions.

### Controller and Software

Powerful microprocessor controller with touch screen operating ePrep's  $\mu$ Xact<sup>3</sup> software (English only) and lifetime software updates (requires WiFi connection).

### Connectivity Controller-to-Tablet

Wireless communications between controller and handle. WiFi capable controller for software update.

Note: 24-volt power cable runs between controller and handle for syringe motor operations.

### Online Updates

Controller software can be automatically updated by WiFi, if connected, from the Controller Box.

### Available Accessories (Optional)

Shaker, Gripper, Barcode Reader, Direct Detector Interface, Multiport Reagent Manifold,  $\mu$ SPEed Cartridge Rack.

## SYSTEM INFORMATION

### Controller Dimensions (L x W x H)

200mm x 115mm x 75mm

### Handle Weight

425 grams

### Voltage

24V, 221W, 2.5A DC Power Pack; 100-240 Volt AC input; Requires country specific IEC C13 power cable (not supplied).

### Operating temperature

10 - 35°C, 0-80% relative humidity

### Operating sound level

Typical 60dB

### Compliance

CE, FCC, IC, RCM, RoHS, Safety EN 61010, EMC 61326

### Warranty

12 months

# Kit Contents

## INCLUDES:

- μXact<sup>3</sup> Driver Handle
- μXact<sup>3</sup> Controller Box
- 110/240-24volt handle Power Pack (mains C4 type computer cable not supplied)
- 250μL μXact<sup>3</sup> μSPEed Syringe
- 2 x μSPEed Needles
- 1 x μSPEed C18RPS-3μm/120Å Cartridge
- 1 x μSPEed Silica-3μm/120Å Cartridge
- 1 x μSPEed PS-DVB-3μm/300Å Cartridge
- 1 x μSPEed PS-DVB-RP-3μm/300Å Cartridge

## ORDERING INFORMATION:

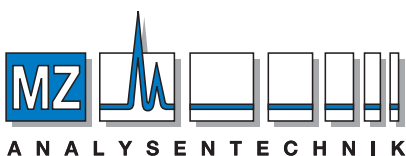
Part Number	Description
<b>μXact<sup>3</sup> Digital Syringe Driver Kit</b>	
01-08110-01	μXact <sup>3</sup> Digital Syringe Driver Kit (X) with Flexi Stand (Bundled)
01-08100-01	μXact <sup>3</sup> Digital Syringe Driver Kit (X) without Stand
<b>Additional μXact<sup>3</sup> Syringes</b>	
01-09058	50 μL μXact <sup>3</sup> Syringe, μSPEed Connection
01-09061	250 μL μXact <sup>3</sup> Syringe, μSPEed Connection
	500 μL μXact <sup>3</sup> Syringe, μSPEed Connection
01-09063	1.25 mL μXact <sup>3</sup> Syringe, μSPEed Connection
01-09026	10 mL ePrep Syringe (usable 5 mL, ½ stroke on μXact <sup>3</sup> )
<b>Optional Accessories</b>	
01-08150	Flexi Stand for μXact <sup>3</sup> with Syringe Cradle
01-08160	Calibration Standards Software Module
μSPEed cartridges	See website for Part Numbers and Product Information.



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