The SMART Analytical Syringe

Effortless Accuracy. Consistent Results.

digiVOL®

E-PREP™
automation for every laboratory

The digiVOL Advantage

digiVOL® is a high performance handheld digital analytical syringe for aliquoting from 0.1µL to 10mL aqueous, organic and volatile liquids at pressure, with exceptional accuracy and precision.

Tedious Liquid Handling is made pleasurable with no compromising results.

digiVOL applications include sequenced liquid dispensing, micro HPLC and SPE, filtration, membrane separations, kinetic (flow) studies and Mass Spectrometry introduction.

Programmable, the digiVOL enables the development of multi-step methods ensuring volumes, flowrate and sequence is repeatable.

Methods can be developed, stored and run. They can be transferred to the ePrep® Sample Preparation Workstation for processing large sample batches.

SMART RESULTS: digiVOL will give you expert accuracy and reproducibility every time. Eliminates human error and skill dependency through its precise syringe control. Build, validate and save methods, then allow digiVOL to take care of the process, diligence and attention to detail to give a successful outcome every time.

SIMPLE OPERATION: digiVOL's semi-automated capabilities builds and execute sequenced multi-step methods for sample preparation operations. Simply program, save and run methods through a touch screen controller.

APPLICATIONS AT PRESSURE: digiVOL can operate at pressure, enabling it to be used for techniques such as microSPE, filtering and membrane separations. This sets digVOL apart and provides opportunity for integration of unique sample preparation protocols.

EXTENSIVE CAPABILITIES: digiVOL is packed with features to extend laboratory operation. These include interchangeable syringes, user preference settings, WiFi connection, automated software updates and calibration standards routines.

digiVOL® Applications

microSPE

digiVOL and µSPEed Cartridges high resolution microSPE

A unique key capability of digiVOL is its ability to drive solvents at pressure, enabling the use of high resolution µSPEed cartridges for micro SPE, fractionation and separation.

µSPEed's one-way valve gives elution in one direction. 3µm sorbent results in a clean, high efficiency separation single step SPE without solvent blow down.

Routine Dispensing - Low Volume liquids: Accurate and precise (no parallax error) dispensing of liquids down to 0.2µL with accuracies better than 0.4%. Multi-step programming and storage of methods.

Dispensing Volatile Organics: Dispense volatile organic liquids using gas tight analytical syringes. Eliminates the problems associated with volatile solvents and air pipette systems. Suitable for hazardous and corrosive chemicals.

Sequenced Micro Reactions: Programmable for repeatable micro reaction sequences (volume and flowrate) such as antibody and protein digest work. Methods can be stored, copied and shared.

Standards Addition: Accurate and precise small volumes of internal or surrogate standard(s) can be aliquoted into sample solutions before sample preparation.

Efficient Dilutions: Accuracy and precision means sample preparation can be performed with smaller volumes of reagent and chemicals.

Reaction/Kinetic Studies: Programmed volumes, flowrates and timed pauses enable digiVOL to be used for kinetic studies such as Trypsin digest through a µSPEed cartridge.

Derivatisation Reagent Addition: Ability to use sealed vials to limit laboratory staff exposure to potentially hazardous materials. Solvent, sample and derivatisation reagents can be added at small volumes.

Direct to Mass Spec: Prepare sample and then directly inject sample at constant flowrate into an MS without an additional syringe pump. digiVOL on a stand can be manipulated to position for MS inlet.

Filtration: Use digiVOL pressure capabilities with disk filters. Accurate flow rates maintaining repeatability. digiVol can also be used for micro membrane separations such as Protein, DNA and RNA.

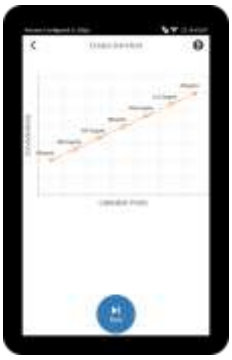
Hand-held Automated Delivery Biotechnology: Suitable for applications such as; Cellular Injections, Research Drug Delivery Studies, Microinjections and Cell Feeding

CALIBRATION STANDARDS

Calculate/Run multipoint calibration standards

digiVOL's Calibration Standards module automatically calculates concentrations and addition of standard internal and surrogate standard and dilution volume to make a multipoint calibration curve.

Shows graphically the calibration points. Ability to use commercial reference standards (single concentration) can be selected.



Handheld
Operation

Auto Syringe
Interchange

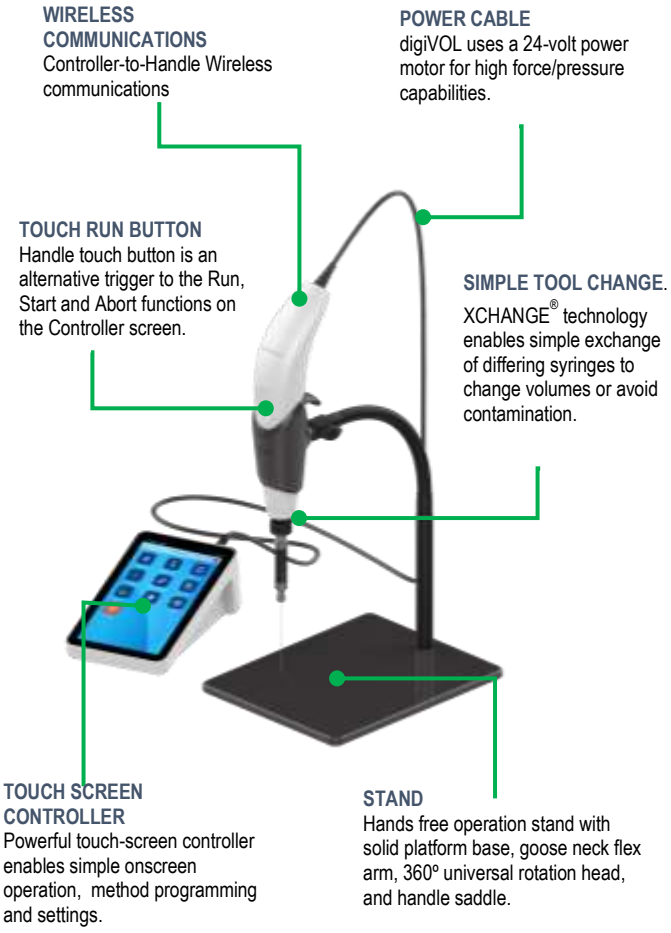
Control
Software

digiVOL® Digital Syringe Driver

digiVOL's controller features a touch screen and a powerful in-built micro-processor. A cable is required between the Controller and Handle to provide power for the handle motor.

APP style software provides simple and comprehensive tools for programming methods, adjusting variables, changing settings to best optimise the workflow methods. digiVol is fitted with Wi-Fi, enabling automated software update and feature additions.

The digiVOL Handle can be operated in handheld or stand mode (see image). Syringes are easily interchanged using the ePrep's XCHANGE® technology. 'Run' buttons on the controller as well as the handle enable the user to trigger action start and stop. A high-performance plunger drive motor capable of accurate plunger positioning and pressure.



Select Syringe → **Add Method Steps** → **Set Options** → **Save Method** → **Run Method**

digiVOL® Control Software

digiVOL APP software is simple to operate. A touch screen, with onscreen keyboard allow 'Methods' to be simply built, saved, copied and run for the selected syringe volume. Standard functions (see below) are easily accessed through a layered menu system. Use the default parameters for each task or set the parameters to suit your sample conditions.

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 digiVOL and can be as simple to use as picking up a manual syringe while providing extreme precision and pressure made possible with the digiVOL.

Methods

Creating new methods, saving, editing or copying existing methods can all be easily achieved using the digiVOL 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 µSPE processes can be programmed. Build methods with multiple steps and save them for future use.

Pre-programmed methods are included to simply build more complex sequence steps

Calibration Standards

Fully integrated calibrations standards module, calculates and runs sequences required to generate multipoint standards for analytical methods such as chromatography calibration standards.

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.

Technical Specifications

Model: digiVOL-X

LIQUID HANDLING AND SAMPLE PREPARATION

Liquid handling precision
Liquid: <0.4% RSD dispensed at 5% total syringe volume

Mechanical: ±0.01mm plunger displacement precision. (0.016µL for a 50µL syringe and 0.5µL 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 digiVOL is capable of operating at pressures using positive liquid displacement.

Volume range
Minimum volume: 1µL per dispense (precision of lower volumes is based on operating conditions).

Maximum volume: 5mL per dispense.

Flow rates
0.1µL/min to 100mL/min depending on the installed syringe.

Plunger stroke/Scale Length
30mm syringe scale length.

Plunger Force
Syringe pressure max: 2.4 µL = 100PSI, 50µL = 4300psi, 250 µL = 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 a) reduce flowrate by 10% steps b) stop dispense with overpressure error.

XCHANGE SYRINGES FOR digiVOL

2.4µL, 50µL, 250µL, 1.25mL digiVOL syringes and 10mL (5mL effect.) 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, Pre-Programmed and Calibration Standards

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

Environment
Syringes with a needle 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 digiVOL 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, µSPEed 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

Specifications are subject to change without notice

Kit Contents – P/N 01-08110-01 (Bundled)

INCLUDES:
digiVOL Driver Handle
digiVOL Controller Box
digiVOL Stand (01-08150)
110/240-24volt handle Power Pack (mains C4 type computer cable not supplied)
250µL digiVOL 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

PRODUCT AND SPARES ORDERING INFORMATION:

Part No	Description	
01-08110-01	digiVOL Digital Syringe Driver Kit (X) with Flexi Stand (Bundled 01-08100-01 & 01-08150)	
01-08100-01	digiVOL Digital Syringe Driver Kit (X) without Stand	
Syringes		
01-09050	2.4 µL digiVOL Syringe, µSPEed Connection	
01-09058	50 µL digiVOL Syringe, µSPEed Connection	
01-09061	250 µL digiVOL Syringe, µSPEed Connection	
01-09062	500 µL digiVOL Syringe, µSPEed Connection	
01-09063	1.25 mL digiVOL Syringe, µSPEed Connection	
01-09026	10 mL ePrep Syringe (usable 5 mL, ½ stroke on digiVOL)	
Hub Needles for µSPEed Syringes		
01-10990	µSPEed Hub Needles (Pkt 10)	
Accessories		
01-08150	Flexi Stand for digiVOL with Syringe Cradle	

automation for every laboratory

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Publication No.94-12003-04 Oct 2019
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