

# FlexDrop PLUS Precision Reagent Dispenser



The FlexDrop™ PLUS Precision Dispenser is the premier system designed for precision dispensing of reagents, buffers, solvents and cells for high throughput assay preparation and compound storage. Intended for use in pharmaceutical, biotech, and research applications, FlexDrop PLUS systems perform non-contact dispensing into 96-, 384-, and 1536-well shallow and deepwell microplates. This small footprint instrument easily fits into a laboratory biosafety or fume hood to ensure sterile containment and safe dispensing of liquids.

## Instrument performance

- **Precision and accuracy:** Achieves precision of < 5% C.V. and inaccuracy of  $\pm 5\%$  at volumes between 500 nL and 2.0 mL across the microplate. Precision data from volumes < 200  $\mu\text{L}$  were determined using spectrophotometric methods.

Precision data for volumes > 200  $\mu\text{L}$  were determined with distilled water under gravimetric evaluation. Inaccuracy data was determined using gravimetric methods.

- **Dynamic dispense range:** FlexDrop PLUS systems provide a dispense range between 200 nL and 2.0 mL in 100 nL increments for precise pipetting into most common 96-, 384-, 1536-shallow and deepwell microplates.
- **Throughput:** Capable of dispensing 250  $\mu\text{L}$  into a 96-well plate in < 20 seconds, 10  $\mu\text{L}$  into a 384-well plate in 30 seconds, and 5  $\mu\text{L}$  into a 1536-well plate in 60 seconds using a single dispense bank. When accessing plates from stacker cassettes, the system is capable of dispensing 250  $\mu\text{L}/\text{well}$  into a 96-well plate in < 45 seconds, 10  $\mu\text{L}/\text{well}$  into a 384-well plate in < 55 seconds and 5  $\mu\text{L}/\text{well}$  into a 1536-well plate in < 85 seconds.

- **Precision plate positioning:** Secure plate capture mechanism ensures positional accuracy of 0.1 mm in the X- and Y-axis for dispensing into high-density 384- and 1536- well microplates.

## Instrument features

- **Modular dispense banks:** Valve banks and manifolds can be easily removed/exchanged by user to enable “personal” fluid path components and simplify system serviceability.
- **Fluid Recovery Unit:** FlexDrop PLUS option recaptures fluid path liquid to recover precious reagents, maintains suspension and reagent temperature.
- **Extended Capacity:** FlexDrop III EX and EXi and FlexDrop IV EX and EXi models include an integrated stacking mechanism holding two stacker cassettes for automated processing of up to 50 standard height microplates. FlexDrop EXi models include a diving board extension to provide external integration capabilities.
- **Choice of models to meet reagent delivery requirements:** FlexDrop III models offer two dispense manifolds, each with eight individual precision solenoid valves, for up to two reagents. FlexDrop IV models offer four dispense manifolds for up to four reagents. Rapid reagent dispensing is achieved through 16 dispensers on the FlexDrop III systems and through 32 dispensers on the FlexDrop IV systems.

## User interface

- **Graphical user interface:** Provides easy-to-use menu-driven control software that guides the user through method development. Standard methods are created by performing three basic steps: create/select the reagent, create/select the microplate, associate the reagent and plate to the method.
- **FlexPREP software:** Enables the use of an external PC. Enhances system flexibility by providing control of dispensing parameters such as prime volume, pre-dispense volume, and dispense speed. Also allows individual valve control.

- **Method library:** Up to 99 common dispense protocols may be created and stored in the system’s permanent memory. Each individual protocol or “method” combines dispense steps, microplate stacking, and microplate lidding/delidding with labware and reagent definitions.
- **Reagent library:** A unique reagent description and viscosity offset can be defined for each reagent used. Up to 99 reagent descriptions may be entered and stored.
- **Plate library:** Up to 20 discrete plate definitions may be entered and stored.
- **RS-232 interface:** Enables integration with PerkinElmer’s JANUS® Automated Workstation and other robots and peripheral devices.

## System programming features

- **Sequential protocol linking:** Individual protocols may be linked together and operated sequentially providing automated processing of complex methods or assays.
- **Plate stacking:** FlexDrop PLUS EX and EXi offers bi-directional plate stacking to enable microplates to be restacked at the end of a protocol and maintain process order. Microplate lids may be removed or placed on plates from either stacker.
- **Sleep mode:** Automatically maintains a primed system when the instrument is not in use for an extended period of time. Sleep mode priming sequence is user-definable for frequency and volume.
- **Password protection:** Password protection enables supervisory personnel to restrict operator access from the system’s permanent storage libraries, such as method creation or modification, plate library modification, and reagent library modification. Enabling the password feature restricts the operator to system operation and runtime editing of protocols.
- **Integration platform:** An on-board RS-232 port provides external computer control and integration capabilities with PerkinElmer’s JANUS Automated Workstation as well as with other external robotic devices and workstation platforms.

- **Performance optimization:** Pipetting performance is optimized using a viscosity offset to compensate for reagent differences. Also, individual valve control, flexible prime volume, pre-dispense volume, and dispense speed allow for added dispense performance optimization.

### Options and accessories

- **Glass Reagent bottles with mesh:** Available in 100 mL, 250 mL, 500 mL and 1000 mL. All bottles listed are provided with a plastic mesh covering.

- **Polypropylene Reagent bottle:** Available in 175 mL, 250 mL, 500 mL, 1000 mL, and 4000 mL.
- **Polypropylene Reagent vials:** Available in 40 mL size. For use, vials must be inserted into a 100 mL bottle for proper sealing and pressurization of the system.
- **Modular Dispense banks:** Additional dispense banks may be used for dedicated fluid path components and simplified system serviceability.
- **Stacking Cassettes:** Available as either lidding or nonlidding cassettes in 50- or 25-plate capacity sizes.

### Physical data

Dimensions	FlexDrop PLUS	FlexDrop PLUS EX	FlexDrop PLUS EXi
Height of system housing including tubing	12 in. (304.8 mm)	15 in. (381 mm)	15 in. (381 mm)
Height of system housing including stacker cassettes	—	35.5 in. (901.7 mm)	35.5 in. (901.7 mm)
Width of system	21 in. (533.4 mm)	35 in. (889 mm)	48 in. (1219.2 mm)
Depth of system including front mounted bottles and power connection	20 in. (508 mm)	21.75 in. (551.2 mm)	21.75 in. (551.2 mm)
Fluid Recovery Unit			

Weight (approximate)	FlexDrop PLUS	FlexDrop PLUS EX	FlexDrop PLUS EXi
Net weight	35 lb (15.9 kg)	70 lb (31.8 kg)	75 lb (34.0 kg)
Shipping weight	87 lb (39.5 kg)	140 lb (63.5 kg)	145 lb (65.8 kg)
Fluid Recovery Unit			

#### Electrical requirements:

110, 220, 240 Vac  $\pm$ 10%; 50/60 Hz; 350 VA

#### Environmental requirements:

Operating ambient temperature: 60-95 °F (15-35 °C)

Operating relative humidity: 20% to 80% at 85 °F (30 °C)

Non-condensing

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