



Pressure Monitored Pipetting (PMP™)

Monitoring of pipetting pressure profiles for enhanced process quality control

The **Pressure Monitored Pipetting (PMP)** option is a sophisticated online tool for real-time quality control of the liquid transfer process. Integration of the PMP tool in the Freedom EVO® series of liquid handling workstations significantly enhances the confidence level in your critical liquid transfers. Common sources of pipetting errors in laboratories, such as occluded tips or air aspiration, are instantly detected and flagged. Error recovery is achieved through the error handling user interface or through a pre-defined error recovery scheme.

Enhanced process stability and traceability

The PMP online quality control tool provides peace of mind and supports your audit trail needs by:

- ensuring consistent, repeatable results
- saving time and aggravation in downstream processes
- supporting your method validation
- reducing the need for offline QC tests.

PMP advantages

Simple:

Use pre-defined pipetting parameters for serum, aqueous solution and DMSO or adjust them for other liquids, then simply activate it in your application script. It's ready to run!

Sensitive:

Optimized by Tecan's liquid handling experts to detect the maximum number of errors while avoiding false error alerts.

Flexible:

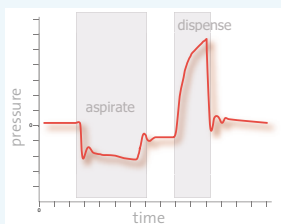
PMP complements the standard Freedom EVO liquid level detection, to provide optimal pipetting control over a wide range of physical properties of liquids.

Robust:

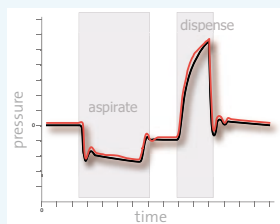
PMP is capable of managing sample-to-sample variation in viscosity and density, and its performance is independent of the atmospheric pressure.

How does it work?

1. PMP measures and records the pressure in the pipetting channel during pipetting.



2. PMP instantly compares the measured and modeled profiles.



3. PMP interprets the differences between the two profiles and reports pipetting problems, if any.

— measured curve — modeled curve

Specifications

Principle of operation

The dynamic pressure in the pipetting channels is constantly measured. The PMP option detects errors such as tip occlusion and air aspiration by comparing the measured and modeled (real-time simulated) pipetting pressure.

Hardware features

Instrument	Freedom EVO® 100, 150, 200
Channel configuration	4 or 8 PMP channels per liquid handling arm
Tip variety	Tecan brand disposable tips: 200 µl tips with or without filter, 1000 µl with filter
Syringe size	1,000 µl

Liquid handling features

Volume range	10 µl -1,000 µl for serum, aqueous reagents and DMSO
Liquid viscosity range	0.1–10 mPa.s
Dispense mode	Free (jet) dispense/Single or multi-dispense
Liquid level detection	The capacitive liquid level detection (cLLD) must be used for all conductive liquids Pressure liquid level detection (pLLD) possible with hexane and 1-octanol
Pre-defined liquid classes	Serum, water (aqueous solutions), DMSO

Software

Freedom EVOware® Standard version 2.3 SP1 or higher – application development software
Freedom EVOware Plus version 2.3 SP1 or higher – advanced process scheduling capabilities

Errors detected by PMP

Clot (tip occlusion during pipetting) and air aspiration

Error detection outputs

In-process error handling
Error flags in log files
Error flags in Freedom EVOware output files and Freedom EVOware Sample Tracking reports
Storage of pressure curves for offline viewing

Some restrictions apply to the clinical use of PMP. Please inquire with your local representative.

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