

microinjection

PLI-100A

Pico-Injector



- Femtoliter to microliter injections
- Digital readouts for injection pressure, time, and count
- Reliable optically encoded circuit for injection time set
- 5 pressures: inject, balance, clear, fill and hold

The PLI-100A Pico-Injector reliably delivers ejections from femtoliters to nanoliters through micropipettes by applying a regulated pressure for a digitally set period of time.

Pressure to the pipette is controlled precisely through a multi-turn regulator, and is reported digitally for reproducibility. Injection time is set using an optically encoded circuit which permits fine and coarse settings from a single knob.

The system timer can be controlled in three ways, front panel push button, foot switch, and external trigger input BNC.

Whether you need to do large injections into capillaries or very small injections into mammalian nuclei, the PLI-100A is up for the task.

Pressure Capabilities

The PLI-100A features two negative and three positive pressure pneumatic capabilities. The negative or vacuum functions allow the user to:

1. Fill micropipettes from their tips, reducing waste of pipettes.
2. Provide a means to secure and manipulate a cell using holding pipette.

The positive pressures allow the user to:

- **Eject precise amounts of fluids**
- **Create a balance pressure which prevents backflow into the micropipette following an injection**
- **Clear a micropipette of material in it**

Unique Features

The PLI-100A's important 'Balance', 'Hold' and 'Clear' functions are features not found on other microinjection units.

Balance

In addition to the ejection pressure, the Pico-Injector offers a secondary balance pressure. This adjustable pressure keeps a positive pressure on the injection pipette before and after injections. This eliminates dilution caused by capillary action and aids in the prevention of clogging. Wasteful continuous injection, which often occurs when no separate balance pressure is offered by an injection device, is avoided.

Fill/Hold

There are two built-in vacuum generators to fill a micropipette from the tip and to hold suspended cells. Filling the pipette from the tip is easier than back filling. The PLI-100A features a Fill Vacuum adjustment on the front panel. Suspended cells can be held with a second (holding) pipette. The holding vacuum's range accommodates most cell types.

Clear

A high-pressure pulse can be used for clearing a pipette, should it happen to clog. This is particularly useful when working with pipettes sized for smaller volumes.

Electrical Connectors

BNC type connectors are available at the front panel to ease integrating the Pico-Injector with other equipment. Synchronization of injections to other stimulations or recordings is therefore possible.

Selection Guideline

The PLI-100A is available in three packages: **Basic, Plus, and Deluxe**. The **Basic** unit is supplied with an input hose, output hose, holding hose, and input hose adapter.

The **Plus** unit also includes a foot switch, pipette holder, and input hose adapter.

The **Deluxe** unit includes all the accessories included with the Plus and an additional foot switch and pipette holder.

PLI-100A

Pico-Injector (Continued)



Rear Panel



Output Hose



Holding hose with cell release bulb



Pipette Holder (W4 65-0013)

Specifications

Input Gas Pressure	75 PSI Recommended, 105 PSI Maximum
Injection Pressure	0.2 to 60 PSI (413 KPa), regulated
Balance Pressure	0.1 to 9.9 PSI (68.9 KPa) regulated, multi-turn control, other ranges available on request
Fill Vacuum	Internally produced 0 to -12 PSI (0 to -82 KPa), regulated
Holding Vacuum	Internally produced 0 to -0.1 PSI (0 to -0.75 KPa), regulated
Clearing Pressure	Input gas pressure, unregulated
Injection Time	0.01 to 99.99 Seconds
Injection Time Accuracy	±0.01% (Crystal Time Base)
Duration Mode	Internally timed or externally gated
Time Trigger	Front panel, foot switch, or external TTL pulse (BNC)
Pressure Units	PSI /KPa switch selectable
Pressure Monitor Output	BNC, Rear Panel, 10 mV/PSI or 1 mV/KPa
Pressure Readout	Inject, balance, clear, output port
Pressure Display Resolution	3½ Digits, 0.1 PSI or 1 KPa
Injection Count Display	0 to 9999 Injections
Power Input	External 9VDC @ 400mA (min) Power Supply universal input 90 to 264 VAC
Weight	5.44 kg (12 lb)
Dimensions (HxWxD)	89 x 432 x 250 mm (3.5 x 17 x 9.8 in) (H x W x D)
Warranty	One year, parts & labor

Order #	Model	Product
W4 64-1735	PLI-100A	PLI-100A Basic Pico Injector with Injection, Balance, Clear, Filling and Holding Pressures; Comes with Input Hose, Output Hose, Holding Hose, and Input Hose Adapter
W4 64-1736	PLI-100A Plus	PLI-100A Plus Pico Injector with Injection, Balance, Clear, Filling and Holding Pressures; Comes with Input Hose, Output Hose, Holding Hose, Foot Switch (65-0029), Pipette Holder (65-0013), and Input Hose Adapter
W4 64-1737	PLI-100ADeluxe	PLI-100A Deluxe Pico-Injector with Injection, Balance, Clear, Filling and Holding Pressures, Comes with Input Hose, Output Hose, Holding Hose, Two Foot Switches, Two Pipette Holders, and Input Hose Adapter