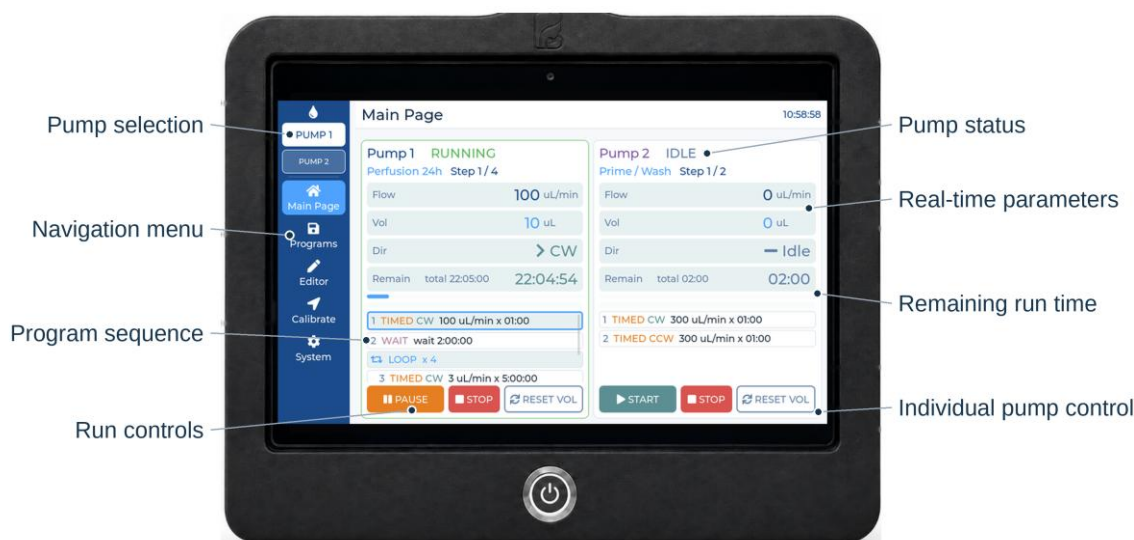


Pythia Perfusion Controller

Programmable Flow Control for Microfluidic Perfusion

The Pythia Perfusion Controller is a programmable touchscreen controller that turns user-defined flow profiles into precise commands for the peristaltic pump of the Pythia Perfusion Hub. Protocol building, live run monitoring, calibration, and program memory are combined in one interface for repeatable microfluidic experiments.

2 independent pumps / 10 stored programs / 0.1 - 380 μ L/min



Controller main page: two pumps running independent programs, with live flow, volume, direction, and remaining run time

Key capabilities

Protocol builder. Build sequences of clockwise, counterclockwise, and static segments, each with a defined flow rate and duration.

Independent dual-pump programming. Run two pumps at the same time, each with its own flow profile.

Live run monitoring. Programmed rate, direction, accumulated volume, progress, and cycle count are shown throughout the run.

Three-point calibration. A guided low-, medium-, and high-speed calibration builds a correction curve for the installed tubing and fluid.

Cycle automation. Repeat selected protocol blocks for a defined number of cycles or continuously.

Safety-oriented control. Run, pause, and stop controls with input-range validation.

Applications

Continuous perfusion • Recirculation • Bidirectional flow protocols • Timed compound exposure

Programmable workflow

Step	Action
1 Calibrate	Apply the three-point correction for the installed tubing and fluid
2 Load	Recall a stored program or create a new block sequence
3 Set up	Set direction, flow rate, duration, and cycle conditions
4 Run and monitor	Track the active block, progress, accumulated volume, and cycle status

The Pythia MPS

The Pythia microphysiological system (MPS) has three components: the Perfusion Controller programs perfusion protocols, the Perfusion Hub perfuses up to six chips in parallel, and the TME-Chip hosts the 3D tumor model.



01 Perfusion Controller

Programs flow rate and perfusion protocols



02 Perfusion Hub

Runs up to six chips in parallel



03 TME-Chip

Hosts the 3D tumor microenvironment

Technical specifications

Parameter	Specification
Product configuration	Programmable touchscreen controller for the Pythia Perfusion Hub
Pumps controlled	Up to 2, each with an independent flow profile
Control architecture	Calibration-based open-loop control
Flow direction	Clockwise (CW) and counterclockwise (CCW)
Target flow rate	0.1 - 380 $\mu\text{L}/\text{min}$
Motor command outputs	Start/stop, CW/CCW direction, step pulses for speed, driver enable
Cycle options	Defined cycle count (up to 30) or continuous
Program storage	Up to 10 user-named programs
Calibration	Guided three-point: low, medium, and high speed
Calculated run data	Accumulated volume; elapsed and assigned segment time
Compatible system	Pythia Perfusion Hub (PI200, PI200-C); Pythia TME-Chip (PO130, PO131) and other organ-on-a-chip devices

Ordering information

Catalog No.	Product	Description
PI100	Pythia Perfusion Controller	Programmable touchscreen controller; 1 unit
PI200	Pythia Perfusion Hub	Six-channel platform with pump and six chip holders; 1 unit
PI200-C	Perfusion Hub, custom	Holders and/or platform size made to fit your device; on quotation
PA100	Reservoir and tubing set	5 mL COC medium reservoir and pump tubing; consumable
PO130	TME-Chip, 1 mm glass	Standard imaging (10 $\times$ - 20 $\times$); 6 chips per box, sterile
PO131	TME-Chip, 0.17 mm glass	High-resolution imaging (40 $\times$ - 60 $\times$); 6 chips per box, sterile

Intended use

For Research Use Only (RUO). Not for use in diagnostic or therapeutic procedures. The Pythia Perfusion Controller is intended to program, calibrate, and operate perfusion protocols on the Pythia Perfusion Hub.

Contact and support

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