

Specifications

■ Micro Infusion Pump iPRECIO®

Infusion Method		Rotary Finger Method (patented peristalsis)
Reservoir		900 μ L Built-in Elastic Reservoir (Medical Grade SIBS)
Tubing	Inner Tubing	Material : Medical Grade SEBS (Olefin Series) Inner Diameter : 0.57mm / 0.022in
	Outer Tubing	Material : Medical Grade SEBS (Olefin Series) Inner Diameter : 0.55mm / 0.0216in Outer Diameter : 1.2mm / 0.047in / 3.6Fr Length of Outer Tube : approx.135mm
Activation Method		IR Communication
Data Communication		
Range of Flow Rate		1.0 μ L/hr - 30.0 μ L/hr (0.1 μ L/hr resolution)
Accuracy		< \pm 5% (under 0 - 80cmH ₂ O pressure)
Battery Life		6 Months at 1.0 μ L/hr - 1 Week at 30.0 μ L/hr
Size/Weight		38.7 (L) x 19.2 (W) x 9.7 (H) mm / 7.9g
Type of Usage		Disposable
Package		EO Sterilized blister package (5pcs / box)

■ iPRECIO® Management System

● iPRECIO® Management Software (requires Windows PC and USB port)

▶ Management of Infusion Protocol Study Name, Number/ID, Date, Experiment Period, Section Name, Operator, Number of Groups/Animals, Animal Species, Strain, Age, Compound Name/ID, Concentration, Buffer Name, Administration Route, etc.	
▶ Automated Recognition of Pump ID/Calibration Factor	
▶ Pump Programming via-PC	
Programmable Parameters	Start date/time, Stop date/time, and Flow-rate.
Infusion Mode Selection	1. Instant Infusion Mode 2. Post Recovery (Delayed) Infusion Mode
Flow Rate Mode Selection	1. Constant Flow Rate Mode 2. Variable Flow Rate Mode (maximum : 10 Flow rate steps) *In Variable Flow Rate Mode, Repeat Mode is selectable.
Dead Volume Setting	Catheter diameter / length or Actual volume
Flushing setting	Flushing Rate and Exchange Schedule
▶ Off-Line Management of Infusion	Schedule Management (Exchange schedule, Refill date/time, Alarm, Elapsed time & volume infused, etc.)
▶ Re-calibration of iPRECIO pump	
▶ Upload of Pump's log	

● iPRECIO® Data Communication Device

Interface	USB / Serial Interface
Communication with Pump	IR Communication
Power Supply	PC USB or AAA batteries
Size / Weight	120 (L) x 67 (W) x 35 (H) mm / 147g (with batteries)
Accessories	1 USB cable (1m), 2 AAA batteries

The iPRECIO® is for use in Laboratory Animal Research ONLY. Not for human use.



www.iprecio.com

E-mail : iprecio@primetech.co.jp

1-3-25, Koishikawa, Bunkyo-ku, Tokyo, 112-0002 JAPAN
Phone: +81-3-3816-0851 Fax: +81-3-3814-5080

manufacturing partner



●EO Sterilized blister package



●5pcs / box



The iPRECIO® Management System consists of:
Data Communication Device
USB cable, 2 AAA batteries
iPRECIO Management Software Installation CD
iPRECIO User Manual



Actual Size (38.7 x 19.2 x 9.7mm / 7.9g)

Authorized Distributor in North America



Contact : eMail : alzet@direct.com Phone : 1-800-692-2990

M i c r o I n f u s i o n P u m p



Implantable, Programmable and Refillable



The World's First Totally Implantable, Programmable
Micro Infusion Pump for Small Laboratory Animals

Micro Infusion Pump iPRECIO®

● Accurate patented Rotary Finger Method

- Every pump is factory tested and calibrated
Better than $\pm 5\%$ accuracy
- $1\mu\text{L}/\text{hour}$ to $30.0\mu\text{L}/\text{hour}$ in $0.1\mu\text{L}/\text{hour}$ steps
291 discrete infusion flow-rates
- Programmable infusion protocols (simple and complex)
- Battery life of up to 6 months (continuous $1.0\mu\text{L}/\text{hour}$)

● Totally implanted in subcutaneous space

● Refillable (reservoir) percutaneously via refill port with re-sealable septum

● With iPRECIO® catheters, test your drug's effects nearly anywhere

● Easy to use menu driven software for infusion protocol programming

iPRECIO® is an Ultimate Choice

“This implantable infusion pump uses a patented, microprocessor controlled peristalsis mechanism for accurate controlled flow. It is the only implantable and programmable pump for small laboratory animals. iPRECIO® can infuse fluids continuously for as long as six months and it can be refilled via a percutaneously accessible port.”



iPRECIO® 3 Key Features and Benefits

● Implantable

- Tetherless free moving animal model
- No exit wounds (reduced infection risk)
- No wires or connections to animal to allow stress free infusion

● Programmable

- Recovery Period
- Dose Escalation/De-escalation Studies
- Wash-out periods
- Complex Infusions
(daily/weekly repeat dosage, circadian rhythm, ...)

Complex pharmacokinetic and tolerance studies based infusion protocols including constant continuous dose, circadian rhythm infusion to complex “oral dosage simulations” three times per day. Further, iPRECIO® enables to test the relevance of dosing time or dosing protocol on the therapeutic index of small and large molecules.

● Refillable

- Multiple drugs
- Multiple solvents/vehicles
- Multiple concentrations of drug(s)

Increase study effectiveness by testing multiple drugs/vehicles within one animal. This enhanced flexibility is made possible by using wash-out periods between drug administration when only saline is infused to keep the catheter patent.

Innovative Drug Infusion Technology for Laboratory Animals

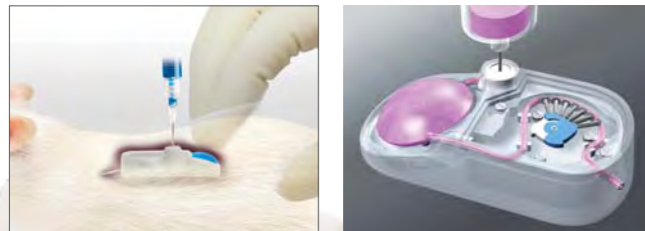
Implantable

The pump can be completely implanted in small laboratory animals subcutaneously. Thus, the animal moves freely without any restraint (i.e. tethering) during drug infusion. Additionally, infection risk is reduced, and the animal is likely to be significantly less stressed than in a tethered infusion model.



Refillable

You can replenish any medical fluid in the pump via percutaneous access to the pump refill septum and reservoir after implantation of the pump. Therefore, long-term drug infusion can continue until the installed battery life has run out. The reservoir is elastic and configured in such a geometry as to allow gentle palpation to confirm an approximate level of fluid in the reservoir.



Precision

The technology driving the infusion is a patented "Rotary Finger" method. This method is a unique form of peristalsis. The precise "micro-stick" pushes a rubber tube in the pump in a uniform and sequential manner. The accuracy of iPRECIO is +/-5%.

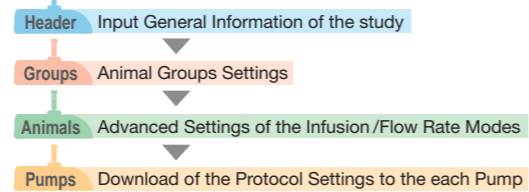


Programmable

Using the easy to use menu driven iPRECIO software, header information along with infusion protocol details are entered and ultimately downloaded to the pump's flash memory. Start Time, End Time, Flow-rate (1.0 $\mu\text{L}/\text{hour}$ to 30.0 $\mu\text{L}/\text{hour}$), Constant and Variable infusion mode are programmable. Both Constant and Variable infusion options have Instant or Recovery Mode Infusion settings. In Variable infusion mode, 10 flow-rate steps are user programmable. Further sophistication may be obtained by using iPRECIO's Repeat

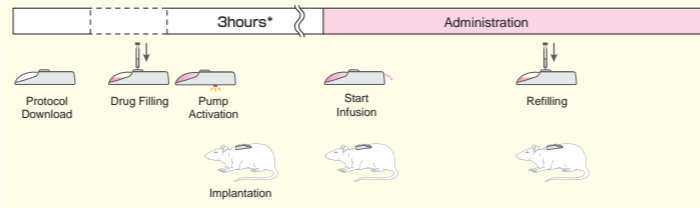
Management Software <4 steps>

Easy to use menu driven software for infusion protocol programming



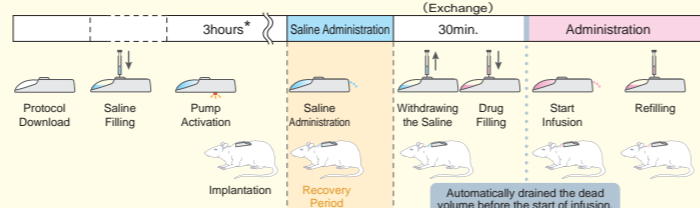
Infusion Mode

1. Instant Infusion :
Start infusion of the drug instantly by pre-programmed protocol following activation of the pump drive.



*Activate the pump between 3 minutes and 3 hours before the infusion start time.

2. Post Recovery (Delayed) Infusion :
Start Infusion of the drug after reservoir contents are exchanged percutaneously following recovery period from implantation surgery by pre-programmed protocol. The pump infuses saline or buffer during the recovery period.



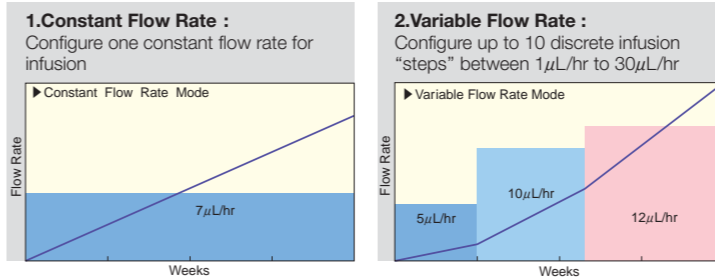
*Activate the pump between 3 minutes and 3 hours before the recovery start time.

Mode where the 10 steps are programmed within one or several repeat cycle loops (5 loops maximum). Each loop may be repeated 2-250 times.* The programmable feature will make iPRECIO pumps indispensable for applications where accurate flow infusion, recovery/washout periods, constant/variable dose or complex circadian infusion studies are necessary.



*subject to battery life

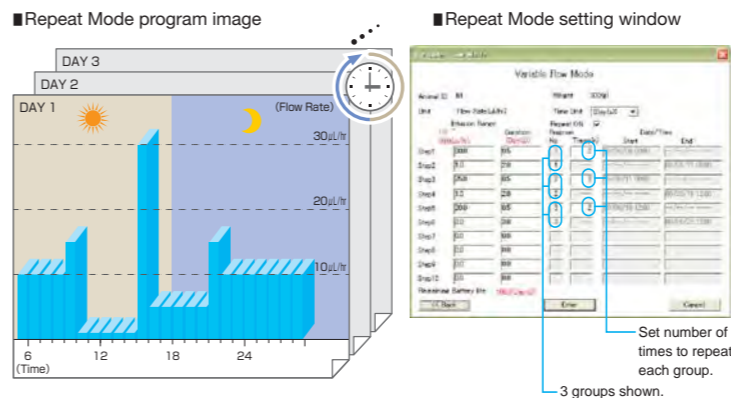
Flow Rate Mode



Repeat Mode

Repeat Mode allows the 10 flow steps to be used in a more sophisticated infusion protocol where up to 2500* steps may be programmed. Therefore infusing protocols taking into account circadian rhythm, oral drug intake (3-4 times per day) or studies for dose response curves may be programmed.

*10 steps x 250 times repeated (subject to battery life)



Data Communication (IR)

IR communications are used for loading the infusion program and activating the pump. It is made directly without removal from the blister pack. Therefore sterility is maintained until the pump is taken to the sterile surgical suite for filling/activation and implantation.



Unique S/N ID with factory calibration data

Each pump's unique ID and calibration factor is read from each pump during the programming phase.



■ Status Manager Window (Off-line monitoring)
You can confirm the administration schedule and the remaining volume of the pump reservoir, refill date, record the factual refill date, upload the log data of the pump.

GLP Compliance

For GLP compliance, accuracy of flow infusion can be validated. In addition, the iPRECIO can be user calibrated.

User log-in and password control options are available to the study director to restrict access to iPRECIO Management Software.

Long battery Life

The battery life is up to 6 months at a continuous flow rate of 1.0 $\mu\text{L}/\text{hr}$. You can confirm the estimated battery life on the PC Screen when you set the infusion protocol with the iPRECIO Management Software.

Flow Rate ($\mu\text{L}/\text{hr}$)	Continuous Infusion		Total Volume (mL)
	(hours)	(approx)	
1.0	4,328	6 Months	4.33
8.5	669	1 Month	5.69
19.0	307	1.8 weeks	5.83
30.0	196	8.1 days	5.88

Research Applications

iPRECIO is an innovative infusion pump which is used for small lab animal infusions in many different research and application fields.