MICROSYRINGE PUMP
(ESP-64)
User Guide

> **Warning:** Do not use this syringe pump on humans or non-laboratory animals.
> It may only be used for laboratory animals for the purpose of basic scientific research.

Eicom Corporation

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Introduction

Thank you for purchasing the Eicom microsyringe pump (ESP-64).
For your safety, please read this instruction manual before use until you completely understand the pumps operating procedures.
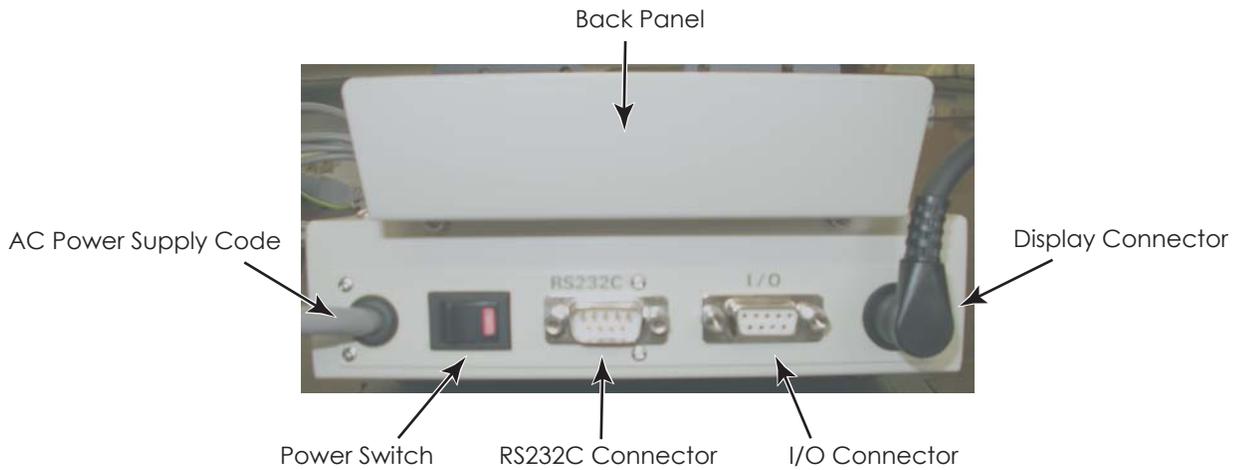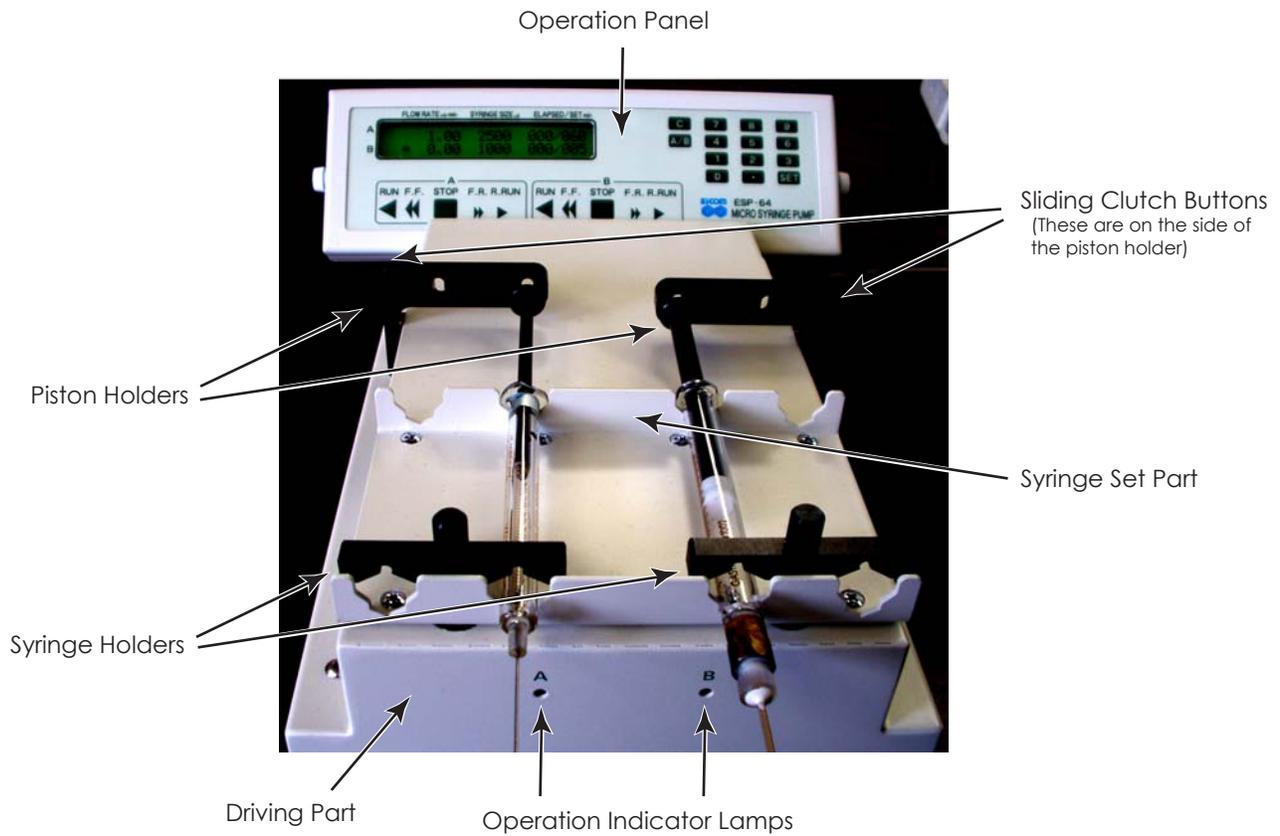
To prevent accidents, you are advised to strictly follow these points:

1. Only operate the ESP-64 pump after reading and completely understanding this instruction manual.

2. Only use the ESP-64 pump for basic research purposes. Do not use it for humans or animals, except for laboratory animals.

3. Follow all warnings and cautions.

4. Do not alter the ESP-64 pump in any way.

5. Do not unscrew or remove any screws on the ESP-64 pump.

Purpose of Use

Precise flow control is crucial for microdialysis and microinjection studies. The microsyringe pump (model ESP-64) has 2 pulsed, motor-driven sliding bars to push, at maximum, four syringe pistons. Do not use the ESP-64 pump for clinical applications.

Parts Name

Operation Panel

Sliding Clutch Buttons
(These are on the side of the piston holder)

Piston Holders

Syringe Set Part

Syringe Holders

Driving Part

Operation Indicator Lamps

Back Panel

AC Power Supply Code

Display Connector

Power Switch

RS232C Connector

I/O Connector

The power on/off switch is located on the back panel.

Numbers appear on the liquid crystal display (LCD) screen of the operation panel by turning on the power switch.

Preparation and Operation

1. Connect the drive part to the operation part.

2. Plug in the power outlet (in the range of 80–240 V) and turn on the power switch.

3. Fill the syringe(s) with 110% of the total pumping volume of the desired solution and remove any air bubbles from the syringe(s). For example, if the total pumping volume is 100 µl, load more than 110 µl of the solution into the syringe.

4. Set the syringe(s) on the syringe set part of the ESP-64.

5. Make sure that the piston holder is completely pressed up against the piston by pressing the F.F. key and confirm that liquid flows out of the syringe. Then press the STOP key to stop the flow.

6. Now, if required, connect the tubing to the syringe needle. Please hold the needle using your other hand to prevent the syringe sliding back when you insert the tubing to the needle. We recommend using Eicom Teflon joint tubing (JT-10) or FEP joint tubing (JF-10).

7. Press the RUN key to start the pump.

8. Press the STOP key to stop the pump.


Setting Programs

1. Select the appropriate channel with the A/B key. You can set up either the A or B channel for operation. The asterisk indicates which channel is being set.

2. The number blinks after pressing the SET key. Enter the desired value and press the SET key to save it. The cursor will now move to the next setting.

3. Input the desired values in the following orders and units:
     1 Syringe size: µl
     2 Flow time (ELAPSED/SET):   min
     3 Rate of flow (FLOW RATE):   µl/min

4. To change a value while the pump is running, press the SET key when the value is blinking. This is usually only done if the flow rate needs to be changed during the analysis.

Pull Function (Optional)

Attach the pull adaptor to the syringe using the two adaptor screws. Attach the hole in the center of the piston head to the piston holder with the piston screw. Press R.RUN to operate the pull function.

Pull adaptor: PU-64 type
Pull adaptor contents: Pull adaptor × 1, screws for adaptor × 2, screws for piston × 2
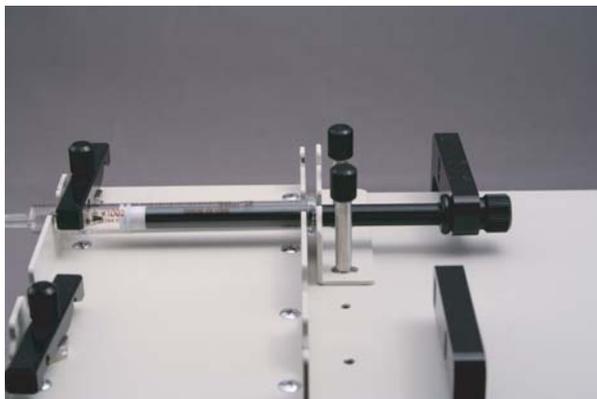
Pull Adaptor Setup

Specifications

Setting injection volume: Direct setting on a liquid crystal display (LCD) screen.
Syringe size allowance: Select 10–20–50–100–250–500 µl or 1–2.5–5ml
                             (Always use a Hamilton gastight syringe)
Syringe: 4-syringe carriage/2-syringe carriage × 2 channel (A and B)
Flow rate ranges:

Size of Gastight Syringes	Flow Rate Range
10, 25 or 50 µl	0.0001 ~ 0.9999 µl/min
100, 250 or 500 µl	0.001 ~ 9.999 µl/min
1, 2.5 or 5 ml	0.01 ~ 99.99 µl/min

Stop timer setting range: 1 ~ 999 min (1min step)
Flow rate accuracy: less than ±1
Operation panel size: W 170 × D 240 × H 80 (mm)
Driving part size: W 226 × D 75 × H 21 (mm)
Weight: approx. 3 kg
Power supply: AC 80–240, VA 50/60 Hz

General Warnings for Operation

1. Do not use the ESP-64 pump for human applications.

2. If the numerical value you input is rejected while setting the running parameters, it may be out of the setting capacity range. Please input a different value or turn the power off once and try setting the pump up again from the beginning.

3. When you slide the piston holder, please press the sliding clutch button firmly. If it makes a sound like "ghee", it may result in the cogwheel wearing out.

4. Never soak the ESP-64 pump or wet any part of it.

5. Please turn off the power when you are not using the ESP-64 pump.

6. Please avoid placing the ESP-64 pump in a humid place.

Remarks

The ESP-64 pump can be controlled from a personal computer via an interface called RS-232C. For a detailed protocol of the RS-232C communication, please contact Eicom.