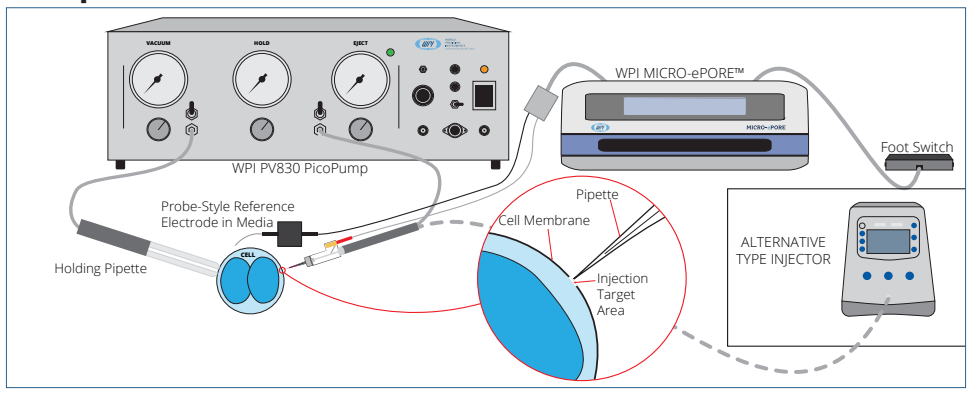
MICRO-ePORE™ Pinpoint Cell Penetrator

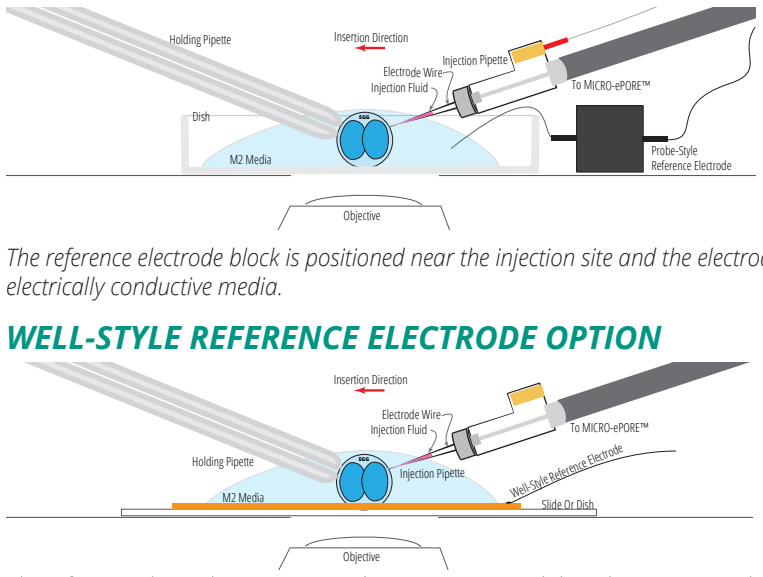
Quick Start Guide Rev. 1 (For units with serial numbers up to 182508)

Setup



The setup could use the probe-style reference electrode or the well-style electrode, as pictured below.

PROBE-STYLE REFERENCE ELECTRODE OPTION



The reference electrode block is positioned near the injection site and the electrode is placed in the electrically conductive media.

WELL-STYLE REFERENCE ELECTRODE OPTION

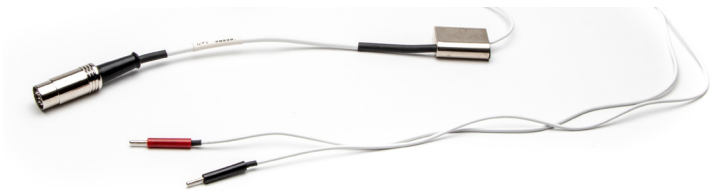
The reference electrode ring is secured to a microscope slide with a vacuum gel, and the media is placed inside the well-style electrode. Both the probe-style electrode and the well-style electrode are included. [Ring reference electrode – OD: 12.7 mm (0.5"), Thickness: 0.4 mm (0.16")]

Pipette Holder Connection

NOTE: The Pipette holder is designed to interface directly to popular injection systems like the WPI PV820/WPI PV830, Eppendorf Femtojet® or the Narishige injectors.

1. The pipette holder has a silver wire that must be inserted into the glass micropipette. The wire must be long enough to make contact with the substance to be injected. This wire is intentionally left longer than most pipettes to allow for different lengths. Trim the wire to the preferred length.

2. The Microelectrode Interface Cable has two 2 mm male pin connectors.



- Insert the red pin into the socket on the microelectrode holder.

- The black pin of the microelectrode interface cable connects to the 2 mm socket of either of the reference electrode options. This is necessary to complete the electrical connection to solution:
  A. For the well-style reference electrode, insert the black pin of the microelectrode interface cable into the socket of the reference electrode (Left).
  B. For the probe-style reference electrode, insert the black pin of the microelectrode interface cable into the back side of the reference electrode block. Plug the probe-style reference electrode pin into the front of the block (Right).

3. A. **Well-style electrode**–If you use the well-style electrode, the gold ring must be secured to your slide using vacuum grease to create an impermeable temporary seal. Place the liquid medium with your embryos inside the gold ring. [Ring reference electrode – OD: 12.7 mm (0.5"), Thickness: 0.4 mm (0.16")]

   B. **Probe-style electrode**–If you are using the probe-style electrode, place the block near the injection site. Then, bend the bare reference wire as needed to make contact with the liquid medium in order to complete the circuit.

NOTE: The silver wire should be chlorided before using it. The silver wire is supplied without chloriding. Refer to the procedure in the Maintenance section of the Instruction Manual.

Rear Panel Connections

The back panel of the MICRO-ePORE™ has the following connection ports:

Microelectrode Interface Cable–Connect the Microelectrode Interface Cable (probe cable) to this port. Be sure to line up all the pins and gently (but firmly) press the connector into the port.

Foot Switch–Plug the foot switch connector into this jack.

Ground–If needed, this port gives you access to the ground potential. This may be used for connecting with other instruments to ensure a common ground reference. The MICRO-ePORE™ is grounded and the probe interface cable is shielded, so use of this port is optional.

AC Power Adapter–Plug the power supply into this port and connect the other end to an AC wall outlet.

OPERATION

Once all the cables are connected and the unit is plugged into an A/C wall outlet, press the power button on the front of the controller to power up the controller. Use the menu system to set the desired voltage and frequency. The background color of the injection counter indicates if a good connection to the specimen is achieved. (Green is good. Red indicates high resistance in the current path delivering the stimulus. In some cases, red indicates a possible issue. Refer to the Troubleshooting section of the manual.) This color change happens as the pedal is pressed and remains until the pedal is released.

Press the foot switch to activate the signal applied at the micropipette wire. You will hear a low frequency tone when the continuity on the probe is not adequate. Otherwise a steady tone is emitted.

Preparing for an Injection

NOTE: The silver wire should be chlorided before use. MICRO-ePORE™ is provided with chlorided silver wire. If the chloride layer has worn out, please chloride the silver wire following the procedure in the Maintenance section of the Instruction Manual.

1. Check for continuity between the reference cable and the chlorided silver wire using this procedure:
   a. Connect the interface cable to the electrode holder and the reference cable. Use either the well-style reference electrode or the probe style reference electrode assembly.
   b. Turn on the audible alarm. (By default the alarms are silenced.) Simply press the red Alarm Muted button on the Home screen to enable the alarm.
   c. In the solution/buffer submerge both the silver wire of the electrode holder and the reference electrode.
      - If the alarm tone is silenced, then you have continuity and all the connections are good.
      - If the alarm sound continues, check all the connections.
   d. If you have continuity, you can disable the alarm by pressing the blue Alarm Enabled button on the Home screen..
2. Fill micropipette with injection solution. The silver wire should be in contact with solution.
3. Make sure that the right gasket is in the electrode-holder. Gaskets are color coordinated according to OD of glass being used.
4. Insert the micropipette into the electrode holder.

⚠ WARNING: GLASS PIPETTE SHOULD BE SECURED TIGHTLY BEFORE MAKING INJECTIONS.

5. Temporarily enable the alarm and place the pipette and reference electrode in the media to verify continuity and eliminate other problems like bubbles. If the Alarm does not sound when the micropipette is in the solution, then you have continuity. The alarm can be disabled at your discretion. You are now ready to make injections.
6. Press the foot switch to activate the signal applied at the micropipette wire. You will hear a low frequency tone when the continuity on the probe is not adequate. Otherwise a steady tone is emitted.

   NOTE: The reference wire is not always connected to ground. This is a multiplexed pin. Before pressing the pedal, this pin is connected to an input used to measure impedance in combination with the output wire (red terminal pin). When the pedal is pressed a measurement is taken, the reference pin is connected to ground and the output wire produces the stimulus signal.

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