INSTRUCTION MANUAL

EVM-AC-03-03

EVOM™ Warming Plate System

www.wpiinc.com
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CONTENTS

ABOUT THIS MANUAL

The following symbols are used in this guide:

This symbol indicates a CAUTION. Cautions warn against actions that can cause damage to equipment. Please read these carefully.

This symbol indicates a WARNING. Warnings alert you to actions that can cause personal injury or pose a physical threat. Please read these carefully.

NOTES and TIPS contain helpful information.

Fig. 1—EVOM™ Warming Plate for well plates.

INTRODUCTION

EVOM™ based transepithelial electrical resistance (TEER) measurement of cellular layers is considered the gold standard for evaluating barrier integrity and tissue function. The TEER readings are known to be affected by fluctuations in the sample temperatures. Normal practice has been to take the sample plates out of the incubator and let the plate equilibrate for 20 minutes at room temperature before measuring samples. WPI's EVOM™ Warming Plate allows you to maintain sample plate temperature at 37°C, the same as the incubator temperature, while the resistance/TEER values are measured with WPI's EVOM™ Manual and chopstick electrodes, such as STX4 or STX HTS. Using the EVOM™ Warming Plate, the effect of temperature fluctuation is minimized, and the measurement can be taken at the physiological

temperature. This also saves your time by eliminating the requirement of room temperature equilibration before measurement. As shown in Fig 1, the heating block and lid of the EVOM™ Warming Plate let you warm a sample well plate to the desired temperature or maintain a warm sample well plate at the desired (incubator like) temperature of 37 °C.

Notes and Warnings

CAUTION: Do apply any external heat/flames to the instrument.

CAUTION: The instrument cannot be exposed to UV.

CAUTION:Do Not Autoclave.

Parts List

After unpacking, verify that there is no visible damage to the sensor. Verify that all items are included:

(1) EVOM™ Warming Plate unit

(1) Power supply (VDC24V-4A)

(1) US power cord (If the product is shipped outside of the USA, the appropriate power cord is also included, based on the shipping destination country.)

(1) Instruction Manual is available online at www.wpiinc.com/manuals.

Unpacking

Upon receipt of this instrument, make a thorough inspection of the contents and check for possible damage. Missing cartons or obvious damage to cartons should be noted on the delivery receipt before signing. Concealed damage should be reported at once to the carrier and an inspection requested. Please read the section entitled "Claims and Returns" on page 7 of this manual. Please contact WPI Customer Service if any parts are missing at 941.371.1003 or customerservice@wpiinc.com.

Returns: Do not return any goods to WPI without obtaining prior approval (RMA # required) and instructions from WPI's Returns Department. Goods returned (unauthorized) by collect freight may be refused. If a return shipment is necessary, use the original container, if possible. If the original container is not available, use a suitable substitute that is rigid and of adequate size. Wrap the instrument in paper or plastic surrounded with at least 100mm (four inches) of shock absorbing material. For further details, please read the section entitled "Claims and Returns" on page 7 of this manual.

INSTRUMENT DESCRIPTION

Instrument Description

Fig. 2—The front view shows the heating block and the lid used to warm a well plate to 37°C, and the back view shows the power switch and the power supply port.

OPERATING INSTRUCTIONS

1. Before you begin, wipe the EVOM™ Warming Plate with a paper towel sprayed with 70% ethanol or isopropanol. Put the EVOM™ Warming Plate inside the cell culture laminar hood. Then, allow about 10 minutes for any alcohol to evaporate.
2. Connect the power supply (VDC24V-4A) to the backside of EVOM™ Warming Plate. Connect the power supply to the power cord. Plug in the power cord to the power source, and then turn the power switch ON (Fig. 2).
3. Once the EVOM™ Warming Plate is powered ON, parameters on the front panel are displayed as follows (Fig. 3):
   - **Current Block Temperature** shows the live temperature (°C) of the heating block.
   - **Temperature Setpoint** indicates the pre-set temperature of 37.0°C.
   - **Current Heating Time Remaining** shows the countdown. When the current temperature of the heating block of the EVOM™ Warming Plate reaches the temperature setpoint, the timer starts to countdown from heating time setpoint (6 hours). When the current heating time remaining reaches 0 minute, the heating stops.
   - **Heating Time Setpoint** shows that the unit is pre-set to 6 hours.

Fig. 3—Time and temperature settings show on the EVOM™ Warming Plate display.

4. Keep the lid of the EVOM™ Warming Plate closed when it is heating up. Press the Start/Stop button. The heating process begins, and the status shows on the display (Fig. 4).

Fig. 4—The EVOM™ Warming Plate shows the Heating Status, Time, and Temperature.

5. After the temperature of the heating block reaches 37.0°C, the heating time remaining starts to countdown (Fig 5).

Fig. 5—The Heating Time Remaining starts counting down once EVOM™ Warming Plate reaches the desired temperature.

6. Take a well plate sample out of the cell culture incubator at 37°C.
7. Open the lid of the EVOM™ Warming Plate, place the well plate on the heating block of the Warming Plate.
8. Open the lid of the well plate and use an STX electrode to measure the sample resistance or TEER using an EVOM™ Manual. Keep the sample plate on the EVOM™ Warming Plate that is set at 37°C.

Fig. 6—A 24-well plate is on the plate warmer, and measurements are taken with an STX4 electrode connected to the EVOM™ Manual.

9. Once the measurement is complete, close the lid of the sample plate and put it back into the incubator. Next, close the lid of the EVOM™ Warming Plate. Power OFF the EVOM™ Warming Plate system by pressing the power button on the back of the unit when you finish measuring TEER values of all sample plates for the day.

MAINTENANCE

The instrument can be wiped with 70% ethanol or ethanol. Do not spray directly.

SPECIFICATIONS

This unit conforms to the following specifications:

Warming Plate System Weight	3.5 lbs; Packaged (4.5 lbs)
Dimension (L x W x H)	17 x 16 x12 cm
Working environment	20–25°C, 35–50% (relative humidity)
Ideal temp range	Room temp +[11–18]°C
Temp stability	±0.5 °C
Display accuracy	0.1 °C
Heating up time	< 12 min from room temp
Timing range	6h 00min
Power supply	VAC100-240, 50/60Hz, VDC24V-4A
Power	96 W
Certifications	CE

WARRANTY

WPI (World Precision Instruments) warrants to the original purchaser that this equipment, including its components and parts, shall be free from defects in material and workmanship for a period of one year* from the date of receipt. WPI's obligation under this warranty shall be limited to repair or replacement, at WPI's option, of the equipment or defective components or parts upon receipt thereof f.o.b. WPI, Sarasota, Florida U.S.A. Return of a repaired instrument shall be f.o.b. Sarasota.

The above warranty is contingent upon normal usage and does not cover products which have been modified without WPI's approval or which have been subjected to unusual physical or electrical stress or on which the original identification marks have been removed or altered. The above warranty will not apply if adjustment, repair or parts replacement is required because of accident, neglect, misuse, failure of electric power, air conditioning, humidity control, or causes other than normal and ordinary usage.

To the extent that any of its equipment is furnished by a manufacturer other than WPI, the foregoing warranty shall be applicable only to the extent of the warranty furnished by such other manufacturer. This warranty will not apply to appearance terms, such as knobs, handles, dials or the like.

WPI makes no warranty of any kind, express or implied or statutory, including without limitation any warranties of merchantability and/or fitness for a particular purpose. WPI shall not be liable for any damages, whether direct, indirect, special or consequential arising from a failure of this product to operate in the manner desired by the user. WPI shall not be liable for any damage to data or property that may be caused directly or indirectly by use of this product.

Claims and Returns

Inspect all shipments upon receipt. Missing cartons or obvious damage to cartons should be noted on the delivery receipt before signing. Concealed loss or damage should be reported at once to the carrier and an inspection requested. All claims for shortage or damage must be made within ten (10) days after receipt of shipment. Claims for lost shipments must be made within thirty (30) days of receipt of invoice or other notification of shipment. Please save damaged or pilfered cartons until claim is settled. In some instances, photographic documentation may be required. Some items are time-sensitive; WPI assumes no extended warranty or any liability for use beyond the date specified on the container

Do not return any goods to us without obtaining prior approval and instructions from our Returns Department. Goods returned (unauthorized) by collect freight may be refused. Goods accepted for restocking will be exchanged or credited to your WPI account. Goods returned which were ordered by customers in error are subject to a 25% restocking charge. Equipment which was built as a special order cannot be returned.

Repairs

Contact our Customer Service Department for assistance in the repair of apparatus. Do not return goods until instructions have been received. Returned items must be securely packed to prevent further damage in transit. The Customer is responsible for paying shipping expenses, including adequate insurance on all items returned for repairs. Identification of the item(s) by model number, name, as well as complete description of the difficulties experienced should be written on the repair purchase order and on a tag attached to the item.

** Electrodes, batteries and other consumable parts are warranted for 30 days only from the date on which the customer receives these items.*

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