



TEER Measurement

with automatic data logging

- TEER Measurement
- Permeability Studies
- Lung Epithelial Studies



*For wherever
science takes you*

EVOM3 FOR TEER MEASUREMENT



The **EVOM3** delivers improved workflow efficiency, more stable and repeatable measurements versus traditional Trans Epithelial Electrical Resistance (TEER) meters.

Providing users with vital feedback during experiment measurements, the EVOM3's large screen offers a range of informational views. The new graphical displays for trend analysis and measurement values helps scientists deliver simple, stepwise methodology during experimental measurements. The touch screen interface provides users an intuitive, easy-to-use menu for configuration.

Eliminating the need to log data by hand, the **EVOM3** writes the resistance or voltage information to a USB drive in CSV format for easy transfer to spreadsheets and data analysis programs. When used with the footswitch it enables hands-free recording of measurements.

At the heart of the **EVOM3** is our latest processor and circuitry, providing users with quick, easy and reliable readings due to its fast stabilization, automatic twenty times sampling average and low noise design. The auto ranging resistance feature allows for fast resistance measurements, and an over-range display feature eliminates false readings. The **EVOM3** has adjustable current levels in three fixed ranges with two lower ranges for sensitive membranes and high resistance ranges up to 100 K Ω .

Benefits



Eliminates errors and reduces experimental processing time



Auto data logging eliminates the need to track data by hand



The small footprint allows more bench space



Easy calibration and verification



Footswitch for hands-free recording



Prevent data loss with auto save and data recovery when battery is low



TEER is easily computed by applying a unit area formula to the resistance

Features

- Low noise design offers greater resolution and accuracy
- Automatic 20X sample averaging improves accuracy and stability
- Adjustable fixed measurement currents (2, 4 or 10 μ A)
- Resistance auto ranging from 1 Ω to 100,000 Ω or with three fixed current ranges
- Reliable low current, low voltage design prevents metal ion transport
- Fast resistance stabilization on low levels under 200 Ω with resolution to 0.1 Ω
- Ergonomic tilt stand for low glare operation
- Graphical display of popular plates (6, 12, 24, 96) for trend analysis
- The display shows the most recent set of parameters
- Automatic plate indexing operation with or without control well subtraction for resistance and potential difference (PD) measurements
- Continuous data logging via USB (PC, Mac, Linux)
- Saves date stamped data to a spreadsheet readable file on a USB drive
- Upgradable firmware

WORLD PRECISION INSTRUMENTS

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TEER Measurement Electrode

The STX2-PLUS electrode was designed for easy insertion into many 24-well plates. It is location re-placeable in the insert for repeatable and consistent measurements. The new shielded electrodes are now designed to minimize electrical interference and to be more easily maintained.

- STX2-PLUS new electrode designed for 12 and 24-well plates.
- Weighted self-standing electrode for hands-free stable measurements
- Shielded cable to minimize electrical and cell phone interference

STX2-PLUS Benefits

- Keyed electrode base for repeatable placement gives more consistent results, eliminating the need for multiple readings.
- Easy to maintain

References

Stanifer, M. L., et al. (2016). Reovirus intermediate subviral particles constitute a strategy to infect intestinal epithelial cells by exploiting TGF- β dependent pro-survival signaling. *Cellular Microbiology*, 18(12), 1831–1845. <https://doi.org/10.1111/cmi.12626>

Meenach, S. A., et al. (2016). Development of three-dimensional lung multicellular spheroids in air- and liquid-interface culture for the evaluation of anticancer therapeutics. *International Journal of Oncology*, 48(4), 1701–1709. <https://doi.org/10.3892/ijo.2016.3376>

Ferguson, M. C., et al. (2015). Ability of the Encephalitic Arbovirus Semliki Forest Virus To Cross the Blood-Brain Barrier Is Determined by the Charge of the E2 Glycoprotein. *Journal of Virology*, 89(15), 7536–7549. <https://doi.org/10.1128/JVI.03645-14>

Applications

- Measure epithelial or endothelial tissues for confluence, TEER and potential difference
- Permeability, conductance and drug studies
- Continuous digital monitoring of a target membrane
- Common studies
- Blood-brain barrier transport
- Lung epithelial tissue studies
- Intestinal tissue studies
- Skin studies

How Does the EVOM3 Work?

Confluence of a cellular monolayer is determined by an increase or a plateau in tissue resistance detected using the unique electronic circuit of the EVOM3 and the new STX2-PLUS electrode. The EVOM3 qualitatively measures cell monolayer health and quantitatively measures cell confluence. The EVOM3 produces a low AC current that avoids electrode metal deposits and adverse effects on tissues which can otherwise be caused by higher DC currents. The EVOM3 uses low current and voltages and is designed for non-destructive testing for epithelial monolayer confluence in cell cultures. In addition, resistance readings are unaffected by membrane capacitance or membrane voltage. The accuracy and repeatability of the EVOM3-STX2-PLUS system makes this instrument ideal for permeability, PD and other detailed membrane studies.

EVOM3 FOR TEER MEASUREMENT

System Components

WHAT IS INCLUDED with the EVOM3	QTY
EVOM3 Epithelial Volt Ohm Meter	1
STX2-PLUS Electrode set	1
300749 USB drive 32 GB (Used for storage. Also contains a Python 3.8 program for continuous digital monitoring of a target insert).	1
503535 USB cable	1
99673 Calibration kit, 1000Ω Test Resistor	1
803025 A/C power cord and charger	1
13142 Foot switch	1
Instruction Manual (download from www.wpiinc.com/manuals)	

NOTE: A 99672 EVOM2 to EVOM3 Electrode Adapter is sold separately. The STX2, STX3 and all STX100s require the use of this adapter with the EVOM3.



Accessories

EVOM3 Accessories & Replacement Parts

99672	EVOM3 legacy electrode adapter to use EVOM3 with EVOM2 electrodes
99673	EVOM3 Calibration kit, 1000 Ω 0.1% test resistor
99675	EVOM2 Electrode adapter to use EVOM2 with EVOM3 electrodes
99916	EVOM3 EndOhm cable
803026	EVOM3 upgrade cable USB Mini-B
300749	USB drive 32GB, programmed
503535	USB2 cable
803025	EVOM3 A/C mains power supply and battery charger
803028	USB drive 32 GB
13142	Foot switch

Specifications subject to change without notice.

Electrodes For TEER (Epithelial) Measurement

- STX2-PLUS** Replacement Electrode Set
 - STX2*** Replacement Electrode Set (Requires 99672 for use with the EVOM3)
 - STX3*** Adjustable electrode set for shallow wells, 5-9 mm depth
 - 3993*** 2 mm Adapter for EVOM2
- *(Requires 99672 for use with the EVOM3)

ENDOHM Chambers For Endothelial/Epithelial Measurement

NEW EndOhm chambers include the EVOM3 cable #99916.

- ENDOHM-6G** EndOhm for 6 mm culture cup (24 wells per plate)
- ENDOHM-12G** EndOhm for 12 mm culture cup (12 wells per plate)
- ENDOHM-24G** EndOhm for 24 mm and Costar Snapwell cup (6 wells per plate)