



Comparative Time Study of the EVOM™ Auto versus REMS

World Precision Instruments' (WPI) legacy Robotic Epithelial Measurement System (REMS) and the new advanced 2023 version of REMS, the EVOM™ Auto with both 24 and 96 HTS multiwell plate capability, are high-throughput, automated transepithelial/transendothelial electrical resistance (TEER) measurement systems. These robotic systems, combined with EVOM™ electronics, expedite TEER measurements in 24 and 96 HTS multiwell plates.

96 Multiwell Tested

A 96 multiwell plate can be read within a few minutes using an automated TEER measurement system when compared with a manual TEER measurement system, which can take up to 90 minutes to read a single 96 multiwell plate. Manual systems require you to move the electrode from one well to another and perform the rinsing in between, if needed. (Rinsing of the electrode while reading through a number of samples helps to prevent sample cross-contamination.) As automated systems measurements and rinsing are controlled by robotics, manual handling time is eliminated. Additionally, automated systems offer better measurement accuracy, due to the elimination of human errors associated with the electrode handling.

When comparing the efficiencies of the EVOM™ Auto with the REMS system, the EVOM™ Auto comes with an array of eight electrode pairs (96 well electrode array) and four electrode pairs (24 well electrode array) versus the REMS single electrode. The table below shows the time savings you can achieve when using the new EVOM™ Auto versus the REMS system.

Run Time with No Rinsing (Test 1)

To read a 96 multiwell plate with no rinsing between samples, a REMS takes 4.40 minutes, and an EVOM™ Auto with a 96 electrode array only 3.13 minutes.* EVOM™ Auto improves measurement time by 31% over REMS when no rinse option is used.

Run Time with 1 & 2 Electrode Rinses (Tests 2 & 3)

Similarly, when the electrodes are rinsed once or twice, the REMS takes 10.04 minutes and 14.44 minutes, respectively. The EVOM™ Auto takes 5.50 minutes and 7.14 minutes, respectively, to execute the same protocol.* When compared with the REMS, EVOM™ Auto offers 42% quicker sampling with the one rinse station option (Test 2) and 51% with a two-rinse station option (Test 3).

Run Time with 3 Electrode Rinses (Tests 4)

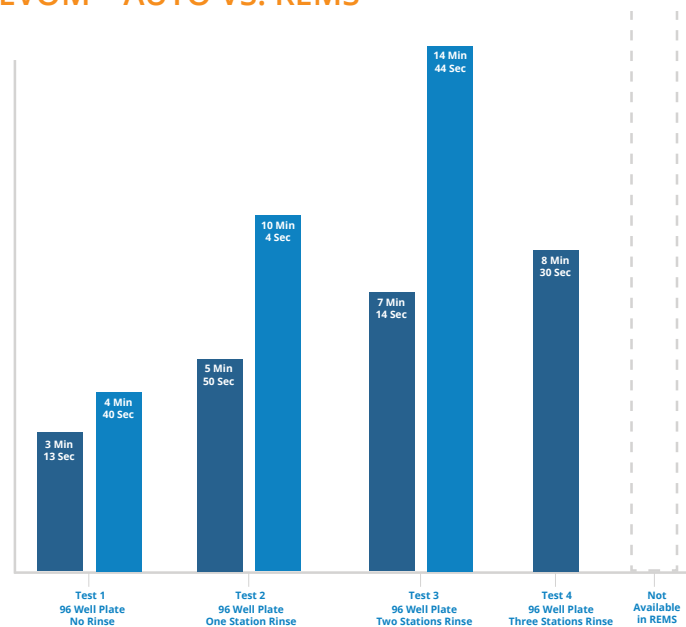
When running a protocol with three rinse stations between measurements, EVOM™ Auto takes 8.30 minutes.* REMS only offers two rinse stations and could not be compared in this trial.

Multiple rinse option is desirable to disinfect the electrode in one station after reading a sample, and then using the other stations to stabilize and equilibrate the electrode before measuring the next sample. Overall, EVOM™ Auto offers significantly improved timing and rinsing options for a better TEER measurement experience in HTS platforms.

*All sample readings and rinse well dips were 1 second in duration. Only the 96 electrode array was tested.

Sample Reading Time

EVOM™ AUTO VS. REMS



EVOM Auto
High-Throughput
Screening System



REMS
Automated TEER
Measurement System



Timing Improvement with EVOM™ Auto

Test 1: No Rinse 31%

Test 2: 1 Rinse 42%

Test 3: 2 Rinses 51%



EVA-MT-03-01 (System for Corning, Millipore, MatTek, 96 HTS Multiwell Plates)

EVA-MT-03-02 (System for Corning 24 HTS Multiwell Plates)

EVA-MT-03-03 (System for Millipore 24 HTS Multiwell Plates)

Specifications

AUTOSAMPLER DIMENSIONS (W×D×H)	
16×10×8.4"	
Autosampler Weight	15.5 lbs.
CE Certified	Yes
Compatibility	96 and 24 Well HTS Plates
Resistance Range	10KΩ, 50KΩ, 100KΩ
Number of Rinse Stations	3
Electrode Array for 96 HTS Plate	Array of 8 pair of (1.2mm Φ) electrodes
Electrode Array for 24 HTS Plate	Array of 4 pair of (1.2mm Φ) electrodes
Minimum Sample Reading Time	1 Second
Control Device for Running Software	Tablet, Laptop, Desktop with Wi-Fi adapter
Output Data	CSV/Microsoft® Excel

Part Number

Description

EVA-MT-03-01	EVOM™ Auto for TEER Measurement in 96 HTS Plate
EVA-MT-03-02	EVOM™ Auto for TEER Measurement in 24C HTS Plate
EVA-MT-03-03	EVOM™ Auto for TEER Measurement in 24M HTS Plate
EVA-EL-03-01	EVOM™ Auto 96 HTS Electrode Array for TEER
EVA-EL-03-02	EVOM™ Auto 24C HTS Electrode Array for TEER
EVA-EL-03-03	EVOM™ Auto 24M HTS Electrode Array for TEER

System Includes

EVOM™ Auto TEER Measurement System (EVA-MT-03-xx) includes the autosampler, an electrode array with accessories (for 96 or 24 HTS multiwell plates), an interface unit and its cable, an iPad control tablet with software, and a power cord.