

MEA *Xpress*: Multiwell Electrophysiology with Automated Liquid Handling

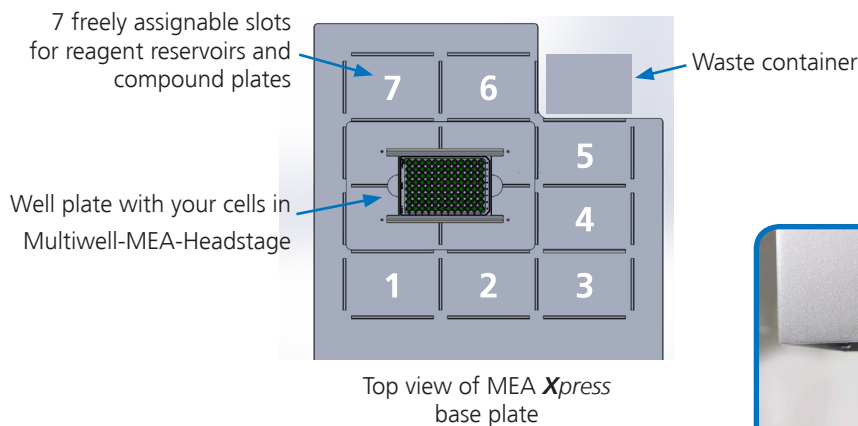
- Completely automated experiments without user interference
- Automated dilution series preparation, compound application, and electrophysiological recordings for 24- and 96-well plates
- Undisturbed environmental control
- Ease of use: Electrophysiological recording and liquid handling in one powerful software

Completely automated high throughput electrophysiology: Liquid handling and recording in one system

The MEA *Xpress*: the complete solution for multiwell microelectrode array (MEA) recordings and automated liquid handling.

What does the MEA *Xpress* do?

- Automates dilution series preparation
- Houses the multiwell plate with your samples
- Automates compound application
- Records electrophysiological data from 288 channels; for cardiac and neuronal samples and compound screening
- Delivers data files with electrophysiological data and meta information ready for analysis in the Multiwell-Analyzer



Your benefits:

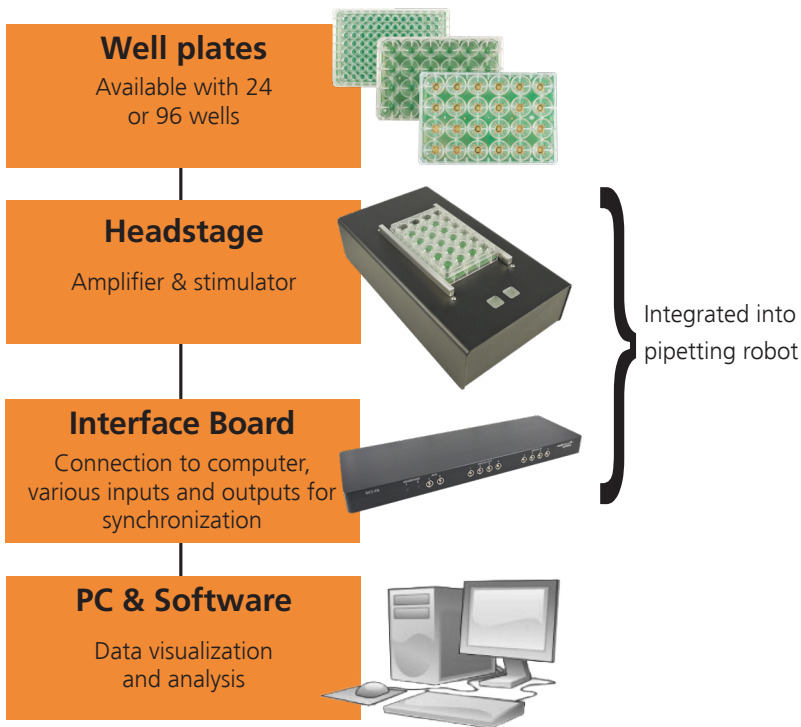
- Completely automatic experiment: Walk away from the bench and let MEA *Xpress* do the work
- Use pre-defined pipetting scripts or customize your own
- Fast drug application: Fills 96-well plate within 20 seconds
- Two pipette mounts (any combination of single- and 8-channel pipettes): Flexibility for pipetting from various reagent reservoirs and plates
- Complete experiment can be set up in advance, no user-interference needed during experiment: 7 freely assignable slots for storage of pipette racks, stock solutions, medium & washing solutions or compound plates
- Smooth, quiet movement for recording with Multiwell-MEA-System: Noise free electrophysiological recordings
- Highest accuracy for your data: Multiwell-MEA-System offers up to 50 kHz sampling rate
- Atmosphere lid: Keeps physiological conditions in wells consistent
- Various plate types for your sample available (all SBS-compliant): Solution for cardiac and neuronal samples, medium or high throughput
- Tools for liquid handling and MEA recording in one powerful software: Complete data set available for analysis
- Multiwell-MEA-System and liquid handling robot can be utilized separately as stand-alone systems

Recording: High throughput MEA solution for extra-cellular recording and stimulation

Featuring both a 24- and 96-well plate format, the Multiwell-MEA-System is the perfect tool for medium and high throughput electrophysiology. It includes high-quality, low-noise amplifiers, and freely-programmable stimulators for individual analysis. Our system has been successfully used in research for years.

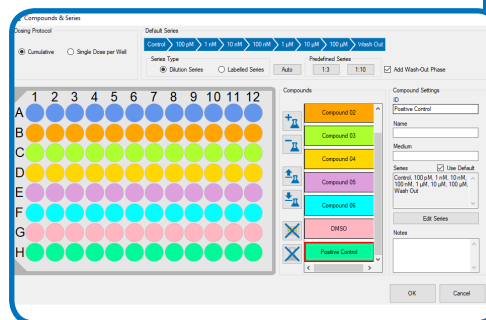
One big advantage of the Multiwell-MEA-System is the high sampling rate. Your data is sampled at up to 50 kHz per channel. Thus, the accuracy of your data is guaranteed, whether you record from cardiac or neuronal samples.

The Multiwell-MEA-System consists of 4 components:



Versatile recording and analysis software Multiwell-Screen

- Pre-defined or user-defined pipetting protocols
- Compound application information and electrical recording within one file for data analysis
- Automated report generation (dose-response data, raw data plots and overlay plots)
- CiPA compliant plate layout as predefined template
- Flexible export of results and raw data – Direct export into CiPA reporting forms
- Software supports single and cumulative dosing



multichannel*
systems

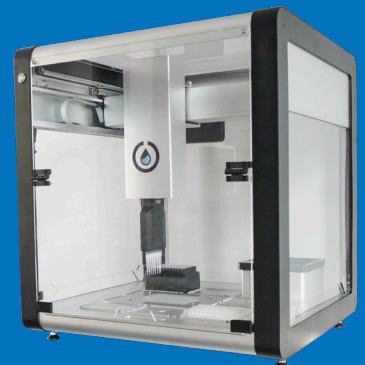
Innovations in Electrophysiology

Liquid Handling: Flexible and precise dilution and dispensation

MCS combined the reliable and cost efficient Opentrons OT-2 pipetting robot with the well known Multiwell-MEA-System to generate an automated platform for substance screening: MEA Xpress. One software is used to automatically generate a compound plate from medium and compound stock with the pipetting robot, control the electrophysiological recording, and apply the drugs from the compound plate to the cells during the experiment without further user interference.

The robot offers high-precision pipettes that execute the liquid transfer quickly and accurately. Being compact, it fits on your bench with ease.

The robot perfectly houses the Multiwell-MEA-System. However, you can always remove the recording system for benchtop operation.



Technical specifications

MEA Xpress Robot

Dimensions (W x D x H)	63 x 57 x 66 cm
Weight	40 kg
Volume	1 - 100 μ l
Number of pipette mounts	2 (for any combination of 1- and 8-channel pipettes)
Speed	Fills a 96-well plate in 20 seconds
Accuracy (systematic error) for default pipette models	5 - 50 μ l: 1 - 5 %, 30 - 300 μ l: 0.6 - 5 %
Precision (random error) for default pipette models	5 - 50 μ l: 0.4 - 5 %, 30 - 300 μ l: 0.3 - 2.5 %
Protocols	Pre-defined or customizable (open-source)

Multiwell-MEA-System

Dimensions (W x D x H)	Headstage: 302 mm x 166 mm x 90 mm Interface board: 250 mm x 83 mm x 25 mm
Weight	Headstage: 4 kg Interface board: 0.3 kg

Amplifier

Data resolution	24 bit
Number of recording channels	288
Bandwidth	adjustable, max. DC to 10 kHz

Data converter and USB interface

Control interface	USB 3.0
Sampling rate per channel	up to 50 kHz

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