

MED64 Integrated Amplifier [MED-A64HD1]

General	
Power supply	DC 12 V, 0.9 A, 10.8 W
Weight (w/o PSU)	6.6 kg
Dimensions (w/o PSU)	W430 × D437 × H74mm
Amplifier	
# Channels	64
Gain	× 10 - 2170
Bandwidth	0.1 Hz - 10 kHz (+0 dB to -3 dB)
Input impedance	100 MΩ
Input terminal	68 pin × 1, 20 pin × 4
Output terminal	68 pin × 1
High-pass filter (LCF)	0.1 / 1 / 10 / 100 Hz (-12 dB/oct)
Low-pass filter (HCF)	1 / 2.5 / 5 / 7.5 / 10 kHz (-12 dB/oct)
RMS noise (short-circuited)	14 nV/√Hz
Power supply unit (PSU)	
Input	AC 100 - 240 V (50 / 60 Hz)
Output	DC 12 V, 5 A, 60 W

MED64-Presto Amplifier [MED-A384iN]

General	
Power supply	DC ±12 V, 2 A, -0.2 A, 25 W
Weight (w/o PSU)	8.4 kg
Dimensions (w/o PSU)	W300 × D388 × H155 mm
Amplifier	
# Channels	384
Gain	× 1000
Bandwidth	0.1 Hz - 5 kHz
Input impedance	100 MΩ
RMS noise (short-circuited)	13 nV/√Hz
Input range	±5 mV
Digitizer	
Resolution	16 bits
Sampling rate	20 kHz
Max. input	±5 V
Output	USB 2.0
Stimulator	
# Channels	1
Output format	Voltage-driven
Max. output	±2 V
Output electrodes	Switchable fixed 1 (unipolar) and 2 electrodes (bipolar) stimuli

MED64-Entry Amplifier [MED-A16HD1]

General	
Power supply	DC 12 V
Weight (w/o PSU)	1.7 kg
Dimensions (w/o PSU)	W298 × D237 × H54 mm
Amplifier	
# Channels	16
Bandwidth	0.1 Hz - 10 kHz (+0 dB to -3 dB)
Input impedance	100 MΩ
Input terminal	68 pin × 1
RMS noise (short-circuited)	14 nV/√Hz
Digitizer	
Resolution	16 bit
Sampling rate	20 kHz / 80 kHz

Special Arrays (hippocampal, hexagonal, 32 × 2, 16 × 4)

Product number		Array	Recording electrodes		Chamber depth (mm)
CNT	Platinum black		Size (μm)	Spacing (μm)	
MED-R50015	MED-P50015	Rat hippocampus	φ20	150	5
MED-R5001A	MED-P5001A	Rat hippocampus	φ20	150	10
MED-R50025	MED-P50025	Mouse hippocampus	φ20	150	5
MED-R5002A	MED-P5002A	Mouse hippocampus	φ20	150	10
MED-R2H075	MED-P2H075	Hexagonal	φ20	70	5
MED-R2H07A	MED-P2H07A	Hexagonal	φ20	70	10
MED-R50035	MED-P50035	32 (4 × 8) × 2	φ50	150	5
MED-R5003A	MED-P5003A	32 (4 × 8) × 2	φ50	150	10
MED-R50045	MED-P50045	16 (4 × 4) × 4	□50	150	5
MED-R5004A	MED-P5004A	16 (4 × 4) × 4	□50	150	10

Digitizer	
Resolution	16 bit
Sampling rate	20 kHz
Max. input	±5 V
Output	USB 2.0
Stimulator	
# Channels	2
Output format	Current-driven
Max. output	±200 μA
F1 stimulus input	
Max. input	±4 V
I/V conversion ratio	25 μA/V
F1 output	
Max. output	±4 V
External signal input	
Receiving channel	Channel 1
Sensitivity	0.5 / 0.05 / 0.02 mV/1V

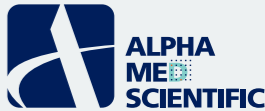
External stimulus input	
# Input channels	1
Max. input	±4 V
I/O conversion ratio	2:1
Trigger output	
# Terminals	1
Max. output	±4 V
Connector	
# Contact pins	432 (48 for ref electrodes)
Contact pin type	1.4 mm stroke spring probe
Contact pin material	Gold plating
Power supply unit (PSU)	
Input	AC 100 - 240 V (50 / 60 Hz)
Output	DC ±12 V, +4 A, -1 A, 60 W
Temperature controller	
Power supply	DC ±12 V, +2.5 A, -0.1 A, 30 W
Heater	Transistor × 4
Sensor	Sensor IC
Temperature controller	Omron EG5C
Range of verified < 1°C	32 - 37°C (Ta = 25°C)
Resolution	±0.1°C

Stimulator	
# Channels	2
Output format	Current-driven
Max. output	±200 μA
F1 stimulus input	
Max. input	±4 V
I/V conversion ratio	25 μA/V
F1 output	
Max. output	±4 V
Power supply unit (PSU)	
Input	AC 100 - 240 V (50 / 60 Hz)
Output	DC 12 V, 5 A, 60 W

Multi-sample Arrays

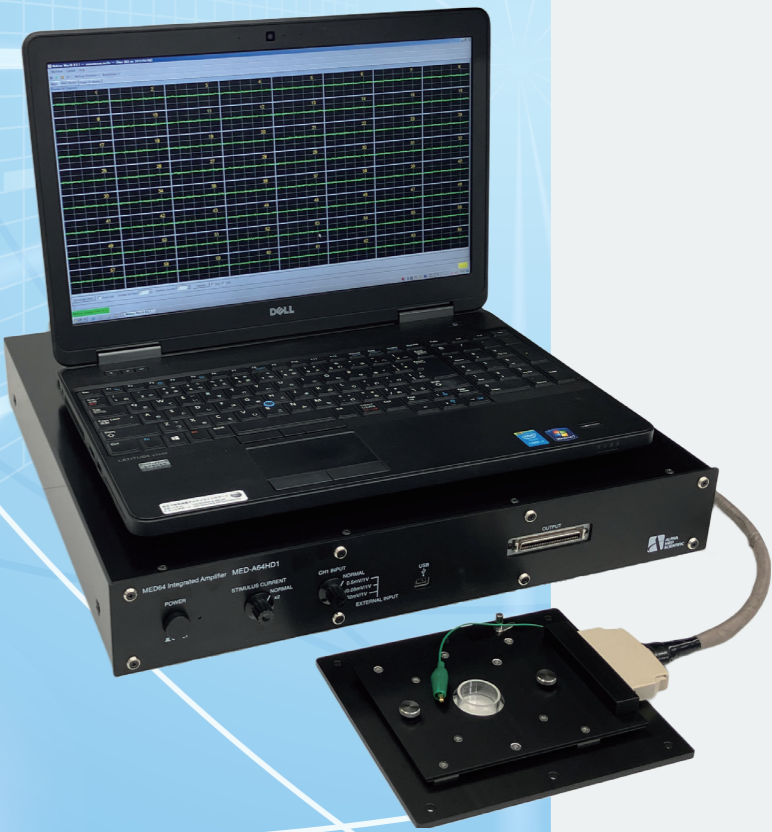
Product number		# Wells	# Electrodes / well	Chamber depth (mm)
CNT	Platinum black			
MED-R5D15A	MED-P5D15A	2	32	10
MED-R5D15B	MED-P5D15B	2	32	10 (5)
MED-R5DF15	MED-P5DF15	2	32 (16 × 2)	10
MED-R5FF15	MED-P5FF15	4	16	10

SCREEN



The most sensitive
microelectrode array system
for *in vitro* extracellular electrophysiology

MED64



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MED64

Unrivaed Data Quality for the Highest Reliability and Reproducibility MED64 System

The MED64 System is the world's first commercialized microelectrode array system. Since its launch in 1996, the MED64 has attracted attention as an advanced solution for *in-vitro* extracellular electrophysiology.

The MED64 system features highly sensitive electrodes and an amplifier designed exclusively to optimize their performance. Engineered for low-noise, the MED64 provides the highest level of reliability and the highest-quality electrophysiological experiments. Due to its excellent S/N ratio, it has been highly regarded by researchers who prioritize data quality.

Wide range of features

- High-precision SNR with a noise level of $0.8 \mu V_{rms}$ (signal acquisition bandwidth < 3 kHz).
- High-quality evoked signals with minimal stimulus artifacts (no blanking circuit necessary).
- Combination of low-noise and broad acquisition bandwidth for highly reliable signal recording.
- Current-driven stimulation via any electrode
- Environmental control via head stage installation in an incubator.
- Low-cost system reconfiguration via purchase of an additional head stage.
- Extensive lineup of dedicated peripheral devices for various experimental needs.
- Thorough technical support system backed by over 20 years of experience.

Extensive lineup of systems tailored to different target specimens, throughput, and budget requirements.

64 channels



	MED64-Basic	MED64-Quad II	MED64-Allegro	MED64-Plex 4/8
	A basic system for a 64-electrode single-well MEA.	All-round system for four 16-electrode single-well MEAs.	Medium-throughput system for multi-well MEAs with 16 or 8 electrodes.	A time-sharing system for 64-electrode singlewell MEAs that enables data acquisition from up to eight samples via time-division controls.
Amplifier	MED64 Integrated Amplifier (built-in current-driven stimulator) *			
Headstage & Additional (Optional) component	MED Connector / MED Thermo Connector	MED Duet Connector x2 (MED Thermo Base x2)	MED Multi-well Connector (MED Thermo Base)	MED64 Multiplexer x1 or 2 MED Connector x4 or 8 / MED Heated Connector x4 or 8
MEA	MED Probe	MED Mini Probe x4	MED Multiwell Probe (16x4 or 8x8 well)	MED Probe x4 or 8
Applications compatible with MEA well size	Acute slices, organotypic & dissociated cultures	Acute slices, organotypic & dissociated cultures	Dissociated cultures	Acute slices, organotypic & dissociated cultures

* MED64 Main & Head Amplifier [MED-A64MD3 / MED-A64HE3] with built-in voltage-driven stimulator is also available.

384 channels

MED64-Presto

High-throughput system with a 384-channel amplifier for multiwell-plate MEAs.

- Dedicated MEA plates are available in the following configurations: 64-electrode x 6-well, 16-electrode x 24-well, 8-electrode x 48-well. The system is manufactured using the same process as MED Probes, ensuring high data quality while enabling easy optical observation and higher throughput.
- Built-in temperature controls the experimental environment controlled by supplying research-grade mixed gas (5% CO₂-Air, optional) through the MEA plate cover.
- Built-in stimulation amplifier enabling simultaneous stimulation from fixed electrodes in each well.
- Control software MEA Symphony includes key analysis functions for cultured neurons and cardiomyocytes. Data files can be converted to Mobius format.
- Dual-monitor support allows for the simultaneous display of raw signals from all 384 electrodes and online analysis results.

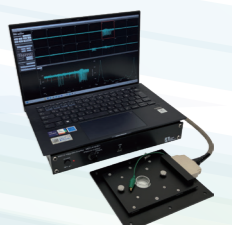


16 channels

MED64-Entry

Entry model with a 16-channel amplifier offering excellent affordability.

- Simultaneous extracellular recordings from the 16 pre-assigned electrodes out of 64 electrodes using a dedicated MED probe
- 22-mm-diameter well that can accommodate acute slices, organotypic cultures, and dissociated cultures.
- Current-driven stimulation via any electrode (up to two electrodes simultaneously).
- Dedicated control software for data acquisition (provided free of charge). With this software, users can monitor neural activity by selecting a time-series plot of either evoked potential amplitude, spike count, or inter-spike interval (equivalent to RR interval). This enables appropriate timing of electrical stimulation or drug application.



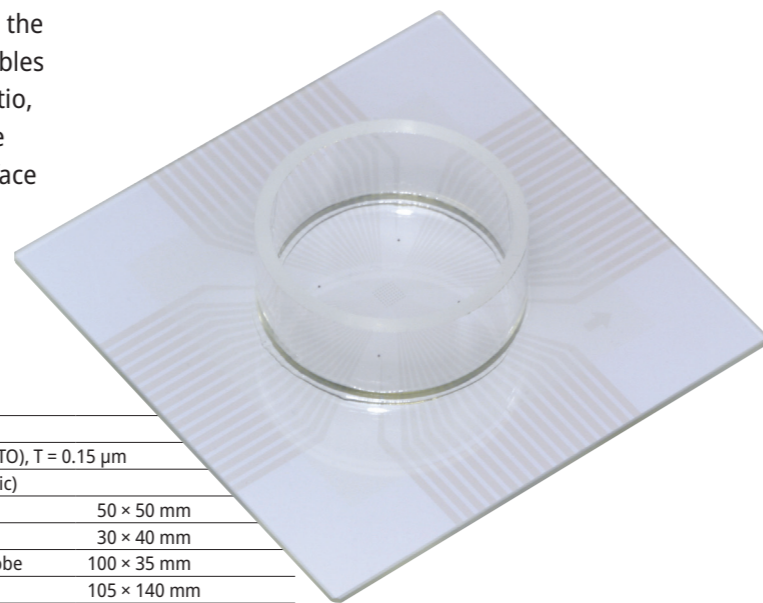
Probes

High-performance probes featuring highly sensitive planar microelectrodes patterned in various configurations

“MED Probes”: microelectrode array with the industry’s smallest* impedance electrodes

The microelectrodes that make up the MED Probes have the industry’s smallest* impedance (8 kΩ at 1 kHz). This enables low-noise recordings and an excellent signal-to-noise ratio, while also allowing the application of large currents. The new carbon nanotube–plated electrodes have a flat surface structure that provides excellent cell adhesion.

*As of September 2025

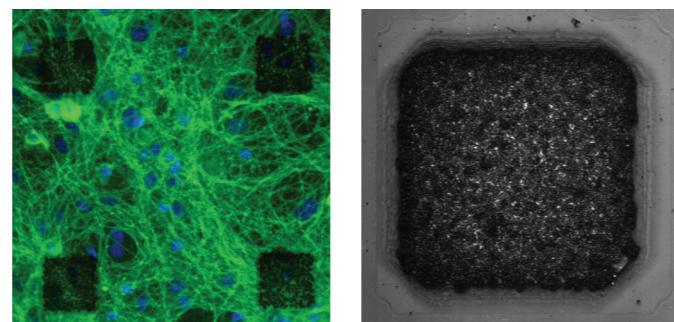


MED Probe / MEA Plate

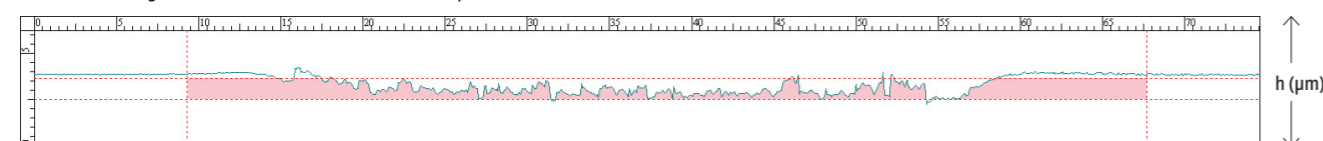
Substrate/ Chamber	Substrate	Glass, T = 0.7 mm		
	Conductioning layer	Indium tin oxide (ITO), T = 0.15 μm		
	Insulation layer	Polyimide (or Acrylic)		
	Substrate size	MED Probe	50 × 50 mm	
		MED Mini Probe	30 × 40 mm	
		MED Multi-well Probe	100 × 35 mm	
		MEA Plate	105 × 140 mm	
Chamber	Glass (OD: 25 / ID: 22 mm)			
	Acrylic resin (for MED Multi-well Probe and MEA Plate)			
Electrodes	Material	CNT	Platinum black	
	Product number	MED-R****	MED-P****	
		MED-RG****	MED-PG****	
		MED-Q****	—	
	Impedance at 1 kHz, 50	□ 50 μm	8 kΩ (Typ.)	10 kΩ (Typ.)
		□ 20 / φ20 μm	10 kΩ (Typ.)	15 kΩ (Typ.)
	Max. output	Current	±200 μA	±200 μA
Voltage		±0.5 V	±0.1 V	

Carbon Nanotube Plating Technology

- Superior cell adhesion due to flat surface structure.
- High sensitivity due to low impedance.
- Excellent durability



Cross-section diagram for the carbon nanotube electrode (pink)

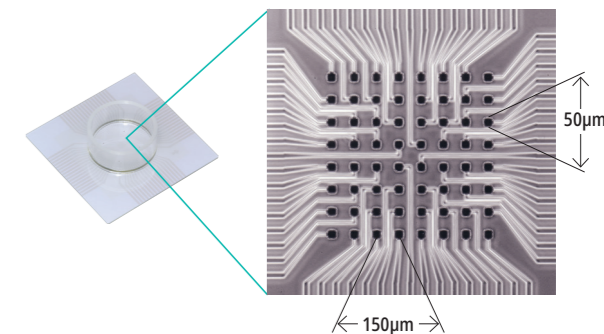


STANDARD 8×8 ARRAYS

Standard 8×8 Arrays

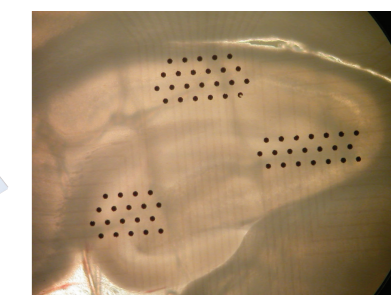
Product number		Array size (mm)	Recording electrodes		Chamber depth (mm)
CNT	Platinum black		Size (μm)	Spacing (μm)	
MED-R210S	MED-P210S	0.7 × 0.7	□20	100	5
MED-R210A	MED-P210A	0.7 × 0.7	□20	100	10
MED-R515S	MED-P515S	1 × 1	□50	150	5
MED-R515A	MED-P515A	1 × 1	□50	150	10
MED-R530S	MED-P530S	2 × 2	□50	300	5
MED-R530A	MED-P530A	2 × 2	□50	300	10
MED-R545S	MED-P545S	3 × 3	□50	450	5
MED-R545A	MED-P545A	3 × 3	□50	450	10

* See the back cover for specifications of Special Array Probes.



MED-R515A Enlarged view of central electrode area

Special Array



Hippocampal slice preparations on MED-P5001A

Dedicated MED Mini Probe for Quad II

MED Mini Probe

Product number		Array	Recording electrodes		Chamber depth (mm)
CNT	Platinum black		Size (μm)	Spacing (μm)	
MED-RG207	MED-PG207	4 × 4	□20	70	10
MED-RG515A	MED-PG515A	4 × 4	□50	150	10
MED-RG501A	MED-PG501A	2 × 8	□50	150	10
MED-RG530A	MED-PG530A	4 × 4	□50	300	10



Hippocampal slice preparations on MED-RG501A

Dedicated MED Multiwell Probe for Allegro

MED Multi-well Probe

Product number		# Wells	# Electrodes / well	Well size (mm)	Electrode size (mm)	Chamber depth (mm)
CNT	Platinum black					
MED-R5NF30	MED-R5NF30	4	8	φ16	□50	10
MED-R5N811	MED-R5N811	8	4	7.5 × 16	□50	10



MED-R5N811

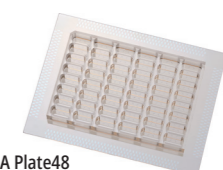
Dedicated MEA Plate for Presto

MEA Plate

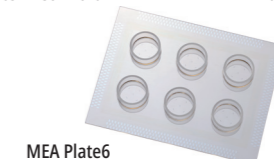
Product number	# Wells	# Electrodes / well	Well size (mm)	Recording electrodes		Chamber depth (mm)
				Size (μm)	Spacing (μm)	
MED-Q2430L	24	16	φ16	□50	300	10
MED-Q2430M	24	16	φ11	□50	300	10
MED-Q4830	48	8	7.5 × 16	□50	300	10
MED-Q630	6	64	φ22	□50	150	10



MEA Plate24 Comfort



MEA Plate48



MEA Plate6

Software

MED64 Mobius – Advanced, customizable control software

MED64 Mobius is data acquisition and analysis software compatible with all system configurations featuring 64-channel amplifiers. Select and purchase packages specialized for representative MEA applications such as EP (evoked potential), Spike Sorter, QT, or combinations of these. The template workflows provided to make the software accessible to beginners. All analysis functions can be performed not only after data acquisition during recording as well as recording, and data files, including raw signals and analysis results, can be exported in formats compatible with third-party software.

MOBIUS

Mobius EP

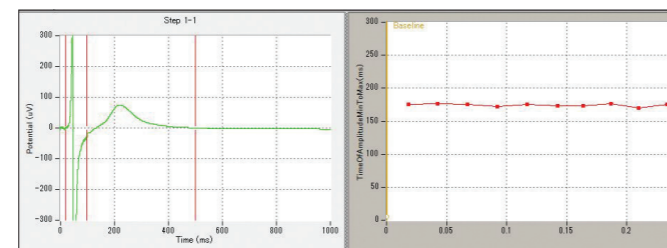
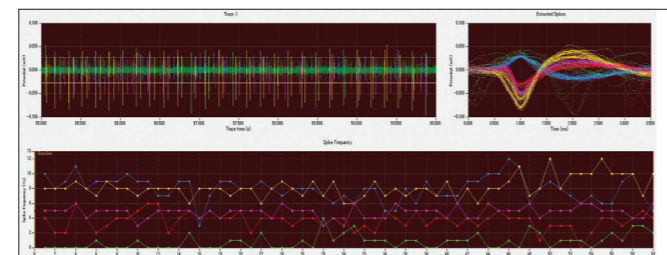
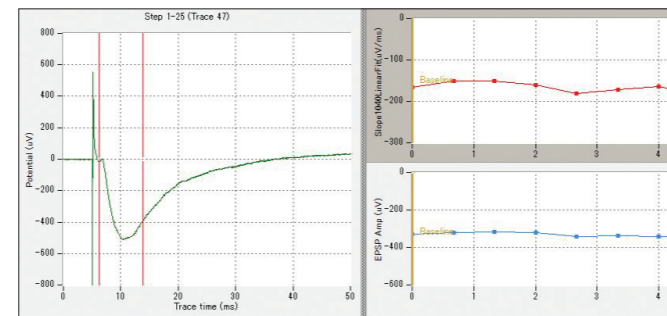
- Evoked field potentials (e.g., fEPSPs) through electrical stimulation
- Waveform analysis (e.g., amplitude, slope, area, timing)
- Time-series plotting of analysis results online and offline
- Complex stimulation patterns (e.g., theta-burst stimulation)

Mobius Spike Sorter

- Detects spikes as signals exceeding user-specified amplitude thresholds
- Methods to specify amplitude thresholds:
 - 1) Mouse operation on 64-electrode or single-electrode charts
 - 2) Direct numerical input
 - 3) Automatic calculation based on RMS noise
- Spike sorting using an algorithm that classifies based on waveform similarity
- Spike frequency calculation and display as time-series plots

Mobius QT

- Detects cardiomyocyte field potentials for each beat exceeding user-specified amplitude thresholds for each beat
- Calculates FPD (field potential duration), beat rate, and inter-beat intervals, with a time-series plot display



SYMPHONY

MEA Symphony

is the most sophisticated acquisition and analysis software dedicated to MED64-Presto, featuring MEA experiment in both neuron and cardiomyocyte cell culture.

Visualizing raw data as its collected will allow for quick identification of interesting or anomalous data.

With a number of automated data collection and analysis features, it is intuitive and easy-to-use.

The MEA Symphony has a number of high-level analyses to choose from so data analysis is in the experimenter's hands, where it belongs!



Neuro workflow has sophisticated spike, burst, and network burst analyses. Automated drug dose-response analysis makes compound testing assays effortless.

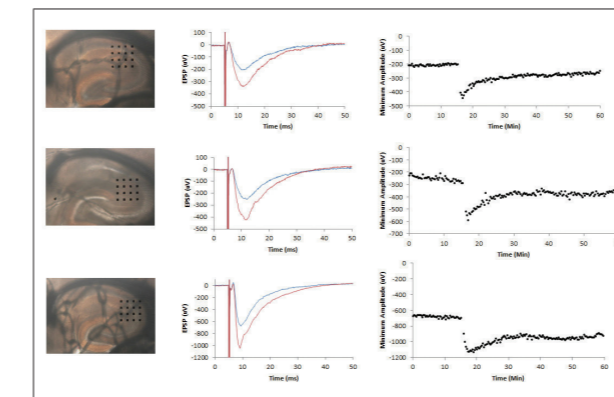
Cardio workflow has sophisticated beat rate and FPD analyses as well as automated compound and drug dose-response analyses.

Examples of Applications & Sample Types

The MED64 system supports advanced applications with high sensitivity and reliability

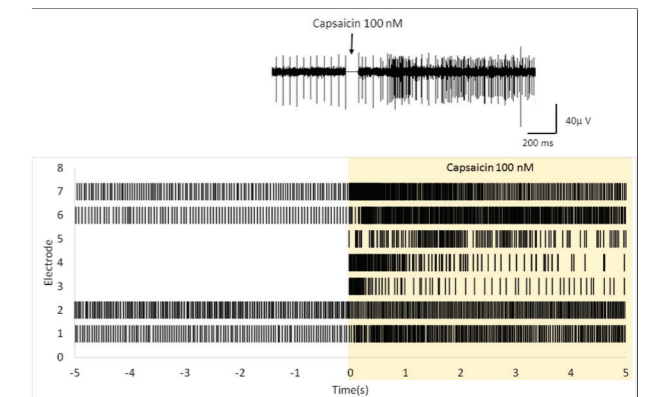
The MED64 system offers exceptionally high sensitivity, providing excellent data quality without the need for digital filtering. It can accurately capture subtle electrical activity that would be lost in typical commercial systems. It delivers highly reliable measurements with superior reproducibility using a purpose-designed system.

LTP studies



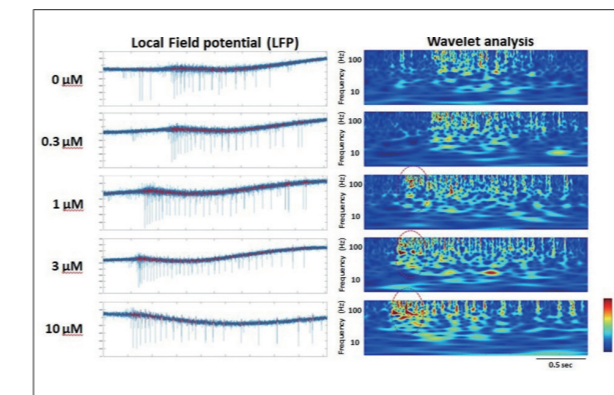
Simultaneous LTP recording from four hippocampal slice preparations using MED64-Quad II

Pain research



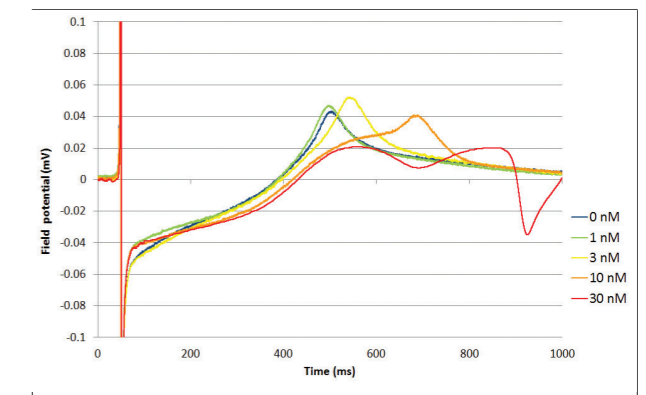
Capsaicin-induced responses in dissociated DRG (dorsal root ganglion) cultures

Neurotoxicity research

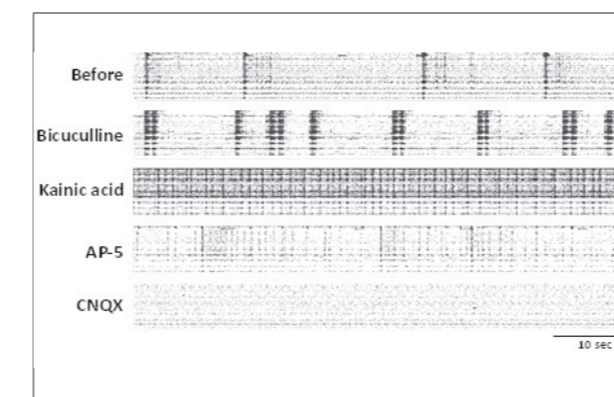


LFP (local field potential) and wavelet analysis

Prediction of drug-induced proarrhythmic effects



Evaluation of FPD (field potential duration) prolongation



Raster plot display of burst firing in cultured neuronal networks

Representative applications

- EP measurement and LTP/LTD assays in brain slice preparations
- Oscillation (rhythmic activity) measurement in brain slice preparations
- Spontaneous activity measurement in cultured neuronal networks or brain organoids
- FPD assays in cardiomyocyte preparations for proarrhythmic evaluation
- Measurement of light-evoked responses in the retina
- Measurement of pacemaker-like potentials in intestinal smooth muscle
- Measurement of glucose-stimulated responses in pancreatic islets/ β -cells