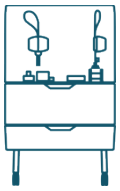
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Technical Specifications

QPatch - automated patch clamp system

Performance/features	QPatch	
Hardware modules (standard)	Automatic cell preparation QPlate and compound plate stacking Individual Q-Amps Temperature control (heating/cooling)	
Unattended operation	>4 hours, up to 15 QPlates	
Parallel test capacity	16	48
Number of amplifiers	16	48
Number of pipettes	4 or 8	8
Data points per day	480-2880	1440-8640
Pipette types	TiO_2 coated on both inner and outer surfaces	
Stimulation/clamp modes V, L, P, and C are individual for each site	Voltage-gated Ligand-gated Pressure Current clamp Temperature	
V_{xx} adaptive voltage-clamp	✓	
I_{adapt} adaptive current-clamp	✓	
Recording configuration	Whole-cell / Perforated patch / Cell attached / Pseudo inside-out	
Cell types applicable	Cell lines Stem cells Primary cells iPSC	
QPlate compatibility	Single-hole Multi-hole Custom-size QPlates	
Maintenance of electrodes / User maintenance of instrument	None / None	
No. of electrodes per recording site	Individual pairs for all sites	
Electrode stability	Drift in voltage offset (V_{off} ~ 0.005 mV/min)	
Seal quality	True GΩ-seal, also in physiological solutions	
Need of seal enhancing agents	None	
Test compound consumption, per well	2-15 µL User-configurable and can be broken into multi-spit	
Total possible liquid addition, per well	250 µL / up to 110 additions	
Liquid added accounting	Automatic	
Liquid journey to cell	Individual microfluidic channels	
Liquid exchange rate	τ < 40 ms	
Compound plate formats	MTP-96 (SBS standard)	
Fast R_{series} compensation, τ <400 µs[1]	✓ (optional)	
R_{series} compensation, τ >400 µs[1]	✓	
C_{total}, C_{fast} & C_{slow}, compensation[1]	✓	
Analyzer software	✓ (unlimited licenses)	
Bandwidth	20 kHz	

[1] Automatically disabled for multi hole and HiR QPlates, which are QPlates with smaller patch holes. Only done for Series resistance below 10 MΩ on single hole QPlates

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RMS noise, open amplifier	< 7.2 pA @ BW=20 kHz < 2.6 pA @ BW= 5 kHz <1.1 pA @ BW= 1 kHz
Sampling rate, maximum	500 kHz, digitally down sampled to 50 kHz, 16 bit
Filter options	Butterworth; 2, 4 & 8th order Bessel; 2, 4 & 8th order
Current range	±25 nA, ±50 nA, ±100 nA Largest range is automatically forced with multi-hole QPlates
Resolution	16 bit
Data storage and security	External database, automatic backup, full log of activity, user-hierarchy
External database operating system and version	Windows 11 LTSC Oracle 19c
Internal PC operating system	Windows 11 LTSC

Dimensions & Requirements	QPatch 16	QPatch 48
Width	104 cm	
Depth	78 -121 cm (open)	
Height	174 - 199 cm (open)	
Weight	350 kg (772 lbs)	
Point pressure	10 kg/cm³	
Foot print	0.55 m²	
Power supply	AC 100-240 V 50-60 Hz Max 6 A	
Pressure	4 - 8 Bar	
Vacuum	0.7 - 0.9 Bar (1 m³/hour)	



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