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Technical Specifications:

Qube 384 Mk III - High Throughput Screen

Performance/features	Qube 384 Mk III		
Hardware modules	Automatic cell preparation, onboard camera, ionizer, tip washing, liquid management & barcode reader temperature control; heating / cooling at recording site		
Hardware modules (optional - can be retrofitted)	None	Extended Range package	Third-party integration
Unattended operation	Up to 4 hours	Up to 10 hours	∞
Target throughput per month	<100,000	<400,000	>400,000
Success rate (incl. pharmacology and quality filtering)	Up to 100%		
User maintenance of instrument	None		
QChip and compound plate handling	Pre-loaded on Qube workplane	In the stacker with two towers	Third-party instrumentation
Just-in-time dilution of stock solution	√		
Resuspension of compound	√		
Compound plate preparation with liquid handler	√		
Barcode reader for full traceability of experiments	√		
Liquid handler tips	Disposable Washable onboard, water + optional solvent Automatic exchange at user-defined intervals		
Number of extracellular liquid additions	∞		
Liquid exchange rate	$\tau < 40$ ms		
Number of different intracellular solutions	24		
Automatic exchange of intracellular solution	√		
Stimulation mode	Voltage-gated, ligand-gated, current clamp, mechanical		
Unlimited combination of stimulation modes in the same sweep	√		
Cell types applicable	Cell-lines, Stem cells, Primary cells, iPSC		
Cell delivery	1-, 2-, 4- column or 384-well		
Cell, minimum volume	1.0 mL for a 1- or 2-column pickup, when run on a partial QChip 5.0 mL for an automated full plate run (+4 mL for each extra QChip)		
Compound, min/max volume and stacking	Extracellularly: 5 - 18 µL/well - two can be stacked Intracelluarly: Min 22 µL/column - multiples hereof configurable		
Giga Ohm seals	√		
R_{series} compensation	√ (up to 100%)		
C_{fast} compension	√		
Fast leak compensation	√		
Parameter estimation Configuration: Before every sweep, before period or off	Single-hole QChip: C_{slow}, C_{fast}, R_s and R_{mem} Multi-hole QChip: C_{slow}, C_{fast}, and R_{mem}		
Differentiated pressure protocols	Any multiple of 2 columns		
QChip fractional use	Any multiple of 2 columns (min 6) Unused columns automatically selected in subsequent exp.		
QChip shelf life of fractionally used	1 week at room temperature		
QChip compatibility	Single-hole, Multi-hole, HiR, Variable hole-number, Variable hole-size		
Shortest/longest voltage-segment	0.2 ms / 2 h 47 m		
Liquid exposure time in ligand-gated experiment	0.8 – 10.0 s (user configurable) 200 ms with custom block		
Electrode maintenance	None – 384 electrode pairs are embedded in the QChip and ready to use		
Electrode stability	Electrode drift < 0.01 mV/min		

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Performance/features	Qube 384 Mk III
Number of Q-Amps	384
Adaptive protocols – 384 individual protocols	V_{xx} , I_{adapt}, I_{Rheo}
Recording configuration	Whole-cell / Perforated patch / Cell-attached
Resolution of current injection	0.6 pA
User maintenance of instrument	None
Data security, traceability and storage options	2 x 12 TB harddrives, data reduction, data migration, automatic backup, full log of activity, user-hierarchy, Cloud storage
Operating systems	Internal Controller PC: Windows 11 LTSC Internal Data PC: Ubuntu 24.04 External User PC: Windows 11 LTSC
Sophion Analyzer Software	√ (unlimited licenses)

Dimensions & Requirements	Qube 384 Mk III Basic	Qube 384 Mk III Extended range	Qube 384 Mk III Integrated
Width	129 cm main body + 32.5 cm shelf for circulator	178 cm	129 cm + external
Depth	85-146 cm (open)	85-146 cm (open)	85 cm + external
Height	186 - 203 cm (open)	186 - 203 cm (open)	186 - 203 cm (open)
Weight	600 kg	630 kg	600 kg + external
Point pressure	3.4 kg/cm²	3.6 kg/cm²	3.4 kg/cm² (Qube)
Foot print	0.86 m²	0.86 m²	0.86 m² (Qube)
Requirements			
Power supply	100-240 V 50-60 Hz Max. 8A	100-240 V 50-60 Hz Max. 8A	100-240 V 50-60 Hz Max. 8A
Pressure	6 - 8 Bar	6 - 8 Bar	6 - 8 Bar
Vacuum	900 - 620 mBar	900 - 620 mBar	900 - 620 mBar
Network	10 Gbit Ethernet	10 Gbit Ethernet	10 Gbit Ethernet

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