



SUTTER INSTRUMENT AMPLIFIER SYSTEMS COMPARISON

	IPA®	Double IPA®	dPatch®	dPatch®-2
Whole-cell recordings		✓		✓
Single-channel recordings				✓
Field potential recordings		✓		✓
Extracellular recordings		✓		✓
Intracellular sharp-electrode recordings		✓		✓
Lipid-bilayer recordings		✓		✓
Ultra-fast signals (e.g., auditory research)				✓
# Headstages	1	2	1	2
Upgradable from 1 to 2 headstages		N/A	✓	N/A
Multi-amplifier mode		✓		
AD-DA converter included		✓		✓
SutterPatch® software included		✓		✓
Feedback elements	500 MΩ		50 MΩ	500 MΩ Capacitive
RMS noise (0.1 – 10 kHz)	1.4 pA		<2.3 pA	<0.7 pA <0.22 pA
Current range	±20 nA		±200 nA	±20 nA ±20 nA
Digital compensation circuitry				✓
Analog bandwidth (max)	20 kHz			1 MHz
Sampling rate (max, per channel)	50 kHz			5 MHz
Resolution	16-bit			Up to 22-bit*
Auxiliary analog inputs	4			8
Auxiliary analog outputs	2			4
Digital outputs	8			16
Output filter	4-pole Bessel			8-pole Bessel
Computer connection	USB 2.0 (High-speed)			USB 3.0 (SuperSpeed)
FastFollower™ current clamp circuitry		✓		✓
Current clamp rise time / bandwidth (Rs = 10 MΩ)	29 μs / 12 kHz			<10 μs / >35 kHz (Rf = 500 MΩ)
Dynamic clamp				✓
Lock-in Amplifier base frequency	up to 1 kHz			up to 20.8 kHz
Field-upgradeable firmware				✓
Analog signal outputs and command inputs		✓		

* At 1 kHz bandwidth



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