Amplifiers in comparison

(as of August 2022)

	BrainAmp						actiCHamp	LiveAmp		CGX Quick		CGX Mobile	
	Standard	**MR**	**DC**	**MR plus**	**ExG**	**ExG MR**	**Plus**	**8 / 16 / 32**	**64**	**20r v2**	**32r**	**72**	**128**
Number of channels per unit	32 + GND and REF				16 + GND		32 + GND	8 / 16 / 32 + GND and REF	2 x 32 + GND and REF	21 + GND and REF	32 + GND and REF	72	128
Max. number of channels	256	within MR scanner: 128 outside MR scanner: 256	256	within MR scanner: 128 outside MR scanner: 256	8 bipolar + 8 AUX with max. 224 EEG	within MR scanner: 8 bipolar + 8 AUX with max. 96 EEG outside MR scanner: 8 bipolar + 8 AUX with max. 224 EEG	160 EEG + 8 AUX	32 EEG + 8 AUX (with STE) or 24 EEG + 8 bipolar + 8 AUX (with STE)	64 EEG + 8 AUX (with STE) or 56 EEG + 8 bipolar + 8 AUX (with STE)	19 EEG + 2 ExG 6 bipolar + 2 AUX with AIM Physiological Monitor	30 EEG + 2 ExG 6 bipolar + 2 AUX with AIM Physiological Monitor	72 EEG 6 bipolar + 2 AUX with AIM Physiological Monitor	128 EEG 6 bipolar + 2 AUX with AIM Physiological Monitor
Compatible electrode types	Passive electrode (gel- and sponge-based) with integrated and fixed GND and REF electrodes via one 50-pin connector. Passive single Multitrodes with separate GND and REF electrodes via EIBDUO. Active electrode (gel-based or dry) with separate GND and REF connectors via actiCAP ControlBox.				Passive single Multitrodes with separate GND electrode (no REF because bipolar measurement)		Active electrodes (gel-based or dry) and sponge-based passive electrodes via 40-pin connector + separate GND electrode, REF electrode chosen via software. Gel-based passive electrodes via 50-40 pin adapter or EIB64DUO with separate GND electrode, REF electrode chosen via software	Active electrodes (gel-based or dry) with separate REF and GND electrodes. Passive electrodes (gel- or sponge-based) with separate REF and GND electrodes.		Active dry electrodes embedded in the headset		Active gel-based electrodes	
Input impedance	10 MΩ		Select between: 10 MΩ >10,000 MΩ				EEG channels: >1,000 MΩ AUX channels: Rev. 01: >2,000 MΩ; as of Rev. 02: >40 MΩ	>200 MΩ		>1 TΩ		>1 TΩ	
Lower cutoff frequency (high pass)	0.016 Hz / (10 s)		Select between: DC mode: 0 Hz AC mode: 0.016 Hz/10s				DC (0 Hz) for both EEG and AUX signals	DC (0 Hz)		DC (0 Hz)			
Upper cutoff frequency (low pass)	1,000 Hz	250 Hz	Select between: 1,000 Hz at 0.1 µV/bit resolution 250 Hz at 0.5 µV/bit resolution				EEG channels: 8 kHz AUX channels: 20 kHz	Changes based on chosen sampling rate: - 262 Hz at 1,000 Hz - 131 Hz at 500 Hz - 65 Hz at 250 Hz		131 Hz			
Measurement range	±3.28 mV	±16.384 mV	Changes based on chosen resolution: ±3.28 mV at 0.1 µV/bit resolution ±16.384 mV at 0.5 µV/bit resolution ±327.68 mV at 10 µV/bit resolution				EEG channels: ±409.6 mV AUX channels: Rev.1: 0.3 - 4V, as of Rev. 2: ±4.8 V	±341.6 mV		±833 mV			
Resolution	0.1 µV/bit	0.5 µV/bit	Select between: 0.1 µV/bit 0.5 µV/bit 10.0 µV/bit				EEG: ≈0.0487 µV/bit AUX: Rev. 01: ≈0.298 µV/bit, as of Rev. 02: ≈0.596 µV/bit	≈40.7 nV/bit		0.1 µV/bit	0.9 µV/bit		
Max. Sampling Rate	Up to 5,000 Hz						Depends on number of channels: 16ch + 8 AUX: 100 kHz 32ch + 8 AUX: 100 kHz 64ch + 8 AUX: 50 kHz 96ch + 8 AUX: 25 kHz 128ch + 8 AUX: 25 kHz 160ch + 8 AUX: 25 kHz	1,000 Hz	500 Hz	500 Hz			
Bit width of A/D converter	16 bit						24 bit for both EEG and AUX channels	24 bit		24 bit			
Signal transmission	Through duplex fiber-optic cables, optically coupled						Through USB, galvanically isolated	On recording computer via wireless transmission. On micro memory card. On recording computer and on micro memory card.		On recording computer via wireless transmission	On recording computer via wireless transmission or on micro memory card		
Power supply	Lead rechargeable battery - PowerPack						Lithium-ion rechargeable battery - PowerUnit	Built-in rechargeable lithium-ion battery		Two AA batteries	Rechargeable lithium-ion battery		
Operating time between charges	Typically 30 hours with one amplifier, 15 hours with two amplifiers						Typically 16 hours (with fully charged and new battery). Changes with number of channels and electrode technology	Depends on transmission mode and electrode technology: >3 hours with wireless data transfer only and passive electrodes >4.5 hours with storage on memory card only and passive electrodes		8 hours	Depends on transmission mode: 4 hours with wireless data transfer 10 hours with storage on memory card		
Trigger input	16 bit						8 bit, D-Sub, 9 pin, female	1-bit via 2.5 mm phone jack input Expandable via LiveAmp Sensor & Trigger Extension (STE) to 9-bit		16-bit via Wireless StimTrigger			
Trigger output	n/a						8 bit, D-Sub, 9 pin, male	8-bit, D-Sub, 9 pin, male (via LiveAmp Sensor & Trigger Extension only)		n/a			
Suitable for use in MR scanner room	no, MR unsafe	yes, MR conditional	no, MR unsafe	yes, MR conditional	no, MR unsafe	yes, MR conditional	no, MR unsafe	no, MR unsafe		no, MR unsafe			