

# The AC032 Commutator

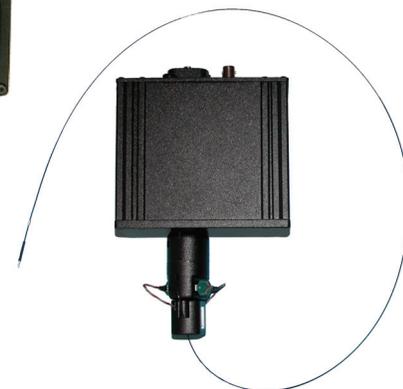
System 3

**Overview.** The AC032 is a motorized commutator with built-in support for both neural recording and optogenetic stimulation. The commutator actively tracks rotation on a headstage cable connected to a behaving subject and then spins the motor to compensate, eliminating turn-induced torque at the subject's end of the cable. The commutator is typically used for systems acquiring neural recordings from up to 32 analog channels [analog headstages and a PZ amplifier] or up to 192 digital channels [digital headstages and a PZ4 headstage manifold].

Built-in electrical shielding ensures an ultra-quiet environment for recording and lightweight cables and connectors minimize the torque caused by subject motion. Pushbuttons allow for optional manual control of the commutator motor, and an input BNC can be used to inhibit the motor during critical recording periods. A banana jack provides access to ground, so that users can connect the commutator ground to an external ground, such as a faraday cage, to minimize ground loops.

Optionally, a fiber optic rotary joint with single-channel optical fiber assembly may be added [pictured] to allow optical targeting and excitation on neural circuits for artifact free stimulation. The optical assembly is user serviceable to allow for easy optical fiber replacement.

**Power and Communication.** The commutator is powered by a 1500 mAh Li-ion Battery. A 6-9 V DC, 500 mA, center negative adaptor [provided] charges the unit. Low battery status is reported only by a decrease in rotational speed. No PC interface is required for operation.



## AC032 Commutator

### Part Numbers:

AC032 - 32 Channel Commutator

FORJ - Fiber Optic Rotary Joint and Fiber Optic Cable

## Technical Specifications

### for the AC032 Commutator

Channels:	
Analog:	up to 32 channels
Digital:	up to 192 channels
Signal/Noise:	120 dB [20 Hz to 25 kHz]
RPM [approx]:	18
Digital Inputs:	1 Inhibit
Power Consumption:	35 mAh, quiescent 65 mAh, rotating
Power Supply:	1500 mAh Li-ion Battery; 1000 cycles of charging
Charger:	6-9 V DC, 500 mA; center negative
Weight [g]:	~917 ~957 with FORJ