1 DESCRIPTION

The Model MS-FLL Mr. SQUID Flux-Locked Loop accessory for STAR Cryoelectronics' Mr. SQUID Educational Demonstration System enables students to operate Mr. SQUID in flux-locked loop mode, learn how feedback electronics work, and use Mr. SQUID for more advanced measurement applications. The Mr. SQUID Flux-Locked Loop accessory is compatible with all STAR Cryoelectronics' Mr. SQUID probes and MS-EB03 control electronics.

The Mr. SQUID Flux-Locked Loop accessory is powered using the DC power source provided with the Mr. SQUID control electronics box. A 5-pin DIN cable included with the Flux-Locked Loop accessory is used to power the Mr. SQUID electronics box through the Flux-Locked Loop box. The voltage output from the Mr. SQUID electronics box is connected to the voltage input on the front panel of the Flux-Locked Loop box, and the feedback signal from the rear panel of the Flux-Locked Loop box is connected to the external feedback port on the rear panel of the Mr. SQUID electronics box. After adjusting Mr. SQUID for maximum V-Φ output, the balance adjustment potentiometer on the front panel of the Flux-Locked Loop box is used to center the V-Φ output about zero Volts, then the toggle switch on the front panel of the Flux-Locked Loop box is used to lock the feedback loop and to reset the feedback loop as necessary. The flux-locked loop output signal is available at the front panel of the Flux-Locked Loop box and may be connected to an oscilloscope or data acquisition unit.

The key components in the integrator and feedback circuits are installed using sockets so that these components may easily be modified to change the feedback range, integrator time constant, and feedback loop bandwidth.

Interior view of the Mr. SQUID Flux-Locked Loop box.

2 SPECIFICATIONS

Parameter	Value
Voltage Input	BNC, Front Panel, ±10 V
Flux-Locked Loop Output	BNC, Front Panel, ±10 V, 50 Ω
Feedback Output	BNC, Rear Panel, ±10 V
Balance Adjustment	±10 V
Feedback Resistor	10 kΩ (default)
Integrator Capacitor	3.3 nF (default)
Integrator Time Constant	10 µs (default)
Bandwidth	~10 kHz (for ~10 μV_{pp} SQUID V-Φ)
Power Requirements	±12 V DC
Size	6.38" × 4.18" × 1.33" (162 × 106 × 34 mm)
Size and Weight	11 oz (300 g)

Specifications subject to change without prior notice.