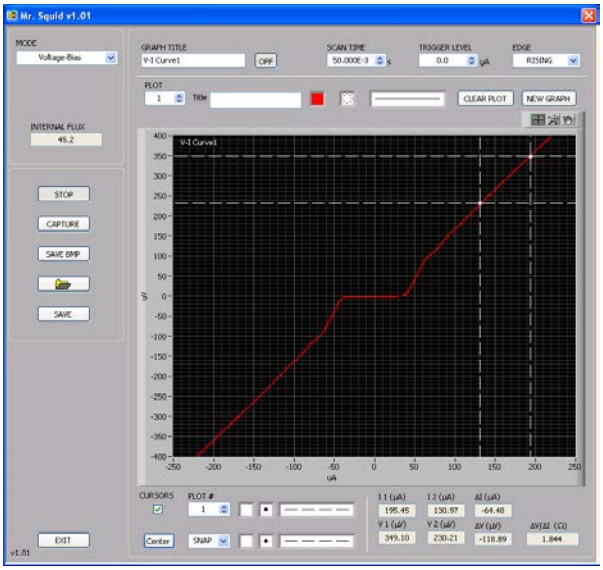
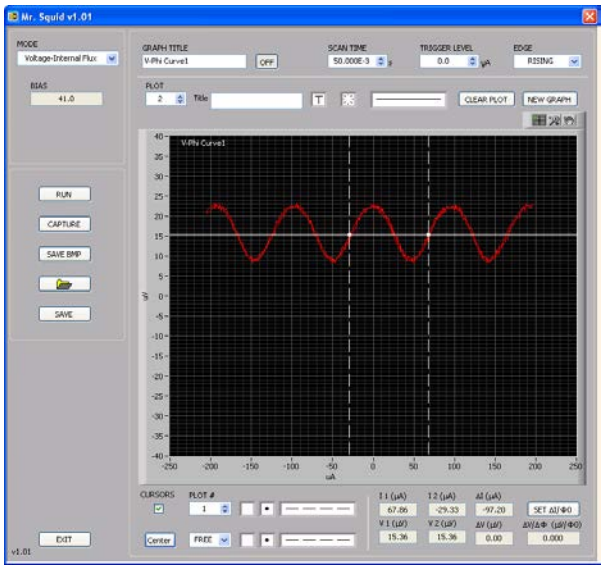
1 DESCRIPTION



The Model MS-DAQ14 Mr. SQUID Digitizer accessory for STAR Cryoelectronics' Mr. SQUID Educational Demonstration System enables students to digitize, display, and capture Mr. SQUID current-voltage (*V-I*) and voltage-flux (*V*-Φ) characteristics on a Windows-based PC via a USB 2.0 interface. The digitizer is bus powered and based on a National Instruments 14-bit data acquisition device with 48 kS/s maximum sampling rate. A higher resolution model (MS-DAQ16 with 16-bits, 250 kS/s) is available for more demanding measurements applications. The Mr. SQUID Digitizer accessory is compatible with all STAR Cryoelectronics' Mr. SQUID probes and MS-EB03 control electronics.

The Mr. SQUID Digitizer control software can be used to display, capture, and save *V-I* characteristics for variable values of flux. Cursor pairs simplify measurement of the critical current and resistance. Similarly, *V*-Φ characteristics (using internal or external flux signals) for variable values of bias current can be displayed, captured, and saved, and the cursor pairs can be used to measure the current per Φ_0 and flux-to-voltage transfer coefficient. Multiple plots can be recorded per graph, with user-configurable labels.





Graphical display for *V-I* mode (left) and *V*-Φ mode, internal flux (right). Cursor pairs simplify measurement s of the SQUID parameters.

2 SPECIFICATIONS

Parameter	Value
Number of Bits	14
Number of Channels	Four, Differential
Maximum Sampling Rate	48 kS/s
Interface	USB 2.0, Bus Powered
Analog Input	DB-15 M, ±10 V
External Trigger Input	BNC, TTL
Size	5.75" × 4.18" × 1.33" (146 × 106 × 34 mm)
Weight	9.7 oz (273 g)

Specifications subject to change without prior notice.

3 FRONT PANEL ANALOG I/O PINOUTS

Pin	Description
1	SQUID output voltage, V
2	Internal feedback coil current, I_{int}
3	SQUID bias current, I
4	External feedback coil current, I_{ext}
5	
6	
7	
8	Analog ground
9	Analog ground
10	Analog ground
11	Analog ground
12	Analog ground
13	
14	
15	Analog ground