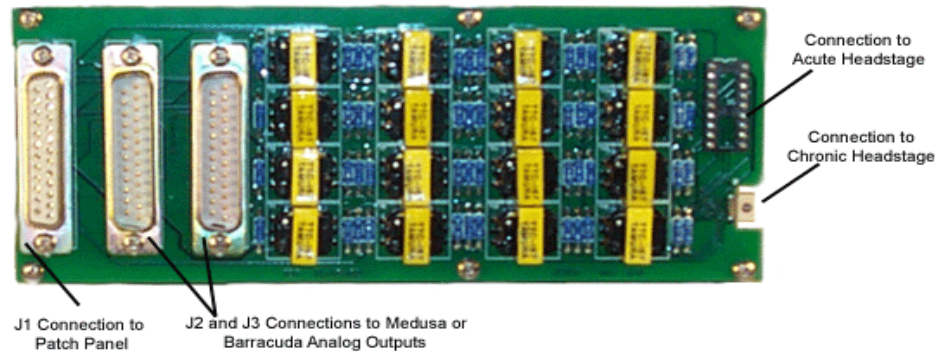


# ETM1 Experiment Test Module



## Overview

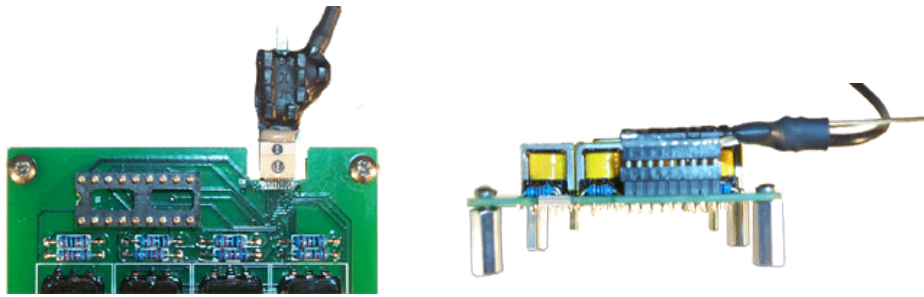
The Experiment Test Module (ETM1) allows you to design and test experimental protocols before running critical experiments and can be used to input signals into either the chronic (RA16CH) or acute (RA16AC) headstages from the analog outputs of the Medusa (RA16BA) or Barracuda Processor (RV8). The ETM1 also accepts signals via the Patch Panel (PP16). A processor can be used to generate signal spikes that simulate a physiological recording. The simulated spike signals can then be passed through the ETM1 and acquired by the connected headstage. The ETM1 also includes a connection to receive signals via the Patch Panel (PP16). Using the PP16, virtually any signal source can be used. The ETM1 allows the experimental setup to be tested without using a subject.

There is 1000 to 1 signal attenuation in the ETM1. Therefore, 1 V on the input is equivalent to 1 mV on the output to the headstage. The ETM1 uses transformer isolation of the incoming signal to the resulting output to the headstages.

Inputs, or processor and patch panel connections, are located on one end of the device and output, or headstage connections, are located on the other end of the device.

## Connecting the Headstage

Connect the headstage to the corresponding connector on the ETM1.



Chronic Headstage connected to ETM1 Acute Headstage connected to ETM1

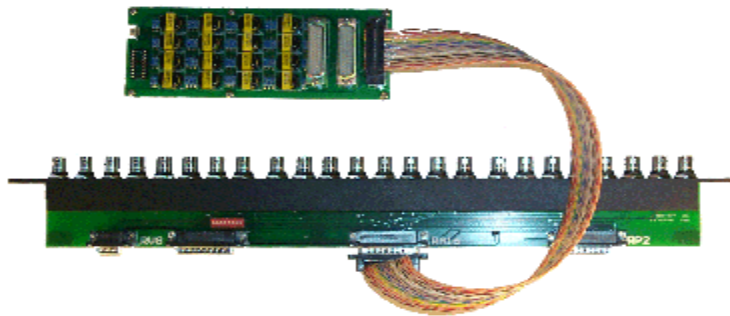
## Connecting the Signal Source

The connectors labeled J1, J2 and J3 are used to connect the ETM1 to signal sources. The first eight-headstage channels (1-8) are wired to connector J2. The other eight-headstage channels (9-16) are wired to connector J3. All 16 channels are wired to connector J1. See “ETM1 Technical Specifications” on page 19-33, for pinouts.

## Connecting to an RA16BA or RV8

For headstage channels 1-8, plug one end of a serial DB25 male-female cable into the J2 connector and plug the other end into the Analog/Digital I/O Port of an RA16BA or RV8. For headstage channels 9-16 plug one end of a serial DB25 male-female cable into the J3 connector and the other end into the Analog/Digital I/O port of a second RA16BA or RV8.

## Connecting to the PP16



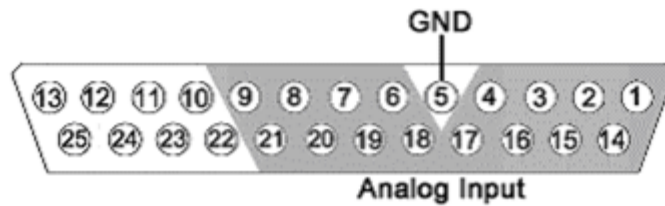
The connector labeled J1 is used to connect the ETM1 to a PP16. Plug one end of a serial DB25 male-female cable into the J1 connector and plug the other end into the RA16 port of the PP16. Channels 1 - 8 and 9 - 16 of the headstages can be accessed through the patch panel BNCs labeled A1-A8 and B1 - B8, respectively. Also, a custom cable can be fabricated to connect the ETM1 (connector J1) to virtually any signal source.

# ETM1 Technical Specifications

|                             |  |
|-----------------------------|--|
| <b>Maximum Input</b>        | Should not exceed the maximum input for your amplifier (such as 4V for the RA16PA) |
| <b>Frequency Response</b>   | Flat from 500 - 20,000 Hz  |
| <b>Highpass Filter (Fc)</b> | 20 Hz  |
| <b>S/N (typical)</b>        | 70 dB  |
| <b>THD (Typical)</b>        | 0.01% for 1 kHz input at 1 V peak-to-peak  |
| <b>Cross-Talk</b>           | < -70 dB   |
| <b>Attenuation</b>          | 60 dB  |

## J1 DB25 Pinout

Analog input channels 1-16. The J1 connector is typically used to input signals from the PP16 Patch Panel.

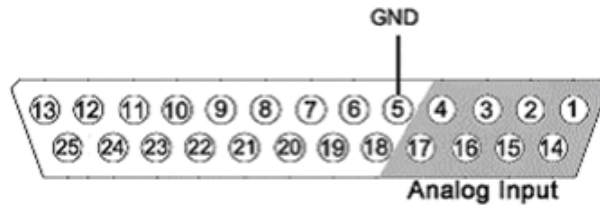


**Note:** Female pin-in shown.

| Pin | Name | Description           | Pin | Name | Description           |
|-----|------|-----------------------|-----|------|-----------------------|
| 1   | A1   | Analog Input Channels | 14  | A2   | Analog Input Channels |
| 2   | A3   |                       | 15  | A4   |                       |
| 3   | A5   |                       | 16  | A6   |                       |
| 4   | A7   |                       | 17  | A8   |                       |
| 5   | NA   | Not Used              | 18  | A9   |                       |
| 6   | A10  | Analog Input Channels | 19  | A11  |                       |
| 7   | A12  |                       | 20  | A13  |                       |
| 8   | A14  |                       | 21  | A15  |                       |
| 9   | A16  |                       | 22  | NA   |                       |
| 10  | NA   | Not Used              | 23  |      |                       |
| 11  |      |                       | 24  |      |                       |
| 12  |      |                       | 25  |      |                       |
| 13  |      |                       |     |      |                       |

### J2 DB25 Pinout

Analog input channels 1-8. Typically used to input signals from the RA16BA or the RV8.

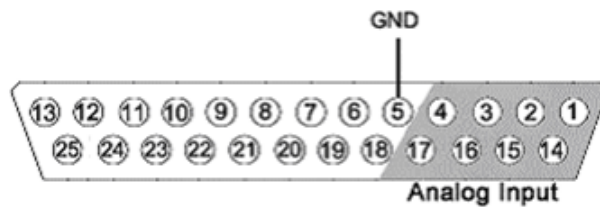


**Note:** Female pin-in shown.

| Pin | Name | Description           | Pin | Name | Description           |
|-----|------|-----------------------|-----|------|-----------------------|
| 1   | A1   | Analog Input Channels | 14  | A2   | Analog Input Channels |
| 2   | A3   |                       | 15  | A4   |                       |
| 3   | A5   |                       | 16  | A6   |                       |
| 4   | A7   |                       | 17  | A8   |                       |
| 5   | GND  | Ground                | 18  | NA   | Not Used              |
| 6   | NA   | Not Used              | 19  |      |                       |
| 7   |      |                       | 20  |      |                       |
| 8   |      |                       | 21  |      |                       |
| 9   |      |                       | 22  |      |                       |
| 10  |      |                       | 23  |      |                       |
| 11  |      |                       | 24  |      |                       |
| 12  |      |                       | 25  |      |                       |
| 13  |      |                       |     |      |                       |

### J3 DB25 Pinout

Analog input channels 9-16. Typically used to input signals from the RA16BA.



**Note:** Female pin-in shown.

| Pin | Name | Description           | Pin | Name | Description           |
|-----|------|-----------------------|-----|------|-----------------------|
| 1   | A9   | Analog Input Channels | 14  | A10  | Analog Input Channels |
| 2   | A11  |                       | 15  | A12  |                       |
| 3   | A13  |                       | 16  | A14  |                       |
| 4   | A15  |                       | 17  | A16  |                       |
| 5   | GND  | Ground                | 18  | NA   | Not Used              |
| 6   | NA   | Not Used              | 19  |      |                       |
| 7   |      |                       | 20  |      |                       |
| 8   |      |                       | 21  |      |                       |
| 9   |      |                       | 22  |      |                       |
| 10  |      |                       | 23  |      |                       |
| 11  |      |                       | 24  |      |                       |
| 12  |      |                       | 25  |      |                       |
| 13  |      |                       |     |      |                       |