

## Warning: Maximum Signal Ratings for AT-MIO Series Boards

**Note:** *National Instruments is not liable for any damages resulting from signal connections that exceed these ratings. Refer to your warranty for specific information on warranty coverage.*

Connections that exceed any of the maximum ratings of input signals on the following AT-MIO Series boards can damage your computer and your data acquisition (DAQ) board: AT-MIO-16, AT-MIO-16D, AT-MIO-16F-5, AT-MIO-64F-5, AT-MIO-16X.

Use the following specifications as definitive values. Some signal ratings change depending on whether the DAQ board is powered on or off.

| Signal Name   | AT-MIO-16<br>AT-MIO-16D  | AT-MIO-16F-5<br>AT-MIO-64F-5<br>AT-MIO-16X                    |
|---|--|---|
| ACH< x ><br>AISENSE   | ±35 V / ±20 V<br>±13.4 V / ±0.6 V  | ±25 V / ±15 V<br>±25 V / ±15 V                                |
| STARTTRIG*<br>STOPTRIG<br>EXTTRIG*<br>EXTGATE*<br>EXTTMRTRIG*             | 5.5 to -0.5 V<br>5.5 to -0.5 V<br>N/A<br>N/A<br>N/A  | N/A<br>N/A<br>5.5 to -0.5 V<br>5.5 to -0.5 V<br>5.5 to -0.5 V |
| EXTREF<br>A/BDIO< x ><br>EXTCONV*<br>SOURCE< x ><br>GATE< x ><br>OUT< x > | ±25 V<br>5.5 to -0.5 V<br>5.5 to -0.5 V <sup>1</sup><br>5.5 to -0.5 V<br>5.5 to -0.5 V<br>5.5 to -0.5 V <sup>1</sup> |   |
| DACxOUT<br>EXTSTROBE*<br>+5 V<br>SCANCLK<br>FOUT                          | Output only<br>Output only<br>Output only<br>Output only<br>Output only  |   |

<sup>1</sup> Applies only when the signal is programmed for high impedance. This is normally an output signal.

x Represents any valid numerical value.

/ Maximum input voltage (power on/power off).

## Test Your Connections

The easiest way to check the proper limits of your I/O signals is to measure them with a voltmeter. Be sure to check your signal levels *before* connecting them to the I/O connector of the DAQ board. Connect the voltmeter's negative lead (usually black) to a ground terminal on your computer chassis. This can be a grounding lug at the back of the computer, or any part of the base metal computer chassis. Then measure each signal input using the voltmeter's positive terminal (usually red). In the case of a differential signal, measure each signal in the differential pair individually. Measure both the DC and AC voltage of each signal.

If any signal should fall outside of the specified limits for *any* of the input signals, *do not* connect it to the DAQ board. Before proceeding, add signal-conditioning circuitry to the signal in question to either attenuate or clip the voltage signal.

If dynamic (for example, AC) signals are connected to the inputs, you must anticipate or calculate the maximum voltage that the signal may attain. Again, if you suspect it will exceed the maximum signal rating allowed for the selected signal, you should add protection or signal-conditioning circuitry to prevent damage to your DAQ board and computer.

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