Product:

All PCI, PCL, PCM, MIC, and USB series modules with the AI function.

Topic:

Why does the Advantech Device Manager read values in AI channel without an input signal?

Description:

This document will explain why the Advantech Device Manager read values in AI channel even though the device does not input signal.

Solution:

1. Consider the example as below, the analog input channels of USB-4716 all get -10V signal in the Advantech Device Manager but the device does not input any signal.
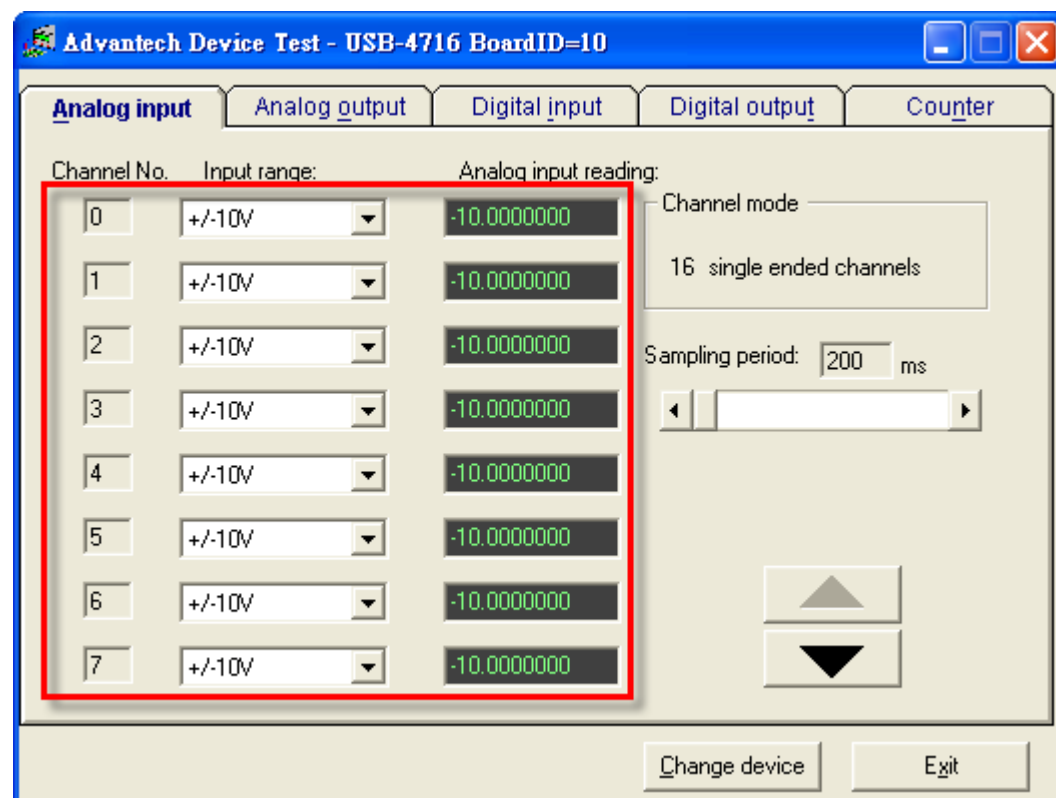
2. The reason is as follow.

   Please refer to the procedure of the AI diagram as below.

   The function of the multiplexer is that it can select one of many analog input signals and output that into a single line.

   But if the channel does not connect to any signal which means floating, the value may be unstable or be held because of the operation of the multiplexer.

   Therefore, an unknown value will be read from the floating AI channel in the Advantech Device Manager.
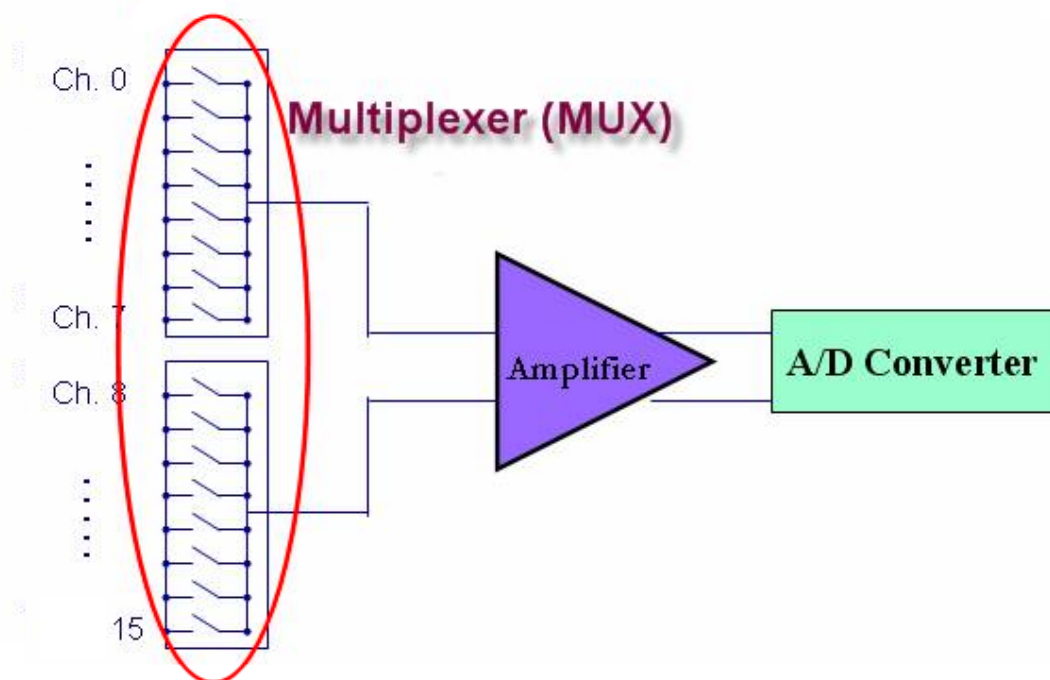
3. It is the feature of the circuit and here has a method to check if there is any problem with the device.

   Please input a fixed voltage or GND to AI channel and see if the value is correct in the Advantech Device Manager.

   Consider an example as below, the AI channel 0 and channel 1 of USB-4716 read 5V and 0V in the Advantech Device Manager when the input signals are $5V_{DC}$ and GND respectively.
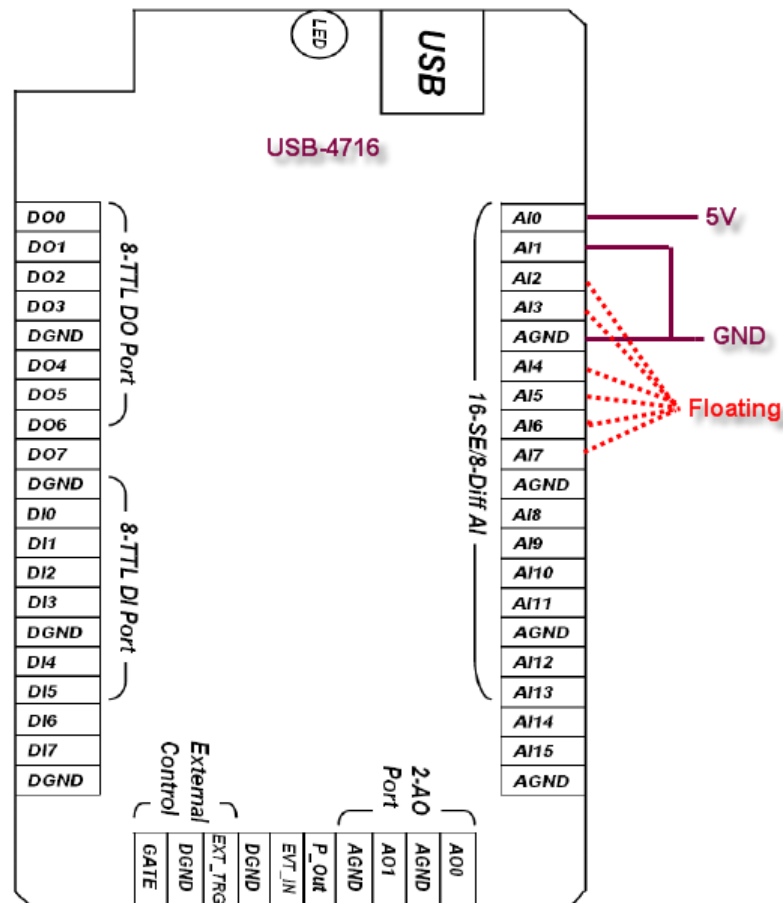
   Please do not care about the values of other channels since they are floating.

Figure 3.1: I/O Connector Pin Assignment