Tips of Analog I/O Board

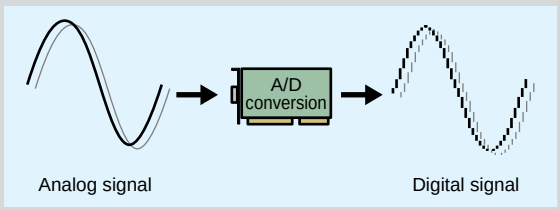
1. Analog I/O Board

Analog I/O Board is an interface board for extending the function that inputs or outputs an analog signal in a personal computer. An external phenomenon can be measured by changing an analog signal into data (digital signal), and downloading to a personal computer, or external apparatus can be controlled by changing and outputting the data of a personal computer to an analog signal.

2. Types and applications for Analog I/O Board

Analog Input Board

Analog I/O Board is a board with the function of A/D (from Analog to Digital signal) conversion. It is used when connecting a personal computer with a temperature sensor, a pressure sensor, etc. which output the amount of change with voltage and current. An analog input board is divided into the following two kinds by the function to carry.



●Standard type

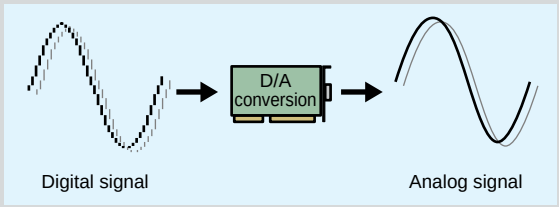
The CONTEC has variety of products for analog input.
For example, these are many channels analog input boards, a sensor input boards, and analog input module with USB connection.

●Intelligent type (analog E series)

It is the high spec. type which carries the various sampling control function and the mass memory and which is adapted for suitable applications. If it combines with the convenient exclusive option which adds functions, such as a simultaneous sampling gain amplifier, low path filter and isolated amplifier, it corresponds also to special application flexibly.

Analog Output Board

Analog Output Board It is a board with the function of D/A (from digital to analog signal) conversion. It is used when connecting external actuators and voltage/current control apparatus units with a personal computer directly.



3. Function(1/2)

Input/Output channels

The sensor or source of a signal which can be output and input, and the number of actuators are expressed. Moreover, the following two input methods can be used with an analog input board. Keep in mind that the number of channels that can be used with an input system changes.

●Single end input

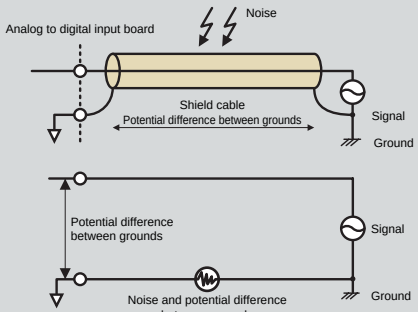
Single end input is the system that connects by 2 lines of a signal line and a ground line, and measures the voltage of the source of a signal. (Refer to the following figure)

Merit

- ●Wiring requires only two lines to the one source of a signal.
- ●The twice [at the time of a differential input] as many number of channels as this can be used.

Demerit

- ●The potential difference between grounds with the source of - signal is contained in a measurement result.
- ●It is easy to be influenced of electrical noise as compared with a differential input.



Differential input

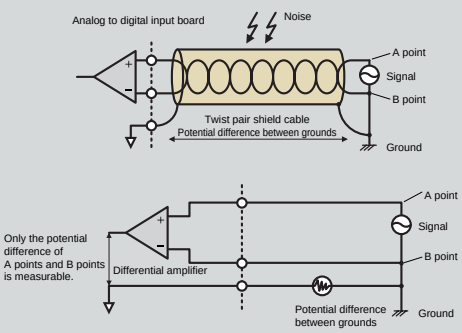
Differential input It is the system that connects by a total of three lines of two signal lines and ground lines, and measures the voltage of the source of a signal. The difference of the potential for a ground, the potential for points, a ground, and B points is taken, and the potential of the source of a signal (between A-B) is measured. (Refer to the following figure)

Merit

- ●A measurement result is not influenced even if there is potential difference between grounds with the source of a signal.
- ●The differential input is not influenced much of electric noise in comparison with the single end input.

Demerit

- ●Wiring becomes required three lines to the one source of a signal.
- ●Only half of the numbers of channels at the time of an input can be used.



Input/Output range

Express the range of the voltage or current which can be output and input.

●Range

Express the kind of input-and-output range in which range selection is possible. Better accuracy is expectable, so that it is close to a sensor or the range of an actuator.

●Setting

Express the difference in the setting method of a setting input-and-output range.
Community: All channels are set as a common input-and-output range.
Independence: A separate input-and-output range can be set up for every channel.