Configuration of Analog Inputs

For the analog input reading of FBs series PLC, there are 3 kinds of data formats used to represent the reading value in compliance with the variation of the external analog inputs. Also, it supports the average method to improve the drift of the reading value away from the noise interference or unstable original analog signal.

The WinProladder provides the friendly and convenient operation interface for the purpose of analog input configuration. There are "analog input data format", "valid bits", and "number of average" for settings.

The procedures for analog inputs configuration as below:

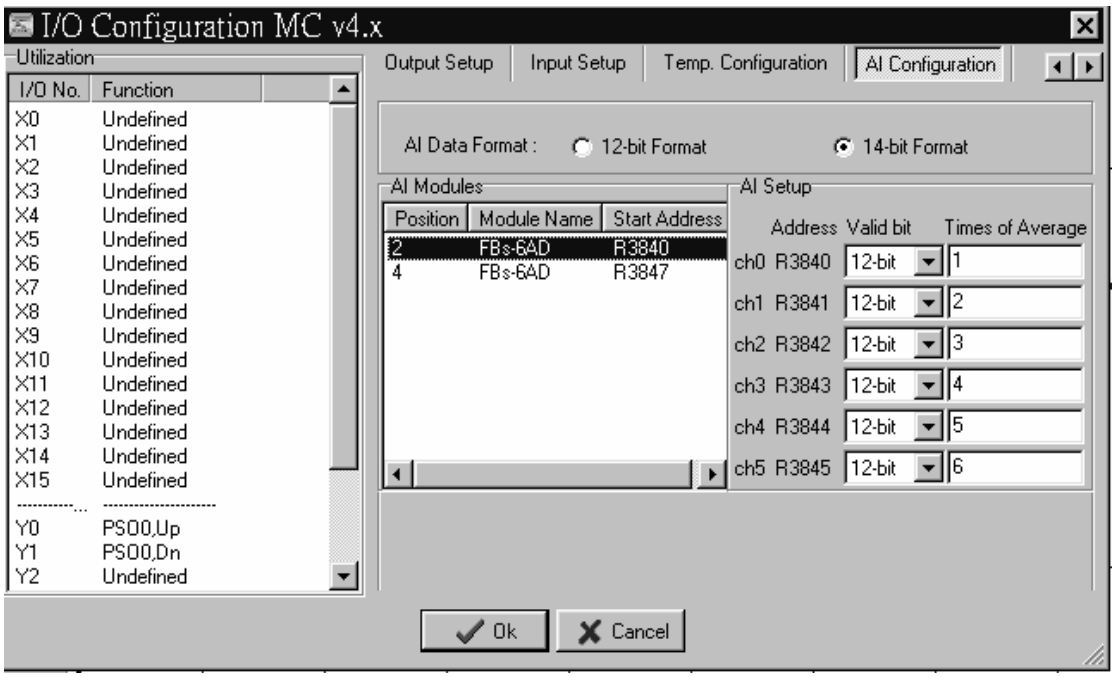
1. Executing WinProladder software

2. Doubble click "System Configuration"

3. Double Click "I/O Configuration"

4. Click "AI Configuration"

5. Click the selective analog input module, there will have the following screen :



. Description of the configuration screen :

. AI Data Format : All analog inputs can be assigned as 12-bit or 14-bit resolution of data format .

. AI Modules : This window displays the information of installed analog input modules, click the selective module will bring in the setting window for valid bits and times of average.

. AI Setup : When the data format is 12-bit resolution, each channel of analog input can be allowed to set the times of average;
When the data format is 14-bit resolution, each channel of analog input can be allowed to set the valid bits and times of average.

. AI Data Format :

a. 12-bit resolution with sign representation (－2048～2047) :

b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
b11	b11	b11	b11	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1

.b11 = 0, Positive reading value
= 1, Negative reading value
.b15 & b14 & b13 & b12 = b11

b. 12-bit resolution without sign representation (0～4095) :

b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
0	0	0	0	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1

c. 14-bit but valid 12-bit resolution with sign representation (－8192～8188) :

b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
b13	b13	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0	0

.b13 = 0, Positive reading value
= 1, Negative reading value
.b15 & b14 = b13 ; b1 & b0 = 0

d. 14-bit but valid 12-bit resolution without sign representation (0～16380) :

b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
0	0	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0	0

e. 14-bit resolution with sign representation (－8192～8191) :

b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
b13	b13	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1

.b13 = 0, Positive reading value

= 1, Negative reading value

.b15 & b14 = b13

f. 14-bit resolution without sign representation (0～16383) :

b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
0	0	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1

. Relative Registers of AI Configuration :

. D4042 : Define the AI data format

= 5612H, all analog inputs are the 12-bit resolution ;

it is allowed to set times of average for each channel.

= 5614H, all analog inputs are the 14-bit resolution ;

it is allowed to set valid bits and times of average for each channel.

. D4006～D4009 : When the AI data format is 14-bit resolution, each bit of these 4 registers is used to define the corresponding analog channel is valid 12 or 14 bits resolution.

D4006 : b0 = 0, AI channel 0 is valid 12-bit resolution

= 1, AI channel 0 is valid 14-bit resolution

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b15 = 0, AI channel 15 is valid 12-bit resolution t

= 1, AI channel 15 is valid 14-bit resolution

D4007 : b0 = 0, AI channel 16 is valid 12-bit resolution

= 1, AI channel 16 is valid 14-bit resolution

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b15 = 0, AI channel 31 is valid 12-bit resolution

= 1, AI channel 31 is valid 14-bit resolution

D4008 : b0 = 0, AI channel 32 is valid 12-bit resolution
= 1, AI channel 32 is valid 14-bit resolution
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b15 = 0, AI channel 47 is valid 12-bit resolution
= 1, AI channel 47 is valid 14-bit resolution

D4009 : b0 = 0, AI channel 48 is valid 12-bit resolution
= 1, AI channel 48 is valid 14-bit resolution
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•
b15 = 0, AI channel 63 is valid 12-bit resolution
= 1, AI channel 63 is valid 14-bit resolution

. D4010～D4041 : Each byte of the 32 registers is used to define the times of average for corresponding analog input channel.

D4010 : Low byte is used to define the times of average for AI channel 0
: High byte is used to define the times of average for AI channel 1
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•
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D4041 : Low byte is used to define the times of average for AI channel 62
: High byte is used to define the times of average for AI channel 63

※ The default of AI data format is 14-bit resolution, valid 12-bit, and times of average is 1.

※ The legal setting value for times of average is 1～16, if it is not the value,
The default for times of average is 1 when it is valid 12-bit resolution
The default for times of average is 8 when it is valid 14-bit resolution