

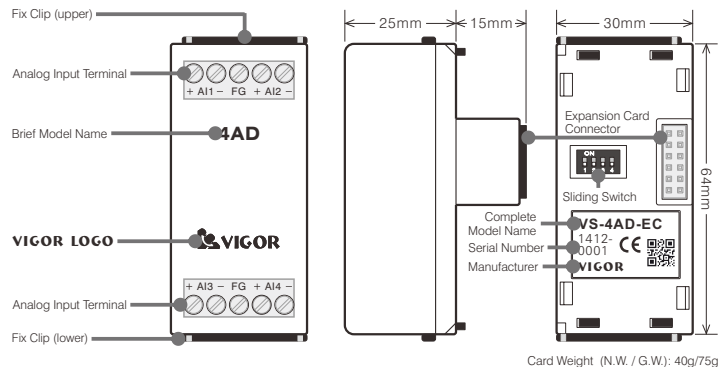
# **VS-4AD-EC** Analog Input Expansion Card

## Forward

The VS-4AD-EC Analog Input Expansion Card can receive 4 channels of external voltage or current signal inputs then convert the analog signals to 12-bit digital values. When the END instruction is executed, the VS Main Unit reads out AD conversion data from the VS-4AD-EC card and stores the values to respective EC card registers. Thus, it provides the reference data for digital monitoring or controls.

The VS-4AD-EC Analog Input Expansion Card is non-isolated. Please read following instructions before use.

## Component Designation

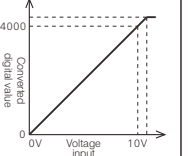
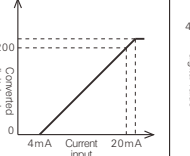
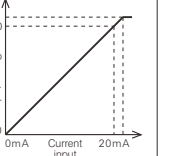


## Specification

Basic Specification

Item	Specification
Power Consumption	DC5V 12mA, DC12V 10mA (from PLC Main Unit)

Analog Input Specification

Item	Voltage Input Spec.	Current Input Spec.	
	The voltage or current input switch is located on the card's bottom also the operation mode special register is required to set.		
Analog Input Range	0~10V	4~20mA	0~20mA
Converted Value	0~4000	0~3200	0~4000
Input Resistance	200KΩ	250Ω	250Ω
Max. Resolution	2.5mV	5μA	5μA
Overall Accuracy	± 1% Overall Max.		
Response Time	1.2 ms × (No. of enabled AI CH.), the AI values will be renewed at the END instruction		
Isolation Method	No isolation between PLC and inputs; no isolation between input channels		
Max. Input Range	-0.5V ~ +12V	-2mA ~ +30mA	-2mA ~ +30mA
Conversion Curve Diagram			

## EC Card Register (Simple Code) Related to VS-4AD-EC

EC1	EC2	EC3	Component Description
EC1D0	EC2D0	EC3D0	To assign the analog input modes of AI1~AI4.
EC1D1	EC2D1	EC3D1	Converted digital value of AI1, 0~4000 or 0~3200.
EC1D2	EC2D2	EC3D2	Converted digital value of AI2, 0~4000 or 0~3200.
EC1D3	EC2D3	EC3D3	Converted digital value of AI3, 0~4000 or 0~3200.
EC1D4	EC2D4	EC3D4	Converted digital value of AI4, 0~4000 or 0~3200.
EC1D18	EC2D18	EC3D18	Identification code: K101 (If get K240, that means the EC card cannot be connected.)
EC1D19	EC2D19	EC3D19	The version number of this card. (the content value XX indicates Ver. X.X)

To appoint the modes of analog inputs: (the sliding switch should also consistent with the modes)

b15	Nibble #4	Nibble #3	Nibble #2	Nibble #1	b0
	A14	A13	A12	A11	

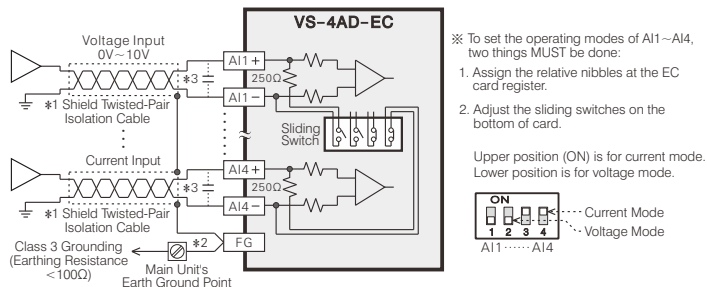
To assign input modes

If the nibble = 0, the channel is assigned for (0~10V) voltage input.  
 If the nibble = 1, the channel is assigned for (4~20mA) current input.  
 If the nibble = 2, the channel is assigned for (0~20mA) current input.  
 If the nibble is any number other than 0, 1 or 2, the channel is disabled.

Example: If a VS-4AD-EC is installed at the EC1, and its EC1D0 is set to be H3210, then

- AI1: voltage input (0~10V)
- AI2: current input (4~20mA)
- AI3: current input (0~20mA)
- AI4: disabled

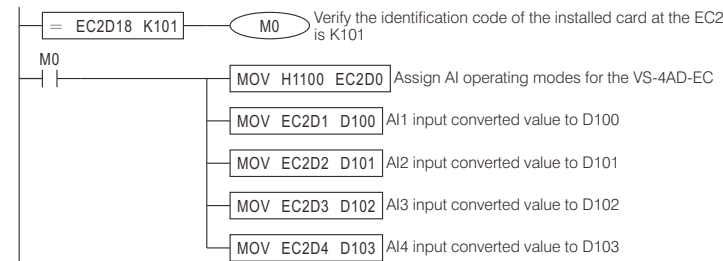
## External Wiring



- #1: Please use the Shield Twisted-Pair isolation cable for every analog input channel and keep the signal cable away from power lines to minimize external interference.
- #2: First, please combine the ends of the cable shields. Then, connect that junction to the earth ground point of Main Unit. After that, make use of class 3 grounding for the point.
- #3: If a voltage/current ripple occurs at converted value or there is electrically induced noise on the external wiring, please parallel connect a smoothing capacitor (0.1μF~0.47μF, 25V) between the input terminals.

## Example Program

Assume that VS-4AD-EC is installed at the EC2, its AI1 & AI2 are used for 0~10V inputs, AI3 & AI4 are used for 4~20mA inputs. Input converted values of AI1~AI4 are sequentially stored at D100~D103.



## Expansion Card Installation Guide

