

VIGOR VS-3ISC-EC Inverter Speed Control Expansion Card

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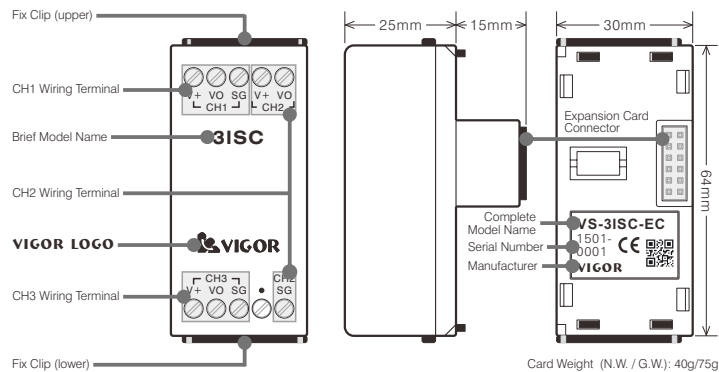
The VS-3ISC-EC Inverter Speed Control Expansion Card is specially designed by VIGOR Corp. for the VS Series PLC could control the operation speed of inverters.

The VS-3ISC-EC offers 3 independent circuits to simultaneously control 3 inverters' operation speed. Since it is completely isolated between these control circuits, that could effectively eliminate the interactions between the analog outputs of multiple inverters.

For users could externally control the speed of an inverter, the inverter is usually equipped with the analog input control circuit and an external control use DC 5V or 10V power supply. Generally, users control the inverter speed can either connect with an external variable resistor for manual control, or voltage control through its analog input circuit. The VS-3ISC-EC performs inverter speed control by voltage-division the external control use power (5V/10V) from the inverter and feed the proportional signal back to its analog input circuit.

Firstly, connect external control use power from the inverter to V+ and SG terminals of the VS-3ISC-EC, then connect the VO terminal of the VS-3ISC-EC to analog input point of inverter speed control. Secondly, use program to set "V+ measured voltage" and "VO Max.", then write the "VO set value" (0~1000 = 0.0%~100.0%) into respective EC card register. By the END instruction, the VS Main Unit writes the values of EC card registers into the card thus it converts the "VO set value" to respective voltage signal. The VO terminal outputs that signal to the analog input point of inverter to control speed. Following is the detailed specification of the VS-3ISC-EC. Please read instructions before use.

Component Designation



Specification

Basic Specification

Item	Specification
Power Consumption	DC5V 10mA, DC12V 0mA (from PLC Main Unit)

Performance Specification

Item	Specification	Conversion Curve Diagram
VO Output Range	0.0% ~ 100.0% (= 0V ~ the setting value of VO Max.)	
VO Set Value Range	0~1000	
Inverter's Input Resistance	10 KΩ or higher	
Resolution	0.1%	
Overall Accuracy	± 1.5% Overall Max.	
Response Time	150ms Max.	
V+ Input Range	4V~12V (power input from inverter to V+ & SG terminals)	
Isolation Method	Each channel has an independent photocoupler to isolate this part of analog circuit to others and PLC.	

EC Card Register (Simple Code) Related to VS-3ISC-EC

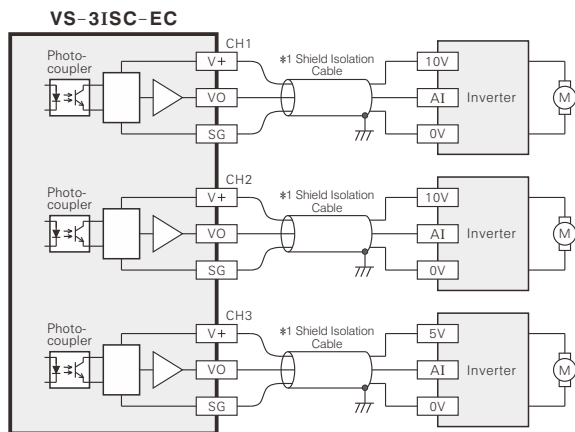
EC1	EC2	EC3	Component Description	
EC1D0	EC2D0	EC3D0	VO set value of CH1, 0~1000	The output ratio at the VO terminal that connect to the inverter's analog speed control point. This set value is to produce a voltage output percentage between 0 and "VO Max.". ※1
EC1D1	EC2D1	EC3D1	VO set value of CH2, 0~1000	
EC1D2	EC2D2	EC3D2	VO set value of CH3, 0~1000	
EC1D3	EC2D3	EC3D3	V+ measured voltage value of CH1.	Measure the external control usage output from inverter by a voltage meter then fill in the measured voltage here. If the measured voltage is 10V, please fill in 1000 (by unit of 0.01V). ※2
EC1D4	EC2D4	EC3D4	V+ measured voltage value of CH2.	
EC1D5	EC2D5	EC3D5	V+ measured voltage value of CH3.	
EC1D6	EC2D6	EC3D6	VO Max. of CH1.	Get the control voltage range of the inverter then fill in that maximum voltage here. If its effective range is 0~10V, please fill in 1000 (by unit of 0.01V). ※3
EC1D7	EC2D7	EC3D7	VO Max. of CH2.	
EC1D8	EC2D8	EC3D8	VO Max. of CH3.	
EC1D18	EC2D18	EC3D18	Identification code: K104 (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)	

※1: If the set value < 0, the real output ratio is equal to 0. If the set value > 1000, the real output ratio is equal to 1000.

※2: If to fill in the value of this measured voltage is not between 400 and 1200, then the VO point will output 0V.

※3: If to fill in this value is not in the range between 0 and "V+ measured voltage", then the VO point will output 0V.

External Wiring



※1: Please use the shield isolation cable and keep that away from power lines to minimize external interference. Besides, ground the shield of the signal cable (Class 3 grounding; earthing resistance < 100Ω).

Example Program

The VS-3ISC-EC is installed at the EC1 to control three inverters. CH1's voltage output VO set value at D7000, CH2's voltage output VO set value at D7001 and CH3's voltage output VO set value at D7002.

M9000	CMP EC1D18 K104 M0	Verify the identification code of the installed card at the EC1 is K104
M1	MOV K1000 EC1D3	Set V+ measured voltage value of CH1; the measured voltage from inverter's control output is 10V.
	MOV K1000 EC1D6	Set VO Max. of CH1; that effective voltage input range from the inverter's datasheet is 0~10V.
	MOV K1065 EC1D4	Set V+ measured voltage value of CH2; the measured voltage from inverter's control output is 10.65V.
	MOV K1000 EC1D7	Set VO Max. of CH2; that effective voltage input range from the inverter's datasheet is 0~10V.
	MOV K518 EC1D5	Set V+ measured voltage value of CH3; the measured voltage from inverter's control output is 5.18V.
	MOV K500 EC1D8	Set VO Max. of CH3; that effective voltage input range from the inverter's datasheet is 0~5V.
	BMOV D7000 EC1D0 K3	Batch move the voltage output VO set values for the CH1~CH3.

Expansion Card Installation Guide

