

VC-4DA Analogue Output Module User Manual

Thank you for purchasing the vc-4da analog output module developed and produced by Suzhou VEICHI Electric Technology Co., Ltd. Before using our VC series PLC products, please read this manual carefully, so as to better grasp the characteristics of the products and correctly install and use them. More secure application and make full use of the rich functions of this product.

Tip:

Please read the operating instructions, precautions and cautions carefully before starting to use the product in order to reduce the risk of accidents. Personnel responsible for the installation and operation of the product must be strictly trained to comply with the safety codes of the relevant industry, strictly observe the relevant equipment precautions and special safety instructions provided in this manual, and carry out all operations of the equipment in accordance with the correct operating methods.

1 Interface description

1.1 Interface description

The expansion interface and user terminals of the VC-4DA are covered with a cover, the appearance of which is shown in Figure 1-1. Opening each cover reveals the terminals, as shown in Figure 1-2.

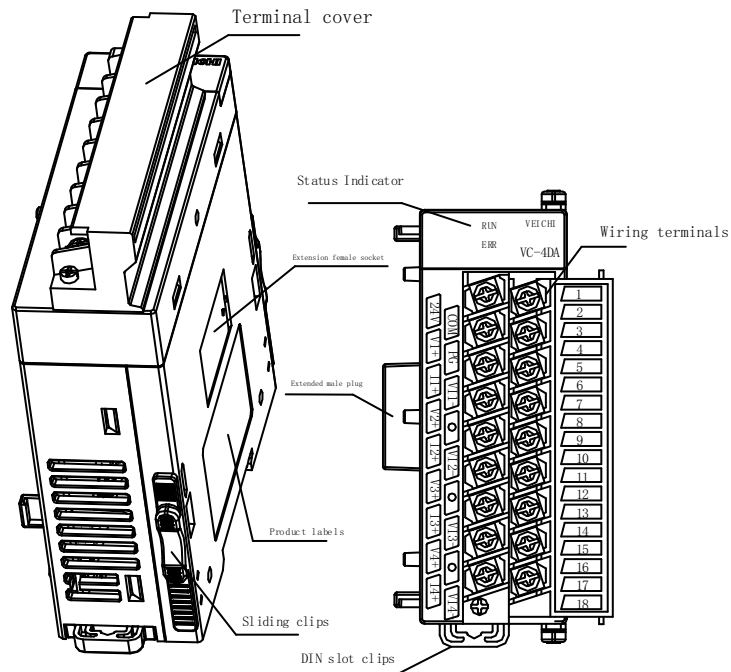
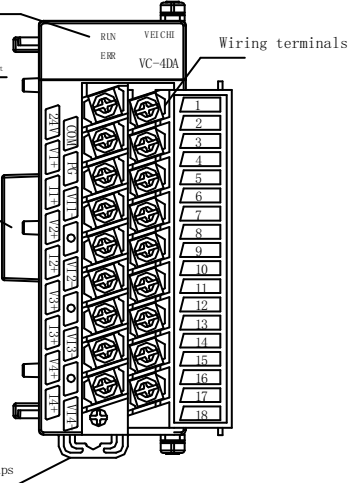


Figure 1-1 Appearance of the module interface

Figure 1-2 Module interface terminal diagram



1.2 Product Model Description

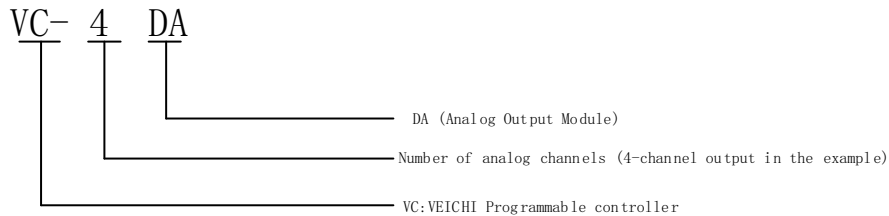


Figure 1-2 Product type description

1.3 Definition of terminal

| No. | Marking | Instruction | No. | Marking | Instruction |
|-----|---------|-------------------------------------|-----|---------|------------------------------------|
| 01 | 24V | Analogue power supply 24V positive | 02 | COM | Analogue power supply 24V negative |
| 03 | V1+ | Voltage signal output for channel 1 | 04 | PG | Grounded side |
| 05 | I1+ | Channel 1 current signal output | 06 | VI1- | Channel 1 common ground end |
| 07 | V2+ | Channel 2 voltage signal output | 08 | ● | Reserved |
| 09 | I2+ | 2nd channel current signal output | 10 | VI2- | Channel 2 common ground end |
| 11 | V3+ | Voltage signal output for channel 3 | 12 | ● | Reserved |
| 13 | I3+ | Channel 3 current signal output | 14 | VI3- | Channel 3 common ground end |
| 15 | V4+ | Channel 4 voltage signal output | 16 | ● | Reserved |
| 17 | I4+ | Channel 4 current signal output | 18 | VI4- | Channel 4 current signal output |

Table 1-3 Definition of terminals

1.4 Access system

(1) VC-4DA is used in VC series programmable controller system, it can be connected to the system through hard connection, see Figure 1-3 for the connection method, plug it into the expansion interface of the main module or any expansion module in the system, then VC-4DA can be connected to the system.

(2) After the VC-4DA is plugged into the system, its expansion interface can also be used to connect other expansion modules of the VC series, such as IO expansion modules, VC-4DA, VC-4TC, etc., and of course the VC-4DA can also be connected.

(3) The main module of the VC series programmable controller can be extended with several IO expansion modules and special function modules. The number of expansion modules to be connected depends on the amount of power the module can provide, see 4.7 Power Supply Specifications in the VC Series Programmable Controller User Manual for details.

(4) This module does not support hot-swapping of the front and rear interfaces.

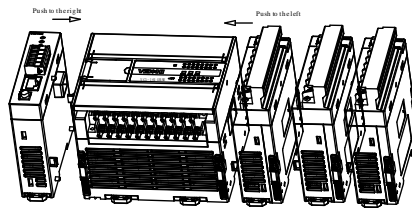


Figure 1-4 Schematic diagram of the connection between the VC-4DA analogue module and the main module

1.5 Wiring instructions

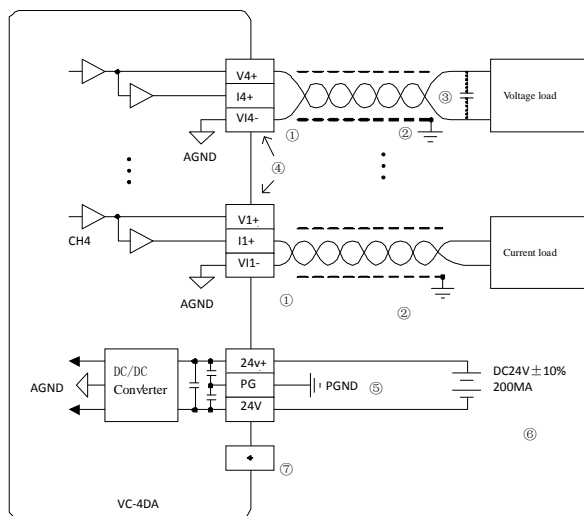


Figure 1-5 Wiring diagram for VC-4DA user terminals

For user terminal wiring requirements, please refer to Figure 1-5. when wiring, please pay attention to the following 7 aspects.

1. It is recommended that twisted shielded cables be used for the analogue outputs and that the cables be routed away from power cables or other wires that may cause electrical interference.
2. Use a single point of earth at the load end of the output cable.
3. If there is electrical noise or voltage fluctuations in the output, connect a smoothing capacitor (0.1 μ F to 0.47 μ F/25V).
4. The VC-4DA may be damaged if the voltage output is short-circuited or if a current load is connected to the voltage output.
5. Ground the module's ground terminal PG well.
6. The analogue power supply can use the auxiliary output 24 Vdc power supply of the main module, or any other power supply that meets the requirements.
7. Do not use the empty pin on the user terminal

2 Instructions for use

2.1 Power indicator

| Project | Instruction |
|------------------|---|
| Analog Circuits | 24Vdc (-10% to +10%), maximum allowable ripple voltage 5%, 50mA (from main module or external power supply) |
| Digital Circuits | 5Vdc 72mA (from main module) |

Table 2-1 Power supply indicators

2.2 Performance indicator

| Project | Instruction |
|---------------------|---|
| I/O points occupied | No |
| Conversion speed | 2ms per channel (changing the number of channels used does not change the conversion speed) |
| Analogue output | Voltage output -10 to 10Vdc (external load impedance not less than 2k Ω) |
| Current output | 0 to 20mA (external load impedance of 500 Ω or less) |

| Project | Instruction |
|--------------------------|----------------------------------|
| Analogue output mode | Corresponding digital quantities |
| Passage closure | |
| Output range -10V to 10V | -10000~10000 |
| Output range 0mA to 20mA | 0~2000 |
| Output range 4mA to 20mA | 0~2000 |

| Project | Instruction | |
|------------------|--|------------------------|
| Digital inputs | Default setting: -10000 to 10000, Allowed range: -10000 to 10000 | |
| Resolution | Voltage output | 1mV (10V/10000) |
| | Current output | 2 μ A (20mA/10000) |
| Overall accuracy | \pm 1% (for full range of 10V) \pm 1% (for full range of 20mA) | |
| Isolation | The analogue and digital circuits are isolated by opto-couplers. The analogue circuit power supply and the external power supply are isolated with DC/DC. No isolation between analogue channels | |

2.3 Indicator light description

| Project | Instruction |
|---------------------------------------|--|
| Signal indicator | RUN status indicator, blinking when normal ERR error status indicator, illuminated on failure |
| Expansion module rear stage interface | Connection of rear modules, hot-swappable not supported |
| Expansion module front interface | Connection of front-end modules, hot-swappable not supported |

3. Feature setting

1. The output channel characteristics of the VC-4DA are the linear relationship between the channel analogue output quantity A and the channel digital quantity D, which can be set by the user. Each channel can be understood as the model shown in Figure 3-1, and since it is a linear characteristic, the characteristics of the channel can be determined by determining two points P0 (A0, D0) and P1 (A1, D1), where D0 indicates that when the analogue output is A0 D0 indicates the channel output digital quantity when the analogue output is A0, D1 indicates the channel output digital quantity when the analogue output is A1.

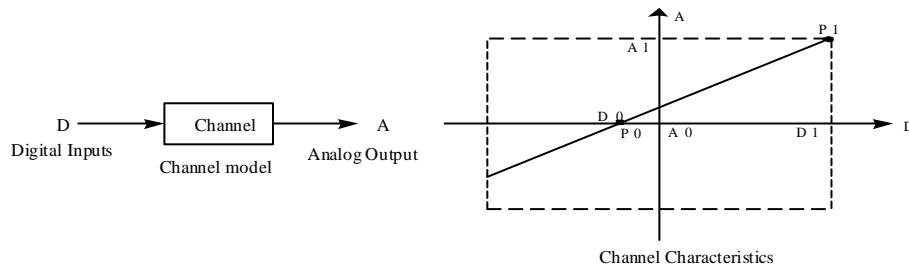
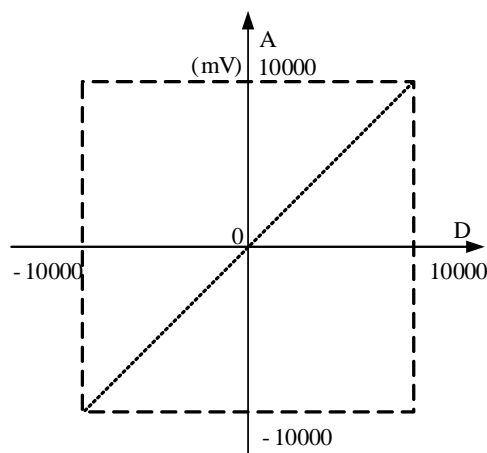


Figure 3-1 Schematic diagram of the channel characteristics of the VC-4DA

1) Considering the user's ease of use and not affecting the realization of the function, in the current mode, A0 and A1 correspond to [measured value 1] and [measured value 2] respectively, D0 and D1 correspond to [standard value 1] and [standard value 2] respectively, as shown in Figure 3-1, the user can change the channel characteristics by adjusting (A0,D0) and (A1,D1), the factory default (A0,D0) is the 0 value of the output analog quantity, (A1,D1) is the maximum value of the output analog quantity

2) If the D0 and D1 values of each channel are not changed and only the mode of the channel is set, then the characteristics corresponding to each mode are shown in Figure 3-2. A, B and C in Figure 3-2 are factory settings factory settings

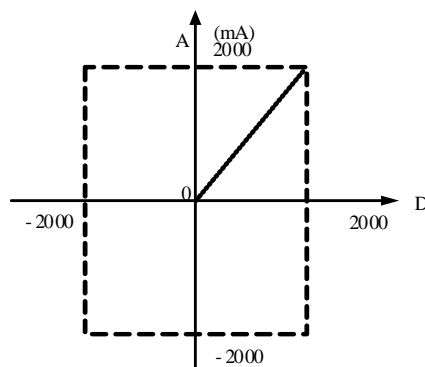


A.Mode 1, D0=0, D1=10000

Input 10V corresponds to input digital 10000

Output 0V, corresponding to input digital quantity 0

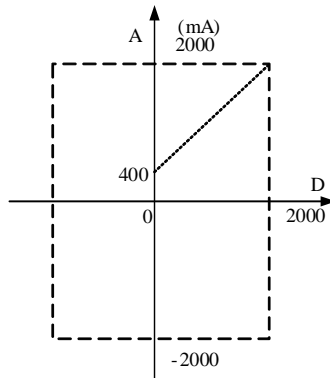
Output -10v, corresponding to input digital -10000



B.Mode 2, D0=0, D1=2000

Output 20mA corresponds to input digital quantity 2000

Output 0mA, corresponding to input digital quantity 0



C.Mode 3,D0=0,D1=2000

Output 4mA corresponds to input digital quantity 0

Output 20mA, corresponding to input digital quantity 2000

Figure 3-2 Default corresponding channel characteristics for each mode without changing the D0 and D1 values of each channel

The channel characteristics can be changed if the D0 and D1 values of the channel are changed. D0 and D1 can be set anywhere between -10000 and 10000, if the setting value is outside this range, the VC-4DA will not receive it and will keep the original valid setting.

4. Programming example

4.1 Programming example for VC series + VC-4DA module

Example: VC-4DA module address is 1, so that it turns off the 1st channel, the 2nd channel outputs voltage signal (-10V to 10V), channel 3 output current signal (0 to 20mA), channel 4 output current signal (4 to 20mA), and set the output voltage or current value with data registers D1, D2 and D3.

1) Create a new project and configure the hardware for the project, as shown below

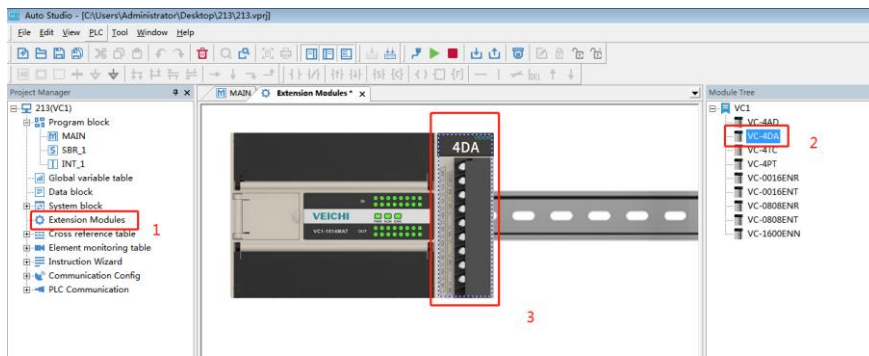


Figure 4-1 Hardware configuration

2) Double click on the "VC-4DA" module on the rail to enter the 4DA configuration parameters.

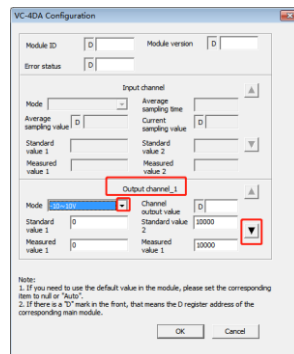


Figure 4-2 Basic Application Channel 1 Setup

3) Click on "▼" for third channel mode configuration.

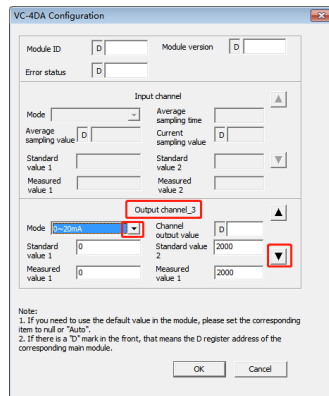


Figure 4-3 Basic application channel three settings

4) Click on "▼" to configure the fourth channel mode and click on "Confirm" when finished;

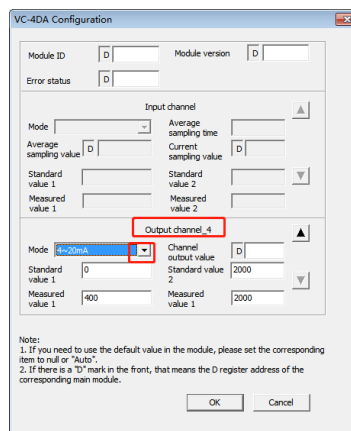


Figure 4-4 Basic application channel four settings

5. Installation

5.1 Installation size

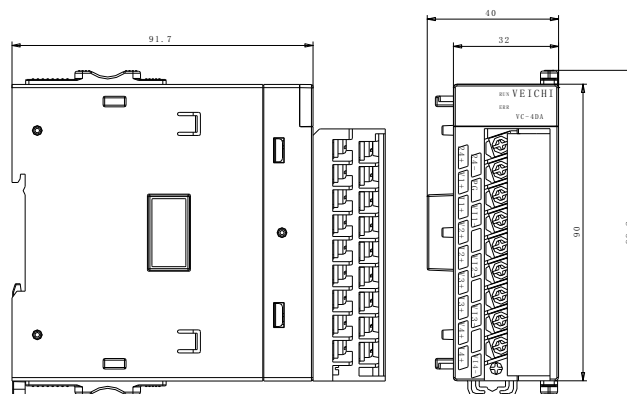


Figure 5-1 Mounting dimensions (in mm)

5.2 Mounting method

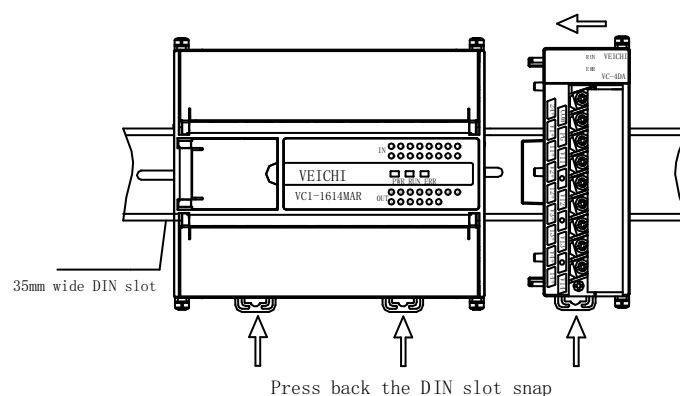


Figure 5-2 Module mounting method

6 Operational check

6.1 Operational check

1. Check that the analogue input wiring meets the requirements, refer to 1.5 Wiring instructions.
2. Check that the VC-4DA is reliably plugged into the expansion interface.
3. Check that the 5V and 24V power supplies are not overloaded. Note: The power supply for the digital part of the VC-4DA comes from the main module and is supplied via the expansion interface.
4. Check the application to ensure that the correct operating method and parameter range has been selected for the application.
5. Set the main module connected to the VC-4DA to RUN.

6.2 Fault checking

If the VC-4DA does not operate properly, check the following items.

- Check the status of the main module "ERR" indicator.
 - Blinking: check the connection of the expansion module and whether the configuration model of the special module is the same as the actual connected module model.
 - extinguished: the expansion interface is correctly connected.
- Check the analog wiring.
 - Check that the wiring is accurate, refer to Figure 1-5.
- Check the status of the module's "ERR" indicator
 - Light up: 24Vdc power supply may be faulty, if 24Vdc power supply is normal, then VC-4DA is faulty
 - Extinguished: 24Vdc power supply is normal.
- Check the status of the "RUN" indicator
 - Blinking: The VC-4DA is operating normally

For User

1. The scope of the warranty refers to the programmable controller body.
2. The warranty period is eighteen months. If the product fails or is damaged during the warranty period under normal use, we will repair it free of charge.
3. The start of the warranty period is the date of manufacture of the product, the machine code is the only basis for determining the warranty period, equipment without the machine code is treated as out of warranty.
4. Even within the warranty period, a repair fee will be charged for the following cases.
failure of the machine due to non-operation in accordance with the user manual.
Damage to the machine caused by fire, flooding, abnormal voltage, etc..
Damage caused when using the programmable controller for a function other than its normal function.
5. The service charge will be calculated on the basis of the actual cost, and if there is another contract, the contract will take precedence.
6. Please make sure that you keep this card and present it to the service unit at the time of warranty.
7. If you have a problem, you can contact your agent or you can contact us directly.

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Data version v1 0 filed on July 30, 2021

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VEICHI Product warranty card

| | | |
|--------------------------------------|---|------------------------|
| Customer Information | Company address: | |
| | Company name: | contacts: |
| | | contact number: |
| Product information | Product model: | |
| | Body barcode: | |
| | Name of agent: | |
| Fault information | Maintenance time and content: | |
| | Repairer: | |
| Maintenance time and content: | Repairer: | |
| | Suzhou VEICHI Electric Technology Co., Ltd | |
| | Address: No. 1000, Songjia Road, Wuzhong Economic and Technological Development Zone | |