

User Manual

To reduce the chance of accident, please carefully read the operating instructions and safety precautions prior to use. Only adequately trained personnel shall install or operate this product. In operation, strict compliance with applicable safety rules in the industry, the operating instructions and safety precautions in this book is required.

1.1 Port

The diagram illustrates the connection of an extension cable to the IVC1-4AD module. On the left, the module is shown with the 'Extension port cover' and 'User port cover' removed, revealing the 'Extension cable' connector. On the right, the 'User port' is shown with a detailed pinout table and the 'Extension port' with a 25-pin connector.

User port Pinout Table:

| Pin | Signal | Pin | Signal | Pin | Signal | Pin | Signal |
|-----|--------|-----|--------|-----|--------|-----|--------|
| 1 | NC | 13 | NC | 25 | NC | 27 | NC |
| 2 | NC | 14 | NC | 26 | NC | 28 | NC |
| 3 | NC | 15 | NC | 27 | NC | 29 | NC |
| 4 | NC | 16 | NC | 28 | NC | 30 | NC |
| 5 | NC | 17 | NC | 29 | NC | 31 | NC |
| 6 | NC | 18 | NC | 30 | NC | 32 | NC |
| 7 | NC | 19 | NC | 31 | NC | 33 | NC |
| 8 | NC | 20 | NC | 32 | NC | 34 | NC |
| 9 | NC | 21 | NC | 33 | NC | 35 | NC |
| 10 | NC | 22 | NC | 34 | NC | 36 | NC |
| 11 | NC | 23 | NC | 35 | NC | 37 | NC |
| 12 | NC | 24 | NC | 36 | NC | 38 | NC |

Extension port Pinout Table:

| Pin | Signal | Pin | Signal |
|-----|--------|-----|--------|
| 1 | NC | 13 | NC |
| 2 | NC | 14 | NC |
| 3 | NC | 15 | NC |
| 4 | NC | 16 | NC |
| 5 | NC | 17 | NC |
| 6 | NC | 18 | NC |
| 7 | NC | 19 | NC |
| 8 | NC | 20 | NC |
| 9 | NC | 21 | NC |
| 10 | NC | 22 | NC |
| 11 | NC | 23 | NC |
| 12 | NC | 24 | NC |
| 13 | NC | 25 | NC |
| 14 | NC | 26 | NC |
| 15 | NC | 27 | NC |
| 16 | NC | 28 | NC |
| 17 | NC | 29 | NC |
| 18 | NC | 30 | NC |
| 19 | NC | 31 | NC |
| 20 | NC | 32 | NC |
| 21 | NC | 33 | NC |
| 22 | NC | 34 | NC |
| 23 | NC | 35 | NC |
| 24 | NC | 36 | NC |
| 25 | NC | 37 | NC |
| 26 | NC | 38 | NC |
| 27 | NC | 39 | NC |
| 28 | NC | 40 | NC |
| 29 | NC | 41 | NC |
| 30 | NC | 42 | NC |
| 31 | NC | 43 | NC |
| 32 | NC | 44 | NC |
| 33 | NC | 45 | NC |
| 34 | NC | 46 | NC |
| 35 | NC | 47 | NC |
| 36 | NC | 48 | NC |
| 37 | NC | 49 | NC |
| 38 | NC | 50 | NC |
| 39 | NC | 51 | NC |
| 40 | NC | 52 | NC |
| 41 | NC | 53 | NC |
| 42 | NC | 54 | NC |
| 43 | NC | 55 | NC |
| 44 | NC | 56 | NC |
| 45 | NC | 57 | NC |
| 46 | NC | 58 | NC |
| 47 | NC | 59 | NC |
| 48 | NC | 60 | NC |
| 49 | NC | 61 | NC |
| 50 | NC | 62 | NC |
| 51 | NC | 63 | NC |
| 52 | NC | 64 | NC |
| 53 | NC | 65 | NC |
| 54 | NC | 66 | NC |
| 55 | NC | 67 | NC |
| 56 | NC | 68 | NC |
| 57 | NC | 69 | NC |
| 58 | NC | 70 | NC |
| 59 | NC | 71 | NC |
| 60 | NC | 72 | NC |
| 61 | NC | 73 | NC |
| 62 | NC | 74 | NC |
| 63 | NC | 75 | NC |
| 64 | NC | 76 | NC |
| 65 | NC | 77 | NC |
| 66 | NC | 78 | NC |
| 67 | NC | 79 | NC |
| 68 | NC | 80 | NC |
| 69 | NC | 81 | NC |
| 70 | NC | 82 | NC |
| 71 | NC | 83 | NC |
| 72 | NC | 84 | NC |
| 73 | NC | 85 | NC |
| 74 | NC | 86 | NC |
| 75 | NC | 87 | NC |
| 76 | NC | 88 | NC |
| 77 | NC | 89 | NC |
| 78 | NC | 90 | NC |
| 79 | NC | 91 | NC |
| 80 | NC | 92 | NC |
| 81 | NC | | |

The extension cable connects IVC1-4AD to the system, while the extension port connects IVC1-4AD to another extension module of the system. For details on connection, see *1.2 Connecting Into System*.

Thank you for choosing our products. To improve the product and provide better service for you, could you please fill in the form after the product has been operated for 1 month, and mail or fax it to our Customer Service Center? We will send you an exquisite souvenir upon receiving the complete Product Quality Feedback Form. Furthermore, if you can give us some advices on improving the product and service quality, you will be awarded a special gift. Thank you very much!

Product Quality Feedback Form

| | | | |
|------------------------------|--|-------------|--|
| Customer name | | Tele | |
| Address | | Zip code | |
| Model | | Date of use | |
| Machine SN | | | |
| Appearance or structure | | | |
| Performance | | | |
| Package | | | |
| Material | | | |
| Quality problem during usage | | | |
| Suggestion about improvement | | | |

The input channel characteristic of IVC1-4AD is the linear relationship between the channel's analog input A and digital output D. It can be set by

the user. Each channel can be considered as the model shown in Figure 3-1. As it is of linear characteristics, the channel characteristics can be defined by just two points: P0 (A0, D0) and P1 (A1, D1), where D0 is the channel's digital output corresponding to analog input A0, and D1 is the channel's digital output corresponding to analog input A1.

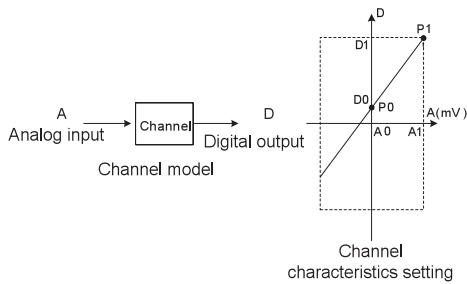


Figure 3-1 Channel characteristics of IVC1-4AD

To simplify the operation process without affecting functions, A0 and A1 are respectively fixed to 0 and the maximum analog value in the present mode. That is to say, in Figure 3-1, A0 is 0 and A1 is the maximum analog input in the present mode. A0 and A1 will change according to the mode when BFM#600 is changed. Users cannot change their values.

If you just set the channel mode (BFM#600) without changing the D0 and D1 of the corresponding channel, the channel characteristics vs. mode should be as shown in Figure 3-2. The A in Figure 3-2 is default.

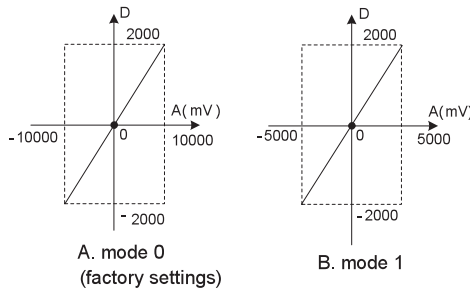


Figure 3-2 Characteristics vs. mode without changing D0 and D1

You can change the channel characteristics by changing D0 and D1. The setting range of D0 and D1 is -10000 ~ 10000. If the setting is outside this range, IVC1-4AD will not accept it, but maintain the original valid setting. Figure 3-3 provides for your reference an example of changing channel characteristics.

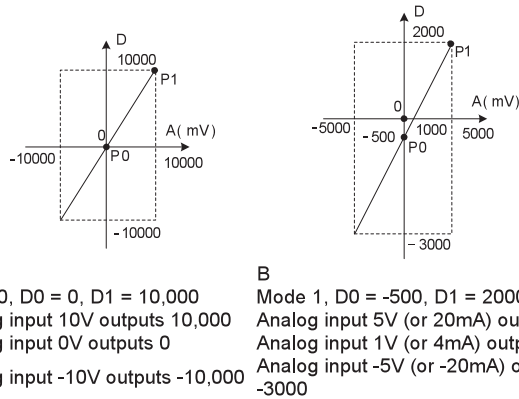


Figure 3-3 Changing input channel characteristics

4 Application Example

4.1 Basic Application

Example: IVC1-4AD module address is 1 (for the addressing of extension modules, see *IVC Series PLC User Manual*). Use CH1 and CH3 for voltage input (-10V~10V), use CH2 for current input (-20~20mA), close CH4, set the average sampling times to 8, and use data registers D1, D2 and D3 to receive the average value, as shown in the following figures.

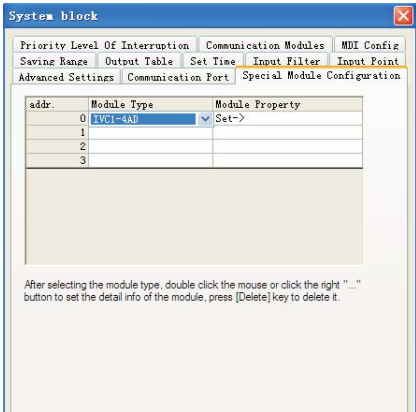


Figure 4-1 Set the module address

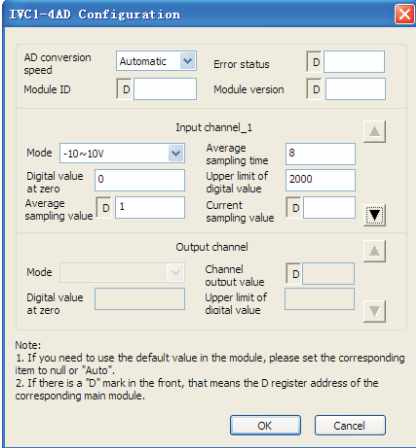


Figure 4-2 CH1 setting interface

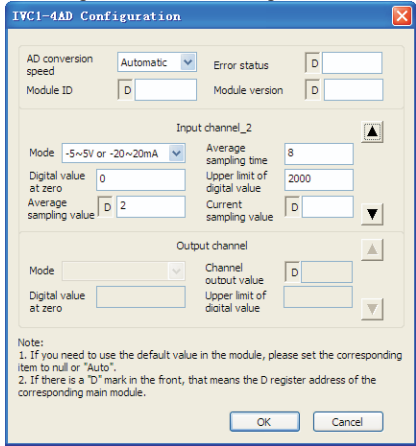


Figure 4-3 CH2 setting interface

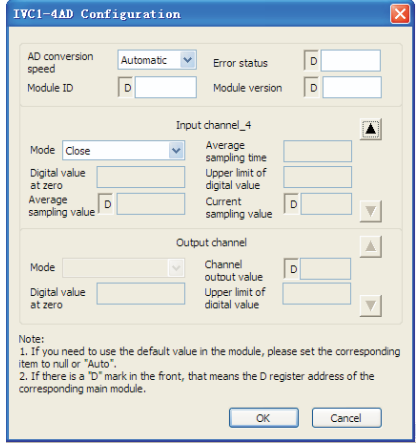


Figure 4-4 CH4 setting interface

4.2 Changing Characteristics

Example: The IVC1-4AD module address is 3 (for the addressing of extension modules, see *IVC Series PLC User Manual*). Set the average sampling times to 4, set characteristics A and B in Figure 3-3 respectively for CH1 and CH2, close CH3 and CH4, and use data registers D1 and D2 to receive the average value, as shown in the following figures. See *IVC*

Series PLC Programming Manual for details.

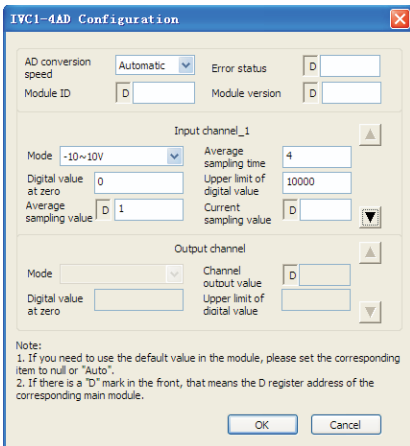


Figure 4-5 Changing CH1 characteristic

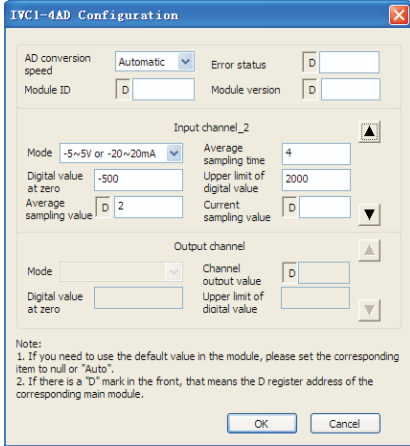


Figure 4-6 Changing CH2 characteristic

5 Operation Inspection

5.1 Routine Inspection

1. Check that the wiring of analog input meets the requirements (see *1.3 wiring*).
2. Check that the extension cable of IVC1-4AD is properly inserted in the extension port.
3. Check that the 5V and 24V power supplies are not overloaded. Note: the digital circuit of IVC1-4AD is powered by the basic module through the extension cable.
4. Check the application and make sure the operation method and parameter range are correct.
5. Set the IVC1 main module to RUN state.

5.2 Inspection Upon Fault

In case of abnormality, check the following items:

- The status of the POWER indicator

ON: the extension cable is properly connected;

OFF: check the extension cable connection and the basic module.

- The wiring of analog input

- The status of the 24V indicator

ON: 24Vdc power supply normal;

OFF: 24Vdc power supply possibly faulty, or IVC1-4AD faulty.

- the status of the RUN indicator

Flash quickly: IVC1-4AD in normal operation;

Flash slowly or OFF: Check the **Error Status** in **IVC1-4AD Configuration** dialogue box through the host software.

Notice

1. The warranty range is confined to the PLC only.
2. **Warranty period is 18 months**, within which period INVT Auto-control Technology Co. Ltd. conducts free maintenance and repairing to the PLC that has any fault or damage under the normal operation conditions.
3. **The start time of warranty period is the delivery date of the product**, of which the product SN is the sole basis of judgment. PLC without a product SN shall be regarded as out of warranty.
4. Even within 18 months, maintenance will also be charged in the following situations:
Damages incurred to the PLC due to mis-operations, which are not in compliance with the User Manual;
Damages incurred to the PLC due to fire, flood, abnormal voltage, etc;
Damages incurred to the PLC due to the improper use of PLC functions.
5. The service fee will be charged according to the actual costs. If there is any contract, the contract prevails.
6. Please keep this paper and show this paper to the maintenance unit when the product needs to be repaired.
7. If you have any question, please contact the distributor or our company directly.

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