

- 2 Communication protocol: MODBUS protocol
- 2 Input: DC current--- 0~±10mA,0~±20mA; 0~±200mA;
- 2 Baudrate: 9600bps (2400, 4800 bps);
- 2 Refreshing period: ≤ 350 mS;
- 2 Working temperature: 0℃~+50℃;
- 2 Temperature drift: 200 ppm/℃;
- 2 Isolation voltage: ≤ 3000 V DC;
- 2 System power consumption: ≤250mW (+12V~24V);
- 2 Input overload: Current 15 times the rated value;
- 2 Power supply: +12, 15, 24V (±5%) .

4 Case Style (marked in the figure Unit: mm)



Figure 5.1 CE-AZ11-34ES3 type product shape

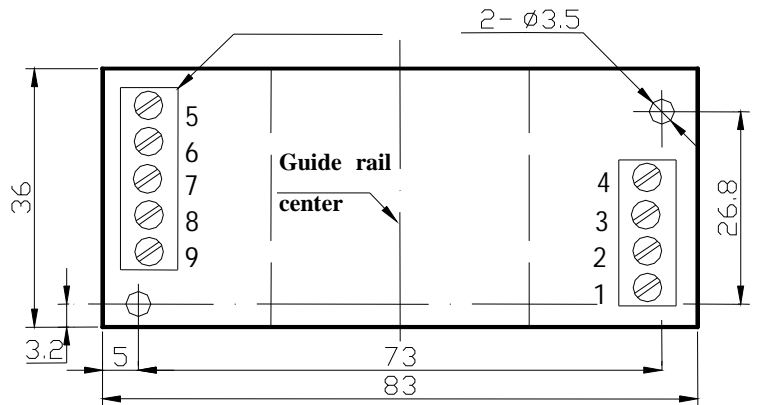


Figure 5.2 CE-AZ11-34ES3 product installation diagram

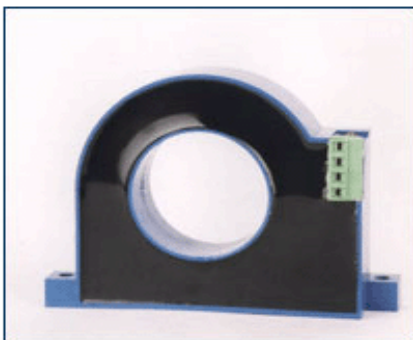


Figure 5.3 CE-AZ11-34E5 product shape

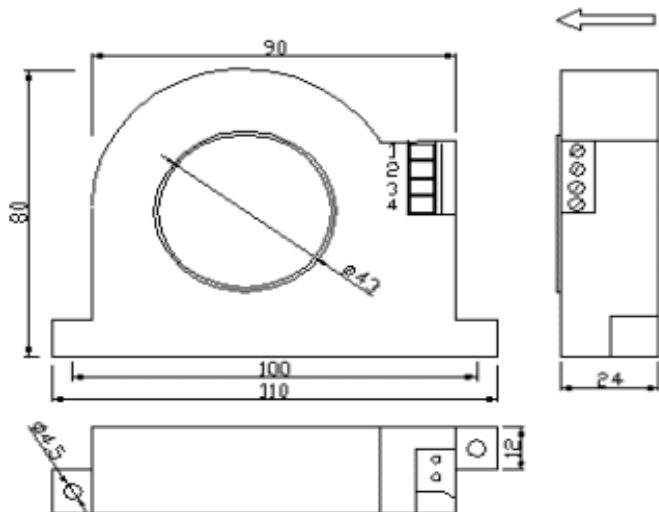


Figure 5.4 CE-AZ11-34E5 product installation diagram

6 Terminal definition and connection diagrams

Figure 6.1, the wiring diagram of 1-phase of S3 case

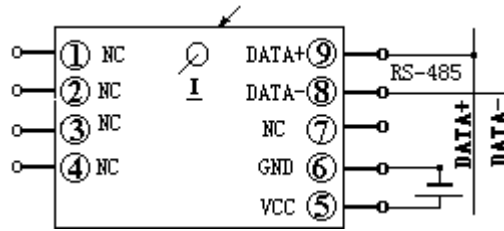


Figure 6.1 wiring diagram of 1-phase CE-AZ11-34ES3

Figure 6.2 wiring diagram of 1-phase current input of E5 case

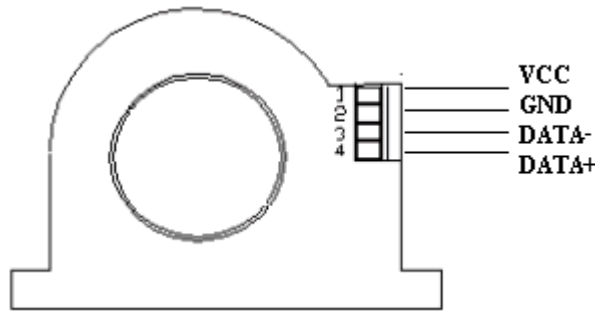


Figure 6.2 wiring diagram of 2-phase CE-AZ11-**ES5

6 ASCII command set for single-phase digital isolation transducer

1 output interface:

1.1 RS485 for serial communication port.

1.2 The information transmission mode is half-duplex asynchronous mode. The start bit is 1 bit, the data bit is 8 bits and the stop bit is 1 bit, no parity.

1.3 The data baudrate is 9600bps. Use RTU mode in MODBUS communication protocol, RTU frame format see appendix.

1.4 In a bus device, the leakage current transducer is a slave device.

2 The description of function code (7 commands)

ADD=address of the transducer

CRC-H: CRC the high byte of the check code

CRC-L: the low byte of the check code

2.1 To read switch value: (query response mode)

COMMAND: (send command)

ADD, 0x03, 0x00, 0x55, 0x00, 0x01, CRC-L, CRC-H;

RETURN: (return command)

ADD, 0x03, 0x02, 0x00\, BITS, CRC-L, CRC-H;

Thereinto: BITS is a hexadecimal number of 1-byte, after being converted into a binary number, the lower 2 bits correspond to the input contact state, the terminal NO.1 and NO.2 correspond to the least significant bit (D0) of the binary number, the terminal NO.3 and NO.4 correspond to the lower digit (D1) of the binary number, the terminal is connected for 0 and open for 1. As shown in the following table:

Terminal status	3,4 pass, 1,2 pass	3,4 pass, 1,2 off	3,4 off, 1,2 pass	3,4 off, 1,2 off
Binary	00000000B	00000001B	00000010B	00000011B
Hexadecimal	00H	01H	02H	03H

2.2 To read leakage current data of the transducer(query response mode)

COMMAND: (send command)

ADD, 0x03, 0x00, 0x56, 0x00, 0x01, CRC-L, CRC-H;

<http://www.ce-transducer.com>
sales@ce-transducer.com

3rd Floor, building 1, Zaimao industrial park, Baoji road, Bantian, Longgang district,
 Shenzhen City, China Post code: 518049

RETURN: (return command)

ADD, 0x03, 0x02, A/D-H, A/D-L, CRC-L, CRC-H;

Thereinto: A/D-H=8-bit high order byte of current data, A/D-L=8-bit low order byte of current data

Example: A/D-H=0xA6, A/D-L=0xFC synthesized to hexadecimal data =0xA6FC, 16-bit binary data =101001101111100. The highest bit 0 of this 16-bit data indicates that current is positive, the highest bit 1 of 16-bit data indicates that the current is negative, and the lower 15 bits of the 16-bit data represent the current data. the low 15 bits of 0xA6FC is 01001101111100 equivalent to decimal data is 9980, Because the most significant bit = 1, so the current is negative and leakage current = $-9980 \div 1000 = -9.980(\text{mA})$. For example, A / D-H = 0x00, A / D-L = 0x00, hexadecimal data = 0x0000, and leakage current = 0.

For example: A/DH = 0x03, A/DL = 0xB8, synthesized to hexadecimal data = 0x03B8, decimal data is 952 of the lower 15 bits of data = 00000110111000, because the highest bit of 16-bit binary data = 0, so the current is positive , and leakage current = $952 \div 1000 = 0.952(\text{mA})$.

When the current range is more than 20mA, the formula should be calculated as follows:

$$I_z = \text{IDATA} / 20000 * \text{IG}$$

Description: IDATA is the data read from the transducer; IG is the current range; Iz is the actual current value of .measurement.

2.3 To modify branch number of the transducer: (query response mode)

COMMAND: (send command)

ADD1, 0x10, 0x00, 0x57, 0x00, 0x01, 0x02, 0x00, ADD2, CRC-L, CRC-H;

Thereinto: ADD2 = new branch number of the transducer, ADD1 = original number of the transducer;

RETURN: (return command)

ADD1, 0x10, 0x00, 0x57, 0x00, 0x01, CRC-L, CRC-H;

Note: (1) If ADD1 = 0xFA is broadcast command mode, regardless what address of leakage current transducer of the RS485 bus it is, this command will always change address into ADD2, and no return information. If you cannot remember the exact address of a transducer, you can use this command to change it to a predetermined address. This command is not easy to use, so as not to change. To prevent the user from modifying a wrong address in the process of using the sensor, special provisions: after the external terminal NO. 6 and 7 feet is shorted, modify the address command is valid.

(2) if ADD1 \neq 0xFA, is the normal use of this command.

2.4 To check the zero value of the transducer: (query response mode)

COMMAND: (send command)

ADD, 0x10, 0x00, 0x58, 0x00, 0x01, 0x02, 0x00, 0x00, CRC-L, CRC-H;

RETURN: (return command)

ADD, 0x10, 0x00, 0x57, 0x00, 0x01, CRC-L, CRC-H;

Note: 1, if "ADD" = 0xFA indicates that the broadcast command. All transducers on the bus will be zero at the same time, but will not return any data.

2, if ADD \neq 0xFA, the sensor of corresponding ADD address to return information. CRC is a normal check code, indicating that calibration of zero is successful; otherwise, calibration of zero is fails.

3, Transducers has been calibrated before delivery, the user generally do not have to calibrate. If the user needs to recalibrate, it is best to send the command of calibrating zero of the transducer after the input value have been stabilizing for 15 seconds,.

2.5 To check positive full scale of the transducer: (query response mode)

COMMAND: (send command)

ADD, 0x10, 0x00, 0x59, 0x00, 0x01, 0x02, XX, YY, CRC-L, CRC-H;

RETURN: (return command)

ADD, 0x06, 0x00, 0x59, 0x00, 0x01, CRC-L, CRC-H,

Thereinto: XX and YY correspond to the value of 20.000mA, XX = 0x4E, YY = 0x20.

Note: 1, if "ADD" = 0xFA indicates that the broadcast command. All sensors on the bus will be calibrated into a positive full scale

at the same time without returning any data.

2, if $ADD \neq 0xFA$, the sensor of corresponding ADD address to return information. CRC is a normal check code, indicating that calibration of a positive full scale is successful; otherwise, calibration of a positive full scale is fails.

3, Transducers has been calibrated before delivery, the user generally do not have to calibrate. If the user needs to recalibrate, it is best to send the command of calibrating a positive full scale of the transducer after the input a positive full scale value have been stabilizing for 15 seconds.

2.6 To check negative full scale of the transducer: (query response mode)

COMMAND: (send command)

ADD, 0x10, 0x00, 0x5A, 0x00, 0x01, 0x02, XX, YY, CRC-L, CRC-H,

RETURN: (return command)

ADD, 0x06, 0x00, 0x5A, 0x00, 0x01, CRC-L, CRC-H,

Thereinto: XX and YY correspond to the value of 20.000mA, $XX = 0x4E$, $YY = 0x20$.

Note: 1, if "ADD" = 0xFA indicates that the broadcast command. All sensors on the bus will be calibrated into a negative full scale at the same time without returning any data.

2, if $ADD \neq 0xFA$, the sensor of corresponding ADD address to return information. CRC is a normal check code, indicating that calibration of a negative full scale is successful; otherwise, calibration of a negative full scale is fails.

3, Transducers has been calibrated before delivery, the user generally do not have to calibrate. If the user needs to recalibrate, it is best to send the command of calibrating a negative full scale of the transducer after the input a negative full scale value have been stabilizing for 15 seconds.