Programmer Communication Protocol

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Introduction

The matrix photoelectric IC series programmer is divided into an upper - computer and a lower - computer. In the communication between the upper and lower computers, use the communication instructions included in this manual. This manual mainly deals with the communication protocol of the upper - computer to the lower - computer.

1．Create the rows and columns of a matrix

Matrix row request:

No	Data(Hex)	Description
1	E0	fixed location
2	05	frame length
3	0A	command character
4	01	fixed location
5	21	CRC check

No answer.

Matrix column request:

No	Data(Hex)	Description
1	E0	fixed location
2	05	frame length
3	0B	command character
4	01	fixed location
5	34	CRC check

No answer.

2．Writing to the chip register (applicable to non-specific parameters)

It can be used to write non-specific parameters, such as parameters like G0 and G1. Since there is no lower computer address for differentiation, it is a broadcast address, and all chips will write the sent instructions.

Request：

No	Data(Hex)	Description
1	E0	fixed location
2	08	frame length
3	1A	command character
4	0A	register address
5	01	register number
6	1A	register value
7	A7	CRC check

Answer：

No	Data(Hex)	Description
1	E0	fixed location
2	05	frame length
3	1A	command character
4	00	fixed location
5	71	CRC check
6	00	none
7	00	none
8	00	none

Note: Non-specific parameters refer to the situation where all chips use the same address register and the Data is the same;

specific parameters refer to the situation where different chips use the same address register but the Data is different.

3. Writing to the chip register (applicable to specific parameters)

It can be used to write parameters that vary from one chip to another, such as parameters like Gain and Zero. Since there is a lower computer address for differentiation, only the lower computer with a specific address will perform this operation.

Request:

No	Data(Hex)	Description
1	E0	fixed location
2	08	frame length
3	1C	command character
4	0A	register address
5	01	register number
6	1A	register value
7	E2	slaver address
8	07	CRC check

Answer:

No	Data(Hex)	Description
1	E2	slaver address
2	05	frame length
3	1C	command character
4	00	fixed location
5	23	CRC check
6	00	none
7	00	none
8	00	none

Note: 1. When writing parameters for the first time, there is no need to distinguish between chips for Gain and Zero. You can use the command symbol with the instruction of 0X1A.

2. Multiple cascading can distinguish and program by changing the address bits of the slave computer.

4. Power-on and power-off

Sending this instruction can control the programmer to power the chip on or off, but it will not enter the communication state.

Request:

No	Data(Hex)	Description
1	E0	fixed location
2	05	frame length
3	20	command character
4	00	00 represents power-off FF represents power-on
5	0A	CRC check

No answer.

5. ADC/OWI status switching

Sending this instruction can switch the OUT of the IC from collecting voltage by the ADC to communicating with the MCU (it can enter the OWI communication only when connected to the MCU).

Request:

No	Data(Hex)	Description
1	E0	fixed location
2	05	frame length
3	22	command character
4	00	fixed location
5	20	CRC check

No answer.

6. OWI communication

Sending this instruction can control the programmer to establish OWI communication with the IC. In the communication state, the register values can be read and written.

Request:

No	Data(Hex)	Description
1	E0	fixed location
2	05	frame length
3	23	command character
4	01	fixed location
5	32	CRC check

No answer.

7. Enhance the OWI communication capability

This command can enhance the success rate of OWI communication and is often used before the command with the command symbol 0X23.

Request:

No	Data(Hex)	Description
1	E0	fixed location
2	04	frame length
3	40	command character
4	5D	CRC check

No answer.

8. ADC collects the voltage value of the fourth channel of the programmer

When this instruction is sent, the ADC will collect the voltage value of the fourth channel at the terminal of the programmer, but it will not return the value to the upper computer.

Request:

No	Data(Hex)	Description
1	E0	fixed location
2	04	frame length
3	42	command character
4	53	CRC check

No answer.

9. ADC array returned to the upper computer

Request:

No	Data(Hex)	Description
1	E0	fixed location
2	05	frame length
3	41	command character
4	E2	slaver address
5	4A	CRC check

Answer:

No	Data(Hex)	Description
1	E2	slaver address
2	0A	frame length
3	41	command character
4	00	none
5	7F	the high 16 bits of data
6	75	the low 8 bits of data
7	00	none
8	00	none
9	00	none
10	27	CRC check

Example:

V=(0X7F*2^16+0X75*2^8)/(2^24)*5=2.48925

10. Read TADC

Read the temperature register and upload it to the upper computer.

Request:

No	Data(Hex)	Description
1	E0	fixed location
2	05	frame length
3	62	command character
4	E2	slaver address
5	DB	CRC check

Answer:

No	Data(Hex)	Description
1	E2	slaver address
2	0A	frame length
3	62	command character
4	00	none
5	0E	the high 8 bits of data
6	E4	the low 4 bits of data
7	00	none
8	00	none
9	00	none
10	5C	CRC check

Example:

If (0X0E*256+0XE4)>2^15

T=(0X0E*256+0XE4)/256;

else

T=((0X0E*256+0XE4)-2^16)/256.

11. Temporarily exit the communication to read the voltage

The IC temporarily exits the communication for 1 second. During this 1 second, the device has a normal output, and the ADC collects the OUT voltage (which has been included in the program) during this period, but the voltage will not be sent back to the upper computer.

Request:

No	Data(Hex)	Description
1	E0	fixed location
2	05	frame length
3	63	command character
4	64	fixed location
5	55	CRC check

No answer.

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