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## Preface

**Thank you for choosing the PROFIBUS DP communication card developed by Shenzhen Sine Electric Co., Ltd.**

**Document No.:**

**Release time: 2024-5**

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The EM760-CM-P1 PROFIBUS DP slave communication card independently developed by Sine Electric can connect our EM760 high-performance vector inverter to the PROFIBUS DP network for command giving, status monitoring, parameter modification and other operations.

**Main features of the product:**

1. Support PZD data exchange
2. Supports PKW service, which can be used to read and write inverter parameters.
3. Supports 5 PPO data formats, which users can customize for transmission of communication process data, that is, parameters that need to be given or monitored in real time.
4. Automatically adapt to the communication rate, the highest communication rate supports 12M

**Before using this product, please read this manual carefully and keep it properly.**

**As we are always committed to improving our products and product information, the information provided by our company is subject to change without prior notice.**

**For the latest changes and more information, please visit [www.sinee.cn](http://www.sinee.cn) or call 400-601-9298 for inquiries.**

## Chapter 1 Introduction to EM760-CM-P1

### 1.1 Features

- Support PZD control data exchange.
- Support PKW to access inverter parameters.
- Supports 5 PPO data formats, which users can customize for transmission of communication process data, that is, parameters that need to be given or monitored in real time.
- The communication rate can be automatically detected and can reach up to 12Mbps.

### 1.2 Functional specifications

- PROFIBUS DP communication port specifications

|                      |                       |
|----------------------|-----------------------|
| Connectors           | DB9 Connector         |
| Transmission method  | High-speed RS485      |
| Transmission Cable   | Shielded twisted pair |
| Electrical isolation | 500VDC                |

- Communication specifications

|                                   |                                                                                         |
|-----------------------------------|-----------------------------------------------------------------------------------------|
| Information Type                  | Cyclic data exchange                                                                    |
| Communication card name           | EM760-CM-P1                                                                             |
| GSD File                          | V100.GSD, V101.GSD ... ..                                                               |
| Manufacturer ID                   | 0656 (HEX)                                                                              |
| Support serial transmission speed | Support 9.6kbps; 19.2kbps; 93.75kbps; 187.5kbps; 500kbps; 1.5Mbps; 3Mbps; 6Mbps; 12Mbps |

- Connecting port to inverter

| project             | Specification                                                                                                                                   |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Connectors          | 18PIN connector terminal                                                                                                                        |
| Transmission method | SCI Newsletter                                                                                                                                  |
| Terminal Function   | 1. The communication card communicates with the inverter through this interface<br>2. The communication card obtains working power through this |

|                  |                 |
|------------------|-----------------|
|                  | interface       |
| Network Protocol | Modbus Protocol |

● Electrical specifications

| project                                    | Specification |
|--------------------------------------------|---------------|
| Supply voltage                             | 5VDC          |
| Insulation voltage                         | 500VDC        |
| Communication<br>line power<br>consumption | 0.8W          |
| Power<br>consumption                       | 1W            |
| weight                                     | 30g           |

● Environmental specifications

| project                          | Specification                                                                                                                                                             |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Interfere with<br>immunity       | ESD(IEC 61800-5-1,IEC 6100-4-2)<br>EFT(IEC 61800-5-1,IEC 6100-4-4)<br>Surge Teat(IEC 61800-5-1,IEC 6100-4-4)<br>Conducted Susceptibility Test(IEC 61800-5-1,IEC 6100-4-6) |
| Operating/Storage<br>Environment | Operation: -10°C~40°C, humidity 90%<br>Storage: -25°C~80°C, humidity 95%                                                                                                  |
| Impact/shock<br>resistance       | International standards IEC 61800-5-1, IEC 60068-2-6                                                                                                                      |

# Chapter 2 Product Appearance and Specifications

## 2.1 Real picture

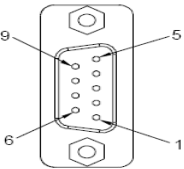


Figure 2.1.1 Front view Figure 2.1.2 Back view  
1. MODBUS indicator 2. POWER indicator 3. PROFIBUS indicator  
4. PROFIBUS DP interface 5. Screw positioning hole 6. Inverter interface

## 2.2 PROFIBUS DP connector

This connector is used to connect to the PROFIBUS network. The following table shows the pin definitions:

| Foot position | definition | illustrate                 |
|---------------|------------|----------------------------|
| 1             | --         | N/C                        |
| 2             | --         | N/C                        |
| 3             | RxD        | Receive/transmit data P(B) |
| 4             | --         | N/C                        |
| 5             | DGND       | Data reference potential   |
| 6             | VP         | Provide positive voltage   |
| 7             | --         | N/C                        |
| 8             | RxD        | Receive/transmit data P(A) |
| 9             | --         | N/C                        |



## Chapter 3 EM760-CM-P1 Installation Information

### 3.1 EM760-CM-P1 communication card connected to the inverter

1. Turn off the power of the EM760 high-performance vector inverter.
2. Remove the keyboard and open the inverter cover, as shown in [Figure 1].
3. Insert the DP card into the card slot, as shown in [Figure 2]



Figure 1 Figure 2



### 3.2 PROFIBUS-DP bus connector and inverter

Insert the PROFIBUS-DP bus connector into the PROFIBUS-DP communication port of the communication card as shown in the figure below, and tighten the screws on the PROFIBUS DP bus connector to ensure that the communication card and the PROFIBUS DP bus are reliably connected, as shown in [Figure 3].



Figure 3

### **3.3 Terminal resistance**

The terminal resistor is used to eliminate signal reflection in the communication cable. There are two reasons for signal reflection during the communication process: impedance discontinuity and impedance mismatch. To eliminate this reflection, add the terminal resistor according to the bus impedance characteristics to make the cable impedance continuous.

The terminal resistor and bias resistor in the Siemens network plug match the characteristic impedance of the Siemens PROFIBUS cable. It is strongly recommended that users use Siemens PROFIBUS cables and network plugs together to avoid many troubles.

## Chapter 4 Communication Information

### 4. 1 EM series AC motor driver communication parameter setting

When the EM series inverter AC motor driver is connected to the PROFIBUS DP network, the communication parameters of the AC motor driver must be set according to Table 4.1-1. After the communication parameters are set, the PROFIBUS DP master station can read and write the parameters of the AC motor driver.

| parameter | Parameter name                                         | Parameter Value | meaning                                                   |
|-----------|--------------------------------------------------------|-----------------|-----------------------------------------------------------|
| F00.02    | Command source selection                               | 2               | Operation command is controlled by communication card     |
| F00.04    | Main frequency source A selection                      | 6               | The frequency command is given by the communication card  |
| F00.36    | Communication control start and stop channel selection | 3               | Communication control is controlled by communication card |
| F00.37    | Communication given channel selection                  | 3               | Communication setting is given by the communication card  |
| f/10.10   | Communication protocol selection                       | 1               | The current protocol is Profibus-DP protocol              |
| f/10.11   | Communication card station number                      | Customize       | EM760 inverter<br>Station number in Profibus-DP network   |

Note: The parameter value of F10.11 is the station number of the AC motor drive in the PROFIBUS DP network. This station number must be consistent with the station number configured during configuration. Changing the parameter value of F10.11 while the AC motor drive is working is invalid; after changing the parameter value of F10.11, the AC motor drive must be powered off and then powered on again for the changed value of F10.11 to be effective.

### 4. 2 Communication rates supported by the communication card and the communication distance at each rate

The PROFIBUS DP communication rate ranges from 9.6kbps to 12Mbps. The length of the transmission line depends on the transmission rate, and the transmission distance ranges from

100m to 1,200m. The communication rates supported by the CMC-PD01 communication card and the communication distances at each communication rate are shown in the table.

|                           |      |       |        |        |      |      |     |     |     |
|---------------------------|------|-------|--------|--------|------|------|-----|-----|-----|
| Communication speed (bps) | 9.6k | 19.2k | 93.75k | 187.5k | 500k | 1.5M | 3M  | 6M  | 12M |
| Length (m)                | 1200 | 1200  | 1200   | 1000   | 400  | 200  | 100 | 100 | 100 |

### 4. 3 Communication card data structure and PKW , PZD introduction

#### 4.3.1 Data structure available for EM760-CM-P1 communication card

Cyclic data exchange can use the data structures defined by PROFIDrive, which are called parameter process data objects (PPO). In addition to the PPO structure, cyclical data can also be configured as EXT CONF. Depending on the requirements, these two expansion configurations can reach up to 12 words of process data (4 processdata words). The data structures supported by EM760-CM-P1 are shown in the table.

| Parameter identification (PKW) |      |      | Process data (PZD) |       |       |       |       |       |       |       |       |         |         |         |
|--------------------------------|------|------|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|---------|---------|---------|
| PK E                           | IN D | PW E | PZD 1              | PZD 2 | PZD 3 | PZD 4 | PZD 5 | PZD 6 | PZD 7 | PZD 8 | PZD 9 | PZ D 10 | PZ D 11 | PZ D 12 |
| PPO1                           |      |      |                    |       |       |       |       |       |       |       |       |         |         |         |
| PPO2                           |      |      |                    |       |       |       |       |       |       |       |       |         |         |         |
|                                |      |      | PPO3               |       |       |       |       |       |       |       |       |         |         |         |
|                                |      |      | PPO4               |       |       |       |       |       |       |       |       |         |         |         |
| PPO5                           |      |      |                    |       |       |       |       |       |       |       |       |         |         |         |
| EXT CONF                       |      |      |                    |       |       |       |       |       |       |       |       |         |         |         |

#### 4.3.2 Introduction to PKW and PZD

When the EM760 series AC motor driver is connected to the PROFIBUS-DP network through the EM760-CM-P1 communication card, there are two ways to access the AC motor driver parameters, one is to access through PKW, and the other is to access through PZD. PKW consists of 4 words, each word represents a specific meaning, and the four words combined together can read or write an AC motor driver parameter. PKW can access various parameters of the AC motor driver by changing the value of each word in PKW.

When accessing the AC motor drive parameters through PZD, PZD can directly map the address of the AC motor drive. After PZD maps the parameter address of the AC motor drive, PZD will be fixed to the address of a certain parameter of the AC motor drive. As shown in Table 4.3-1, the 4 words in the PKW area can be combined to read or write a parameter of the AC motor drive, and each word in the PZD area can map a parameter address of the AC motor drive.

## 4. 4 Introduction to data structures and examples

The PKW data structure is shown in the table. In the periodic data, the PKW data has a request and response mechanism, so the master station must receive the corresponding response before it can send a new request message.

| PKW   | Bit meaning of each WORD in the PKW area |        |        |        |        |        |       |                                          |           |
|-------|------------------------------------------|--------|--------|--------|--------|--------|-------|------------------------------------------|-----------|
|       | Bit 15                                   | Bit 14 | Bit 13 | Bit 12 | Bit 11 | Bit 10 | Bit 9 | Bit 8                                    | Bit0~Bit7 |
| WORD1 | PKE (parameter ID)                       |        |        |        |        |        |       |                                          |           |
|       | AK                                       |        |        |        | SPM    |        |       | Function code parameter address high bit |           |
| WORD2 | IND (parameter subindex)                 |        |        |        |        |        |       |                                          |           |
|       | Function code parameter address low bit  |        |        |        |        |        |       | SPM                                      |           |
| WORD3 | PWE1 (reserved)                          |        |        |        |        |        |       |                                          |           |
| WORD4 | PWE2 (read/write parameter values)       |        |        |        |        |        |       |                                          |           |

#### 4.4.1 PKE (Word1)

AK ( PKE Bit12~Bit15 ): Request  
Request identification ID (Master ->

|  |  |
|--|--|
|  |  |
|--|--|

and response ID  
EM760-CM-P1)

| Request identification ID | meaning                                          |
|---------------------------|--------------------------------------------------|
| 0                         | No request                                       |
| 1                         | Request parameter value                          |
| 2                         | Changing parameter values                        |
| 14                        | Change parameter values and store them in EEPROM |

Note: The above command codes are all in decimal. Request identification ID 1 and 2 cannot operate the EM760 "○" attribute (cannot be modified during operation) parameters, that is, only the "●" attribute (can be modified during operation) parameters can be modified, otherwise, an error code is returned.

Response identification ID (EM760-CM-P1->Master)

| Response Identification ID | meaning                                                                                         |
|----------------------------|-------------------------------------------------------------------------------------------------|
| 0                          | No response                                                                                     |
| 1                          | Transfer parameter values                                                                       |
| 7                          | The request cannot be made (determine the cause of the error based on the PWE2 parameter value) |

If a request cannot be made, an error code will be generated in PWE2. The meaning of the error code is shown in the table

| Error Code | illustrate                                                                               |
|------------|------------------------------------------------------------------------------------------|
| 0          | Invalid parameter code (parameter does not exist)                                        |
| 1          | Parameters cannot be changed (parameters are read-only/current values cannot be changed) |
| 2          | The minimum value was not reached or the maximum value was exceeded                      |
| 18         | Other Errors                                                                             |

- ☐ SPM ( Bit8~Bit11 ): Reserved (default is 0)
- ☐ **Function** code parameter address high bit ( Bit0~Bit7 ): The high 8 bits of the function code parameter address.

#### 4.4.2 IND (Word2)

- Function code parameter address low bit (Bit8~Bit15): The low 8 bits of the function code parameter address.
- SPM (Bit8 ~ Bit7): Reserved (default is 0)

#### 4.4.3 PWE1 and PWE2 (Word3 and Word4)

PWE1 is reserved for EM760-CM-P1. When using PKW to read or write the parameters of the AC motor drive, the PROFIBUS DP master must set PWE1 to 0. When using PKW to read the parameter value of the AC motor drive, PWE2 must be filled with 0; when using PKW to write the parameter value of the AC motor drive, PWE2 must be filled with the parameter

value to be written.

#### 4.4.4 Read the inverter given frequency value through the PKW area

In order to read the actual output frequency of the AC motor driver, first set the request to 1 ( read parameter value ). The given frequency parameter of the AC motor driver is F00.07, the address of the parameter is 0007 (hex) , and the data format of the PKW area is as follows:

Master->Inverter: 1000 0700 0000 0000

Inverter->Master: 1000 0700 0000 1388

Master request data:

| PKW Zone Parameters | PKW area parameter value (HEX) |
|---------------------|--------------------------------|
| Word1 (PKE)         | 1000                           |
| Word2 (IND)         | 0700                           |
| Word3 (PWE1)        | 0000                           |
| Word4 (PWE2)        | 0000                           |

Slave station response data:

| PKW Zone Parameters | PKW area parameter value (HEX) |
|---------------------|--------------------------------|
| Word1 (PKE)         | 1000                           |
| Word2 (IND)         | 0700                           |
| Word3 (PWE1)        | 0000                           |
| Word4 (PWE2)        | 1388                           |

#### 4.4.5 Rewrite the given frequency F00.07 to 50.00HZ through the PKW area

To write the value 50.00 into the AC motor driver F00.07 parameter, first set the request ID to 2 (modify parameter value). The address of the AC motor driver F00.07 is 0007 (hex), and the modified value 50.00 is converted to hexadecimal 1388.

The data format of the PKW area is as follows:

Master station -> slave station: 2000 0700 0000 1388

Slave station -> master station: 1000 0700 0000 1388

Master request data:

| PKW Zone Parameters | PKW area parameter value (HEX) |
|---------------------|--------------------------------|
| Word1 (PKE)         | 2000                           |
| Word2 (IND)         | 0700                           |
| Word3(PWE1)         | 0000                           |
| Word4(PWE2)         | 1388                           |

Slave station response data:

| PKW Zone Parameters | PKW area parameter value (HEX) |
|---------------------|--------------------------------|
| Word1 (PKE)         | 1000                           |
| Word2 (IND)         | 0700                           |
| Word3 (PWE1)        | 0000                           |
| Word4 (PWE2)        | 1388                           |

#### 4.4.6 Using PZD to read and write parameter values

reading / writing AC motor drive parameters through PZD , the configuration parameters of the AC motor drive and the master register form a one-to-one correspondence. When reading / writing slave parameters through the master, the slave address can be directly operated through the mapping address in the master. For the method of reading and writing AC motor drive parameters through PZD, please refer to the instructions in the application example.

## Chapter 5 GSD File Introduction

GSD file is a text file that can be used to identify PROFIBUS DP devices (master or slave). The GSD file contains the data information necessary to configure a DP slave on a standard DP master. The GSD file basically contains the supplier's information, supported communication transmission rates, and available I/O signals. The GSD file is the basic structure of the master parameter record. When using an AC motor drive as a PROFIBUS DP slave, the GSD file of the AC motor drive must be added to the configuration tool of the PROFIBUS DP master. Please obtain the GSD from your dealer or the Sine official website.

Note: The GSD file must be used in conjunction with the inverter. The specific matching table is shown in the figure below.

| Product Model | Software version (F12.24)     | GSD file version |
|---------------|-------------------------------|------------------|
| EM500         | $\geq 300.00$                 | V101             |
| EM500         | $< 300.00$                    | V100             |
| EM760         | $\geq 112.00$                 | V101             |
| EM610         | $= 201.08$                    | V100             |
| EM610         | $\geq 201.00$ (except 201.08) | V101             |

data output area and data input area shown in Figure 7-2 1 of the V100 version GSD file are the PZD mapping slave parameter addresses. The output and data input data formats are in decimal format and can be entered manually; The data format of output and data input is hexadecimal. For example, 7000H is converted to decimal as 28672; function code F18.16 (1210) is converted to decimal as 4624.

## Chapter 6 LED Indicator Explanation and Troubleshooting

- POWER LED indicator

The POWER LED is used to show whether the working power of the EM760-CM-P1 communication card is normal.

| LED Status | Display instructions | Treatment                                                                   |
|------------|----------------------|-----------------------------------------------------------------------------|
| Lights on  | Power supply is OK   | No treatment required                                                       |
| Lights out | No power supply      | Check whether the EM760-CM-P1 card and the inverter are connected properly. |

- PROFIBUS-DP Network Light Description

| LED Status | Display instructions                                                 | Treatment                                                                                                                                                                                 |
|------------|----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Lights on  | normal                                                               | No treatment required                                                                                                                                                                     |
| Lights out | EM760-CM-P1 has not established a connection with the master station | Check whether the address configured by the slave station is the same as its actual address<br>Check whether the communication line between EM760-CM-P1 and PROFIBUS DP master is normal. |

- MODBUS Lamp Description

| LED Status | Display instructions                                                   | Treatment                                                                                                                                                                                     |
|------------|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Lights on  | normal                                                                 | No treatment required                                                                                                                                                                         |
| Lights out | The communication between EM760-CM-P1 and the inverter is disconnected | 1. Please check whether the parameters are set correctly<br>2. Turn off the inverter power supply and check whether the connection between the communication card and the inverter is normal. |

## Chapter 7 Application Examples

This example uses Siemens S7-300 as the PROFIBUS DP master and EM760 high-performance vector inverter as the slave.

The data exchange between S7-300 (Siemens PLC) and EM760 high-performance vector inverter is completed through the PROFIBUS DP network.

### 7.1 Inverter access to PROFIBUS DP network

1. The schematic diagram of PROFIBUS DP network is shown in Figure 7-1.

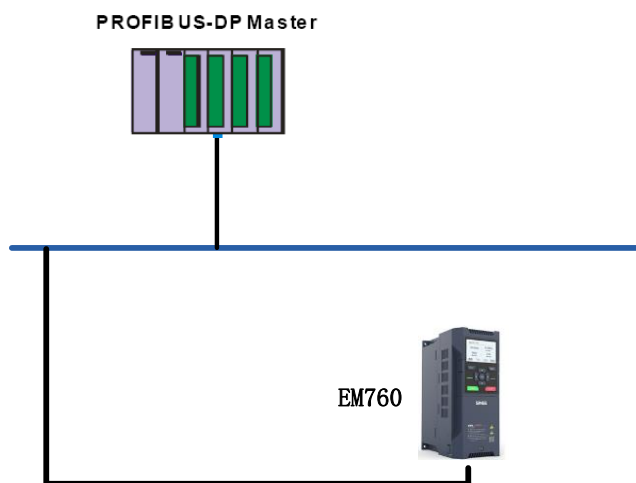


Figure 7-1

2. Set the AC motor drive parameter value. After changing the parameter value of F10.11 , the inverter must be powered on again for the new changed value to take effect.

| Inverter parameters | Parameter Description                   | Setting range |
|---------------------|-----------------------------------------|---------------|
| F00.02              | Command source selection                | 2             |
| f/10.10             | Communication protocol selection        | 1             |
| f/10.11             | PROFIBUS DP expansion card node address | 1-125         |

3. Please check and confirm that the inverter is reliably connected to the EM760-CM-P1 communication card, check and confirm that the entire network wiring is correct, and use PROFIBUS DP standard connection cables and plugs to ensure network reliability.

### 7.2 Configuration of the inverter in the PROFIBUS DP network (software configuration)

- Create a new project file

1. Open SIMATIC Manager and click [File->New] in the system menu, as shown in Figure 7-2.

2. In the pop-up " New Project " dialog box, fill in the project content:

- (1) Project name;
- (2) Select the type as " Project " ;
- (3) Select the save path for the project;
- (4) Click " OK " to enter the project development environment page.

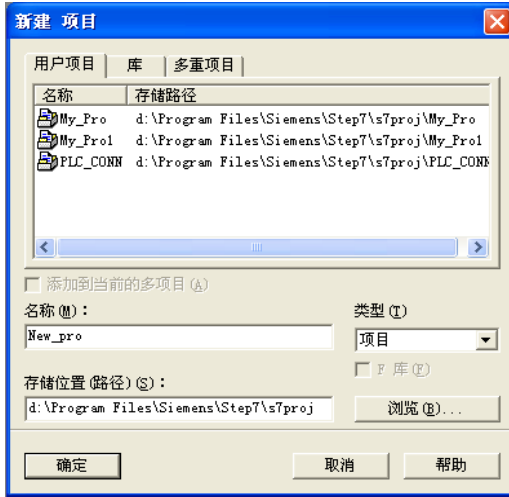


Figure 7-2

- System configuration and configuration

In the development environment, a page appears with the project structure directory on the left and the contents of the corresponding directory on the right. In the project structure directory, right-click the project name and select [Insert New Object -> SIMATIC 300 Station] , as shown in Figure 7-3.

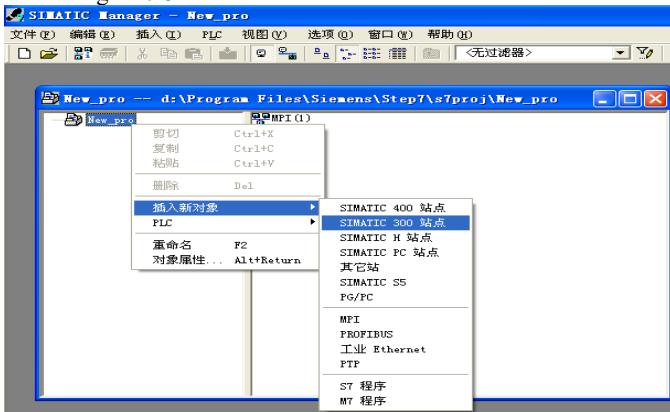


Figure 7-3

1. The project structure directory has one more subdirectory, which is automatically named SIMATIC 300 (1). At the same time, a new object icon will appear in the content panel on the right, as shown in Figure 7-4.

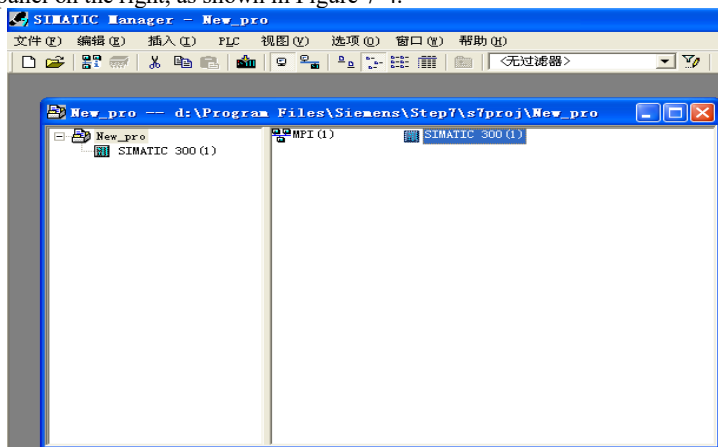


Figure 7-4

2. Double-click the newly created object icon in any area on the left or right.  **SIMATIC 300 (1)** When the object appears  **硬件**, double-click **[Hardware]** to enter the object configuration page, as shown in Figure 7-5.

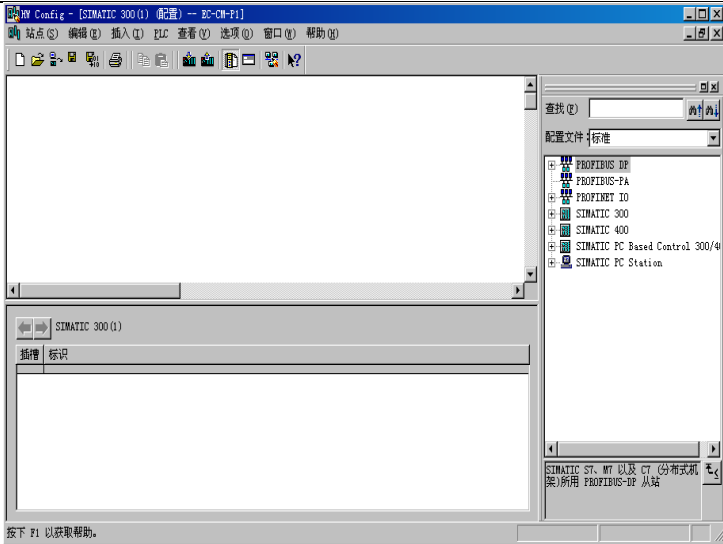


Figure 7-5

3. Right-click on a blank area on the configuration page, select [Insert Object], and select [SIMATIC]->[RACK-300]->[Rail] in the pop-up selection box to insert a track. The device will be installed on this track, as shown in Figure 7-6 .

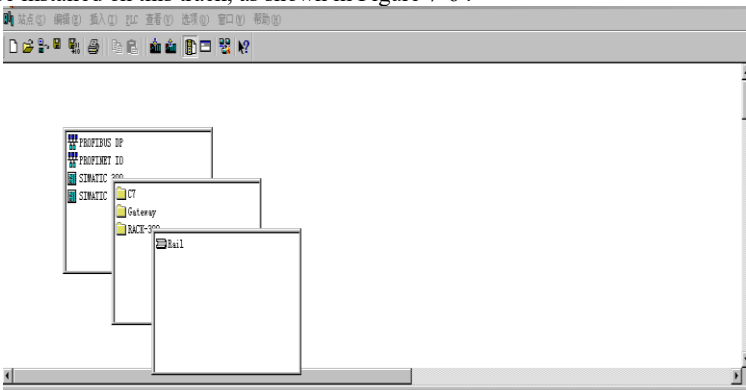


Figure 7-6

4. Right-click the first row in the pop-up list and select [Insert Object] . In the pop-up device list, select [PS 307 5A] as the power supply for the device, as shown in Figure 7-7.

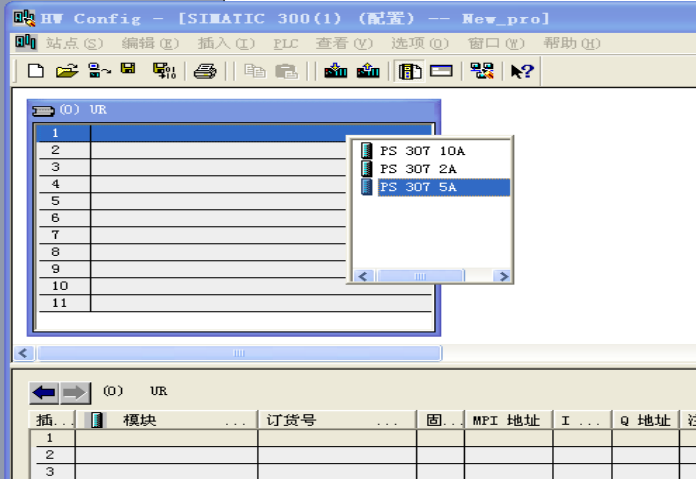


Figure 7-7

5. Right-click the second row in the pop-up list and select [Insert Object] . In the pop-up device list, select [CPU 313C-2 DP]->[6ES7 313-6CF03 0AB0]->[V2.6] in turn to add the system CPU, as shown in Figure 7-8.

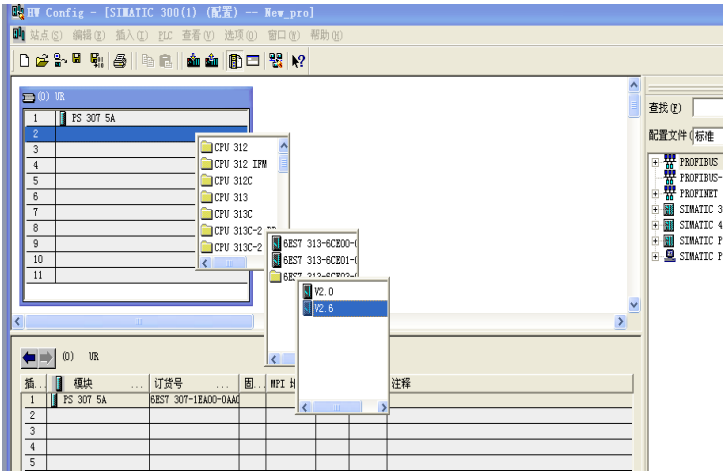


Figure 7-8

6. After selecting the CPU, the Profibus interface setting dialog box will pop up automatically. In the [Parameters] tab, set the host address of the Profibus bus to 2 (select any one by pulling down), then click New, and the New Subnet Properties dialog box will pop up. In the network settings, set the transmission rate (select any one by pulling down) and profile (select DP), as shown in Figure 7-9.

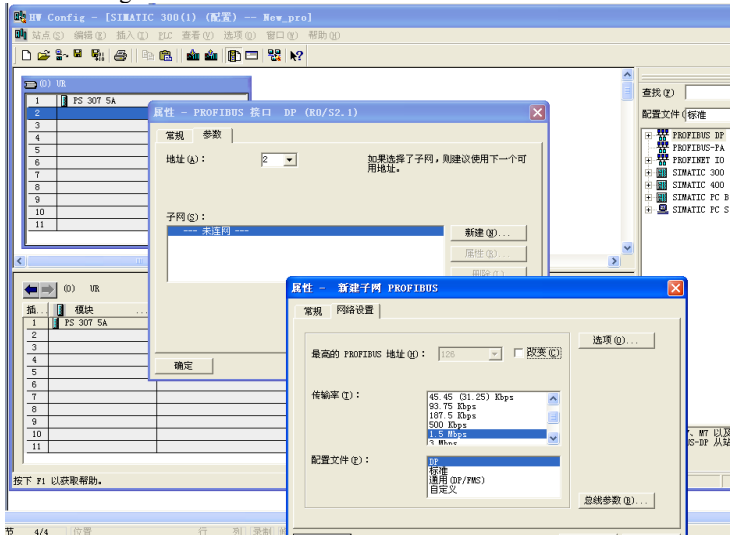


Figure 7-9

The page after the settings are completed is shown in Figure 7-10.

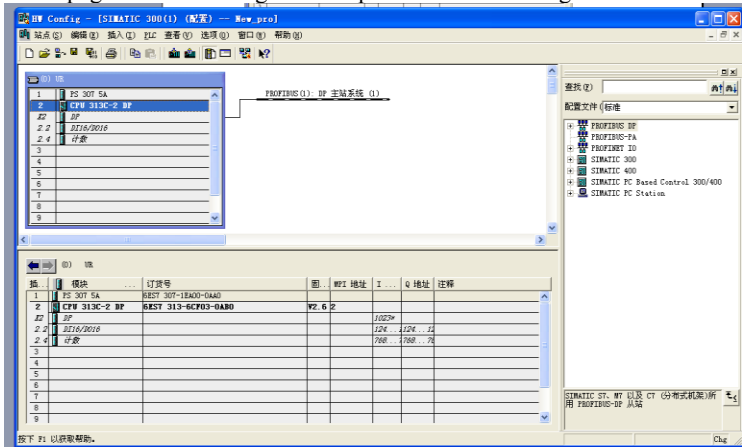


Figure 7-10

7. Install the GSD file. Click [Options] in the menu and select [ Install GSD File ]. In the

pop-up dialog box, select the path where the SINEE GSD file is located, and then click **[Install]** to complete the installation of the Profibus bridge GSD file, as shown in Figure 7-11.

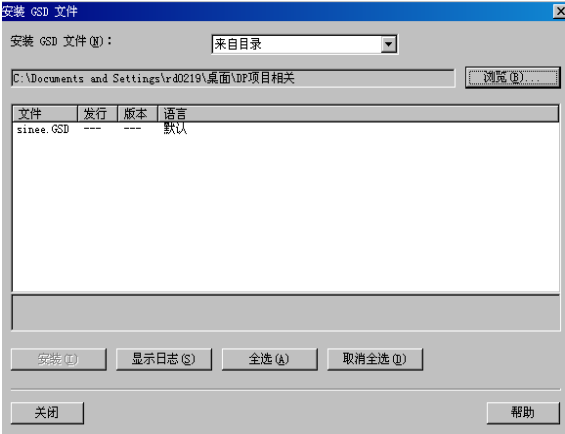


Figure 7-11

8. After adding the GSD file of EC-CM-P1 , you can Find the EC-CM-P1 name in the right column of the window shown in Figure 7-1 2 As shown,

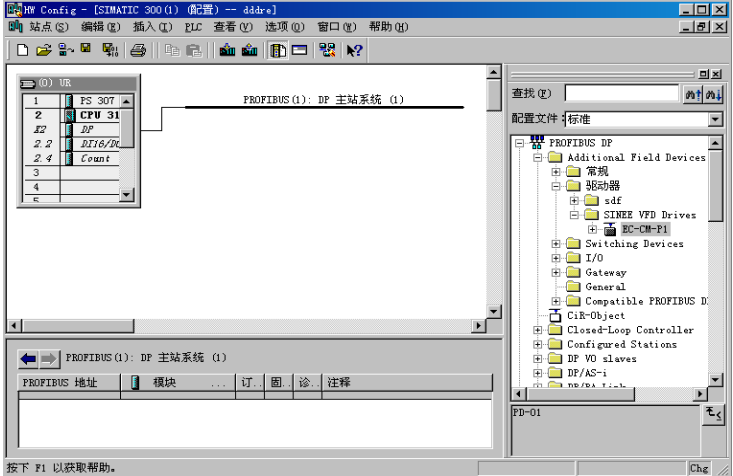


Figure 7-12

9. As shown in Figure 7-12 , select the PROFIBUS DP bus and double-click the

EC-CM-P1 icon in the right column of the figure.  
A new dialog box appears.

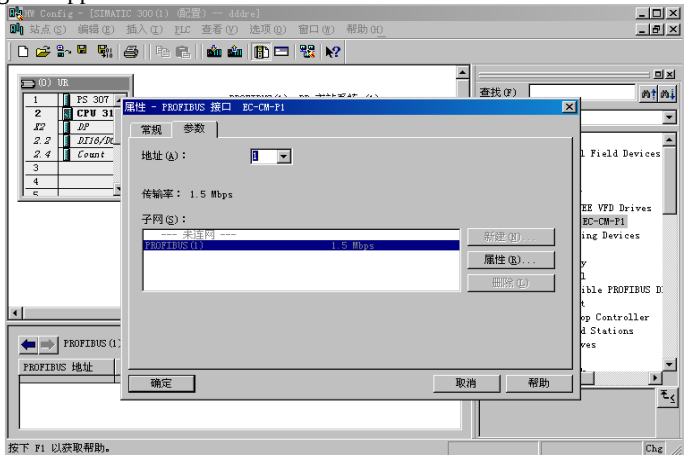


Figure 7-13

10. In Figure 7-13 In the new dialog box that appears, enter the address Select the slave address from the drop-down menu .  
(decimal), this address must be consistent with the parameter value set in parameter F10-11 .  
After setting the address, click the " OK " button

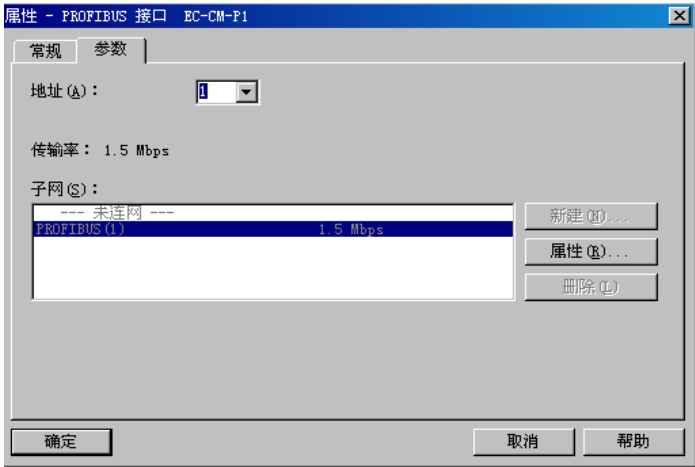


Figure 7-14

11. EC-CM-P1 Add PROFIBUS DP bus, as shown in Figure 7-15 shown.

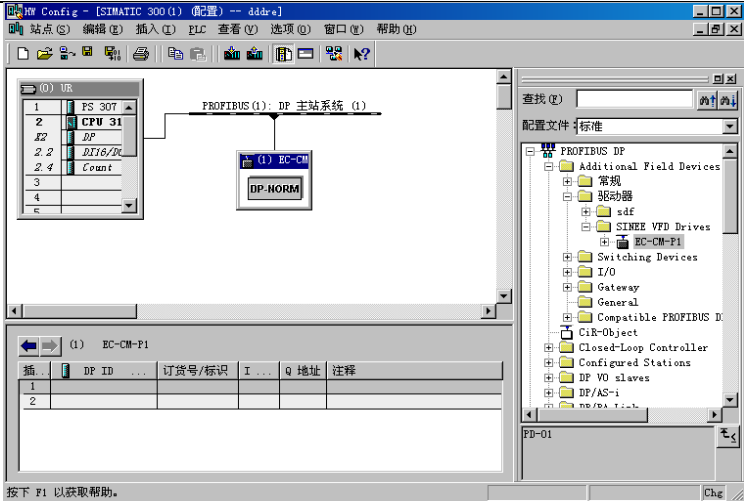


Figure 7-15

12. As shown in Figure 7-16 As shown, select slot 1 and double-click the icon of 4PKW 2 PZD in the right column of the figure below.

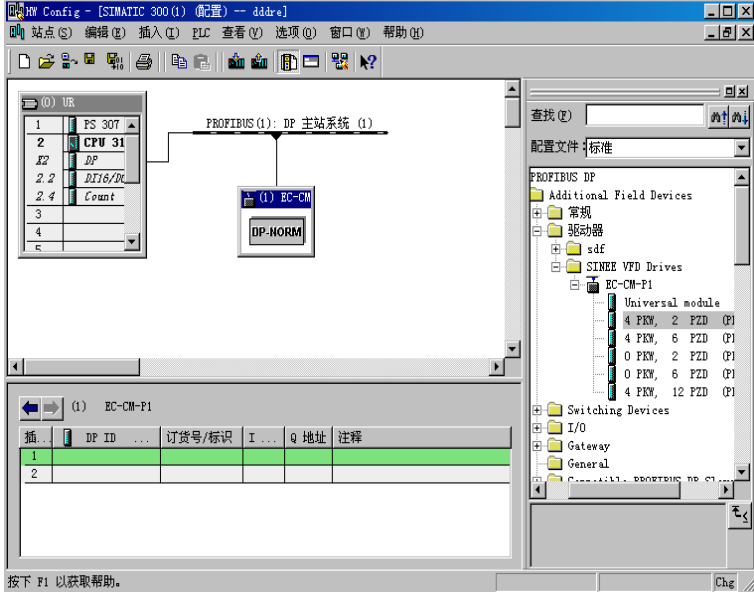


Figure 7-16

in Figure 7-17 As shown, the parameters of 4PKW 2 PZD are configured to slot 1 and slot 2

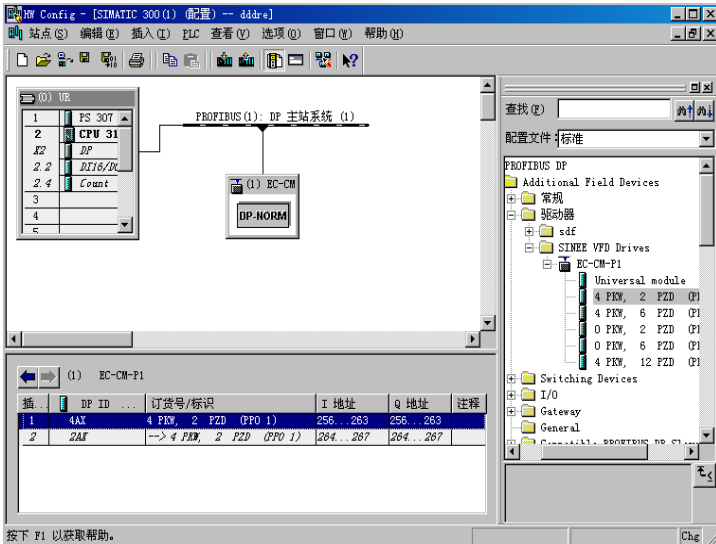


Figure 7-17

After the parameters are configured, click the Download button in the



HW Config

window to display Figure 7-18 In the dialog box shown in Figure 7-18 , click the " OK " button and a new dialog box will appear.

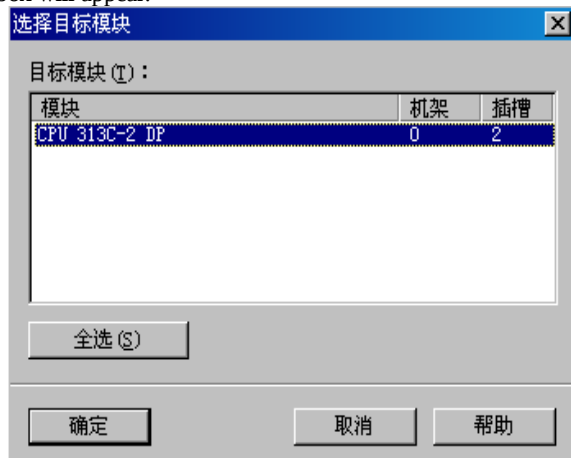


Figure 7-18

In the new dialog box shown in Figure 7-19, click the OK button to download the configured parameters.

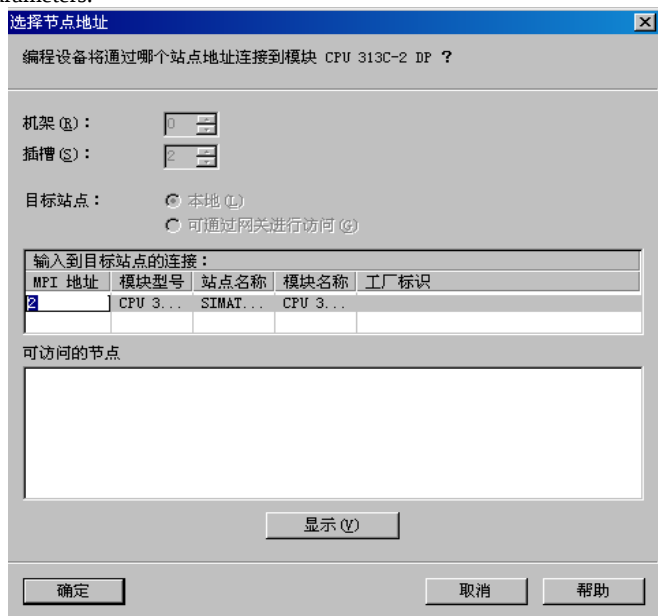


Figure 7-19

After the configuration parameters are downloaded, EM760-CM-P1 Communication Card PRO The light will stay green.

13. Data mapping relationship

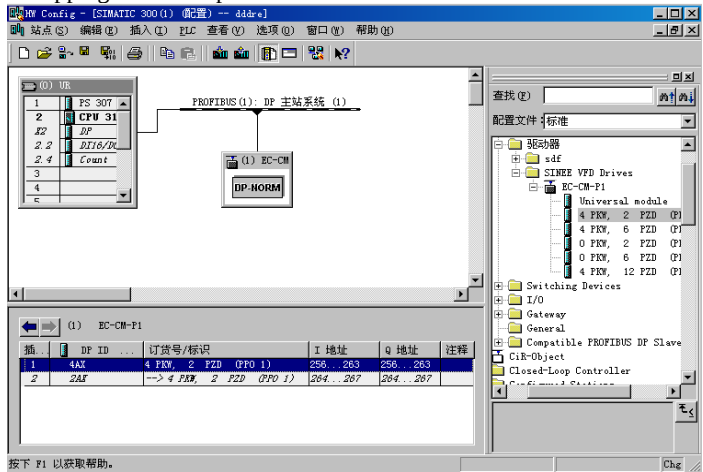


Figure 7-20

- click Figure 7-20 EM760-CM-P1 under PROFIBUS DP bus Slave icon, pop-up Figure 7-2 1 Figure 7-2 1 The data output area and data input area are the PZD mapping slave parameter addresses, data The data format of output and data input is decimal and can be entered manually . The hundreds and thousands of the data in the output and data input represent the high-order address of the parameter function code of the slave station EM760. The ones and tens represent the high-order address of the parameter function code of the EM760 . The input value is 7001 (decimal), which means the address of the AC motor driver is 7001 (hexadecimal).

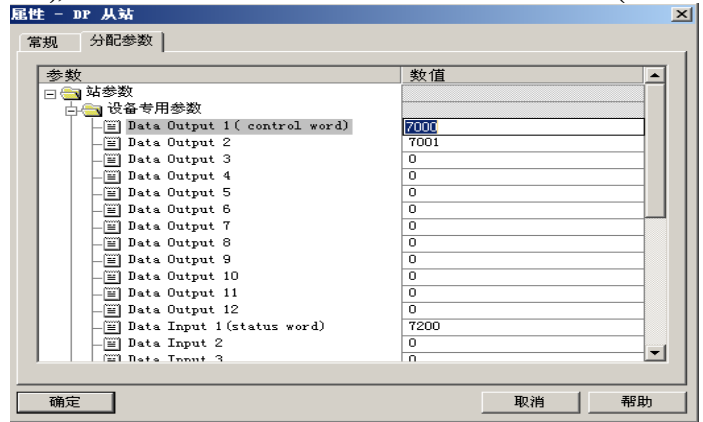


Figure 7-21

Figure 7- 22 Figure 7-2 1 The dialog box after pulling down the scroll bar. Figure 7- 22 The din\_len in the figure indicates the data length in the Data Input area, and dout\_len indicates the data length in the Data Output area. The input value is 1800 (decimal), which means the address of the AC motor driver is 1800 (hexadecimal), which means the inverter parameter F18-00 .

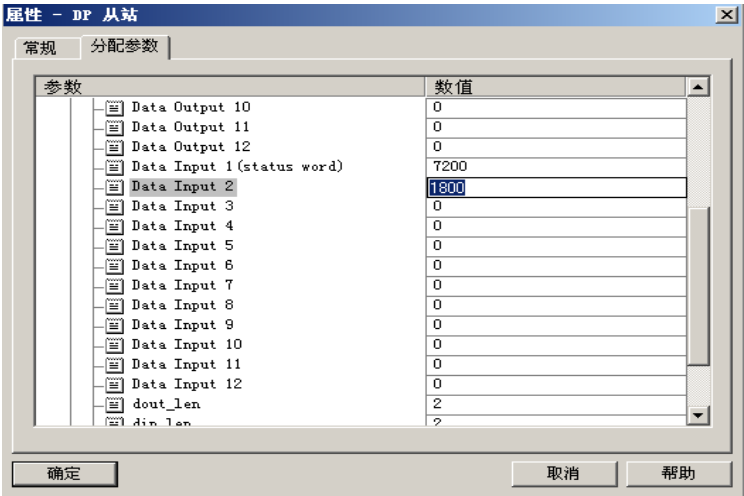


Figure 7-22

Under the parameter configuration shown in Figure 7-21 and Figure 7-22, the data mapping relationship is shown in the table

| PKW/PZD | S7300 External Input/output words | PROFIBUS Network Transmission direction    | AC motor driver parameter address                             |
|---------|-----------------------------------|--------------------------------------------|---------------------------------------------------------------|
| PKW     | PQW256                            | PLC master station<br>→ communication card | 4 words combination to read/write an AC motor drive parameter |
|         | PQW258                            |                                            |                                                               |
|         | PQW260                            |                                            |                                                               |
|         | PQW262                            |                                            |                                                               |
|         | PIW256                            | PLC master station<br>← communication card | PKW reply data                                                |
|         | PIW258                            |                                            |                                                               |
|         | PIW260                            |                                            |                                                               |
|         | PIW262                            |                                            |                                                               |
| PZD     | PQW264                            | PLC master station<br>→ communication card | 7000 (Data output1)                                           |
|         | PQW266                            | → communication card                       | 7001 (Data output2)                                           |
|         | PIW264                            | PLC master station<br>← communication card | 7200 (Data input1)                                            |
|         | PIW266                            | ← communication card                       | 1800 (Data input2)                                            |

## Chapter 8 Program Examples

The I/O access commands in STEP 7 do not allow single-byte, single-word or double-word commands to access DP data areas (modules) with 3 or more bytes. To access such closed structured continuous data areas, use the system functions DPRD\_DAT and DPWR\_DAT.

### 8.1 SFC14 : Read consistent data to standard PROFIBUS DP Slave

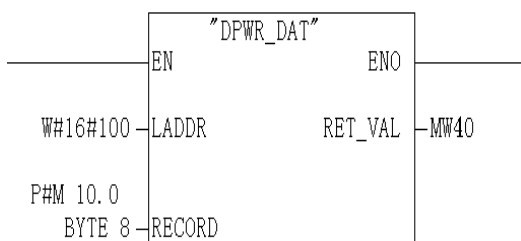


Figure 8-1

LADDR indicates the starting address of the input module of the DP slave configured by HW Config, i.e. the starting address of the input image area of the slave in the master (such as 7-16PIW256 in the figure above). LADDR is in hexadecimal, for example, if W#16#100 is entered in LADDR of SFC14, it means PIW256.

RECORD describes the destination area on the S7 CPU for the phase-continuous input data to be read from the DP slave. The length you define here must correspond to the length defined for the input module of the DP slave with HW Config. Please note that the RECORD parameter is of the data type ANY-Pointer. The only data type permitted for ANY-Pointer is BY T E.

RET\_VAL is the address of the error code. When the EN condition of SFC14 is met, SFC14 is executed. If an error occurs after execution, an error code will be stored in the address of RET\_VAL . If there is no error, the value in the address of RET\_VAL is 0 .

Figure 7-34 shows that the data transmitted from the slave to PIW256, PIW258, PIW260, and PIW262 are written to MW20, MW22, MW24, and MW26 .

## 8.2 SFC15 : Read consistent data to a standard PROFIBUS DP slave

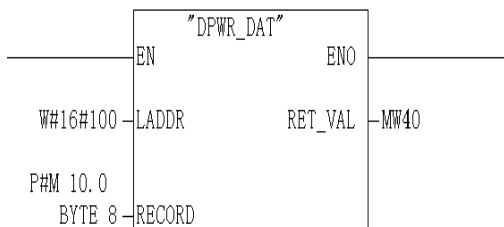


Figure 8-2

LADDR indicates the starting address of the slave station's output image area in the master station (such as PQW256 in Figure 7-28). LADDR is expressed in hexadecimal form. For example, if W#16#100 is entered in LADDR of SFC15, it means PQW256. The decimal value of hexadecimal 100 is 256. RECORD indicates the starting address and length of the data to be written.

The data length of RECORD must be consistent with the data length in the parameter configuration and must be in BYTE.

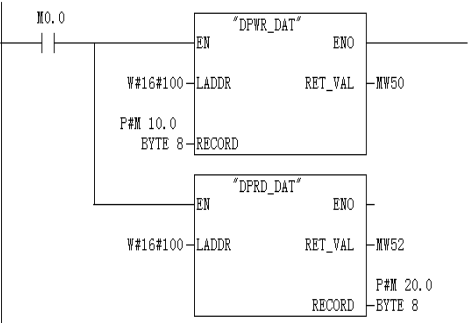
RET\_VAL is the address of the error code. When the EN condition of SFC15 is established, the SFC15 instruction is executed. If an error occurs after execution, an error code will be stored in the address of RET\_VAL; if there is no error, the value in the address of RET\_VAL is 0.

OB1 : "Main Program Sweep (Cycle)"

注释:

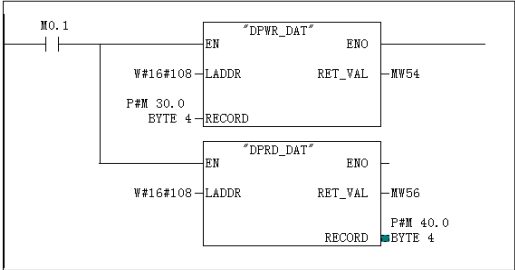
程序段 1: 标题:

注释:



程序段 2: 标题:

注释:



M0.0 ON can execute PKW operation. The PKW data is shown in the following table:

# EM760-CM-P1 PROFIBUS DP Slave Communication Module User Manual

|                                                                                                                             |      |      |      |      |
|-----------------------------------------------------------------------------------------------------------------------------|------|------|------|------|
| Use PKW to modify the parameter value of parameter F00.14 to 10.00s (the address of parameter F00.14 is 000E (hexadecimal)) |      |      |      |      |
| Data from master to slave                                                                                                   | MW10 | MW12 | MW14 | MW16 |
| Data Value                                                                                                                  | 2000 | 0E00 | 0000 | 03E8 |
| Data from slave to master                                                                                                   | MW20 | MW22 | MW24 | MW26 |
| Data Value                                                                                                                  | 1000 | 0E00 | 0000 | 03E8 |
| Use PKW to read the parameter value of parameter F00.14 (the address of parameter F00.14 is 000E (hexadecimal))             |      |      |      |      |
| Data from master to slave                                                                                                   | MW10 | MW12 | MW14 | MW16 |
| Data value (hexadecimal)                                                                                                    | 1000 | 0E00 | 0000 | 0000 |
| Data from slave to master                                                                                                   | MW20 | MW22 | MW24 | MW26 |
| Data value (hexadecimal)                                                                                                    | 1000 | 0E00 | 0000 | 03E8 |

M0.1 ON can execute the operation on PZD. The data transmission of PZD is shown in the following table:

| Master Register | PROFIBUS DP transmission direction                                                 | Inverter parameter address |
|-----------------|------------------------------------------------------------------------------------|----------------------------|
| MW30 (PQW264)   |   | 7000H                      |
| MW32 (PQW266)   |                                                                                    | 0007H                      |
| MW40 (PIW264)   |  | 7200H                      |
| MW42 (PIW266)   |                                                                                    | 7202H                      |