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MD580-SI-DP1 PROFIBUS DP Communication Expansion Card

User Guide

Industrial Automation | Intelligent Elevator | New Energy Vehicle | Industrial Robot | Rail Transit

Data code 19012458A00

Preface

Introduction

MD580-SI-DP1 is a PROFIBUS DP fieldbus adapter module compliant with IEC61158-1 Type 3, the international PROFIBUS fieldbus standard. The MD580-SI-DP1 module is designed to be used with the MD580 AC drive of Inovance. It needs to be installed in the CN13 expansion slot of the AC drive and communicates with the bus master based on the PROFIBUS DP protocol.

This guide describes the applicable AC drives, technical specifications, interfaces, dimensions, installation, wiring, communication, and troubleshooting of this product.

Revision History

Date	Version	Description
December 2023	A00	First release

Access to the Guide

This guide is not delivered with the product. You can obtain the PDF version in the following ways:

- Visit *www.inovance.com*, go to "Support" > "Download", search by keyword, and then download the PDF file.
- Scan the QR code on the product with your smart phone.
- Scan the QR code below to install the Inovance app, and search for MD580 in the app to obtain this guide.

Warranty

For faults and damage incurred during normal use in the warranty period, Inovance provides free repair service. (For details of the warranty period, see the purchase order.) A maintenance fee will be charged out of the warranty period.

Even in the warranty period, a maintenance fee will be charged for repair of the following damage:

- Damage caused by operations not following the instructions in the guide
- Damage caused by fire, flood, or abnormal voltage
- Damage caused by unintended use of the product

- Damage caused by use beyond the specified scope of application of the product
- Damage or secondary damage caused by force majeure (natural disaster, earthquake, and lightning strike)

The maintenance fee will be charged according to our latest Price List if not otherwise agreed upon.

For details, see the Product Warranty Card.

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1 Product Information

1.1 Introduction

MD580-SI-DP1 is a PROFIBUS DP fieldbus adapter module compliant with IEC61158-1 Type 3, the international PROFIBUS fieldbus standard. It is designed to be used with the MD580 AC drive of Inovance. It needs to be installed in the CN13 expansion slot of the AC drive and communicates with the bus master based on the PROFIBUS DP protocol.

Features:

- Automatically identifies the bus baud rate; supports the communication speed range of 9.6 kbps to 12 Mbps.
- In the bus topology, connects up to 32 nodes (including the master) when no repeater is used, or up to 122 nodes when repeaters are used (each segment comprising 31 nodes and 1 repeater).
- Complies with the EMC standard EN 61800-3:2004.
- Supports DPV0 and DPV1 for data exchange with the master.
- Powered by the AC drive, without requiring an external power supply.

Figure 1-1 MD580-SI-DP1 card appearance

1.2 Applicable AC Drives

Card Model	Order No.	Applicable AC Drive
MD580-SI-DP1	01040190	MD580

1.3 Technical Specifications

Item	Technical Specifications							
Baud rate (kbps)	9.6	19.2	93.75	187.5	500	1500	3000	12000
Transmission distance (m)	1200	1200	1200	1200	400	200	100	100

Note

The transmission distances in the preceding table are distances without using any repeater.

1.4 Outline Dimensions

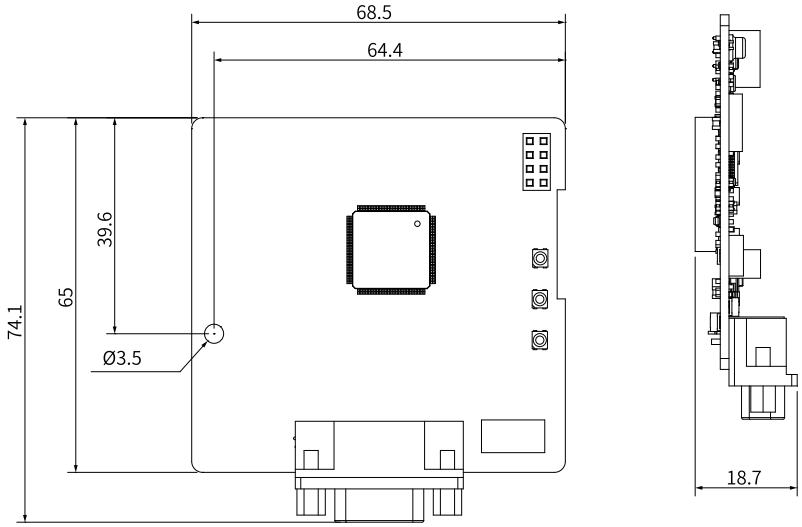


Figure 1-2 MD580-SI-DP1 card dimensions (unit: mm)

1.5 Interface Description

Interface layout

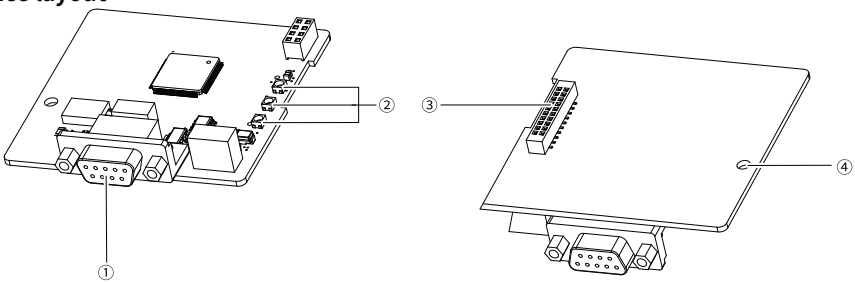


Figure 1-3 MD580-SI-DP1 card interface layout

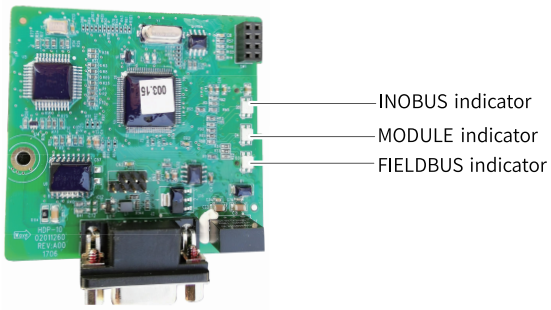
Interfaces

Table 1–1 MD580-SI-DP1 card interface function description

No.	Terminal Name	Function Description
①	Bus communication terminal	PROFIBUS DP bus communication terminal
②	Communication status indicator	Shows module communication status
③	Slot terminal	Electrically connects the card to the MD580 AC drive
④	Retaining screw hole	Fastens the card to the MD580 AC drive and ensures proper connection of the PE layer

Status indicators

The MD580-SI-DP1 card uses the following three status indicators to indicate bus communication faults. See the following table for troubleshooting instructions.



Indicator		Status Description
INOBUS	Green light steady ON	Normal communication with the MD580 AC drive
	Red light blinking	Establishing or lost communication with the MD580 AC drive
MODULE	Green light steady ON	Module status normal
	Red light steady ON	Device ID invalid
	Red light blinking	Establishing communication with the MD580 AC drive
FIELDBUS	Green light steady ON	Bus network connection normal
	Green light blinking	Establishing bus network communication
	Red light steady ON	Bus network communication failed
	Red light blinking	Master lost
	Orange light blinking	Slave configuration error

2 Installation Guide

Installation precautions

- Power off the MD580 AC drive before installing or removing the MD580-SI-DP1 module. Failure to comply may result in damage to the AC drive or module due to hot swapping.
- Do not let the MD580-SI-DP1 module drop or be impacted to prevent module damage.
- Do not disassemble the MD580-SI-DP1 module to avoid damage.
- Do not tighten terminals with excessive torque to avoid damage.

Required installation tools

The installation will need:

- 1# Phillips screwdriver
- 1# straight screwdriver

Screw and fastener tightening torque

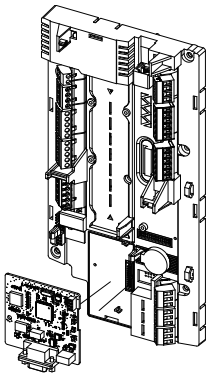
The screw mentioned in this guide must be tightened to the following torque value.

Mechanical Connection		Electrical Connection	
Screw	Tightening Torque	Screw	Tightening Torque
M3	1.2 N·m	M3	0.55 N·m

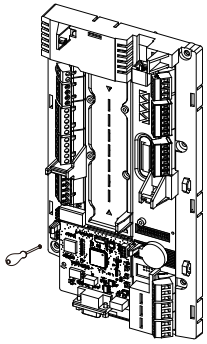
Installation procedure

The MD580-SI-DP1 module can be inserted into the expansion slot on the MD580 AC drive. The steps are as follows.

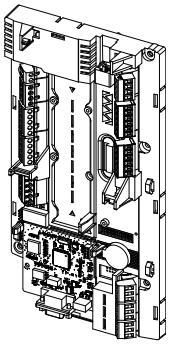
1. Align the module with the expansion slot on the MD580 AC drive.



2. Press the module inward into the slot to latch the two snap-fit joints. Then, secure the module grounding screw with a #1 screwdriver.



3. Installation is completed.



Removal procedure

Remove the module by following the steps above in reverse order.

1. Remove the electrical grounding screw of the MD580-SI-DP1 module using a 1# screwdriver.
2. Unlatch the snap-fit joints on both sides of the MD580-SI-DP1 module, and pull the MD580-SI-DP1 module outward.
3. Put the removed MD580-SI-DP1 module in a proper place.

3 Electrical Connection

Bus cable description

It is recommended to use PROFIBUS DP-dedicated cables with the following parameters.

Table 3–1 Cable parameters

Parameter	Description
Conductor	1-pair (2x22 AWG) single-strand copper wire
Insulation sheath color	Green/Red
Shield	Aluminum-polyethylene tape and tinned copper wire braid
Sheath material	PVC
Ambient temperature	–30°C to +70°C
Appearance	Purple

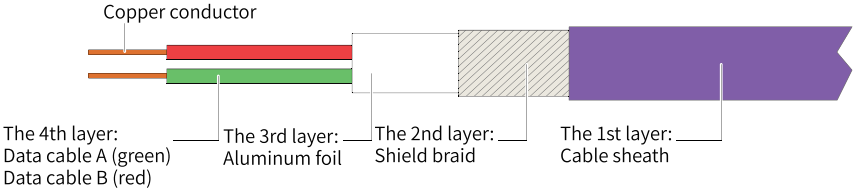


Figure 3-1 Layers in the bus cable structure

Bus terminal description

It is recommended to use SIEMENS PROFIBUS DP-dedicated connectors (model: 6ES7 972-0BB12-0XA0).

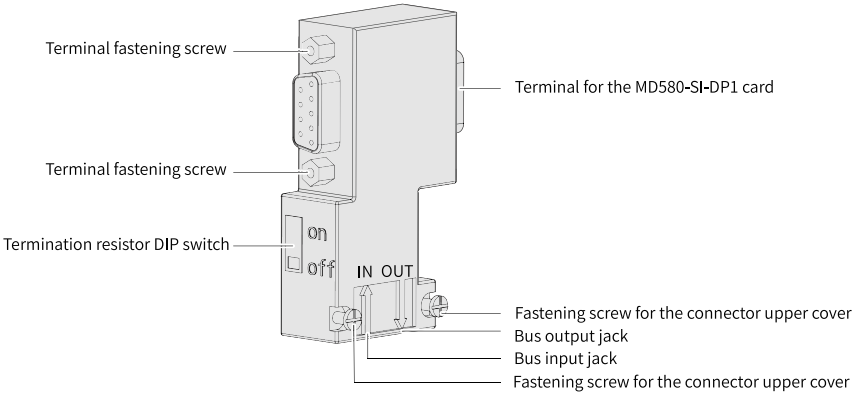


Figure 3-2 Bus terminal structure layout

Bus connection procedure

1. Strip each layer of the cable according to the lengths marked in the following figure.

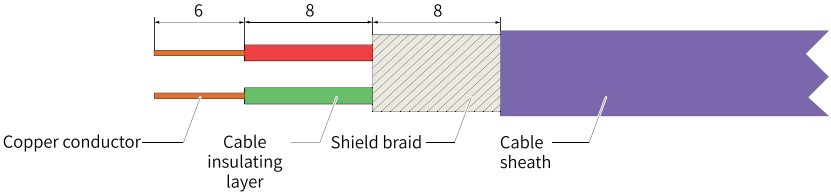
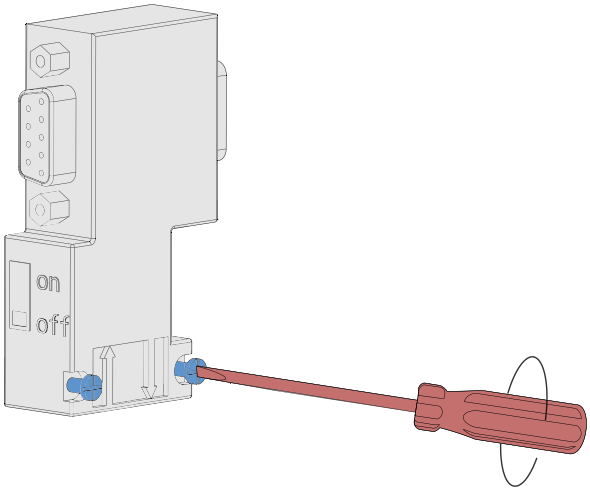
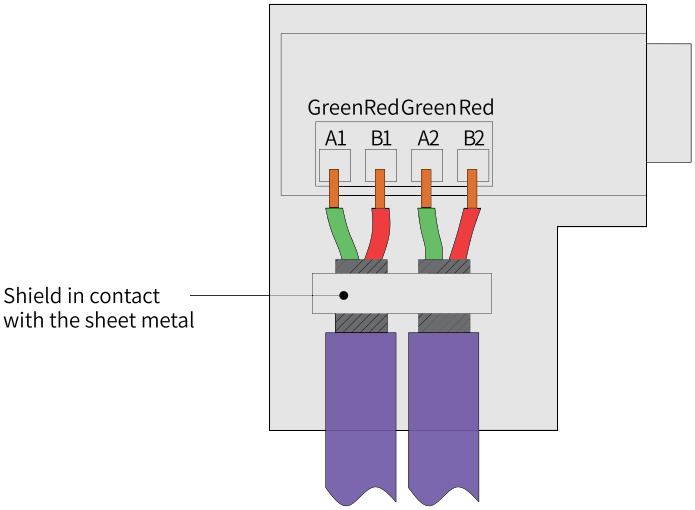


Figure 3-3 Cable stripping dimensions (unit: mm)

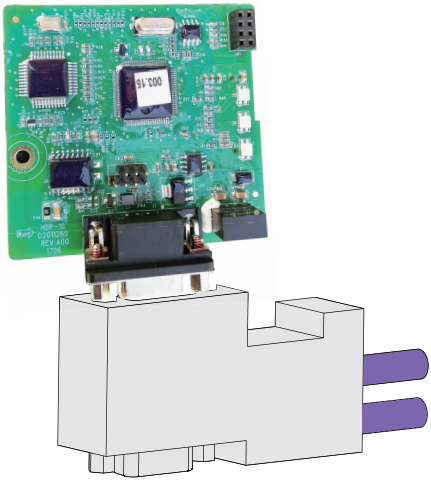
2. Remove the terminal cover of the bus connector with a 1# straight screwdriver.



3. Fix the cable to the installation position of the connector with a 1# straight screwdriver. Ensure that the shield is in close contact with the shield sheet metal, the green wires are connected to the A terminals, and the red wires are connected to the B terminals, as shown in the following figure.



4. Close the connector cover and fix the screws on the cover. Insert the connector in the DB9 port corresponding to MD580-SI-DP1 and use the screwdriver to tighten the retaining screws on both sides to prevent loosening.



Note

When installing the PROFIBUS DP bus, make sure that the studs on both sides of the Siemens terminal are securely connected to the MD580-SI-DP1 module; otherwise, communication may fail or the communication quality may deteriorate.

Bus topology

- For multi-device system connection without any repeater, connect termination resistors at the head and end, as shown in *"Figure 3–4 Multi-device system connection without any repeater" on page 13*.

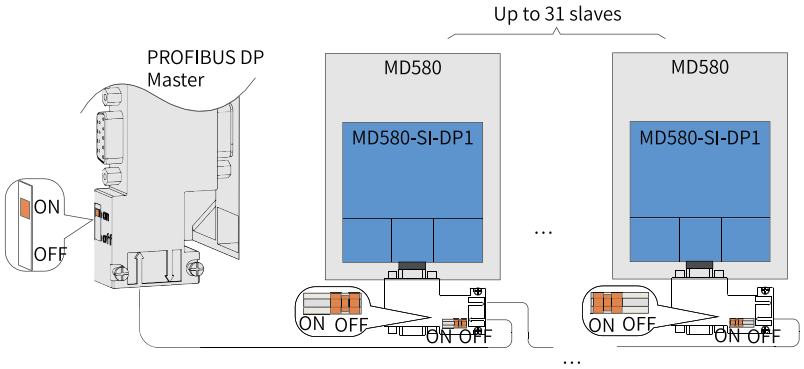


Figure 3-4 Multi-device system connection without any repeater

- For multi-device system connection with a repeater, connect termination resistors at the head and end, and connect the termination resistor of the repeater, as shown in *"Figure 3–5 Multi-device system connection with a repeater" on page 14*.

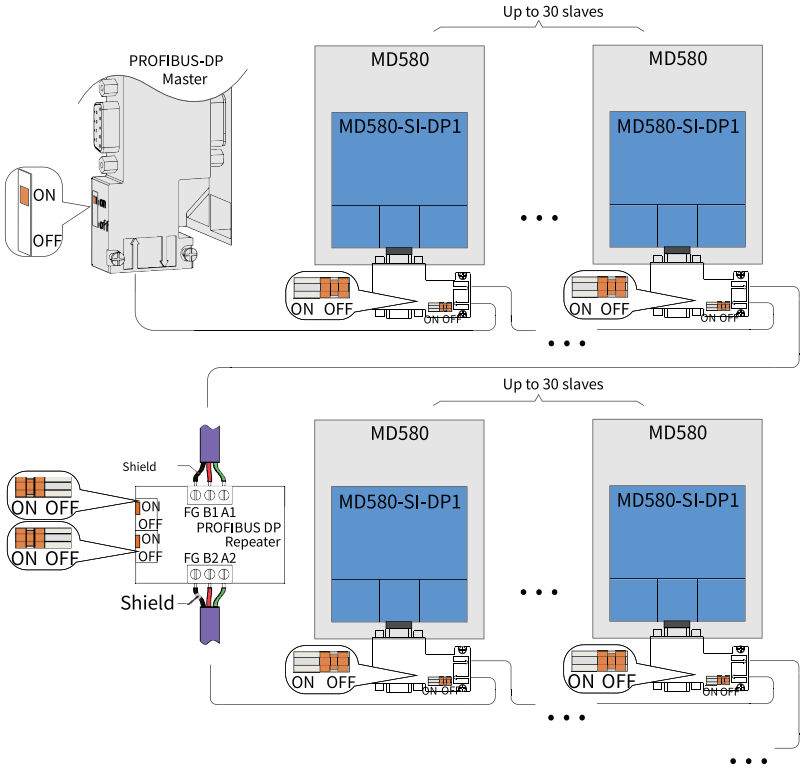


Figure 3-5 Multi-device system connection with a repeater

Baud rate and communication distance

Baud rate (kbps)	9.6	19.2	93.75	187.5	500	1500	3000	12000
Transmission distance (m)	1200	1200	1200	1200	400	200	100	100

Note

The transmission distances in the preceding table are distances without using any repeater.

4 PROFIBUS DP Communication Protocol Description

4.1 Introduction

The Process Field Bus (PROFIBUS) standard is mainly used in automation technology. PROFIBUS DP (Decentralized Peripherals) is mainly applied in factory automation scenarios, allowing a central controller to manage many sensors and actuators. PROFIBUS DP also enables the monitoring of module status through standard or optional diagnostic functions. In PROFIBUS DP, DP stands for Decentralized Periphery, which is a type of computer electronic component. DP offers high-speed communication at a low cost, facilitating communication between device-level control systems and distributed I/O. PROFIBUS DP, along with PROFIBUS PA (Process Automation) and PROFIBUS FMS (Fieldbus Message Specification), collectively form the PROFIBUS standard.

4.2 Data Frame Structure

Data transmission formats

The PROFIdrive protocol defines the Parameter Process Data Object (PPO) as the format for data transmission. PPO includes five types: PPO1, PPO2, PPO3, PPO4, and PPO5. The DP card supports all the five types of PPO.

The following table lists the functions supported by each type of PPO.

Data Type	Supported Function
PPO1	• Operation on a single function parameter • Setting of AC drive command and frequency • Reading of AC drive status and operation frequency
PPO2	• Operation on a single function parameter • Setting of AC drive command and frequency • Reading of AC drive status and operation frequency • Cyclic writing of 4 function parameters • Cyclic reading of 4 function parameters
PPO3	• Setting of AC drive command and frequency • Reading of AC drive status and operation frequency
PPO4	• Setting of AC drive command and frequency • Reading of AC drive status and operation frequency • Cyclic writing of 4 function parameters • Cyclic reading of 4 function parameters
PPO5	• Operation on a single function parameter • Setting of AC drive command and frequency • Reading of AC drive status and operation frequency • Cyclic writing of 10 function parameters • Cyclic reading of 10 function parameters

A PPO data block is subdivided into two areas: parameter value (PKW) and process data (PZD). The following figure shows the structure of each PPO type supported by the DP card.

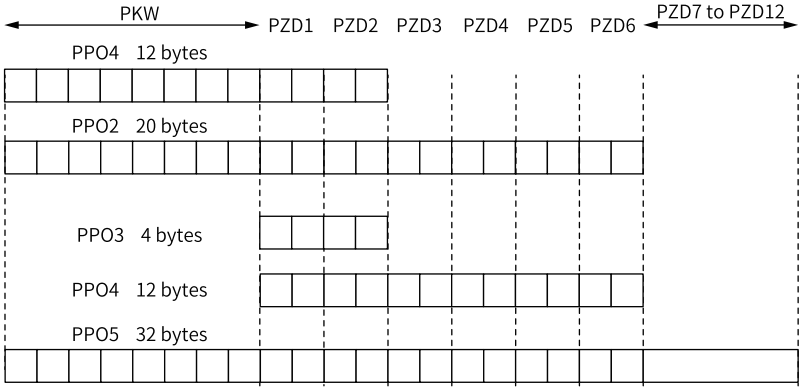


Figure 4-1 PPO data structures

PKW area

The PKW area enables the master to read or write a single AC drive parameter. The communication address of the AC drive parameter is directly specified in the communication data. The PKW area is used to:

- Read a function parameter of the AC drive
- Modify a function parameter of the AC drive

Data format

The PKW area consists of three parts: PKE, IND, and PWE. The PKE, IND, and PWE parts always contain two bytes, two bytes, and four bytes, respectively, as shown in the following table.

PKW Area in Master Request							
Operation Command	Parameter Address		Reserved			Write: Parameter value Read: Reserved	
PKE	PKE	IND	IND	PWE	PWE	PWE	PWE
PKW Area in AC Drive Response							
Operation Command	Parameter Address		Reserved			Successful: Parameter value Failed: Error information	
PKE	PKE	IND	IND	PWE	PWE	PWE	PWE

Data description

PKW Area in Master Request		PKW Area in AC Drive Response	
PKE	• High-order 4 bits: Command code0: No request1: Read2: Write(The preceding command code is in decimal format.) • Low-order 4 bits: Reserved • Low-order 8 bits: High-order bits of the parameter address	PKE	• High-order 4 bits: Response code0: No request1: Operation correct7: Cannot execute • Low-order 8 bits: High-order bits of the parameter address
IND	High-order 8 bits: Low-order bits of the parameter address Low-order 8 bits: Reserved	IND	High-order 8 bits: Low-order bits of the parameter address Low-order 8 bits: Reserved
PWE	High-order 16 bits: Reserved Low-order 16 bits: Reserved (in the case of read request) or parameter value (in the case of write request)	PWE	• Request succeeded: Parameter value • Request failed: Error code (consistent with standard Modbus)1: Invalid command2: Invalid address3: Invalid data4: Other error

Application example

The following figure shows the PKW area in the request and response transmitted between the master and the AC drive when the master requests to read function parameter F0-08 of the AC drive.

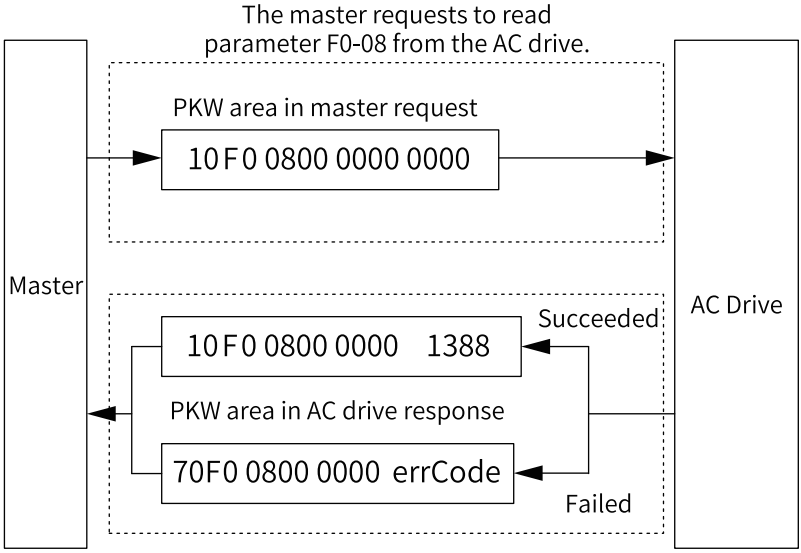


Figure 4-2 Example of PKW data transmitted when the master requests to read an AC drive parameter

The following figure shows the PKW area in the request and response transmitted between the master and the AC drive when the master requests to change function parameter F0-08 of the AC drive.

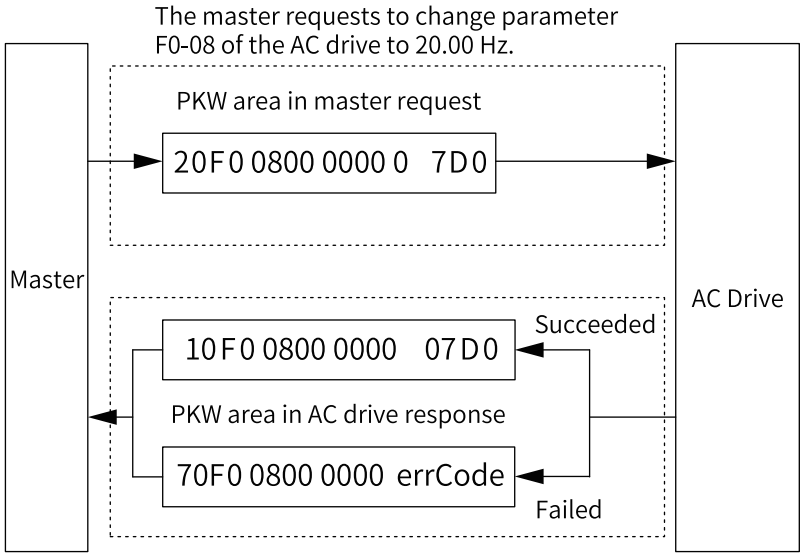


Figure 4-3 Example of PKW data transmitted when the master requests to write an AC drive parameter

PKW data exchange with the AC drive is performed cyclically. Continuous access to the EEPROM with the write command (PKE = 0x20xx) will significantly reduce the service life of the AC drive's main control chip. Therefore, to modify AC drive parameters, it is advisable to use the acyclic write command or operate the RAM addresses in PKW. The following table lists the RAM addresses of the parameters.

Parameter Group	Address
F0 to FF	0x00 to 0x0F
A0 to AF	0x40 to 0x4F

For example, the RAM address of parameter F0-10 is 0x000A.

PZD area

The PZD area enables the master to modify or read AC drive data in real time and exchange data with the AC drive cyclically. The data communication addresses are directly configured by the AC drive. The PZD area is used to:

- Set the AC drive control command or frequency reference in real time.
- Read the AC drive status or operation frequency in real time.

- Exchange function parameter data and monitoring parameter data between the AC drive and the PROFIBUS master in real time. PZD is used for the following cyclic data exchange between the master and the AC drive.

PZD Area in Master Request		
AC Drive Command	AC Drive Frequency Reference	Real-time modification of AC drive function parameters
PZD1	PZD2	PZD3 to PZD12
PZD Area in AC Drive Response		
AC Drive Command	AC Drive Operation Frequency	AC Drive Parameters Read in Real Time
PZD1	PZD2	PZD3 to PZD12

Master request

PZD Area in Master Request		
PZD1	AC drive command word (valid when the command source is set to communication)	
	0: No command 01: Forward running 02: Reverse running 03: Forward jog	04: Reverse jog 05: Coast to stop 06: Decelerate to stop 07: Fault reset
PZD2	• Specifies the AC drive frequency reference (valid when the frequency reference source is set to communication; the value unit is determined by the AC drive and Hz is used as an example here). • The frequency reference range is 0 to F0-10. • When F0-22 is set to 1, the frequency range is 0.0 Hz to 3200.0 Hz. • When F0-22 is set to 2, the frequency range is 0.00 Hz to 320.00 Hz. • When the specified frequency reference exceeds F0-10, the AC drive does not respond to the frequency reference.	
PZD3 to PZD12	• Specifies parameter values (group F and group A) to be modified in real time. The modification is not written to EEPROM. • FE-02 to FE-11 correspond to PZD3 to PZD12. For the configuration, see PZD data configuration. • After communication between the PLC and the AC drive is established, FE-02 to FE-11 show the parameter values written in PZD3 to PZD12. Manual setting of the parameters in group FE on the AC drive does not take effect.	

AC drive response

PZD Area in AC Drive Response	
PZD1	Indicates the AC drive status by bits as follows: • Bit 0: 0: Stopped; 1: Running • Bit 1: 0: Forward running; 1: Reverse running • Bit 2: 0: No fault; 1: Fault • Bit 3: 0: Frequency reference not reached; 1: Frequency reference reached
PZD2	Indicates the AC drive operation frequency: The current AC drive operation frequency is indicated by 16-bit signed data in the response. • When F0-22 is set to 1, –32000 to +32000 correspond to the actual operation frequency of –3200.0 Hz to +3200.0 Hz. • When F0-22 is set to 2, –32000 to +32000 correspond to the actual operation frequency of –320.00 Hz to +320.00 Hz.
PZD3 to PZD12	Indicates function parameter values (group F and group A) and monitoring parameter values (group U) read in real time. • FE-22 to FE-31 correspond to PZD3 to PZD12. For the configuration, see PZD data configuration. • After communication between the PLC and the AC drive is established, FE-02 to FE-11 show the parameter values written in PZD3 to PZD12. Manual setting of the parameters in group FE on the AC drive does not take effect.

5 Parameter Configuration

Parameter configuration procedure

The procedure for setting the MD580-SI-DP1 module is as follows:

1. Go to the parameter settings screen.
2. Select the fieldbus adapter and function module.
3. Select fieldbus adapter A.
4. Select the bus type for the fieldbus adapter.
5. Select the PROFIBUS DP fieldbus adapter module.

Note

You can also select the fieldbus adapter B.

Parameter configuration instructions

The MD580-SI-DP1 module involves the following parameter settings.

Parameter	Parameter Definition	Default	Reference	Description
n2-00	Bus type for fieldbus adapter A	0	7	Set only one of them to 7.
n3-00	Bus type for fieldbus adapter B	0	7	
n16-00	Expansion slot selection	0	0: Disable 1: Expansion slot 1_1 2: Expansion slot 1_2 3: Expansion slot 1_3	Select an expansion slot as needed. Typically, set this parameter to 1 (expansion slot 1_1).
n16-01	Online status	0	0: Offline 1: Online	-

Parameter	Parameter Definition	Default	Reference	Description
n16-02	Expansion card device ID	1	1 to 125	Slave device ID
n16-10	DP data check bit	0	0: PZD1.bit10 by default 1: Disable 2: PZD1.bit0 3: PZD1.bit1 4: PZD1.bit2 5: PZD1.bit3 6: PZD1.bit4 7: PZD1.bit5 8: PZD1.bit6 9: PZD1.bit7 10: PZD1.bit8 11: PZD1.bit9 12: PZD1.bit10 13: PZD1.bit11 14: PZD1.bit12 15: PZD1.bit13 16: PZD1.bit14 17: PZD1.bit15	Select the data validity check bit.

Note

After parameters are set, you must reset the MD580 to make the settings take effect.

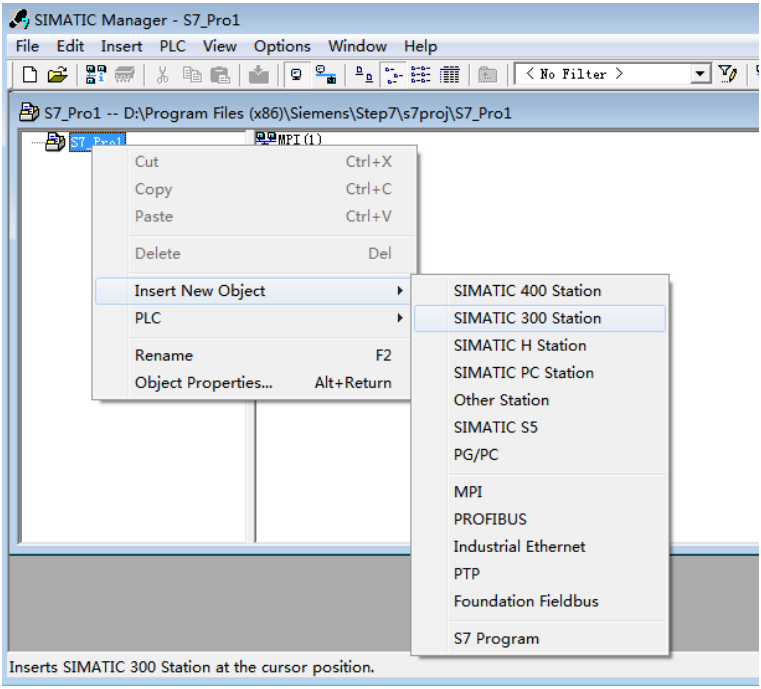
6 Communication Settings Example

6.1 Setting PROFIBUS DP Communication Between an AC Drive and an S7-300 Controller

Configuring a slave on an S7-300 master

Before using the PROFIBUS master, you need to configure the General Station Description (GSD) file of the slave to add the slave device to the system of the master. If the GSD file exists, skip step 2. You can obtain the GSD file from Inovance or its agent. The steps are as follows.

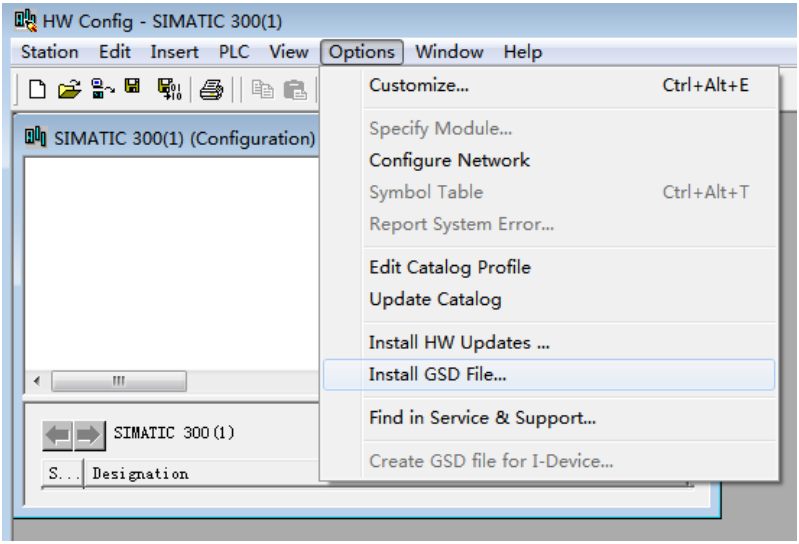
1. Create a project and add an S7-300 master to the project in STEP 7, as shown in the following figure.

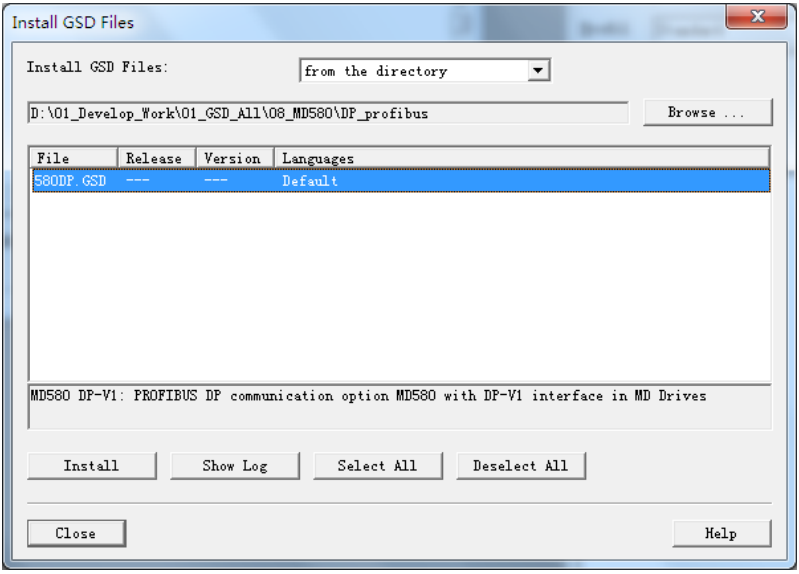


2. Double-click the hardware icon to enter the "HW Config" interface. Add the MD580DP.GSD file, as shown in the following figure.

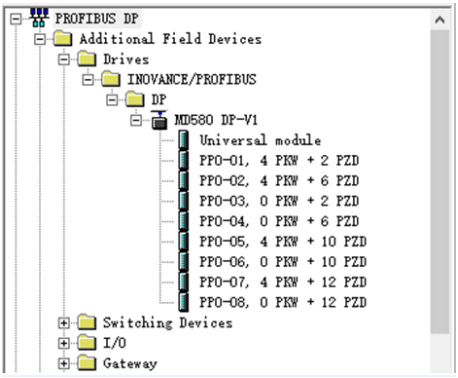
Note

Do not store the GSD file in a Chinese path; otherwise, the GSD file may not be recognized.

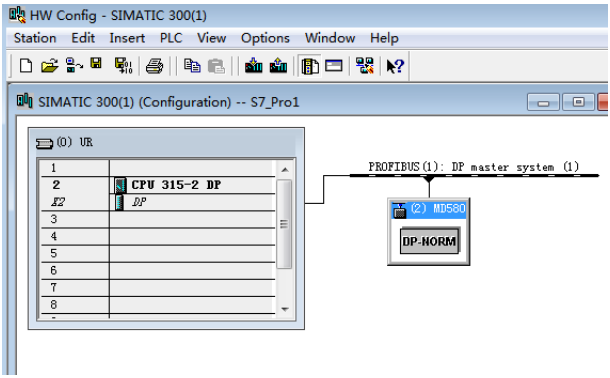




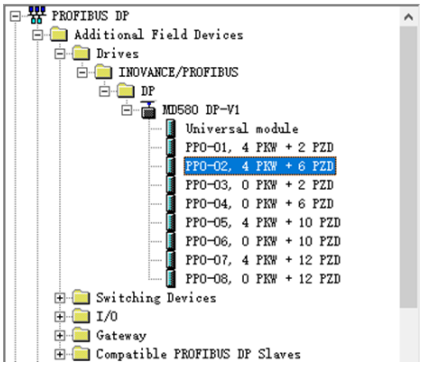
Click "Install". After the installation is completed, the PROFIBUS DP module named "MD580DP" is displayed in the list, as shown in the following figure.



3. Configure the actual hardware system, as shown in the following figure.



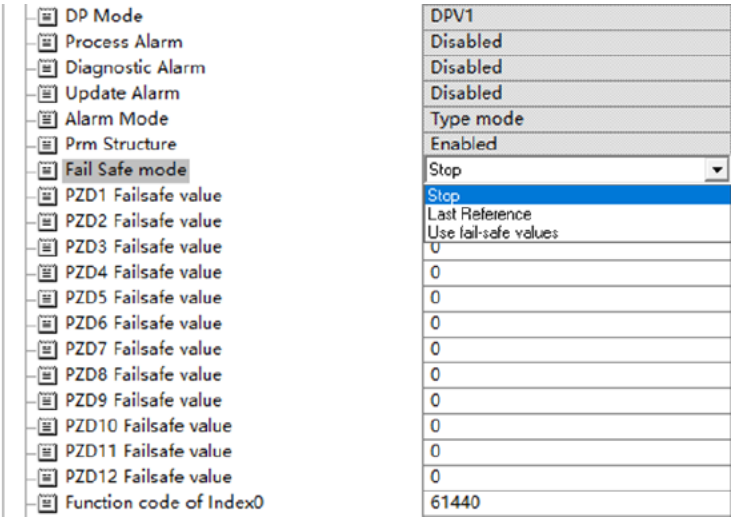
4. Configure data properties of the slave.



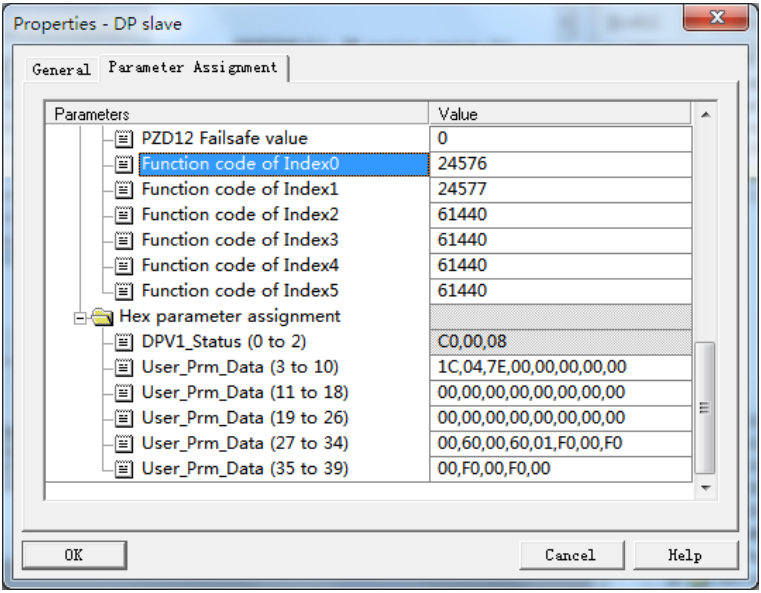
5. Configure PZD.
   You need to configure PZD mapping addresses on the MD580 AC drive (these settings depend on the AC drive).

6. Configure parameters.

After configuring the PZD mapping addresses on the AC drive, you need to set corresponding parameters, mainly including failsafe mode and values as well as the index mapping for non-cyclic reading and writing.



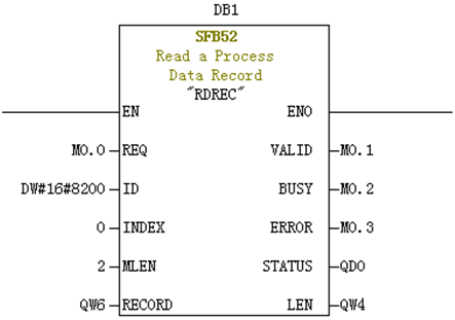
As shown above, you need to select a failsafe mode from the "Fail Safe mode" drop-down list. The options include "Stop", "Last Reference", and "Use fail-safe values". Specifically, "Stop" means clearing all values written by the PLC to the Ac drive when a fault occurs. "Last Reference" means retaining the last normal values when a fault occurs. "Use fail-safe values" means using preset values, which are listed under "Fail Safe mode" (such as "PZD1 Failsafe value").



Now the PROFIBUS slave configuration is completed. You can compile programs on the S7-300 master to control the AC drive.

Performing acyclic read/write operations on the AC drive slave

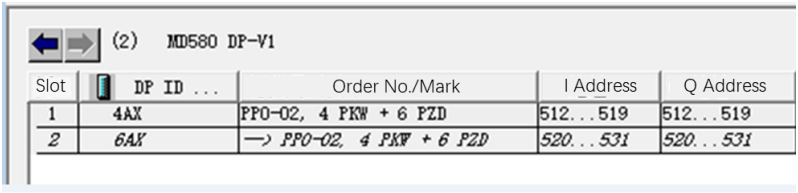
To perform acyclic read and write operations on an AC drive as a DP slave, you need Siemens system function blocks SFB52 (read) and SFB53 (write). Create an organization block in the program, and add relevant function blocks and programs in the organization block.



After M0.0 is set, the function block reads U0-00 (Index 0 has been mapped to U0-00) of the AC drive No. 2 and saves it in QW6. The fields are defined as follows:

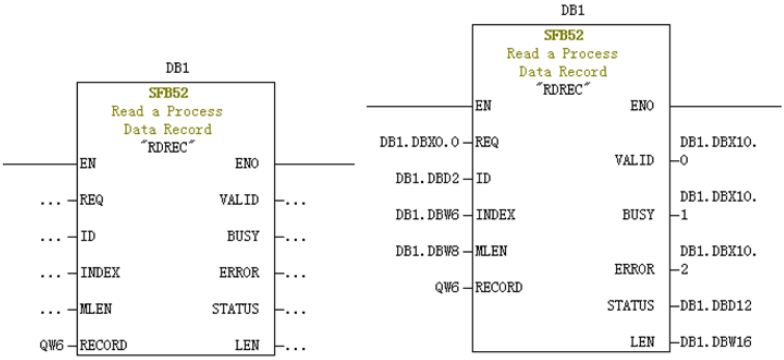
- REQ: Command enable. When this bit is set to 1, the function block is enabled.
- ID: Logic address. To specify this field, convert any Q address of the corresponding AC drive slave to a hexadecimal value, and set bit 15 of the value to 1. For

example, convert Q512 to a hexadecimal value, H200. Then, set bit 15 to 1 and you can obtain H8200.



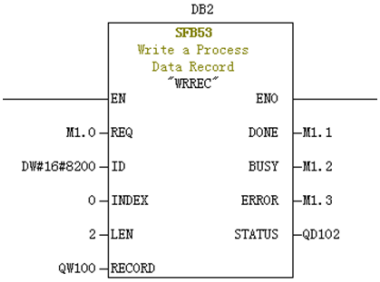
- INDEX: Index number. The value range is 0 to 5. This field can be customized to an index mapping address of a slave as needed.
- MLEN: Maximum length of the data to be obtained. The value must be 2 for MD580HDP.
- RECORD: Target area of the obtained data record. This field is used to store read data when the read operation is performed and sent data when the write operation is performed.
- VALID: The new data record is received and valid.
- BUSY: When the value is ON, the operation is not completed.
- ERROR: Error flag. When the value is ON, an error has occurred.
- STATUS: Block status or error information.
- LEN: Length of the obtained data record.

When you call this block, you can use custom parameters or some or all default parameters, as shown below.



In the left figure, default parameters are used, which is equivalent to the parameter settings shown in the right figure. You can set custom parameters or default parameters for blocks based on actual needs. If there are multiple different calls in the program, it is essential to customize the parameters, because using default parameters in all calls will lead to confusion and errors (Note: RECORD must be customized).

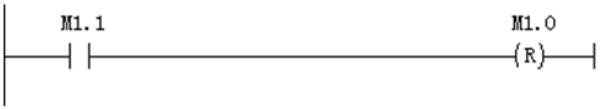
Acyclic write operations are similar to acyclic read operations, while the RECORD field stores data to be written, as shown below.



Note

Before running an organization block, you need to download data blocks (above the function block with DB1 and DB2 used as examples) to the PLC. Otherwise, the DB block unloading error will be generated.

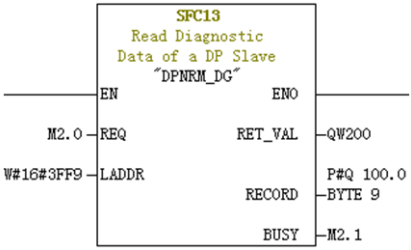
SFB53 is used to perform operations on the EEPROM. Therefore, relevant operations are invoked when necessary and relevant operations are disabled in time in the program. After the write operation is complete (M1.1 is set to 1), the program is invoked to reset M1.0, as shown in the following figure.



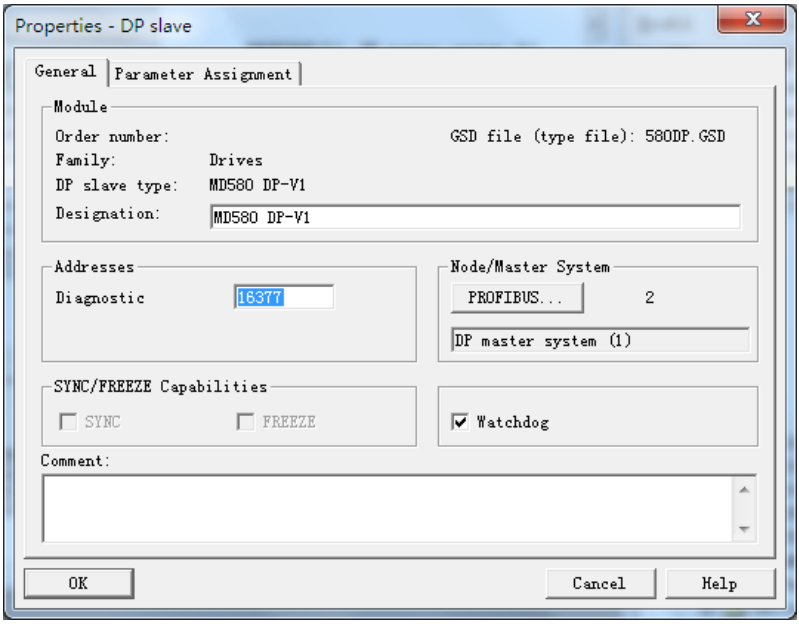
SFB52 and SFB53 require multiple calls to the corresponding blocks for each execution. Therefore, avoid calling these operations in a single execution environment.

Diagnosis

You can use SFC13 in the program to read diagnosis data of a slave, as shown in the following figure.



- REQ: Command enable. When this field is set to ON, diagnosis data reading is enabled.
- LADDR: Configured diagnosis address of the DP slave. The following figure shows the actual value. For SFC13, the address must be specified in hexadecimal.



- RET_VAL: Error code (negative) when a call error occurs, or actual length of transmitted data (positive) when no error occurs.
- RECORD: Target area of the read diagnosis data. The value type must be BYTE and the length must be nine bytes. Otherwise, an error is reported during the call. The nine bytes are defined as follows:
  - Byte 0 to byte 2: Device status
  - Byte 3: Master device ID
  - Byte 4: Supplier ID (high-order byte)
  - Byte 5: Supplier ID (low-order byte)
  - Byte 6: Device-specific diagnosis length (constantly 3)
  - Byte 7: High-order byte of device-specific diagnosis
  - Byte 8: Low-order byte of device-specific diagnosis
- BUSY: When this field is 1, reading is not completed.

Device-specific diagnosis provides AC drive fault information.

Faults and troubleshooting

Indicator	Status	Fault	Solution
D5	Red light blinking continuously	Handshake unsuccessful between the HDP-10 module and the AC drive	Check the AC drive settings.
D4	Red light blinking	Handshake unsuccessful between the HDP-10 module and the AC drive	Check the AC drive settings.
	Red light steady ON	HDP-10 module operation fault	Power on the device again or contact the technical engineer.
D3	Green light blinking	Establishing connection with the master	Check if the PROFIBUS DP device ID is within the range of 1 to 125.
	Red light blinking	Lost connection with the master PLC	Check cable connections and connectors, including the termination resistor connections.
	Red light steady ON	Master not found	Check cable connections and connectors. Check if the configuration is set and loaded.
	Orange light blinking	Configuration error	Check if the GSD file is correct.

7 Troubleshooting of Communication Faults

The MD580-SI-DP1 communication card uses three status indicators to indicate bus communication faults. See the following table for troubleshooting instructions.

Indicator	Color	Status Description	Solution
INOBUS	Green light blinking	Establishing communication with the main control board	-
	Green light steady ON	Normal communication with the main control board	-
	Red light blinking	Failed communication with the main control board	Check if the MD580-SI-DP1 module is damaged.
MODULE	Green light blinking	Module initialization	-
	Green light steady ON	Module initialization completed or working normally	-
	Red light blinking	Module fault	Check if the MD580-SI-DP1 module is damaged.
FIELDBUS	Green light blinking	Module initialization	Power-on initialization
	Green light steady ON	Bus data communication normal	-
	Red light blinking	Bus communication fault	• Check if the n10-04 address settings are correct. • Check the RS485 communication link. • Check if the termination resistor DIP switch settings of the MD580-SI-DP1 module are correct. For point-to-point connection, both the master and slave stations need to have the termination resistors connected.

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