



JN5-CM-PDP
Profibus-DP for L510
User Manual

2012.04

Apply to: JN5-CM-PDP

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1 Summary

JN5-CM-PDP module was developed for automation tasks using the PROFIBUS-DP field bus system. JN5-CM-PDP module is a “gateway” and can only be operated in combination with other base units.

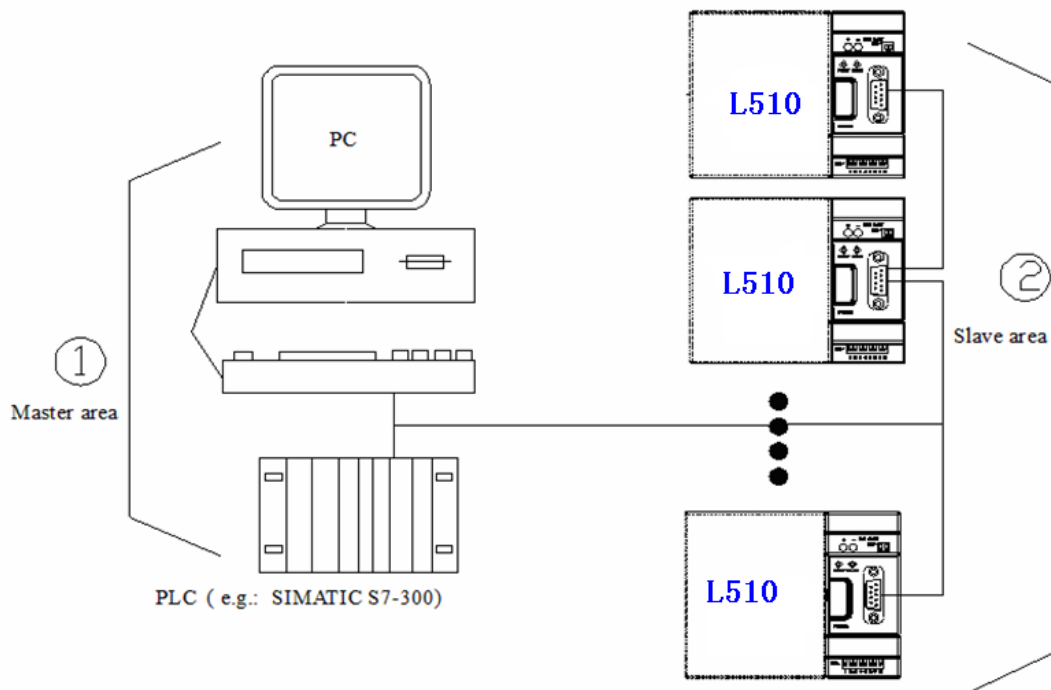
JN5-CM-PDP module can be connected with different type base units when selecting different GSD file.

JN5-CM-PDP for L510 module: selecting **TECO_L51.GSD** file, connected with L510 series drive.

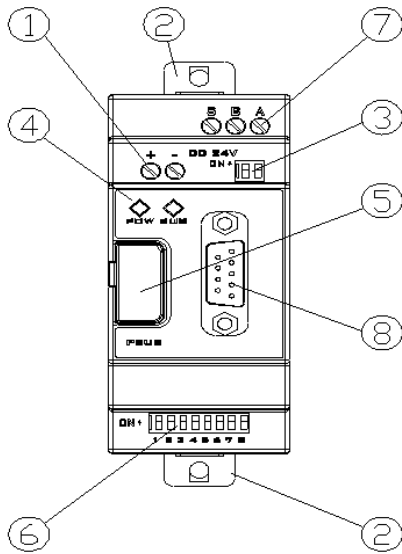
L510 drive with PROFIBUS-DP gateway PBUS module always operates as network slaver.

1.1 System Overview

JN5-CM-PDP modules connect with L510 via RS485 as network slavers.



1.2 Structure of the Unit



- ① 24vDC power supply
- ② Retractable mounting feet
- ③ 2bits DIP switch (terminal resistor)
- ④ POW & BUS LED
- ⑤ PRESS
- ⑥ 8bits DIP switch (setting address)
- ⑦ RS485 port
(Interface to connect with [L510](#))
- ⑧ PROFIBUS-DP connection (9pin D-SUB socket)

1.3 PROFIBUS-DP Function Description

[JN5-CM-PDP](#) communication module PROFIBUS-DP function is decided by GSD file.

You can select the following 4 functions described in the ‘[TECO_L51.GSD](#)’ file via network configuration tools. More function describe refer to ‘[chapter-3 Communication](#)’.

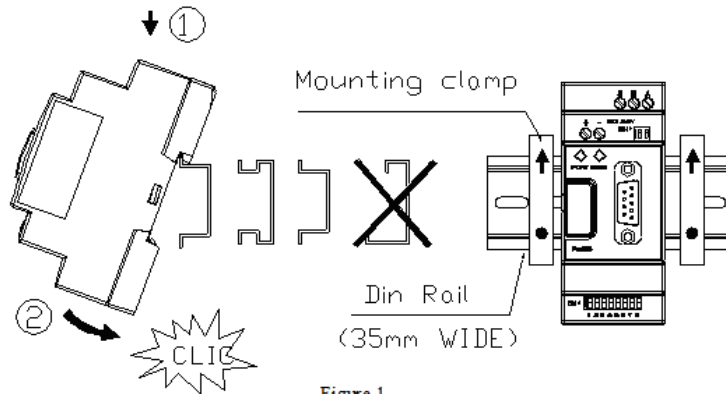
1. Cyclical process data exchange (PZD).
2. Parameter accessing: cyclical accessing of parameters (PKW).
3. PROFIBUS supports the control commands SYNC and FREEZE for data synchronization between master and slaves.
4. Support the configuration of data structure for data exchange with [L510](#) series.

2 Installation

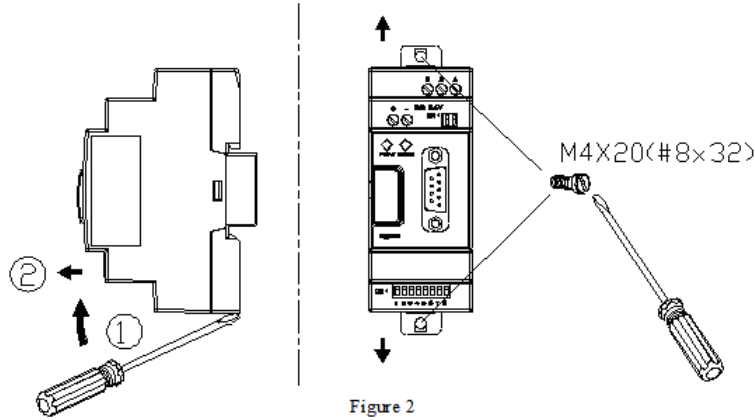
2.1 Installation and Dimension

● Installation

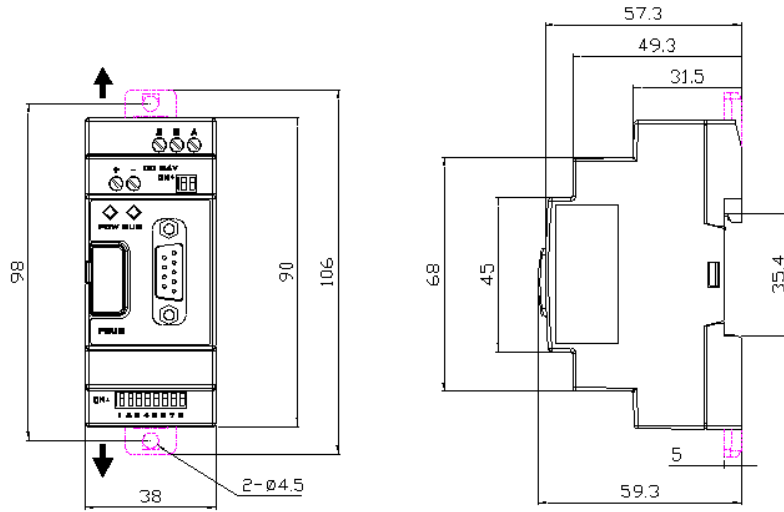
The JN5-CM-PDP should always be mounted vertically. Press the slots on the back of the module onto the rail until the plastic clamps hold the rails in place.



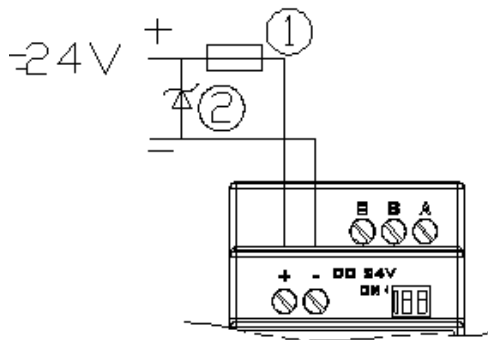
Use M4 screws to direct mount the PBUS module as shown Figure 2.



- Dimension:
Unit: mm (1 inch = 25.4mm)



2.2 Connecting Power Supply



JN5-CM-PDP module operates with a 24vDC supply voltage.

User can use an external 24vDC power.

①: 1A quick-blowing fuse, circuit-breaker or circuit protector

②: Surge absorber

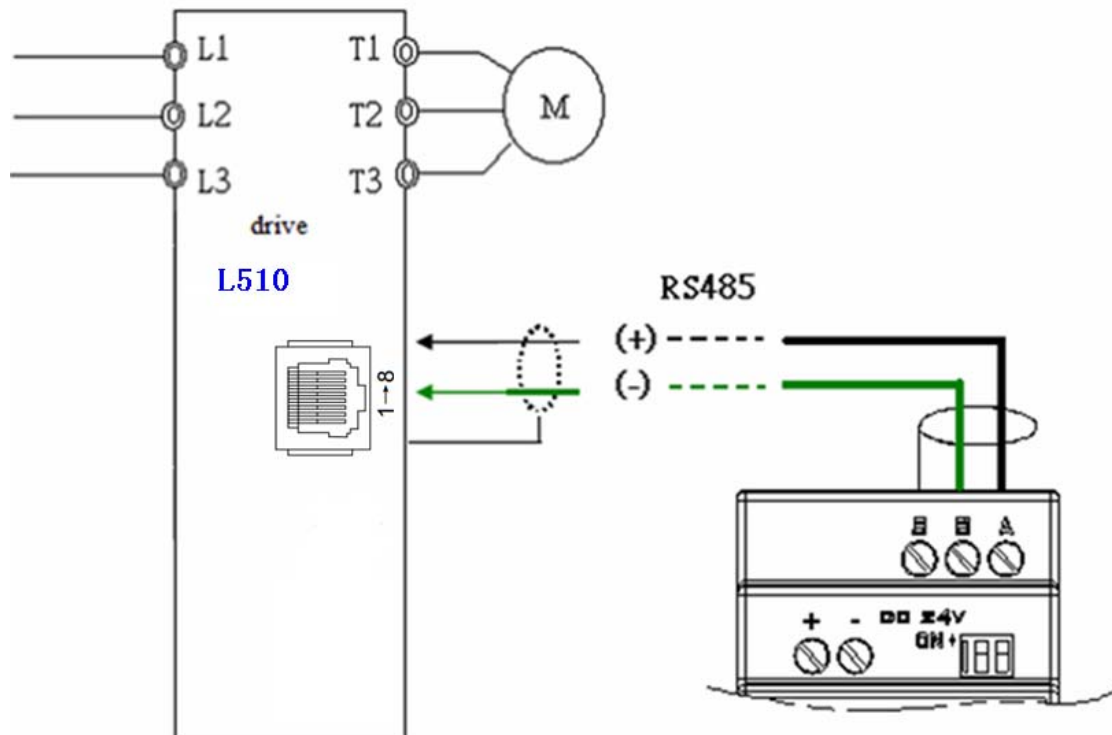
2.3 Connect with Base Unit and Setting Parameters

JN5-CM-PDP module connected with base unit via a RS485 port with MODBUS RTU protocol. Setting for RS485 port: Baud Rate 19200kbps, 8 bit data length, 1bit for stop bit, and no parity bit.

Users have to set parameters as shown in the table below.

| Function | Description | Setting value | Default value |
|----------|-----------------------|--------------------------|---------------|
| 00-02 | Run source | 2: communication control | 0 |
| 00-05 | Frequency source | 5: communication setting | 0 |
| 09-00 | Communication address | 1: address=1 | 0 |
| 09-01 | RTU/ASCII mode | 0: RTU mode | 0 |
| 09-02 | Serial Baud Rate | 2: 19200bps | 2 |
| 09-03 | Stop Bit | 0: 1stop bit | 0 |
| 09-04 | Parity Bit | 0: no parity bit | 0 |
| 09-05 | Data Length | 0: 8bit data length | 0 |

More information for setting and wiring refer to see: [L510 User Manual](#).

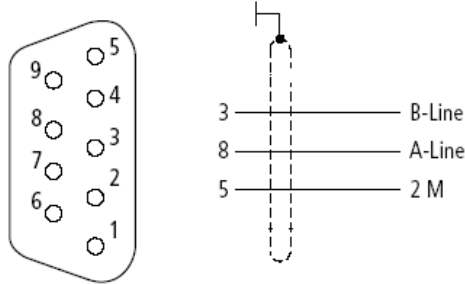


2.4 Connect with PROFIBUS-DP Bus

Please use a 9-pole D-SUB to connect the [JN5-CM-PDP](#) module to the PROFIBUS-DP field bus.

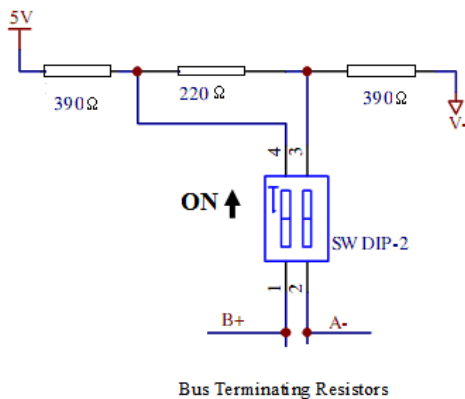
For this use the special PROFIBUS-DP plug and the special PROFIBUS-DP cable.

The type of cable used determines the permissible maximum bus length and the transfer rate.



| Pin | Signal name | Designation |
|-----|------------------------|--------------------------|
| 1 | Not assigned | - |
| 2 | Not assigned | - |
| 3 | RXD/TXD-P (B- Line) | Receive/Send data -P |
| 4 | Not assigned | - |
| 5 | DGND (2M) | Data reference potential |
| 6 | Not assigned | - |
| 7 | Not assigned | - |
| 8 | RXD/TXD-N (A-Line) | Receive/Send data -N |
| 9 | Not assigned | - |

2.5 Bus Terminating Resistors

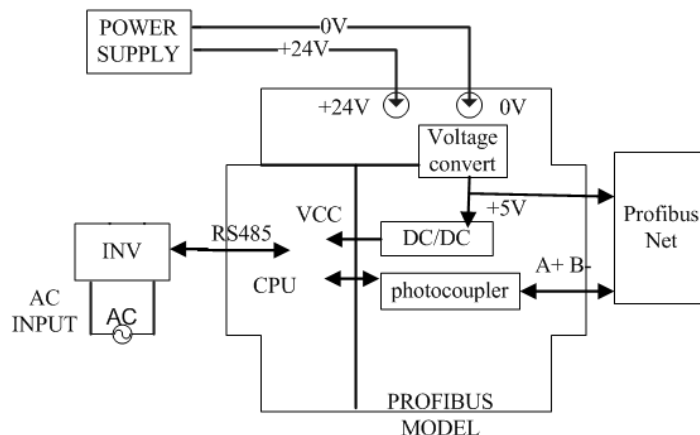


The first and last station in a bus segment must be connected to the bus with the bus terminating resistor switched on.

[JN5-CM-PDP](#) modules have integrated bus termination. The 2bit DIP switch of module enables the bus terminating resistors to be switched on.

2.6 Electronic Isolation

The following electrical isolation should be provided for the **JN5-CM-PDP** module:



Note: Can't use **L510** user 24V to connect **JN5-CM-PDP** input, otherwise **JN5-CM-PDP** is no isolated with **L510**.

2.7 Data Transfer Rate and Distance

JN5-CM-PDP module automatically detects the baud rate in the PROFIBUS-DP network after it is power on. However, this requires that at least one master station sends valid telegrams in the network.

The following transfer rates are supported: 9.6Kbit/s to 6000Kbit/s.

Two types of bus cable are specified in IEC 61158. Cable type B should no longer be used with new applications because it has been discontinued. Cable type A allows all transfer rates up to 12000Kbit/s to be used. Cables for burial in the ground, festoon suspension and drum cables are also available.

The cable parameters are as follows:

| Parameter | Cable type A |
|-----------------------------|-------------------------------|
| Surge impedance in Ω | 135~165 Ω (at 3~20MHz) |
| Effective capacitance | <30 (pF/m) |
| Loop resistance | <110 (Ω /Km) |
| Core diameter | >0.64 (mm) |
| Core cross section | >0.34 (mm ²) |

Distance between stations when using type A cable to IEC 61158:

| Baud rate (Kbit/s) | Max. cable length type A cable (m) |
|--------------------|------------------------------------|
| 9.6 | 1200 |
| 19.2 | 1200 |
| 93.75 | 1200 |
| 187.5 | 1000 |
| 500 | 400 |
| 1500 | 200 |
| 3000 | 100 |
| 6000 | 100 |

3 Communication

3.1 Initial Power Up

Before you power on the [JN5-CM-PDP](#) module, verify that it is properly connected to the power supply, to the bus connector and to the base unit. If the [JN5-CM-PDP](#) unit is factory set, the station address of the PROFIBUS-DP station must be set.

3.2 PROFIBUS-DP Address

Every PROFIBUS-DP station requires a unique address in the PROFIBUS-DP structure. User can use the integrated 8bits DIP switch on the [JN5-CM-PDP](#) to set address. The SW1-1 is the lowest bit, and the SW1-7 is highest bit, the SW1-8 is not used.

Valid PROFIBUS Address range is 1~125.

| SW_7 | SW-6 | SW-5 | SW-4 | SW-3 | SW-2 | SW-1 | Address |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| OFF | OFF | OFF | OFF | OFF | OFF | OFF | 0 |
| OFF | OFF | OFF | OFF | OFF | OFF | ON | 1 |
| OFF | OFF | OFF | OFF | OFF | ON | OFF | 2 |
| OFF | OFF | OFF | OFF | OFF | ON | ON | 3 |
| OFF | OFF | OFF | OFF | ON | OFF | OFF | 4 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| ON | ON | ON | ON | ON | OFF | ON | 125 |

NOTE: Setting address changes via DIP switch will not be effective immediately. This will be effective after [JN5-CM-PDP](#) module power re-boot.

3.3 JN5-CM-PDP Cyclical Data Exchange

[JN5-CM-PDP](#) is controlled via cyclical PROFIBUS-DP channel. This channel can be used to access the parameters of [L510](#) series diver.

3.3.1 PPO configuration

The structure of useful data for the cyclical channel is defined in the PROFIDrive Profile version2.0. Please refer to the Parameter Process data Object (PPO).

| PKW | | | | PZD | | | | | | | | | |
|-------------|-------------|-------------|-------------|--------------------|--------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|
| PKE | IND | PWE | | PZD1 STW ZSW | PZD2 HSW HIW | PZD3 | PZD4 | PZD5 | PZD6 | PZD7 | PZD8 | PZD9 | PZD10 |
| 1st word | 2nd word | 3rd word | 4th word | 1st word | 2nd word | 3rd word | 4th word | 5th word | 6th word | 7th word | 8th word | 9th word | 10th word |
| PPO1 | | | | | | | | | | | | | |
| PPO2 | | | | | | | | | | | | | |
| | | | | PPO3 | | | | | | | | | |
| | | | | PPO4 | | | | | | | | | |
| PPO5 | | | | | | | | | | | | | |

| | |
|---------------------------------|--------------------------------|
| PKW : Parameter ID/value | STW : Control word |
| PZD : Process data | ZSW : Status word |
| PKE : Parameter ID | HSW : Main set point |
| IND : Sub-index | HIW : Main actual value |
| PWE : Parameter value | |

NOTE: JN5-CM-PDP supports PPO1 and PPO3 structure only.

3.3.2 Extended configuration

In addition to the PPO types, cyclical data can also be configured to EXT CONF1 or EXT CONF2 (shown as the table below). These two extended configuration both have four process data words.

| PKW | | | | PZD | | | | | | | | | |
|------------|----------|----------|----------|----------|----------|----------|----------|------------|----------|----------|----------|----------|-----------|
| PKE | IND | PWE | | PZD1 | PZD2 | PZD3 | PZD4 | PZD5 | PZD6 | PZD7 | PZD8 | PZD9 | PZD10 |
| | | | | STW | HSW | | | | | | | | |
| | | | | ZSW | HIW | | | | | | | | |
| 1st word | 2nd word | 3rd word | 4th word | 1st word | 2nd word | 3rd word | 4th word | 5th word | 6th word | 7th word | 8th word | 9th word | 10th word |
| EXT CONF 1 | | | | | | | | | | | | | |
| | | | | | | | | EXT CONF 2 | | | | | |

3.3.3 Default settings of PZD structure

JN5-CM-PDP must receive the user parameters from master that configured via GSD file. The default settings of PZD structure are as follows:

STW1: Control Word, mapping to MODBUS address 0x2501 of A510 series drive.

HSW: Main set point, mapping to MODBUS address 0x2502 of A510 series drive.

ZSW1: Drives status, mapping to MODBUS address 0x2520 of A510 series drive.

HIW: Main actual value, mapping to MODBUS address 0x2524 of A510 series diver.

PROFIBUS-DP master → L510 series drive

PZD3: Not used.

PZD4: Not used.

L510 series drive → PROFIBUS-DP master

L510 output status, mapping to MODBUS address 0x2520~0x252D of L510 series drive. The default settings of PZD3/PZD4 as follows:

PZD3: Default Multi-function terminal on/off status, mapping to MODBUS address 0x2522 of L510 series drive.

PZD4: Default output current, mapping to MODBUS address 0x2527 of L510 series drive.

3.3.4 Control and Status words

JN5-CM-PDP supports the PPO1 and PPO3 data structure. However, it does not support the bit assignments of control and status words in PROFIDrive profile. It only supports the L510 series drive control and status words.

Control word (data from PROFIBUS-DP to L510 series drive)

| Bit | Meaning | 1 | 0 |
|-----|---------------------------|-------------|---------|
| 0 | Operation Command | Run | Stop |
| 1 | Reverse Command | Reverse | Forward |
| 2 | External Fault | Fault | |
| 3 | Fault Reset | Reset | |
| 4 | Jog Command | Jog | |
| 5 | Jog Reverse Command | Jog reverse | |
| 6 | Multi function Command S1 | ON | OFF |
| 7 | Multi function Command S2 | ON | OFF |
| 8 | Multi function Command S3 | ON | OFF |
| 9 | Multi function Command S4 | ON | OFF |
| A | Multi function Command S5 | ON | OFF |
| B | (unused) | | |
| C | Relay R1 | ON | OFF |
| D | (unused) | ON | OFF |
| E~F | (unused) | | |

Status word (data from L510 series drive to PROFIBUS-DP)

| Bit | Meaning | 1 | 0 |
|-----|----------------------------------|----------|----------|
| 0 | Operation State | Run | Stop |
| 1 | Direction State | Reverse | Forward |
| 2 | Inverter operation prepare state | ready | unready |
| 3 | Abnormal | Abnormal | normal |
| 4 | Data setting error | Error | No error |
| 5~F | (unused) | | |

3.3.5 Accessing parameter via PKW area

In cyclical data, [JN5-CM-PDP](#) can provide request and response message to access the [L510](#) series parameters. Due to the request and response mechanism, the master must send the request until receives a corresponding response. Following 4 words are for PKW area:

| | | | | |
|--------|----------------------------|----|-----------------------|---|
| Word 1 | Parameter ID(PKE) | | | |
| bit | 15 | 12 | 11 | 0 |
| | AK | | Parameter number(PNU) | |
| Word 2 | IND Reserved | | | |
| Word 3 | PWE1 | | | |
| bit | 15 | 8 | 7 | 0 |
| | Reserved | | Fault number | |
| Word 4 | PWE2 Read/Write parameters | | | |

- **PKE**

Bit 0 to 11 (PNU) contain the MODBUS address of the relevant parameter.

Please refer to [Appendix B: L510 series drive MODBUS address allocation](#).

Bits 12 to 15(AK) contain the request or the response identifier.

Request identifier (Master → [JN5-CM-PDP](#))

| Request Identifier | Description |
|--------------------|------------------------|
| 0 | No request |
| 1 | Read parameter value |
| 2 | Modify parameter value |

Response identifier ([JN5-CM-PDP](#) → Master)

| Request Identifier | Description |
|--------------------|--|
| 0 | No response |
| 1 | Request parameter value processed |
| 7 | Request parameter value cannot process |

If request parameter value cannot be processed, and the fault numbers following will be stored in the low byte of PWE1.

| NO. | Description |
|-----|---|
| 0 | Parameter does not exist |
| 1 | Parameter can not change in current state |
| 2 | Parameter value minimum/maximum not reached/exceeded |
| 101 | Other SP communication error occur, e.g. response time over |

- **PWE**

All parameters for the L510 series drive are 16-bit. A 16-bit parameter value is transferred by PWE2 (4th word). PWE1 (3rd word) must be set to 0 on the PROFIBUS-DP master in this case.

- **Example for PKW mechanism**

Read data of parameter 00-05 (frequency source command).

To read value of 00-05, first set the request ID to 1. Then refer to the appendix to find out the corresponding MODBUS address 0x0005. Thus, the data sequence is as follows:

Master → JN5-CM-PDP: 1005 0000 0000 0000

JN5-CM-PDP → Master: 1005 0000 0000 0004

| Request | |
|--------------|------|
| Word 1(PKE) | 1005 |
| Word 2(IND) | 0000 |
| Word 3(PWE1) | 0000 |
| Word 4(PWE2) | 0000 |

| Response | |
|--------------|------|
| Word 1(PKE) | 1005 |
| Word 2(IND) | 0000 |
| Word 3(PWE1) | 0000 |
| Word 4(PWE2) | 0004 |

4 GSD File and Parameters

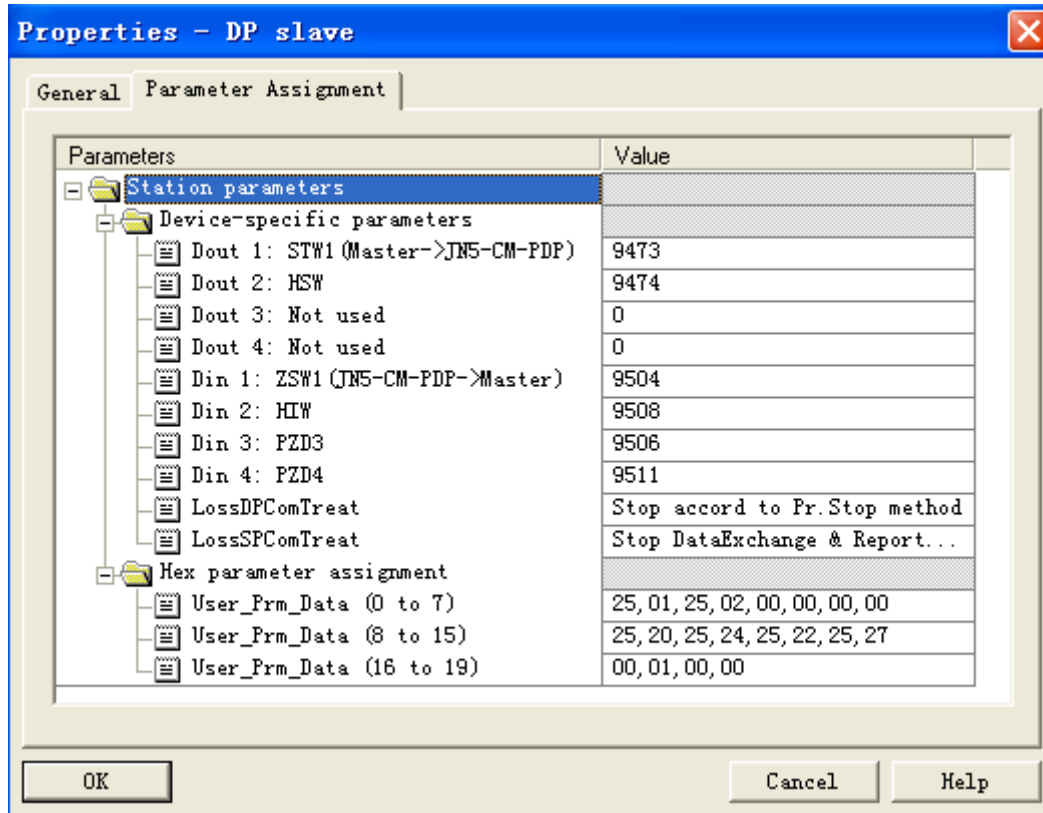
A GSD file is a text file used to identify PROFIBUS-DP device (master or slave), which contains the necessary data for the configuration of DP slaves within a standard DP master. Typical information in a GSD file are Vendor information, supported Baud rates, Timing information, supported Options/features and Available I/O signals. The parameters in GSD file are used for the configuration of the PROFIBUS network. The parameters descriptions are shown as below.

- GSD File for L510 series drive [Appendix A: TECO_L51.GSD](#)
- Parameters for L510 series drive

The parameters description is shown as in the table below:

| Item | Name | Type | Description | Default |
|------|----------------|------|---|---------|
| 1 | Dout1 | U16 | This is the MODBUS address of STW1. Other addresses are not allowed. | 0x2501 |
| 2 | Dout2 | U16 | This is the MODBUS address of HSW. Other addresses are not allowed. | 0x2502 |
| 3 | Dout3 | U16 | Not used | 0x0000 |
| 4 | Dout4 | U16 | Not used | 0x0000 |
| 5 | Din1 | U16 | This is the MODBUS address of ZSW1. Other addresses are not allowed. | 0x2520 |
| 6 | Din2 | U16 | This is the MODBUS address of HIW. Other addresses are not allowed. | 0x2524 |
| 7 | Din3 | U16 | This is a MODBUS address and should in range of 0x2520 to 0x252D. JN5-CM-PDP will monitor this address, and copy the return data to the 3rd word of cyclic input data PZD if selecting module"4 PKW, 4 PZD". | 0x2522 |
| 8 | Din4 | U16 | This is a MODBUS address and should in range of 0x2520 to 0x252D. JN5-CM-PDP will monitor this address, and copy the return data to the 4th word of cyclic input data PZD if selecting module"4 PKW, 4 PZD". | 0x2527 |
| 9 | LossDPComTreat | U16 | It is used to decide the method when communication with PROFIBUS network is lost. The settings can be: 00 - Ignore event and continue; 01 - Stop according to 07-09 stop method. | 0x0001 |
| 10 | LossSPComTreat | U16 | It is used to decide the method when the SP communication is lost. The settings can be: 00 - Stop data exchange and alarm; 01 - Continue data exchange and alarm; 02 - Ignore and continue data exchange. | 0x0000 |

The default parameter setting is shown as in the following:



5 Troubleshooting

5.1 LED Display

POW LED and BUS LED are used to monitor the [JN5-CM-PDP](#) communication status.

| LED state | Description | Corrective Actions |
|------------------------|---|--|
| POWER LED | | |
| OFF | No power | Verify the power supply of JN5-CM-PDP unit. |
| Orange | SPComm not establish | 1, Check the connection between the JN5-CM-PDP unit and base unit 2, Check the communication setting in base unit is (19200, 8, N, 1) |
| Flashing Red LED | SPComm error occur | Check the PLC program, and ensure the communication address in JN5-CM-PDP unit is correct. |
| Rapid Flashing Red LED | Invalid PROFIBUS address set via switch | Check whether the switch value is valid, valid value of slave is within 1~125. Set the valid value and re-power. |
| Green ON | Power supply present | |
| Green flash | Communication with the base unit correct. | |
| BUS LED | | |
| OFF | DPComm not establish | 1, Verify network installation is OK 2, Check the user parameter assignment of JN5-CM-PDP unit is correct |
| Green on | DPComm is established | |

5.2 Bus Diagnostic Data

[JN5-CM-PDP](#) provides 8 bytes diagnostic data when the abnormal communication occurs or parameter “LossSPComTreat” is set to report alarm.

It includes 6 bytes standard diagnostic data and 2 bytes device related diagnostic data. The following table shows the meanings of the 8 bytes:

| Bytes 1~6 | Byte 7 | Byte 8 |
|--------------------------|----------------------|---|
| Standard diagnostic data | Length in bytes 2 | SPComm status 00 - normal 01 - SPComm return error code 02 - SPComm time out |

Byte 7 indicates the length of device related diagnostic data, including itself, so byte 7 is always 2.

Byte 8 indicates the SP communication status when the error occurs.

If there is a communication error detected between [JN5-CM-PDP](#) unit and drive base unit ([L510](#)), the error code will be displayed on the digital keypad of drive.

Appendix

Appendix A: TECO_L51.GSD

```

=====
;
; GSD-File for L510 series drives Profibus DP
;
; Auto_Baud_supp, 6MBaud
;
; File      : TECO_L51.GSD
=====

```

```
#Profibus_DP
```

```
; Unit-Definition-List:
```

```

GSD_Revision      = 1
Vendor_Name       = "TECO Electric&Machinery Co.,Ltd"
Model_Name        = "L510 ProfiBus-DP"
Revision          = "Rev1.0"
Ident_Number      = 0x0AC2
Protocol_Ident    = 0           ; PROFIBUS DP
Station_Type      = 0           ; DP-slave
FMS_supp         = 0
Hardware_Release  = "V1.0"
Software_Release  = "V1.0"
Redundancy        = 0
Repeater_Ctrl_Sig = 0
24V_Pins         = 0
Implementation_Type = "SPC3"
;Bitmap_Device    = "L510 DRV"
;Bitmap_Diag      = "L510 DRV"
;Bitmap_SF        = "L510 DRV"
Slave_Family      = 1@TECO@L510 ; Drives family

```

```
; Supported Communication Speeds:
```

```

9.6_supp         = 1
19.2_supp        = 1
93.75_supp       = 1
187.5_supp       = 1
500_supp         = 1
1.5M_supp        = 1
3M_supp          = 1
6M_supp          = 1

```

```

12M_supp          = 0

MaxTsdr_9.6       = 60
MaxTsdr_19.2      = 60
MaxTsdr_93.75     = 60
MaxTsdr_187.5     = 60
MaxTsdr_500       = 100
MaxTsdr_1.5M      = 150
MaxTsdr_3M        = 250
MaxTsdr_6M        = 450
;MaxTsdr_12M      = 800

```

; DP_Slave Information:

```

Freeze_Mode_supp = 1
Sync_Mode_supp   = 1
Auto_Baud_supp   = 1
Set_Slave_Add_supp = 0
Min_Slave_Intervall = 1           ; 100 micro-second

```

; Module-Definitions:

```

Modular_Station = 1           ; 0-compact; 1-modular
Max_Module      = 1
Max_Input_Len   = 16
Max_Output_Len = 16
Max_Data_Len    = 32

```

```

Modul_Offset    = 0
Fail_Safe       = 0
Max_Diag_Data_Len = 8

```

; Meaning of "device diagnostic" field

Unit_Diag_Bit(0) = "SPComm return error code"

Unit_Diag_Bit(1) = "SPComm time out"

OrderNumber="JN5-CM-PDP"

; Specify the user parameters:

```

Max_User_Prm_Data_Len = 20
User_Prm_Data_Len     = 20
User_Prm_Data         = 0x25,0x01,\
                        0x25,0x02,\
                        0x00,0x00,\
                        0x00,0x00,\

```

```

0x25,0x20,\
0x25,0x24,\
0x25,0x22,\
0x25,0x27,\
0x00,0x01,\
0x00,0x00

```

```

Module = "4 PKW, 2 PZD (PPO 1)      " 0xF3, 0xF1
EndModule
Module = "0 PKW, 2 PZD (PPO 3)      " 0xF1
EndModule
Module = "4 PKW, 4 PZD              " 0xF3, 0xF3
EndModule
Module = "0 PKW, 4 PZD              " 0xF3
EndModule

```

; Extended Description of User-Parameters

```

PrmText = 1
Text(0) = "Ignore and Continue"
Text(1) = "Stop accord to Pr.Stop method"
EndPrmText

```

```

PrmText = 2
Text(0) = "Stop DataExchange & Report Fault"
Text(1) = "Continue & Report Alarm"
Text(2) = "Ignore & Continue DataExchange"
EndPrmText

```

```

ExtUserPrmData = 1 "Dout 1: STW1(Master->JN5-CM-PDP)"
Unsigned16 0x2501 9473-9473
EndExtUserPrmData

```

```

ExtUserPrmData = 2 "Dout 2: HSW"
Unsigned16 0x2502 9474-9474
EndExtUserPrmData

```

```

ExtUserPrmData = 3 "Dout 3: Not used"
Unsigned16 0x0000 0-0
EndExtUserPrmData

```

```

ExtUserPrmData = 4 "Dout 4: Not used"
Unsigned16 0x0000 0-0
EndExtUserPrmData

```

```
ExtUserPrmData = 5 "Din 1: ZSW1(JN5-CM-PDP->Master)"
Unsigned16 0x2520 9504-9504
EndExtUserPrmData
```

```
ExtUserPrmData = 6 "Din 2: HIW"
Unsigned16 0x2524 9508-9508
EndExtUserPrmData
```

```
ExtUserPrmData = 7 "Din 3: PZD3"
Unsigned16 0x2522 9504-9517
EndExtUserPrmData
```

```
ExtUserPrmData = 8 "Din 4: PZD4"
Unsigned16 0x2527 9504-9517
EndExtUserPrmData
```

```
ExtUserPrmData = 9 "LossDPComTreat"
Unsigned16 1 0-1
Prm_Text_Ref = 1
EndExtUserPrmData
```

```
ExtUserPrmData = 10 "LossSPComTreat"
Unsigned16 0 0-2
Prm_Text_Ref = 2
EndExtUserPrmData
```

```
Ext_User_Prm_Data_Ref(0) = 1
Ext_User_Prm_Data_Ref(2) = 2
Ext_User_Prm_Data_Ref(4) = 3
Ext_User_Prm_Data_Ref(6) = 4
Ext_User_Prm_Data_Ref(8) = 5
Ext_User_Prm_Data_Ref(10) = 6
Ext_User_Prm_Data_Ref(12) = 7
Ext_User_Prm_Data_Ref(14) = 8
Ext_User_Prm_Data_Ref(16) = 9
Ext_User_Prm_Data_Ref(18) = 10
```

```
;===== END of GSD file for L510 Drives =====
```

Appendix B: L510 MODBUS address allocation

| Register Code | Function Block | Register Code | Function Block | Register Code | Function Block | Register Code | Function Block | Register Code | Function Block |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Group00 | | Group03 | | Group05 | | Group06 | | Group07 | |
| 0000H | 00-00 | 0300H | 03-00 | 0500H | 05-00 | 0600H | 06-00 | 0700H | 07-00 |
| 0001H | 00-01 | 0301H | 03-01 | 0501H | 05-01 | 0601H | 06-01 | 0701H | 07-01 |
| 0002H | 00-02 | 0302H | 03-02 | 0502H | 05-02 | 0602H | 06-02 | 0702H | 07-02 |
| 0003H | 00-03 | 0303H | 03-03 | 0503H | 05-03 | 0603H | 06-03 | 0703H | 07-03 |
| 0004H | 00-04 | 0304H | 03-04 | 0504H | 05-04 | 0604H | 06-04 | 0704H | 07-04 |
| 0005H | 00-05 | 0305H | 03-05 | 0505H | 05-05 | 0605H | 06-05 | 0705H | 07-05 |
| 0006H | 00-06 | 0306H | 03-06 | 0506H | 05-06 | 0606H | 06-06 | 0706H | 07-06 |
| 0007H | 00-07 | 0307H | 03-07 | 0507H | 05-07 | 0607H | 06-07 | 0707H | 07-07 |
| 0008H | 00-08 | 0308H | 03-08 | 0508H | 05-08 | 0608H | 06-08 | 0708H | 07-08 |
| 0009H | 00-09 | 0309H | 03-09 | 0509H | 05-09 | 0609H | 06-09 | 0709H | 07-09 |
| 000AH | 00-10 | 030AH | 03-10 | 050AH | 05-10 | 060AH | 06-10 | Group08 | |
| 000BH | 00-11 | 030BH | 03-11 | 050BH | 05-11 | 060BH | 06-11 | 0800H | 08-00 |
| 000CH | 00-12 | 030CH | 03-12 | 050CH | 05-12 | 060CH | 06-12 | 0801H | 08-01 |
| 000DH | 00-13 | 030DH | 03-13 | 050DH | 05-13 | 060DH | 06-13 | 0802H | 08-02 |
| 000EH | 00-14 | 030EH | 03-14 | 050EH | 05-14 | 060EH | 06-14 | 0803H | 08-03 |
| 000FH | 00-15 | 030FH | 03-15 | 050FH | 05-15 | 060FH | 06-15 | 0804H | 08-04 |
| 0010H | 00-16 | 0310H | 03-16 | 0510H | 05-16 | 0610H | 06-16 | 0805H | 08-05 |
| 0011H | 00-17 | 0311H | 03-17 | 0511H | 05-17 | 0611H | 06-17 | 0806H | 08-06 |
| 0012H | 00-18 | 0312H | 03-18 | 0512H | 05-18 | 0612H | 06-18 | 0807H | 08-07 |
| 0013H | 00-19 | 0313H | 03-19 | 0513H | 05-19 | 0613H | 06-19 | 0808H | 08-08 |
| 0014H | 00-20 | | | 0514H | 05-20 | 0614H | 06-20 | 0809H | 08-09 |
| Group00 | | Group04 | | 0515H | 05-21 | 0615H | 06-21 | Group09 | |
| 0100H | 01-00 | 0400H | 04-00 | 0516H | 05-22 | 0616H | 06-22 | 0900H | 09-00 |
| 0101H | 01-01 | 0401H | 04-01 | 0517H | 05-23 | 0617H | 06-23 | 0901H | 09-01 |
| 0102H | 01-02 | 0402H | 04-02 | 0518H | 05-24 | 0618H | 06-24 | 0902H | 09-02 |
| 0103H | 01-03 | 0403H | 04-03 | 0519H | 05-25 | 0619H | 06-25 | 0903H | 09-03 |
| 0104H | 01-04 | 0404H | 04-04 | 051AH | 05-26 | 061AH | 06-26 | 0904H | 09-04 |
| 0105H | 01-05 | 0405H | 04-05 | 051BH | 05-27 | 061BH | 06-27 | 0905H | 09-05 |
| 0106H | 01-06 | 0406H | 04-06 | 051CH | 05-28 | 061CH | 06-28 | 0906H | 09-06 |
| 0107H | 01-07 | 0407H | 04-07 | 051DH | 05-29 | 061DH | 06-29 | 0907H | 09-07 |
| 0108H | 01-08 | 0408H | 04-08 | 051EH | 05-30 | 061EH | 06-30 | 0908H | 09-08 |
| 0109H | 01-09 | 0409H | 04-09 | 051FH | 05-31 | 061FH | 06-31 | 0909H | 09-09 |
| 010AH | 01-10 | 040AH | 04-10 | 0520H | 05-32 | 0620H | 06-32 | | |
| 010BH | 01-11 | 040BH | 04-11 | | | 0621H | 06-33 | | |
| | | 040CH | 04-12 | | | 0622H | 06-34 | | |

| Register Code | Function Block | Register Code | Function Block | Register Code | Function Block | Register Code | Function Block | Register Code | Function Block |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 0200H | 02-00 | 040DH | 04-13 | | | 0623H | 06-35 | | |
| 0201H | 02-01 | 040EH | 04-14 | | | 0624H | 06-36 | | |
| 0202H | 02-02 | 040FH | 04-15 | | | 0625H | 06-37 | | |
| 0203H | 02-03 | | | | | 0626H | 06-38 | | |
| | | | | | | 0627H | 06-39 | | |
| Group10 | | Group10 | | Group11 | | Group12 | | Group13 | |
| 0A00H | 10-00 | 0A0CH | 10-12 | 0B00H | 11-00 | 0C00H | 12-00 | 0D00H | 13-00 |
| 0A01H | 10-01 | 0A0DH | 10-13 | 0B01H | 11-01 | 0C01H | 12-01 | 0D01H | 13-01 |
| 0A02H | 10-02 | 0A0EH | 10-14 | 0B02H | 11-02 | 0C02H | 12-02 | 0D02H | 13-02 |
| 0A03H | 10-03 | 0A0FH | 10-15 | 0B03H | 11-03 | 0C03H | 12-03 | 0D03H | 13-03 |
| 0A04H | 10-04 | 0A10H | 10-16 | 0B04H | 11-04 | 0C04H | 12-04 | 0D04H | 13-04 |
| 0A05H | 10-05 | 0A11H | 10-17 | 0B05H | 11-05 | 0C05H | 12-05 | 0D05H | 13-05 |
| 0A06H | 10-06 | 0A12H | 10-18 | 0B06H | 11-06 | | | 0D06H | 13-06 |
| 0A07H | 10-07 | 0A13H | 10-19 | 0B07H | 11-07 | | | 0D07H | 13-07 |
| 0A08H | 10-08 | 0A14H | 10-20 | 0B08H | 11-08 | | | 0D08H | 13-08 |
| 0A09H | 10-09 | 0A15H | 10-21 | 0B09H | 11-09 | | | | |
| 0A0AH | 10-10 | 0A16H | 10-22 | 0B0AH | 11-10 | | | | |
| 0A0BH | 10-11 | | | 0B0BH | 11-11 | | | | |

Register code of function block of drive (as for the parameter description, please refer to drive user manual)

Command DATA (Readable and Writable)

| Register | Content | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------|---|---------------------------|-------------|---------|---|---|-------------------|-----|------|---|-----------------|---------|---------|---|----------------|-------------|--|---|-------------|-------|--|---|-------------|-----|--|---|---------------------|-------------|--|---|---------------------------|----|-----|---|---------------------------|----|-----|---|---------------------------|----|-----|---|---------------------------|----|-----|---|---------------------------|----|-----|---|----------|--|--|---|----------|----|-----|---|----------|--|--|-----|----------|--|--|
| 2501H | Operation signal | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th>Bit</th> <th>Meaning</th> <th>1</th> <th>0</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Operation Command</td> <td>Run</td> <td>Stop</td> </tr> <tr> <td>1</td> <td>Reverse Command</td> <td>Reverse</td> <td>Forward</td> </tr> <tr> <td>2</td> <td>External Fault</td> <td>Fault (EFO)</td> <td></td> </tr> <tr> <td>3</td> <td>Fault Reset</td> <td>Reset</td> <td></td> </tr> <tr> <td>4</td> <td>Jog Command</td> <td>Jog</td> <td></td> </tr> <tr> <td>5</td> <td>Jog Reverse Command</td> <td>Jog reverse</td> <td></td> </tr> <tr> <td>6</td> <td>Multi function Command S1</td> <td>ON</td> <td>OFF</td> </tr> <tr> <td>7</td> <td>Multi function Command S2</td> <td>ON</td> <td>OFF</td> </tr> <tr> <td>8</td> <td>Multi function Command S3</td> <td>ON</td> <td>OFF</td> </tr> <tr> <td>9</td> <td>Multi function Command S4</td> <td>ON</td> <td>OFF</td> </tr> <tr> <td>A</td> <td>Multi function Command S5</td> <td>ON</td> <td>OFF</td> </tr> <tr> <td>B</td> <td>(unused)</td> <td></td> <td></td> </tr> <tr> <td>C</td> <td>Relay R1</td> <td>ON</td> <td>OFF</td> </tr> <tr> <td>D</td> <td>(unused)</td> <td></td> <td></td> </tr> <tr> <td>E~F</td> <td>(unused)</td> <td></td> <td></td> </tr> </tbody> </table> | Bit | Meaning | 1 | 0 | 0 | Operation Command | Run | Stop | 1 | Reverse Command | Reverse | Forward | 2 | External Fault | Fault (EFO) | | 3 | Fault Reset | Reset | | 4 | Jog Command | Jog | | 5 | Jog Reverse Command | Jog reverse | | 6 | Multi function Command S1 | ON | OFF | 7 | Multi function Command S2 | ON | OFF | 8 | Multi function Command S3 | ON | OFF | 9 | Multi function Command S4 | ON | OFF | A | Multi function Command S5 | ON | OFF | B | (unused) | | | C | Relay R1 | ON | OFF | D | (unused) | | | E~F | (unused) | | |
| | Bit | Meaning | 1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0 | Operation Command | Run | Stop | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1 | Reverse Command | Reverse | Forward | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2 | External Fault | Fault (EFO) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | Fault Reset | Reset | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4 | Jog Command | Jog | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 5 | Jog Reverse Command | Jog reverse | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 6 | Multi function Command S1 | ON | OFF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 7 | Multi function Command S2 | ON | OFF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 8 | Multi function Command S3 | ON | OFF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 9 | Multi function Command S4 | ON | OFF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | A | Multi function Command S5 | ON | OFF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B | (unused) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C | Relay R1 | ON | OFF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D | (unused) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| E~F | (unused) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2502H | Frequency Command | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2503H ~ 251FH | (unused) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Note: The unused Bit is defined as 0, the spare register is not available for writing Data.

Supervision Data (Only for reading)

| Register | Content | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------|---|---|----------|--|---------|----|------------------------|-----|---|----|---------------------------|---------|------------------------------|----|----------------------------------|-------|----------|----|----------------------|----------|---------------------------------------|----|---------------------|-------|--|-----|----------|----|---|----|-------------------|----|----------------------|----|--------------------------|----|-------------------------------|----|-----------------------------------|----|---------------------------------------|----|-----------------------|----|-------------------------------|----|----------------------------|----|--------------------------------|----|------------------------------|----|--------------------------------|----|----------------------------|----|---|----|-----------------------|----|------------------------------|----|--------------------------|----|--------------------------------|----|------------------------|----|------------------------------|----|-------------------------|----|----------|----|----------|----|----------|----|---|----|--------|----|---|----|--------|----|------------------------------|--|--|
| 2520H | <table border="1"> <thead> <tr> <th>Bit</th> <th>Meaning</th> <th>1</th> <th>0</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Operation State</td> <td>Run</td> <td>Stop</td> </tr> <tr> <td>1</td> <td>Direction State</td> <td>Reverse</td> <td>Forward</td> </tr> <tr> <td>2</td> <td>Inverter operation prepare state</td> <td>ready</td> <td>unready</td> </tr> <tr> <td>3</td> <td>Abnormal</td> <td>Abnormal</td> <td>normal</td> </tr> <tr> <td>4</td> <td>Data setting error</td> <td>Error</td> <td>No error</td> </tr> <tr> <td>5~F</td> <td>(unused)</td> <td></td> <td></td> </tr> </tbody> </table> | Bit | Meaning | 1 | 0 | 0 | Operation State | Run | Stop | 1 | Direction State | Reverse | Forward | 2 | Inverter operation prepare state | ready | unready | 3 | Abnormal | Abnormal | normal | 4 | Data setting error | Error | No error | 5~F | (unused) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Bit | Meaning | 1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0 | Operation State | Run | Stop | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1 | Direction State | Reverse | Forward | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2 | Inverter operation prepare state | ready | unready | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | Abnormal | Abnormal | normal | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4 | Data setting error | Error | No error | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5~F | (unused) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2521H | <p>Error content</p> <table border="1"> <thead> <tr> <th>Code</th> <th>Meaning</th> <th>Code</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>00</td> <td>The inverter is normal</td> <td>20</td> <td>Over current during decelerating (OC-D)</td> </tr> <tr> <td>01</td> <td>Inverter over heat (OH)</td> <td>21</td> <td>Over current at start (OC_S)</td> </tr> <tr> <td>02</td> <td>Over current at stop (OC)</td> <td>22</td> <td>(unused)</td> </tr> <tr> <td>03</td> <td>Under voltage (LV)</td> <td>23</td> <td>Under voltage during running (LV-C)</td> </tr> <tr> <td>04</td> <td>Over voltage (OV)</td> <td>24</td> <td>Over voltage at constant speed / decelerating (OV-C)</td> </tr> <tr> <td>05</td> <td>(unused)</td> <td>25</td> <td>Inverter over heat at constant speed (OH-C)</td> </tr> <tr> <td>06</td> <td>External BB(bb)</td> <td>26</td> <td>Run at 0 Hz (STP0)</td> </tr> <tr> <td>07</td> <td>CPU interrupted (CTER)</td> <td>27</td> <td>Direct start disable (STP1)</td> </tr> <tr> <td>08</td> <td>PID feedback signal loss (PDER)</td> <td>28</td> <td>Control panel emergency stop (STP2)</td> </tr> <tr> <td>09</td> <td>EEPROM abnormal (EPR)</td> <td>29</td> <td>Keypad operation error (Err1)</td> </tr> <tr> <td>10</td> <td>Auto testing error(ATER)</td> <td>30</td> <td>Parameter setting error (Err2)</td> </tr> <tr> <td>11</td> <td>Over torque detected (OL3)</td> <td>31</td> <td>Analog converting error (Err4)</td> </tr> <tr> <td>12</td> <td>Inverter over load (OL2)</td> <td>32</td> <td>Modifying the parameter in communication (Err5)</td> </tr> <tr> <td>13</td> <td>Motor over load (OL1)</td> <td>33</td> <td>Communication failure (Err6)</td> </tr> <tr> <td>14</td> <td>Communication error(EFO)</td> <td>34</td> <td>Parameter setting error (Err7)</td> </tr> <tr> <td>15</td> <td>Emergency stop (E.S)</td> <td>35</td> <td>Default setting error (Err8)</td> </tr> <tr> <td>16</td> <td>Parameter locked(LOC)</td> <td>36</td> <td>(unused)</td> </tr> <tr> <td>17</td> <td>(Unused)</td> <td>37</td> <td>(unused)</td> </tr> <tr> <td>18</td> <td>Over current at constant speed (OC-C)</td> <td>38</td> <td>(EPR1)</td> </tr> <tr> <td>19</td> <td>Over current during accelerating (OC-A)</td> <td>39</td> <td>(EPR2)</td> </tr> <tr> <td>40</td> <td>Inverter over speed (OVSP)</td> <td></td> <td></td> </tr> </tbody> </table> | Code | Meaning | Code | Meaning | 00 | The inverter is normal | 20 | Over current during decelerating (OC-D) | 01 | Inverter over heat (OH) | 21 | Over current at start (OC_S) | 02 | Over current at stop (OC) | 22 | (unused) | 03 | Under voltage (LV) | 23 | Under voltage during running (LV-C) | 04 | Over voltage (OV) | 24 | Over voltage at constant speed / decelerating (OV-C) | 05 | (unused) | 25 | Inverter over heat at constant speed (OH-C) | 06 | External BB(bb) | 26 | Run at 0 Hz (STP0) | 07 | CPU interrupted (CTER) | 27 | Direct start disable (STP1) | 08 | PID feedback signal loss (PDER) | 28 | Control panel emergency stop (STP2) | 09 | EEPROM abnormal (EPR) | 29 | Keypad operation error (Err1) | 10 | Auto testing error(ATER) | 30 | Parameter setting error (Err2) | 11 | Over torque detected (OL3) | 31 | Analog converting error (Err4) | 12 | Inverter over load (OL2) | 32 | Modifying the parameter in communication (Err5) | 13 | Motor over load (OL1) | 33 | Communication failure (Err6) | 14 | Communication error(EFO) | 34 | Parameter setting error (Err7) | 15 | Emergency stop (E.S) | 35 | Default setting error (Err8) | 16 | Parameter locked(LOC) | 36 | (unused) | 17 | (Unused) | 37 | (unused) | 18 | Over current at constant speed (OC-C) | 38 | (EPR1) | 19 | Over current during accelerating (OC-A) | 39 | (EPR2) | 40 | Inverter over speed (OVSP) | | |
| | Code | Meaning | Code | Meaning | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | The inverter is normal | 20 | Over current during decelerating (OC-D) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 01 | Inverter over heat (OH) | 21 | Over current at start (OC_S) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 02 | Over current at stop (OC) | 22 | (unused) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 03 | Under voltage (LV) | 23 | Under voltage during running (LV-C) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 04 | Over voltage (OV) | 24 | Over voltage at constant speed / decelerating (OV-C) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 05 | (unused) | 25 | Inverter over heat at constant speed (OH-C) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 06 | External BB(bb) | 26 | Run at 0 Hz (STP0) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 07 | CPU interrupted (CTER) | 27 | Direct start disable (STP1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 08 | PID feedback signal loss (PDER) | 28 | Control panel emergency stop (STP2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 09 | EEPROM abnormal (EPR) | 29 | Keypad operation error (Err1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 10 | Auto testing error(ATER) | 30 | Parameter setting error (Err2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 11 | Over torque detected (OL3) | 31 | Analog converting error (Err4) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 12 | Inverter over load (OL2) | 32 | Modifying the parameter in communication (Err5) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 13 | Motor over load (OL1) | 33 | Communication failure (Err6) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 14 | Communication error(EFO) | 34 | Parameter setting error (Err7) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 15 | Emergency stop (E.S) | 35 | Default setting error (Err8) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 16 | Parameter locked(LOC) | 36 | (unused) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 17 | (Unused) | 37 | (unused) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 18 | Over current at constant speed (OC-C) | 38 | (EPR1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19 | Over current during accelerating (OC-A) | 39 | (EPR2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | Inverter over speed (OVSP) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Note: The unused Bit is defined as 0.

Supervision Data (Only for reading)

| Register | Content | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------|---|----------|----------|----|-----|---------------------------|---|---------|----|-----|---|---------|----|-----|---|---------|----|-----|---|---------|----|-----|---|---------|----|-----|---|----------|--|--|---|----------|----|-----|--------------------|---|----------|--|--|-----|----------|--|--|
| 2522H | MFIT state | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th>Bit</th> <th>Meaning</th> <th>1</th> <th>0</th> </tr> </thead> <tbody> <tr> <td rowspan="7">Sequent input value</td> <td>0</td> <td>MFIT S1</td> <td>ON</td> <td>OFF</td> </tr> <tr> <td>1</td> <td>MFIT S2</td> <td>ON</td> <td>OFF</td> </tr> <tr> <td>2</td> <td>MFIT S3</td> <td>ON</td> <td>OFF</td> </tr> <tr> <td>3</td> <td>MFIT S4</td> <td>ON</td> <td>OFF</td> </tr> <tr> <td>4</td> <td>MFIT S5</td> <td>ON</td> <td>OFF</td> </tr> <tr> <td>5</td> <td>(unused)</td> <td></td> <td></td> </tr> <tr> <td>6</td> <td>Relay R1</td> <td>ON</td> <td>OFF</td> </tr> <tr> <td rowspan="2">Terminal output</td> <td>7</td> <td>(unused)</td> <td></td> <td></td> </tr> <tr> <td>9~F</td> <td>(unused)</td> <td></td> <td></td> </tr> </tbody> </table> | Bit | Meaning | 1 | 0 | Sequent input value | 0 | MFIT S1 | ON | OFF | 1 | MFIT S2 | ON | OFF | 2 | MFIT S3 | ON | OFF | 3 | MFIT S4 | ON | OFF | 4 | MFIT S5 | ON | OFF | 5 | (unused) | | | 6 | Relay R1 | ON | OFF | Terminal output | 7 | (unused) | | | 9~F | (unused) | | |
| | Bit | Meaning | 1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Sequent input value | 0 | MFIT S1 | ON | OFF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1 | MFIT S2 | ON | OFF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 2 | MFIT S3 | ON | OFF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 3 | MFIT S4 | ON | OFF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 4 | MFIT S5 | ON | OFF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 5 | (unused) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 6 | Relay R1 | ON | OFF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Terminal output | 7 | (unused) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 9~F | (unused) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2523H | Frequency command | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2524H | Frequency output | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2525H | Voltage command (10/1V) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2526H | DC voltage command (1/1V) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2527H | Current output (10/1A) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2528H | Reserved | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2529H | Reserved | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 252AH | PID Feedback value (100% / Max output frequency, 10/1%) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 252BH | PID input value (100% / Max output frequency, 10/1% , sign attached) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 252CH | TM2 AIN input value (1001 / 10V) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 252DH | TM2 AV2 input value (1001 / 10V) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 252EH | Ready-to-use | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 252FH | Ready-to-use | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |