



JN5-CM-PDP
Profibus-DP for A510
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.

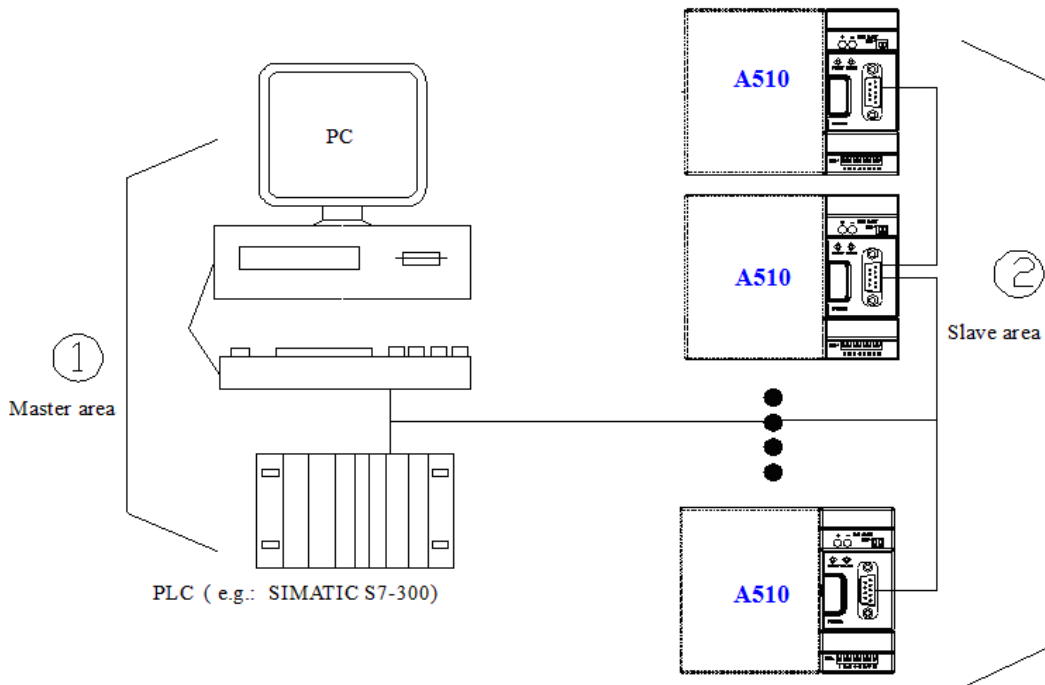
JN5-CM-PDP module can be connected with different type base units when selecting different GSD file.

JN5-CM-PDP for A510 module: selecting **TECO_A51.GSD** file, connected with A510 series drive.

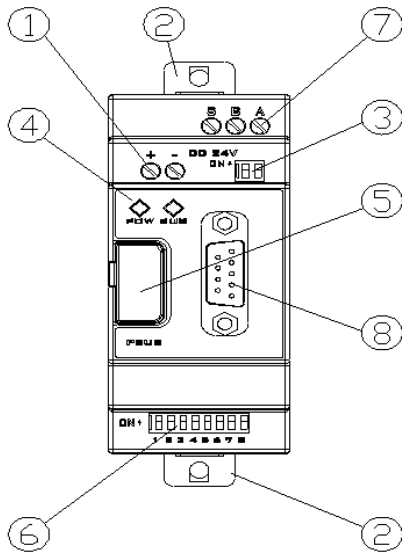
A510 drive with PROFIBUS-DP gateway PBUS module always operates as network slaver.

1.1 System Overview

JN5-CM-PDP modules connect with A510 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 [A510](#))
- 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_A51.GSD](#)’ file via network configuration tools. More function describe refer to ‘[chapter-3 Communication](#)’.

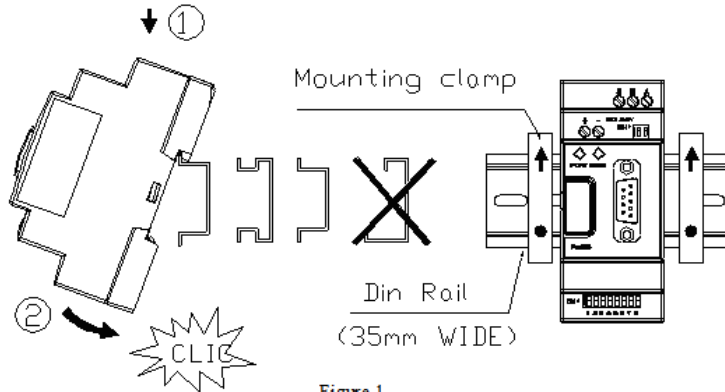
1. Cyclical process data exchange (PZD).
2. Parameter accessing: cyclical accessing of parameters (PKW).
3. PROFIBUS supports the control commands SYNC and FREEZE for data synchronization between master and slaves.
4. Support the configuration of data structure for data exchange with [A510](#) series.

2 Installation

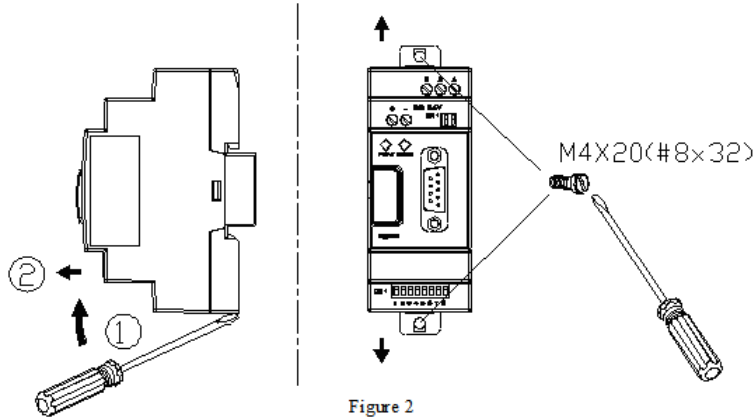
2.1 Installation and Dimension

● Installation

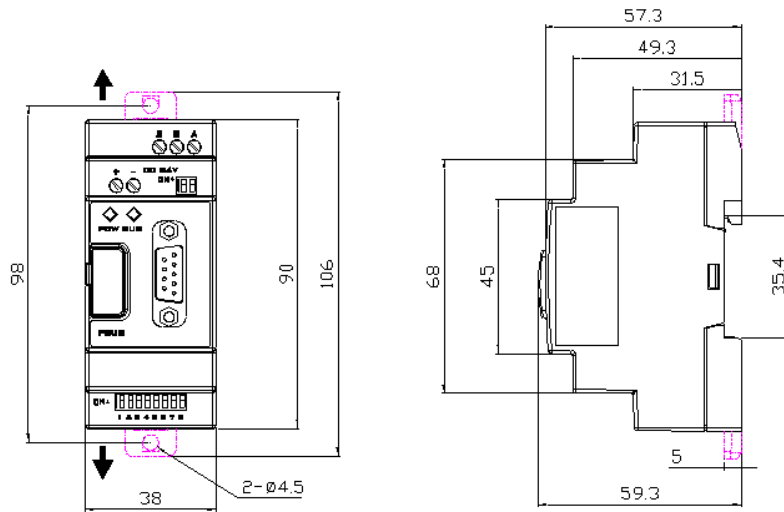
The JN5-CM-PDP module should always be mounted vertically. Press the slots on the back of the module onto the rail until the plastic clamps hold the rails in place.



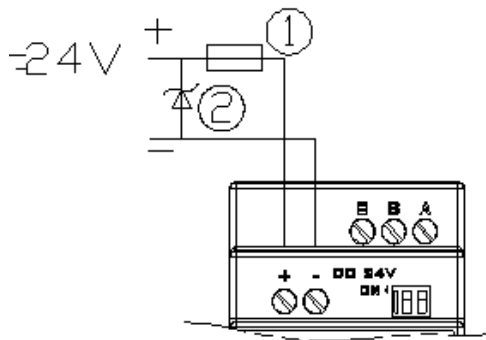
Use M4 screws to direct mount the PBUS module as shown Figure 2.



- 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

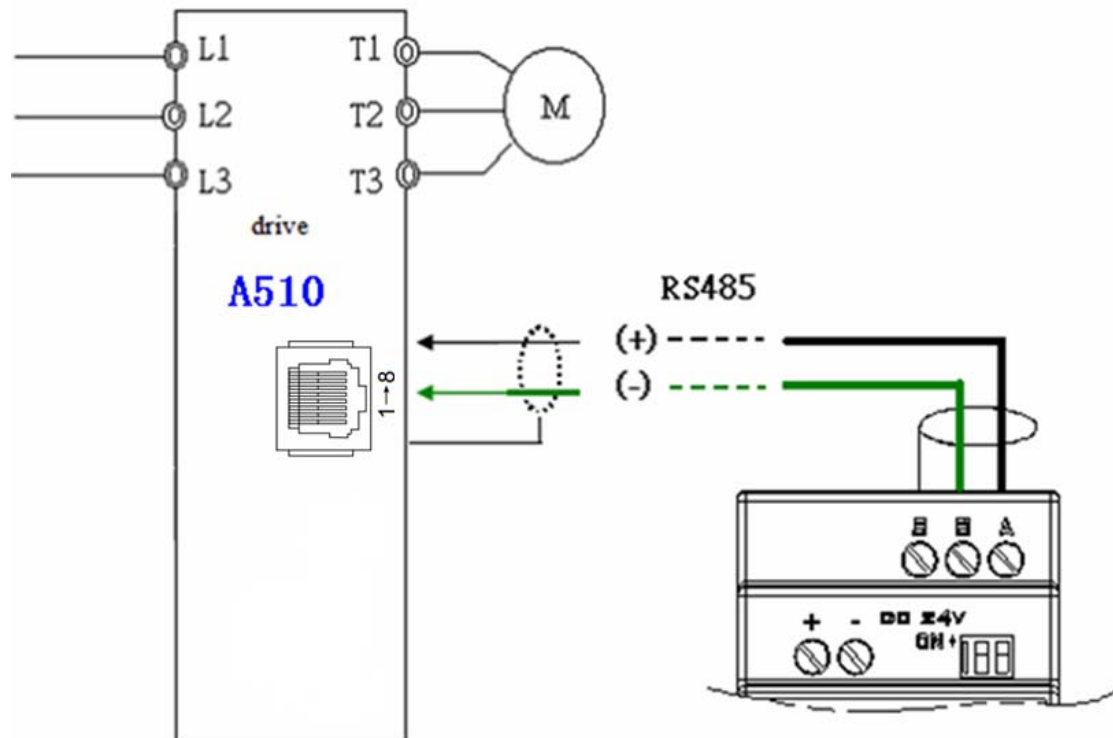
2.3 Connect with Base Unit and Setting Parameters

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	1
00-05	Frequency source	3: communication setting	1
09-00	Communication address	1: address=1	1
09-02	Serial Baud Rate	4: 19200bps	3
09-03	Stop Bit	0: 1stop bit	0
09-04	Parity Bit	0: no parity bit	0

More information for setting and wiring refer to see: [A510 User Manual](#).

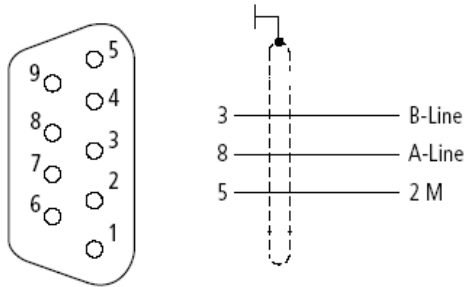


2.4 Connect with PROFIBUS-DP Bus

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

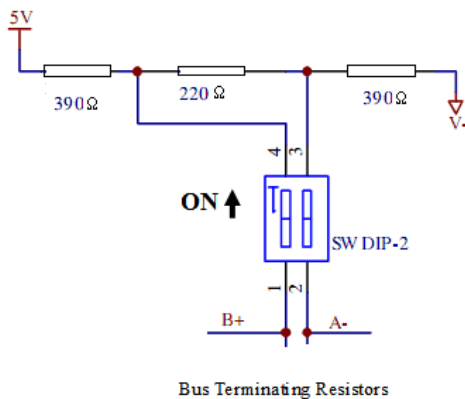
For this use the special PROFIBUS-DP plug and the special PROFIBUS-DP cable.

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

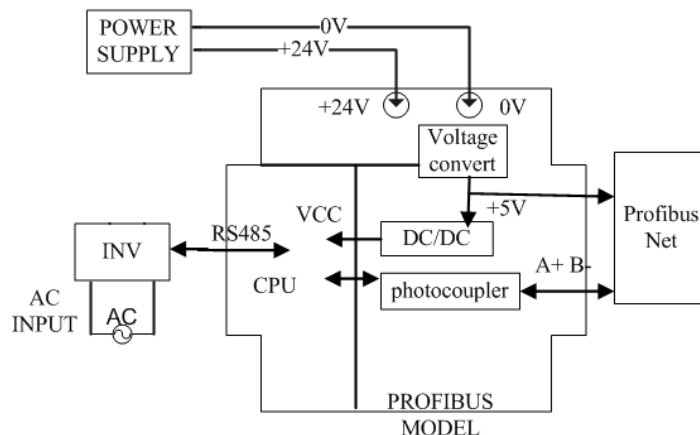


The first and last station in a bus segment must be connected to the bus with the bus terminating resistor switched on.

[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 A510 user 24V to connect JN5-CM-PDP input, otherwise JN5-CM-PDP is no islanded with A510.

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
□	□	□	□	□	□	□	□
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 [A510](#) 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 → A510 series drive

PZD3: Not used.

PZD4: Not used.

A510 series drive → PROFIBUS-DP master

A510 output status, mapping to MODBUS address 0x2520~0x252F of A510 series drive. The default settings of PZD3/PZD4 as follows:

PZD3: Default Multi-function terminal on/off status, mapping to MODBUS address 0x2522 of A510 series drive.

PZD4: Default output current, mapping to MODBUS address 0x2527 of A510 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 A510 series drive control and status words.

Control word (data from PROFIBUS-DP to A510 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	Reserved		
5	Reserved		
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	Multi function Command S6	ON	OFF
C	Multi function Command S7	ON	OFF
D	Multi function Command S8	ON	OFF
E	Drive mode	ON	OFF
F	Reserved		

Status word (data from A510 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	Fault	Abnormal	normal
4	Warning	ON	OFF
5	ZeroSpeed	ON	OFF
6	Is440V	ON	OFF
7	FreqAgree	ON	OFF
8	SetFreqAgree	ON	OFF
9	FreqDet1	ON	OFF
A	FreqDet2	ON	OFF
B	UnderVoltage	ON	OFF
C	InvNoOutput	ON	OFF
D	FreqNotFromComm	ON	OFF
E	SeqNotFromComm	ON	OFF
F	OverTorque	ON	OFF

.3.5 Accessing parameter via PKW area

In cyclical data, [JN5-CM-PDP](#) can provide request and response message to access the [A510](#) 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: A510 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 A510 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

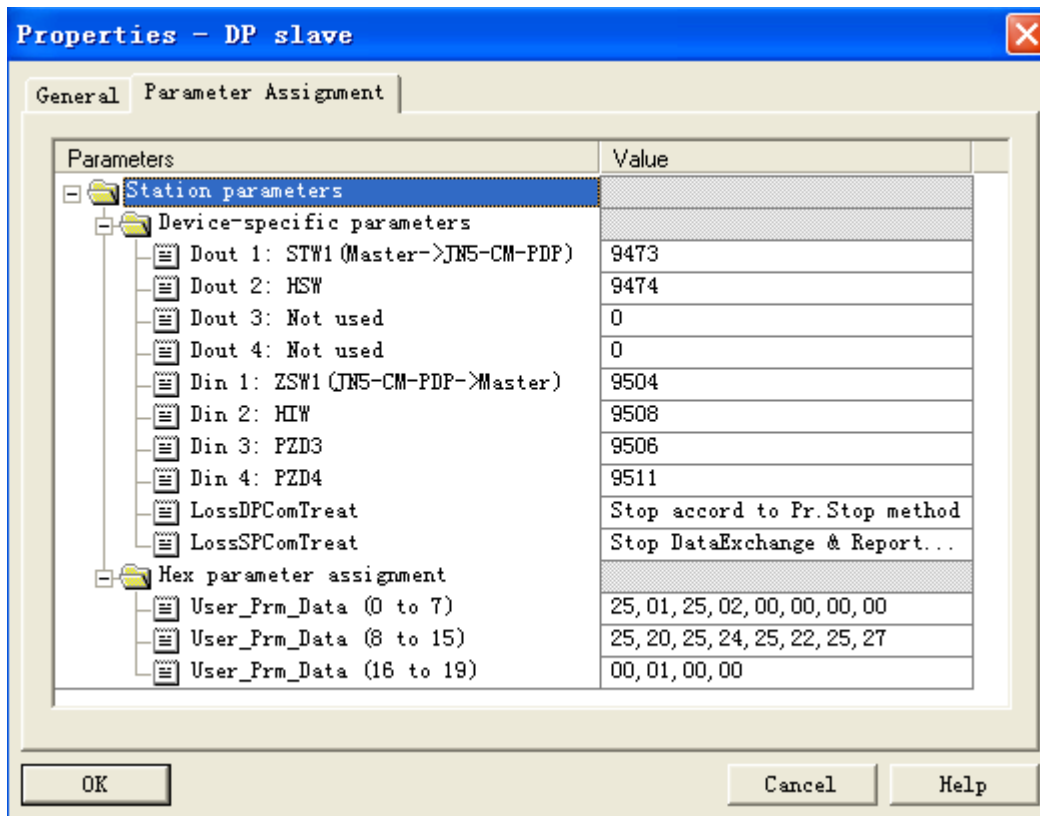
A GSD file is a text file used to identify PROFIBUS-DP device (master or slave), which contains the necessary data for the configuration of DP slaves within a standard DP master. Typical information in a GSD file are Vendor information, supported Baud rates, Timing information, supported Options/features 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 **A510** series drive [Appendix A: TECO_A51.GSD](#)
- Parameters for **A510** 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 0x252F. 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 0x252F. 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 ([A510](#)), the error code will be displayed on the digital keypad of drive.

Appendix

Appendix A: TECO_A51.GSD

```

=====
;
; GSD-File for A510 series drives Profibus DP
;
; Auto_Baud_supp, 6MBaud
;
; File      : TECO_A51.GSD
=====
#Profibus_DP
; Unit-Definition-List:

GSD_Revision      = 1
Vendor_Name       = "TECO Electric&Machinery Co.,Ltd"
Model_Name        = "A510 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    = "A510 DRV"
;Bitmap_Diag      = "A510 DRV"
;Bitmap_SF        = "A510 DRV"
Slave_Family      = 1@TECO@A510; 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

```

```

MaxTsd_9.6           = 60
MaxTsd_19.2          = 60
MaxTsd_93.75         = 60
MaxTsd_187.5         = 60
MaxTsd_500           = 100
MaxTsd_1.5M          = 150
MaxTsd_3M            = 250
MaxTsd_6M            = 450
;MaxTsd_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 9504-9519  
EndExtUserPrmData
```

```
ExtUserPrmData = 8 "Din 4: PZD4"  
Unsigned16 0x2527 9504-9519  
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 A510 Drives =====
```

Appendix B: A510 MODBUS address allocation

Register Code	Function Block	Register Code	Function Block	Register Code	Function Block	Register Code	Function Block	Register Code	Function Block
Group00		Group01		Group02		Group03		Group04	
0000H	00-00	0100H	01-00	0200H	2 – 00	0300H	03-00	0400H	04-00
0001H	00-01	0101H	01-01	0201H	2 – 01	0301H	03-01	0401H	04-01
0002H	00-02	0102H	01-02	0202H	2 – 02	0302H	03-02	0402H	04-02
0003H	00-03	0103H	01-03	0203H	2 – 03	0303H	03-03	0403H	04-03
0004H	00-04	0104H	01-04	0204H	2 – 04	0304H	03-04	0404H	04-04
0005H	00-05	0105H	01-05	0205H	2 – 05	0305H	03-05	0405H	04-05
0006H	00-06	0106H	01-06	0206H	2 – 06	0306H	03-06	0406H	04-06
0007H	00-07	0107H	01-07	0207H	2 – 07	0307H	03-07	0407H	04-07
0008H	00-08	0108H	01-08	0208H	2 – 08	0308H	03-08	0408H	04-08
0009H	00-09	0109H	01-09	0209H	2 – 09	0309H	03-09	0409H	04-09
000AH	00-10	010AH	01-10	020AH	2 – 10	030AH	03-10	040AH	04-10
000BH	00-11	010BH	01-11	020BH	2 – 11	030BH	03-11	040BH	04-11
000CH	00-12	010CH	01-12	020CH	2 – 12	030CH	03-12	040CH	04-12
000DH	00-13	010DH	01-13	020DH	2 – 13	030DH	03-13	040DH	04-13
000EH	00-14	010EH	01-14	020EH	2 – 14	030EH	03-14	040EH	04-14
000FH	00-15	010FH	01-15	020FH	2 – 15	030FH	03-15	040FH	04-15
0010H	00-16	0110H	01-16	0210H	2 – 16	0310H	03-16	0410H	04-16
0011H	00-17	0111H	01-17	0211H	2 – 17	0311H	03-17	0411H	04-17
0012H	00-18	0112H	01-18	0212H	2 – 18	0312H	03-18	0412H	04-18
0013H	00-19	0113H	01-19	0213H	2 – 19	0313H	03-19		
0014H	00-20	0114H	01-20	0214H	2 – 20	0314H	03-20		
0015H	00-21	0115H	01-21	0215H	2 – 21	0315H	03-21		
0016H	00-22	0116H	01-22	0216H	2 – 22	0316H	03-22		
0017H	00-23	0117H	01-23	0217H	2 – 23	0317H	03-23		
0018H	00-24	0118H	01-24	0218H	2 – 24	0318H	03-24		
0019H	00-25	0119H	01-25	0219H	2 – 25	0319H	03-25		
001AH	00-26			021AH	2 – 26	031AH	03-26		
001BH	00-27			021BH	2 – 27	031BH	03-27		
001CH	00-28			021CH	2 – 28	031CH	03-28		
001DH	00-29			021DH	2 – 29	031DH	03-29		
001EH	00-30			021EH	2 – 30	031EH	03-30		
001FH	00-31			021FH	2 – 31	031FH	03-31		
0020H	00-32			0220H	2 – 32	0320H	03-32		
				0221H	02-33	0321H	03-33		
				0222H	02-34	0322H	03-34		
				0223H	02-35	0323H	03-35		
				0224H	02-36	0324H	03-36		

Register Code	Function Block	Register Code	Function Block	Register Code	Function Block	Register Code	Function Block	Register Code	Function Block
						0325H	03-37		
						0326H	03-38		
Group05		Group05		Group06		Group06		Group07	
0500H	05-00	0518H	05-24	0600H	06-00	0619H	06-25	0700H	7-00
0501H	05-01	0519H	05-25	0601H	06-01	061AH	06-26	0701H	7-01
0502H	05-02	051AH	05-26	0602H	06-02	061BH	06-27	0702H	7-02
0503H	05-03	051BH	05-27	0603H	06-03	061CH	06-28	0703H	7-03
0504H	05-04	051CH	05-28	0604H	06-04	061DH	06-29	0704H	7-04
0505H	05-05	051DH	05-29	0605H	06-05	061EH	06-30	0705H	7-05
0506H	05-06	051EH	05-30	0606H	06-06	061FH	06-31	0706H	7-06
0507H	05-07	051FH	05-31	0607H	06-07	0620H	06-32	0707H	7-07
0508H	05-08	0520H	05-32	0608H	06-08	0621H	06-33	0708H	7-08
0509H	05-09	0521H	05-33	0609H	06-09	0622H	06-34	0709H	7-09
050AH	05-10	0522H	05-34	060AH	06-10	0623H	06-35	070AH	7-10
050BH	05-11	0523H	05-35	060BH	06-11	0624H	06-36	070BH	7-11
050CH	05-12	0524H	05-36	060CH	06-12	0625H	06-37	070CH	7-12
050DH	05-13	0525H	05-37	060DH	06-13	0626H	06-38	070DH	7-13
050EH	05-14	0526H	05-38	060EH	06-14	0627H	06-39	070EH	7-14
050FH	05-15	0527H	05-39	060FH	06-15	0628H	06-40	070FH	7-15
0510H	05-16	0528H	05-40	0610H	06-16	0629H	06-41	0710H	7-16
0511H	05-17	0529H	05-41	0611H	06-17	062AH	06-42	0711H	7-17
0512H	05-18	052AH	05-42	0612H	06-18	062BH	06-43	0712H	7-18
0513H	05-19	052BH	05-43	0613H	06-19	062CH	06-44	0713H	7-19
0514H	05-20	052CH	05-44	0614H	06-20	062DH	06-45	0714H	7-20
0515H	05-21	052DH	05-45	0615H	06-21	062EH	06-46	0715H	7-21
0516H	05-22	052EH	05-46	0616H	06-22	062FH	06-47	0716H	7-22
0517H	05-23	052FH	05-47	0617H	06-23			0717H	7-23
		0530H	05-48	0618H	06-24			0718H	7-24
Group08		Group09		Group10		Group11		Group11	
0800H	8-00	0900H	9-00	0A00H	10-00	0B00H	11-00	0B1EH	11-30
0801H	8-01	0901H	9-01	0A01H	10-01	0B01H	11-01	0B1FH	11-31
0802H	8-02	0902H	9-02	0A02H	10-02	0B02H	11-02	0B20H	11-32
0803H	8-03	0903H	9-03	0A03H	10-03	0B03H	11-03	0B21H	11-33
0804H	8-04	0904H	9-04	0A04H	10-04	0B04H	11-04	0B22H	11-34
0805H	8-05	0905H	9-05	0A05H	10-05	0B05H	11-05	0B23H	11-35
0806H	8-06	0906H	9-06	0A06H	10-06	0B06H	11-06	0B24H	11-36
0807H	8-07	0907H	9-07	0A07H	10-07	0B07H	11-07	0B25H	11-37
0808H	8-08	0908H	9-08	0A08H	10-08	0B08H	11-08	0B26H	11-38
0809H	8-09	0909H	9-09	0A09H	10-09	0B09H	11-09	0B27H	11-39
080AH	8-10	0900H	9-00	0A0AH	10-10	0B0AH	11-10	0B28H	11-40
080BH	8-11	0901H	9-01	0A0BH	10-11	0B0BH	11-11	0B29H	11-41

Register Code	Function Block	Register Code	Function Block	Register Code	Function Block	Register Code	Function Block	Register Code	Function Block
080CH	8 - 12	0902H	9 - 02	0A0CH	10 - 12	0B0CH	11 - 12	0B2AH	11 - 42
080DH	8 - 13	0903H	9 - 03	0A0DH	10 - 13	0B0DH	11 - 13	0B2BH	11 - 43
080EH	8 - 14	0904H	9 - 04	0A0EH	10 - 14	0B0EH	11 - 14	0B2CH	11 - 44
080FH	8 - 15	0905H	9 - 05	0A0FH	10 - 15	0B0FH	11 - 15	0B2DH	11 - 45
0810H	8 - 16	0906H	9 - 06	0A10H	10 - 16	0B10H	11 - 16	0B2EH	11 - 46
0811H	8 - 17	0907H	9 - 07	0A11H	10 - 17	0B11H	11 - 17	0B2FH	11 - 47
0812H	8 - 18	0908H	9 - 08	0A12H	10 - 18	0B12H	11 - 18	0B30H	11 - 48
0813H	8 - 19			0A13H	10 - 19	0B13H	11 - 19	0B31H	11 - 49
0814H	8 - 20			0A14H	10 - 20	0B14H	11 - 20	0B32H	11 - 50
0815H	8 - 21			0A15H	10 - 21	0B15H	11 - 21	0B33H	11 - 51
0816H	8 - 22			0A16H	10 - 22	0B16H	11 - 22	0B34H	11 - 52
0817H	8 - 23			0A17H	10 - 23	0B17H	11 - 23	0B35H	11 - 53
0818H	8 - 24			0A18H	10 - 24	0B18H	11 - 24	0B36H	11 - 54
0819H	8 - 25			0A19H	10 - 25	0B19H	11 - 25	0B37H	11 - 55
081AH	8 - 26			0A1AH	10 - 26	0B1AH	11 - 26	0B38H	11 - 56
081BH	8 - 27			0A1BH	10 - 27	0B1BH	11 - 27	0B39H	11 - 57
081CH	8 - 28			0A1CH	10 - 28	0B1CH	11 - 28	0B3AH	11 - 58
081DH	8 - 29			0A1DH	10 - 29	0B1DH	11 - 29		
081EH	8 - 30								
Group12		Group12		Group13		Group14		Group15	
0C00H	12 - 00	0C21H	12 - 33	0D00H	13 - 00	0E00H	14 - 00	0F04H	15 - 04
0C01H	12 - 01	0C22H	12 - 34	0D01H	13 - 01	0E01H	14 - 01	0F05H	15 - 05
0C02H	12 - 02	0C23H	12 - 35	0D02H	13 - 02	0E02H	14 - 02	0F06H	15 - 06
0C03H	12 - 03	0C24H	12 - 36	0D03H	13 - 03	0E03H	14 - 03	0F07H	15 - 07
0C04H	12 - 04	0C25H	12 - 37	0D04H	13 - 04	0E04H	14 - 04	0F08H	15 - 08
0C05H	12 - 05	0C26H	12 - 38	0D05H	13 - 05	0E05H	14 - 05	0F09H	15 - 09
0C06H	12 - 06	0C27H	12 - 39	0D06H	13 - 06	0E06H	14 - 06	0F0AH	15 - 10
0C07H	12 - 07	0C28H	12 - 40	0D07H	13 - 07	0E07H	14 - 07	0F0BH	15 - 11
0C08H	12 - 08	0C29H	12 - 41	0D08H	13 - 08	0E08H	14 - 08	0F0CH	15 - 12
0C09H	12 - 09	0C2AH	12 - 42	0D0AH	13 - 10	0E09H	14 - 09		
0C0AH	12 - 10	0C2BH	12 - 43			0E0AH	14 - 10		
0C0BH	12 - 11	0C2CH	12 - 44			0E0BH	14 - 11		
0C0CH	12 - 12	0C2DH	12 - 45			0E0CH	14 - 12		
0C0DH	12 - 13	0C2EH	12 - 46	Group16		Group17		Group18	
0C0EH	12 - 14	0C2FH	12 - 47	1000H	16 - 00	1100H	17 - 00	1200H	18 - 00
0C0FH	12 - 15	0C30H	12 - 48	1001H	16 - 01	1101H	17 - 01	1201H	18 - 01
0C10H	12 - 16	0C31H	12 - 49	1002H	16 - 02	1102H	17 - 02	1202H	18 - 02
0C11H	12 - 17	0C32H	12 - 50	1003H	16 - 03	1103H	17 - 03	1203H	18 - 03
0C12H	12 - 18	0C33H	12 - 51	1004H	16 - 04	1104H	17 - 04	1204H	18 - 04
0C13H	12 - 19	0C34H	12 - 52	1005H	16 - 05	1105H	17 - 05	1205H	18 - 05
0C14H	12 - 20	0C35H	12 - 53	1006H	16 - 06	1106H	17 - 06		

Register Code	Function Block	Register Code	Function Block	Register Code	Function Block	Register Code	Function Block	Register Code	Function Block
0C15H	12 – 21	0C36H	12 – 54	1007H	16– 07	1107H	17 – 07		
0C16H	12 – 22	0C37H	12 – 55	1008H	16 – 08	1108H	17 – 08		
0C17H	12 – 23	0C38H	12 – 56			1109H	17– 09		
0C18H	12 – 24	0C39H	12 – 57			110AH	17 – 10		
0C19H	12 – 25	0C3AH	12 – 58						
0C1AH	12 – 26	0C3BH	12 – 59						
0C1BH	12 – 27	0C3CH	12 – 60						
0C1CH	12 – 28	0C3DH	12 – 61						
0C1DH	12 – 29	0C3EH	12 – 62						
0C1EH	12 – 30	0C3FH	12 – 63						
0C1FH	12 – 31	0C40H	12 – 64						
0C20H	12 - 32								
Group19		Group20		Group20		Group21		Group22	
1300H	19– 00	1400H	20– 00	1410H	20 – 16	1500H	21– 00	1600H	22 – 00
1301H	19 – 01	1401H	20 – 01	1411H	20 – 17	1501H	21 – 01	1601H	22 – 01
1302H	19 – 02	1402H	20 – 02	1412H	20 – 18	1502H	21 – 02	1602H	22 – 02
1303H	19 – 03	1403H	20 – 03	1413H	20 – 19	1503H	21 – 03	1603H	22 – 03
1304H	19 – 04	1404H	20 – 04	1414H	20 – 20	1504H	21 – 04	1604H	22 – 04
1305H	19 – 05	1405H	20 – 05	1415H	20 – 21	1505H	21 – 05	1605H	22 – 05
1306H	19 – 06	1406H	20 – 06	1416H	20 – 22	1506H	21 – 06	1606H	22 – 06
1307H	19– 07	1407H	20 – 07	1417H	20 – 23	1507H	21 – 07	1607H	22 – 07
		1408H	20 – 08	1418H	20 – 24	1508H	21 – 08	1608H	22 – 08
		1409H	20 – 09	1419H	20 – 25			1609H	22 – 09
		140AH	20 – 10	141AH	20 – 26			160AH	22 – 10
		140BH	20 – 11	141BH	20 – 27			160BH	22 – 11
		140CH	20 – 12	141CH	20 – 28			160CH	22 – 12
		140DH	20 – 13	141DH	20 – 29				
		140EH	20 – 14	141EH	20 – 30				
		140FH	20 – 15	141FH	20 – 31				

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>Reserved</td> <td></td> <td></td> </tr> <tr> <td>5</td> <td>Reserved</td> <td></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>Multi function Command S6</td> <td>ON</td> <td>OFF</td> </tr> <tr> <td>C</td> <td>Multi-function Comm S7</td> <td>ON</td> <td>OFF</td> </tr> <tr> <td>D</td> <td>Multi-function Comm S8</td> <td>ON</td> <td>OFF</td> </tr> <tr> <td>E</td> <td>drive mode</td> <td>ON</td> <td></td> </tr> <tr> <td>F</td> <td>Reserved</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	Reserved			5	Reserved			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	Multi function Command S6	ON	OFF	C	Multi-function Comm S7	ON	OFF	D	Multi-function Comm S8	ON	OFF	E	drive mode	ON		F	Reserved		
	Bit	Meaning	1	0																																																																	
	0	Operation Command	Run	Stop																																																																	
	1	Reverse Command	Reverse	Forward																																																																	
	2	External Fault	Fault (EFO)																																																																		
	3	Fault Reset	Reset																																																																		
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	6	Multi function Command S1	ON	OFF																																																																	
	7	Multi function Command S2	ON	OFF																																																																	
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	B	Multi function Command S6	ON	OFF																																																																	
	C	Multi-function Comm S7	ON	OFF																																																																	
D	Multi-function Comm S8	ON	OFF																																																																		
E	drive mode	ON																																																																			
F	Reserved																																																																				
2502H	Frequency Command																																																																				
2503H	Reserved																																																																				
2504H	Reserved																																																																				
2505H	AO1																																																																				
2506H	AO2																																																																				
2507H	DO																																																																				
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250AH	Reserved																																																																				
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250DH	Reserved																																																																				
250EH	Reserved																																																																				
250FH	Reserved																																																																				
251FH																																																																					

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	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	ZeroSpeed	ON	
	6	Is440V	ON	
	7	FreqAgree	ON	
	8	SetFreqAgree	ON	
	9	FreqDet1	ON	
	A	FreqDet2	ON	
	B	UnderVoltage	ON	
	C	InvNoOutput	ON	
	D	FreqNotFromComm	ON	
	E	SeqNotFromComm	ON	
	F	OverTorque	ON	
2521H	Error content			
	Code	Meaning	Code	Meaning
	0		31	Under Torque 1
	1	UV	32	Under Torque 2
	2	OC	33	CF02
	3	OV	34	CF03
	4	OH1	35	CF04
	5	OL1	36	CF05
	6	OL2	37	CF06
	7	OH4	38	CF07
	8	OH5	39	CF08
	9	SC	40	CF09
	10	Ground OC	41	CF10
	11	Fuse broken	42	CF11
	12	Input Phase Loss	43	CF12
	13	Output Phase Loss	44	CF13
	14	PG Overspeed	45	CF14
	15	PG Open	46	CF15
	16	PG Speed Deviation	47	CF16
	17	External Fault 01	48	CF17
18	External Fault 02	49	FeedbackFeedback Fault Fault	

19	External Fault 03	50	KeyKeypad Removedved
20	External Fault 04	51	OH
21	External Fault 05	52	OH3
22	External Fault 06	53	Modbus External Fault
23	External Fault 07	54	Braking Transistor Fault
24	External Fault 08	55	Braking Resistor Overheat
25	External Fault 09	56	CE
26	External Fault 10	57	
27	External Fault 11	58	
28	External Fault 12	59	
29	Over Torque 1	60	
30	Over Torque 2	61	

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>Terminal S1</td> <td>ON</td> <td>OFF</td> </tr> <tr> <td>1</td> <td>Terminal S2</td> <td>ON</td> <td>OFF</td> </tr> <tr> <td>2</td> <td>Terminal S3</td> <td>ON</td> <td>OFF</td> </tr> <tr> <td>3</td> <td>Terminal S4</td> <td>ON</td> <td>OFF</td> </tr> <tr> <td>4</td> <td>Terminal S5</td> <td>ON</td> <td>OFF</td> </tr> <tr> <td>5</td> <td>Terminal S6</td> <td>ON</td> <td>OFF</td> </tr> <tr> <td>6</td> <td>Terminal S7</td> <td>ON</td> <td>OFF</td> </tr> <tr> <td rowspan="2">Terminal output</td> <td>7</td> <td>Terminal S8</td> <td>ON</td> <td>OFF</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	Terminal S1	ON	OFF	1	Terminal S2	ON	OFF	2	Terminal S3	ON	OFF	3	Terminal S4	ON	OFF	4	Terminal S5	ON	OFF	5	Terminal S6	ON	OFF	6	Terminal S7	ON	OFF	Terminal output	7	Terminal S8	ON	OFF	9~F	(unused)		
	Bit	Meaning	1	0																																							
	Sequent input value	0	Terminal S1	ON	OFF																																						
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2523H	Frequency command																																										
2524H	Frequency output																																										
2525H	Reserved																																										
2526H	DC voltage command (1/1V)																																										
2527H	Current output (10/1A)																																										
2528H	warning																																										
2529H	DO State																																										
252AH	Reserved																																										
252BH	Reserved																																										
252CH	AI 1 Input																																										
252DH	AI 2 Input																																										
252EH	Software Version(預定新增)																																										
252FH	A510/L510/E510 Check(預定新增)																																										