

SI-M Communication Option Card Application Manual

TECO ELEC.& MACH.CO.,LTD.

Version: 01

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Key Words

• Full Duplex, Half Duplex

According to the direction of information transmission, serial communication includes Full Duplex and Half Duplex.

1. Full Duplex: Data is received and transmitted on different lines. Both sides can receive and send the message at the same time.



2. Half Duplex: Data is received and transmitted on one line. Both sides can't receive/send the message at the same time.



- Point-to-point, Point-to-multiple and Multiple-to-multiple
 - 1. Point-to-point: There are only one sender and one receiver on the transmission line.
 - 2. Point-to-multiple: There are one sender and many receivers on the transmission line.
 - 3. Multiple-to-multiple: There are many senders and receivers on the transmission line.

Serial Transmission Speed

A bit per second is used to express the speed of the serial transmission.

Format of the Serial Transmission



1. General

SI-M interface card is used to communicate PLC with the inverter, using PLC as master and 7200GS as slave.

2. Communication Criterion

1. SI-M interface card can use RS-232, RS-422 or RS-485 communication interface.

	RS-232	RS-422	RS-485	
Status	Point-to-point, Full Duplex	Point-to-multiple, Full Duplex	Multiple-to-multiple, Half Duplex	
Transmissio n Distance	15m	1200m	1200m	
Positive and Negative Voltage Signal Signal 1: -3~ -15V Signal 0: +3~ +15V		Voltage differential Signal 1: Voltage of positive is higher than that of negative Signal 0: Voltage of negative is higher than that of positive		

			_ ·	
RS-232	RS-422	and RS-185	Comparison	Tahla
10-202,	110-422		Companson	Table

- 2. Modbus RTU mode
- 3. Communication Mode
 - 1. Baud rate: 2400/ 4800/ 9600bps (set by SI-M interface card)
 - 2. Parity check: No Parity Check
 - 3. Stop bit: 2 bits
 - 4. Data length: 8 bits

3. Connection

1. RS-232 line:



2. RS-422 line:



2. RS-485 line:



4. DIP Switches and LED instruction

1. Switch1 (S1) Instruction

Bit	Status	Content
1 2 3 4 5	2 ⁰ 2 ¹ 2 ² 2 ³ 2 ⁴	Station address is exclusive, range from 01 to 31, it can connect 31 transceivers
6	_	-
7	OFF	Keep the error in the Inverter
1	ON	Delete the error when resetting
8	_	_

2. Switch2 (S2) Instruction

Bit	Status	Content			
1	Baud rate	First bit	Second bit	Baud rate	Time-out
		OFF	OFF	2400bps	2s
		OFF	ON	4800bps	2s
2		ON	OFF	9600bps	2s
3	OFF	Controlled by RTS (RS-422/485)			
0	ON	No RTS (RS-232)			
4	OFF	Reserved (please set it OFF)			

3. Switch3, Switch5 (S3, S5) Instruction

S3 status	S5 status	Content
ON	ON	RS-485 line
OFF	OFF	RS-422 line

4. Switch4 (S4) Instruction

Status	Content
ON	Terminal resistance is used
OFF	Terminal resistance is not used

5. LED instruction

O ER light Communication Error: ER LED ON Communication OK: ER LED OFF

5. Inverter Parameters about Communication

1. Select the operating command of inverter

$Sn-08 = \times \times 0 \times$ $Sn-04 = \times \times \times \times$	GS inverter operates according to the command from PLC.
$Sn-08 = \times \times 1 \times Sn-04 = \times \times 0 \times$	GS inverter operates according to the command from circuit terminal
$Sn-08 = \times \times 1 \times$ $Sn-04 = \times \times 1 \times$	GS inverter operates according to the command from digital operator.

2. Select the frequency command

$Sn-08 = \times \times \times 0$ $Sn-04 = \times \times \times \times$	The frequency command is from PLC.
$Sn-08 = \times \times \times 1$ Sn-04 = × × × 0	The frequency command is from control terminal 13 and 14 of inverter
$Sn-08 = \times \times \times 1$ $Sn-04 = \times \times \times 1$	An-01 is the frequency command.

3. Waiting for Communication

If the RUN/STOP or frequency command comes from PLC and there is no communication, the digital operator of inverter displays "Comm. Stand by" and flashes. It will flash until SI-M option card receives data from PLC.

4. Operation of communication error

Sn-08= 0 0 × ×	The digital operator displays fault message and the inverter decelerates to stop according to Bn-02.
Sn-08= 0 1 ××	The digital operator displays fault message and the inverter coasts to stop.
Sn-08= 1 0 × ×	The digital operator displays fault message and the inverter decelerates to stop according to Bn-04.
Sn-08= 1 1 × ×	The digital operator displays flashing alarm message and the inverter remains running.

6. Installation Procedures

- 1. Turn off the power supply of PLC and inverter, insert SI-M into 2CN.
- 2. Set DIP Switch of SI-M according to the communication setting.
- 3. Connect PLC and SI-M.
- 4. Provide inverter with power and set parameter of inverter.
- 5. Provide PLC with power.

7. Modbus Communication Protocol

1. In Modbus protocol RTU mode, one message consists of slave address, function code, date and CRC-16. All of which are sent in order. 3.5 characters identify the start and end of each message.

T1 T2 T3 T4 [*] Slave Function Address Code	Data	CRC-16	T1 T2 T3 T4 [*]
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* T1-T4: byte time

Bit format is shown below:

(1) Slave address

Set the address of each inverter according to S1 of SI-M interface card, with the range from 01 to 31.

The entire message is sent from Master can be received by all the slaves connected together, but only the slave with identical message will execute.

(2) Function code

Function Code	Function
03H	Read the message of the Holding register
10H	Write the message into the holding register

(3) Data

As each function code has different messages, we will discuss them in "Message Format".

(4) CRC-16

CRC-16 Generation Procedure.

- A.Load a 16-bit register with FFFFH. Call this the CRC register.
- B. Exclusive OR the first 8-bit byte of the message with the low order byte of the 16-bit CRC registers, putting the result in the CRC register.
- C.Shift the CRC register one bit to the right (toward the LSB), zero filling the MSB. Extract and examine the LSB.
- D.If LSB is 0, repeat procedure C (another shift).
- If LSB is 1, Exclusive OR the CRC register with the polynomial value A001H.
- E.Repeat procedure C, D until eight shifts has been performed. While this is done, a complete byte will have been processed.
- F. Repeat procedure B-E to the following byte of the message until all bytes of the message is processed. Now, the value of CRC register is the CRC-16 data.
- G.When the CRC is placed into the message, it upper and lower bytes must be swapped.
- 2. Response Message
 - (1) Please consult "message model" about response message.
 - (2) If there is no response message, the inverter should send message after receiving the order 20ms later.
 - (3) The inverter will have no response message in the following:
 - A. While checking up the error (Parity error, Framing error, Overrun error or CRC-16 error) during receiving data.
 - B. The slave address of the message is not equal to that of SI-M interface card.

8. Message Format

SI-M communication cards support two Modbus functions only.

	Description	Host Query		Inverter Return		
Function Code		Byte (Min.)	Byte (Max.)	Byte (Min.)	Byte (Max)	
Read	03H	Read data from Holding register	8	8	7	37
Write	10H	Write data to Holding register	11	41	8	8

1. Read: read data from holding register

Host Query					
Slave Ad	05H				
Function	03H				
Head Address	High Byte	00H			
Tiedu Address	Low Byte	01H			
Access Count	High Byte	00H			
(*1)	Low Byte	01H			
CBC-16	Low Byte	D4H			
0110-10	High Byte	4EH			

Inverter Return (Normal)

Slave Addr	05H	
Function C	03H	
Data Byte C	02H	
Data Value	High Byte	00H
Data value	Low Byte	01H
CBC-16	Low Byte	88H
	44H	

Inverter Return (Error Detected)

Slave Addr	05H	
80H + Functio	83H	
Error Coc	01H	
CBC-16	Low Byte	C1H
010-10	High Byte	31H

*1 Host controller can read 16 registers at most in each message.

2. Write: write data to holding register

Host Query					
Slave Ade	05H				
Function	Code	10H			
Head Address	High Byte	00H			
Head Address	Low Byte	01H			
Access Count	High Byte	00H			
(*1)	Low Byte	01H			
Data Byte Co	02H				
Data Value	High Byte	00H			
Data value	Low Byte	01H			
CBC-16	Low Byte	54H			
010-10	High Byte	81H			

Inverter Return (Normal)

Slave Addr	05H	
Function C	10H	
Head Address	High Byte	00H
Tiedu Address	Low Byte	01H
Access Count	High Byte	00H
(*1)	Low Byte	01H
CBC-16	Low Byte	51H
	High Byte	8DH

Inverter Return (Error Detected)

Slave Addr	05H	
80H + Functio	90H	
Error Coo	06H	
CBC-16	Low Byte	8DH
0110-10	High Byte	СЗН

- *1 Host controller can write 16 registers at most in each message.
- *2 The number of message bytes is twice as that of holding registers

9. Holding Register List

1. Control Data Register (Read/Write): it is used to control the inverter.

Address	Function		Comment
	0	0: Stop, 1: Run	
	1	0: Forward Run, 1: Reverse run	
	2	External Fault Signal: 0: No action, 1: Action	
	3	Fault Reset Signal: 0: No action, 1: action	
	4	Multi-function Input 5 setting: 0: no action, 1: action	
	5	Multi-function Input 6 setting: 0: no action, 1: action	
	6	Multi-function Input 7 setting: 0: no action, 1: action	
000111	7	Multi-function Input 8 setting: 0: no action, 1: action	Operation
0001H	8		Signal
	9		
	Α		
	В		
	С		
	D		
	Е		
	F		
0002H	Fre	quency Command: (100/1Hz)	
	0	Multi-function Output <a>[
	1	Multi-function Output 23-20 Signal	
	2	Multi-function Output 129-29 Signal	
	3		
	4		
	5		
	6		
0000	7		Multi-
00091	8		Output
	9		
	Α		
	В		
	С		
	D		
	Е		
	F		

Address		Function	Comment
	0	During Running	
	1	Reverse Running	
	2	Inverter Operation Ready	
	3	Major Fault	
	4	Parameter Setting Error	
	5	Status of Multi-function Output (9-10)	
	6	Status of Multi-function Output 29-29	
00204	7	Status of Multi-function Output 20-20	Inverter
00200	8		Status
	9		
	Α		
	В		
	С		
	D		
	Е		
	F		
	0	Overcurrent	
	1	Overvoltage	
	2	Overload	
	3	Overheat	
	4		
	5	Broken Fuse	
	6		
0021	7	External Fault	Fault
002111	8	Control Circuit Fault	Content 1
	9	Motor overload	
	Α		
	В	Power Loss or MC Detective	
	С	Low Voltage	
	D		
	Е		
	F		

2. Monitor Data Register (Read-only): it is used to watch the status of the inverter.

	0	Parameter Setting Error	
	1	Writing Mode Error	-
	2	Parameter No. Error	-
	3	Parameter Value out of Range	-
	4	Incorrect Parameter Setting	-
	5	Fault of NV-RAM	-
	6	The Command Has not Been Received	
	7	Fault of BCC	Data link
0022H	8	Fault of DP-RAM	
	9		1
	Α		
	В		
	С		
	D		
	Е		
	F		
0023H	Fre	quency Reference (100/1Hz)	
0024H	Out	tput Frequency (100/1Hz)	
0027H	Out	tput Current (10/1A)	
0028H	Out	tput Voltage (1/1V)	
0029H	Ma	ster Speed Frequency A/D Conversion (1023/10V)	
002AH	Aux	kiliary Frequency A/D Conversion (1023/10V)	
002BH	The	e number of scan	
	0	During Running	
	1	Zero Speed	
	2	Agreed Frequency	
	3	Agreed Frequency Setting	
	4	Frequency Detection 1	
	5	Frequency Detection 2	
	6	Inverter Operation ready	Inverter
00204	7	During Undervoltage Detection	Status
002011	8	During Base Block	
	9	Frequency Reference Mode	
	Α	Control Command	
	В	Overtorque Detection	
	С	Frequency Reference Missing	
	D	Braking Transistor Fault	
	Е	Fault	
	F	Communication Fault	

002DH	Multi-function Output Monitor		
0031H	DC voltage of Main Circuit (1/1V)		
0032H	Output Power (10/1kW)		
	1-3 Previous Fault		
00221	4-7 Previous 2 Fault	Fault	
00330	8-B Previous 3 Fault	Monitor	
	C-F Previous 4 Fault		
	0 CRC Error		
	1 Data length Error		
	2		
	3 Parity Error	Fault	
00301	4 Over Rate	ation	
	5 Message Format Error		
	6 Time-out Error		
	7		
003EH	DP-RAM Defective Address		
003FH	DP-RAM Defective Data		
	0 SI-M card S1-①		
	1 SI-M card S1-2		
	2 SI-M card S1-3		
	3 SI-M card S1-④		
	4 SI-M card S1-⑤		
	5 SI-M card S1-6		
	6 SI-M card S1-⑦		
0040	7 SI-M card S1-®	DIP Switch	
00401	8 SI-M card S2-①		
	9 SI-M card S2-2		
	A SI-M card S2-3		
	B SI-M card S2-④		
	С		
	D		
	E		
	F		

- 3. Holding register of inverter parameter: inverter parameters and the address of holding register
 - 1 During PRGM mode, all the holding registers can be read or written. During DRIVE mode, holding registers are read-only except those for An and Bn.
 - 2.7200 GS inverter has four control modes. SI-M card can be used under V/F (GP) or Sensorless (SL). Parts of parameters have different meanings in these modes. The parameters marked with GP or SL only can be used under V/F or Sensorless mode.

0101H - V/F Pattern Selection (Sn-02) 0102H - 0 0000: Setting and reading of An, bn, Cn and Sn enabled 0101: Setting and reading of An enabled. Reading of bn, Cn, Sn and enabled 1110: Contents Initialization (2-wire) (Sn-03) 0103H - 0 0: Frequency Command = Control Circuit Terminals (0-(0)) (Sn-04) 0103H - 0 0: Frequency Command = Frequency Command 1 (An-01) (Sn-04) 1 0: RUN/STOP Command = Digital Operator 0 (Sn-04) 2 0: Casting to Stop (Sn-04) 2 0: Casting to Stop (Sn-04) 2 0: Coasting to Stop (Sn-04) 0: Tull-range DC Injection Braking Stop (Sn-04) 1: Coasting to Stop (Timer Function Provided) 0: Stop key ineffective during operation from control terminal 0: Stop key ineffective during operation from control terminal (Sn-05) 1: Control Input Terminal (0-(3) are scanned twice (Sn-05) 1: Control Input Terminal (0-(3) are scanned twice (Sn-05) 1: Control Input Terminal (0-(3) are scanned moce (Sn-05) 0: Securve = 0.2 second (Sn-06) 0: Securve =	0100H	-	Inv	verter Capability Selection	(Sn-01)				
0102H - 0 0000: Setting and reading of An, bn, Cn and Sn enabled 0101: Setting and reading of An enabled. Reading of bn, Cn, Sn and enabled (Sn-03) 0102H - 0: Frequency Command - Control Circuit Terminals (D-(D) 1: Frequency Command = Control Circuit Terminals (D-(D) 0: RUN/STOP Command = Control Circuit Terminals 0: RUN/STOP Command = Digital Operator (Sn-04) 0 1: Frequency Command = Control Circuit Terminals 0: RUN/STOP Command = Digital Operator (Sn-04) 2 0: Ramp to Stop 1: Coasting to Stop 1: Coasting to Stop (Timer Function Provided) (Sn-04) 0 0: Stop key effective during operation from control terminal 0: Stop key ineffective during operation from control terminal 1: Reverse Run Not Enabled 1 (Sn-05) 0 0: Stop key effective during operation from control terminal 0: Stop key ineffective during operation from control terminal 1: Reverse Run Not Enabled 1 (Sn-05) 1 0: Securve = 0.2 second 0: Securve = 0.2 second 0: Securve = 0.2 second 11: Securve = 0.3 second 11: Securve = 1.0 second 11: Securve = 1.0 second 11: Securve = 1.0 second 11: Securve = 1.0 second 1: Operation to Continue when Frequency Reference is Missing 3 (Sn-06) 0 0: Overtorque Detection Disabled 1: Overtorque Detection With Dravue (Sn-07)	0101H	-	V/I	F Pattern Selection	(Sn-02)				
0102H - 1 0101: Setting and reading of An enabled. Reading of bn, Cn, Sn and enabled (Sn-03) 0102H - 2 1110: Contents Initialization (2-wire) (Sn-03) 1111: Contents Initialization (3-wire) 0: Frequency Command = Control Circuit Terminals (0-(9) (Sn-04) 0103H - 0: Frequency Command = Control Circuit Terminals (0-(9) (Sn-04) 0103H - 0: RUN/STOP Command = Control Circuit Terminals (0-(9) (Sn-04) 0103H - 0: Ramp to Stop (Sn-04) 1: Coasting to Stop 0: Stop key infective during operation from control terminal (Sn-04) 0104H - 0: Stop key infective during operation from control terminal (Sn-05) 0104H - 0: Stop key infective during operation from control terminal (Sn-05) 0104H - 0: Stop key infective during operation from control terminal (Sn-05) 0104H - 0: Stop key infective during operation from control terminal (Sn-05) 0: Stop key infective during operation from control terminal 0: Stop key infective during 0-(9) (Sn-05) 0: Stop key infective during 0-(9) 0: Stop key infective during 0-(9) (Sn-05) (Sn-05) <tr< td=""><td></td><td></td><td>0</td><td>0000: Setting and reading of An, bn, Cn and Sn enabled</td><td></td></tr<>			0	0000: Setting and reading of An, bn, Cn and Sn enabled					
0102H - 2 110: Contents Initialization (2-wire) (SI-03) 0103H - 0: Frequency Command = Control Circuit Terminals (0-(0)) (Sr-04) 0103H - 0: Frequency Command = Digital Operator (Sr-04) 0103H - 0: RUN/STOP Command = Digital Operator (Sr-04) 0: RUN/STOP Command = Digital Operator 0: Run/Stop Cipe Command = Digital Operator (Sr-04) 0: Run to Stop 0: Full-range DC Injection Braking Stop (Sr-04) 1: Coasting to Stop 0: Stop key ineffective during operation from control terminal 0: Stop key ineffective during operation from control terminal 0: Stop key ineffective during operation from control terminal 0: Stop key ineffective during operation from control terminal (Sn-05) 0: Stop key ineffective during operation from control terminal 0: Stop key ineffective during operation from control terminal (Sn-05) 0: Stop key ineffective during O-(0) are scanned twice 2 (Sn-05) (Sn-05) 1: Control Input Terminal (0-(0) are scanned twice 2 (Sn-05) (Sn-05) 1: Selection of item to be analog output (terminals (0-(0)) (Sn-05) (Sn-06) (Sn-06) (Sn-06) 0: Selection of item to be canalog output (terminals (0-(0))	040011		1	0101: Setting and reading of An enabled. Reading of bn, Cn, Sn	(Sp 02)				
0103H - 0 (0.103H) 	01021	_	2	1110: Contents Initialization (2-wire)	(311-03)				
0103H - 0 0 Frequency Command = Control Circuit Terminals (0-(0)) 1 Frequency Command = Frequency Command 1 (An-01) 1 0 RUN/STOP Command = Digital Operator (2 2 0 Rump to Stop (2 0 Rump to Stop (3 (2 0 Rump to Stop (3 (2 0 Full-range DC Injection Braking Stop (3 (2 0 Full-range DC Injection Braking Stop (3 (2 0 Coasting to Stop (Timer Function Provided) (3 (2 0 (2 0 Coasting to Stop (Timer Function Provided) (3 (2 0 Coasting to Stop (Timer Function Provided) (3 (2 0 Control Input Terminal (0-(3) are scanned twice (3 (3 (2 0 Control Input Terminal (0-(3) are scanned once (2 (2 Control Input Terminal (0-(3) are scanned once (3 (3 (2 (2 Control Input Terminal (0-(3) are scanned twice (3 (3 (2 (2 Control Input Terminal (0-(3)) (3 (3 (3 (2 (2 Control Input Terminal (0-(3)) <td< td=""><td></td><td></td><td>3</td><td>1111: Contents Initialization (3-wire)</td><td></td></td<>			3	1111: Contents Initialization (3-wire)					
0103H - 1: Frequency Command = Frequency Command 1 (An-01) 1 0: RUN/STOP Command = Control Circuit Terminals 0: RUN/STOP Command = Digital Operator 2 0: Ramp to Stop 2 2 0: Ramp to Stop 2 3 0: Full-range DC Injection Braking Stop 1 1: Coasting to Stop (Timer Function Provided) 0: Stop key effective during operation from control terminal 0: Stop key effective during operation from control terminal 0: Stop key effective during operation from control terminal 1 0: Reverse Run Enabled 1: Reverse Run Enabled 1: Reverse Run Not Enabled 1: Control Input Terminal ①-③ are scanned twice (Sn-05) 2 0: Control Input Terminal ①-③ are scanned once 0: Stelection of item to be analog output (terminals ①-③) 1: Secure = 0.0 second 0105H 2 0: Control Input Terminal ①-③ are scanned twice (Sn-06) 1 0: Scurve = 0.2 second 0: S-curve = 0.2 second (Sn-06) 1 1: S-curve = 0.0 second (No S curve) 1 1: S-curve = 1.0 second (Sn-06) 2 0: Reference Command Has Forward Characteristics (Sn-06) (Sn-06) (Sn-06) 3 1: Operation to Continue with 80% of			_	0: Frequency Command = Control Circuit Terminals (3-(4)					
0103H - 1 0: RUN/STOP Command = Control Circuit Terminals 0: RUN/STOP Command = Digital Operator (Sn-04) 2 0: Ramp to Stop 1: Coasting to Stop (Sn-04) 3 0: Full-range DC Injection Braking Stop 1: Coasting to Stop (Timer Function Provided) (Sn-04) 0104H - 0: Stop key effective during operation from control terminal 0: Stop key ineffective during operation from control terminal 1: Reverse Run Enabled (Sn-05) 1 1: Reverse Run Enabled (Sn-05) (Sn-05) 2 0: Control Input Terminal (D-S) are scanned twice 1: Control Input Terminal (D-S) are scanned once (Sn-05) 3 0: Selection of item to be analog output (terminals (D-Q)) (Sn-05) 1: Selection of item to be analog output (terminals (D-Q)) (Sn-06) (Sn-06) 0: Scurve = 0.2 second 11: S-curve = 0.5 second (Sn-06) 1: Seterce Command Has Forward Characteristics (Sn-06) (Sn-06) 0: Stop by Reference Input when Frequency Reference is Missing (Sn-06) (Sn-06) 1: Operation to Continue with 80% of Frequency Reference When Frequency Reference Is Missing (Sn-07) (Sn-07) 0: Overtorque Detection Disabled 1: Overtorque Detection Enabled (Sn-07) (Sn-07) 2 <td< td=""><td></td><td></td><td>0</td><td>1: Frequency Command = Frequency Command 1 (An-01)</td><td></td></td<>			0	1: Frequency Command = Frequency Command 1 (An-01)					
0103H - 1 0: RUN/STOP Command = Digital Operator (Sn-04) 2 0: Ramp to Stop 1: Coasting to Stop (Sn-04) 3 0: Full-range DC Injection Braking Stop (Sn-04) 0104H - 0: Stop key effective during operation from control terminal (Sn-05) 0104H - 0: Stop key effective during operation from control terminal (Sn-05) 0104H - 2 0: Control Input Terminal O-③ are scanned twice (Sn-05) 2 0: Control Input Terminal O-③ are scanned once (Sn-05) (Sn-05) 3 0: Selection of item to be analog output (terminals ①-③) (Sn-05) 1 Scarve = 0.2 second 01: S-curve = 0.2 second (Sn-06) 0105H 2 0: Reference Command Has Forward Characteristics (Sn-06) 1 1: Secore Command Has Forward Characteristics (Sn-06) (Sn-06) 0105H 2 0: Stop by Reference Input when Frequency Reference when Frequency Reference when Frequency Reference to Missing (Sn-06) 1 1: Operation to Continue with 80% of Frequency Reference When Frequency Reference to Missing (Sn-07) 0106H - 1 0: Enabled Only If at Agree			4	0: RUN/STOP Command = Control Circuit Terminals					
010311 2 0: Ramp to Stop (ShF04) 1: Coasting to Stop 0: Full-range DC Injection Braking Stop (ShF04) 3 0: Stop key effective during operation from control terminal (Stop key ineffective during operation from control terminal 0: Stop key effective during operation from control terminal 0: Stop key ineffective during operation from control terminal (Sn-05) 0: Neverse Run Enabled 1: Reverse Run Not Enabled (Sn-05) (Sn-05) 2 0: Control Input Terminal (D-(S) are scanned once (Sn-05) 3 0: Selection of item to be analog output (terminals (D-(2))) (Sn-05) 1: Securve = 0.2 second 01: S-curve = 0.2 second (Sn-06) 0: Securve = 0.3 second 0: Securve = 0.3 second (Sn-06) 1: S-curve = 1.0 second 0: Reference Command Has Forward Characteristics (Sn-06) 0: Stop by Reference Input when Frequency Reference is Missing 1: Operation to Continue with 80% of Frequency Reference When Frequency Reference When Frequency Reference Is Missing (Sn-07) 0: Operation Continued After Overtorque Is Detected 1: Coast to Stop If Overtorque Is Detected (Sn-07) 2 0: Operation Continued After Overtorque Is Detected (Sn-07) (Sn-07) 2 0: Operatio	0102		Ľ	0: RUN/STOP Command = Digital Operator	(Sn 04)				
0104H - 1: Coasting to Stop 0: Full-range DC Injection Braking Stop 0: Full-range DC Injection Braking Stop 0104H - 0: Stop key effective during operation from control terminal 1: Reverse Run Enabled 1: Reverse Run Enabled 1: Reverse Run Not Enabled 0: Control Input Terminal ①-③ are scanned twice 2: Control Input Terminal ①-③ are scanned twice 0: Selection of item to be analog output (terminals ①-④) 3: Selection of item to be analog output (terminals ①-④) 1: Selection of item to be analog output (terminals ①-④) 0: Source = 0.2 second 0: S-curve = 0.2 second 0: Selection of item to be condo uptut (terminals ①-④) 0: Selection of item to be condo uptut (terminals ①-④) 0: Selection of item to be condo uptut (terminals ①-④) 0: Selection of item to be condo uptut (terminals ①-④) 0: Securve = 0.2 second 0: Securve = 0.2 second 0: Securve = 0.3 second 0: Securve = 0.0 second 11: S-curve = 0.3 second 1: Securve = 1.0 second 0: Reference Command Has Forward Characteristics 0: Sn-06) 0: Stop by Reference Input when Frequency Reference is Missing 0: Overtorque Detection Disabled 0: Overtorque Detection Disabled 0: Overtorque Detection Enabled 1: Operation Continue dAfter Overtorque Is Detected 1: Coast to Stop If Overtorque Is Detected 0:	010311	_	2	0: Ramp to Stop	(311-04)				
0104H			2	1: Coasting to Stop					
0104H - 1: Coasting to Stop (Timer Function Provided) 0104H - 0: Stop key effective during operation from control terminal 0: Stop key ineffective during operation from control terminal 0: Stop key ineffective during operation from control terminal 1: Reverse Run Enabled 1: Reverse Run Not Enabled (Sn-05) 2: Ocntrol Input Terminal ①-③ are scanned twice 0: Selection of item to be analog output (terminals ①-③) 3: Selection of item to be analog output (terminals ①-④) 0: Selection of item to be analog output (terminals ①-④) 0: Selection of item to be analog output (terminals ①-④) 0: Selection of item to be analog output (terminals ①-④) 0: Selection of item to be analog output (terminals ①-④) 0: Selection of item to be analog output (terminals ①-④) 0: Selection of item to be analog output (terminals ①-④) 0: Selection of item to be analog output (terminals ①-④) 1: Seurce = 0.2 second 0: Securve = 0.2 second 0: Securve = 0.2 second 1: D: S-curve = 1.0 second 1: Securve = 1.0 second (Sn-06) 0: Reference Command Has Forward Characteristics 0: Reference Command Has Reverse Characteristics (Sn-06) 0: Overtorque Detection Disabled 1: Overtorque Detection Disabled 1: Overtorque Detection Disabled (Sn-07) 2: Ocoperation Continued After Overtorque Is De			3	0: Full-range DC Injection Braking Stop					
0104H - 0 0: Stop key effective during operation from control terminal 0: Stop key ineffective during operation from control terminal 0: Stop key ineffective during operation from control terminal 0: Stop key ineffective during operation from control terminal 0: Stop key ineffective during operation from control terminal 0: Stop key ineffective during operation from control terminal 0: Stop key ineffective during operation from control terminal 0: Stop key ineffective during operation from control terminal 0: Stop key ineffective during operation from control terminal 0: Stop key ineffective during operation from control terminal 0: Stop key ineffective during operation from control terminal 0: Stop key ineffective during operation from control terminal 0: Stop key ineffective during operation from control terminal 0: Stop key ineffective during operation from control terminal 0: Stop key ineffective during operation from control terminal 0: Stop key ineffective during operation from control terminal 0: Stop key ineffective during operation from control terminal 0: Stop key ineffective during operation from control terminal 0: Stop key ineffective during operation from control terminal 0: Stop key ineffective during operation from control terminal 0: Snop key ineffective during operation from control terminal 0: Snop key ineffective during operation from control terminal 0: Snop key ineffective during from key in the fore 0: Snop key ineffective during operation from control terminal 0: Snop key ineffective during from key in the fore 0: Overtorque Detection Disabled </td <td></td> <td></td> <td>0</td> <td>1: Coasting to Stop (Timer Function Provided)</td> <td></td>			0	1: Coasting to Stop (Timer Function Provided)					
0104H - 0:Stop key ineffective during operation from control terminal 1:Reverse Run Not Enabled 1:Reverse Run Not Enabled 2:0:Control Input Terminal ①-③ are scanned twice 1:Control Input Terminal ①-③ are scanned once (Sn-05) 2 0:Control Input Terminal ①-③ are scanned once 1:Control Input Terminal ①-③ are scanned once (Sn-05) 3 0:Selection of item to be analog output (terminals ①-②) 1:Selection of item to be analog output (terminals ①-②) (Sn-06) 0 00:S-curve = 0.2 second 01:S-curve = 0.0 second (No S curve) 10:S-curve = 0.5 second 11:S-curve = 1.0 second (Sn-06) 0 00:S-curve = 0.5 second 0:Reference Command Has Forward Characteristics 0:Stop by Reference Input when Frequency Reference is Missing 3:Operation to Continue with 80% of Frequency Reference When Frequency Reference Is Missing (Sn-06) 0:Operation to Continue with 80% of Frequency Reference When Frequency Reference Is Missing (Sn-07) 0:Operation Continued After Overtorque Is Detected 1:Covertorque Detection Enabled (Sn-07) 0:Operation Continued After Overtorque Is Detected 1:Coast to Stop If Overtorque Is Detected (Sn-07) 0:Overtorque Detection with Current 1:Overtorque Detection with Torque (Sn-07)			0	0: Stop key effective during operation from control terminal					
0104H - 1 0: Reverse Run Not Enabled 1: Reverse Run Not Enabled 2 (Sn-05) 2 0: Control Input Terminal ①-③ are scanned twice 1: Control Input Terminal ①-③ are scanned once (Sn-05) 3 0: Selection of item to be analog output (terminals ①-④) 1: Selection of item to be analog output (terminals ①-④) 1: Selection of item to be analog output (terminals ①-④) (Sn-05) 0105H 0 00: S-curve = 0.2 second 01: S-curve = 0.0 second (No S curve) 1 10: S-curve = 0.5 second 11: S-curve = 1.0 second (Sn-06) 1 10: S-curve = 1.0 second 01: S-curve = 1.0 second (Sn-06) (Sn-06) 2 0: Reference Command Has Forward Characteristics 0: Reference Command Has Reverse Characteristics (Sn-06) 3 1: Operation to Continue with 80% of Frequency Reference When Frequency Reference Is Missing (Sn-06) 3 0: Overtorque Detection Disabled 1: Overtorque Detection Enabled (Sn-07) 1 0: Enabled Only If at Agreed Frequency 1: Enabled During Operation (Except During DC injection) (Sn-07) 2 0: Operation Continued After Overtorque Is Detected 1: Coast to Stop If Overtorque Is Detected (Sn-07) 3 0: Overtorque Detection with Current 1: Overtorque Detection with Torque (Sn-07)			0	0: Stop key ineffective during operation from control terminal					
0104H - 1: Reverse Run Not Enabled (Sn-05) 2 0: Control Input Terminal ①-⑧ are scanned twice (Sn-05) 3 0: Selection of item to be analog output (terminals ②-③) (Sn-05) 1: Selection of item to be analog output (terminals ②-④) (Sn-05) 1: Selection of item to be analog output (terminals ②-④) (Sn-05) 0: Selection of item to be analog output (terminals ②-④) (Sn-05) 1: Selection of item to be analog output (terminals ②-④) (Sn-06) 0: Securve = 0.2 second (Sn-07) 1: S-curve = 1.0 second (Sn-06) 1: S-curve = 1.0 second (Sn-06) 2: O: Reference Command Has Forward Characteristics (Sn-06) 0: Reference Command Has Reverse Characteristics (Sn-06) 0: Reference Command Has Reverse Characteristics (Sn-06) 0: Stop by Reference Input when Frequency Reference When Frequency Reference Is Missing (Sn-06) 1: Operation to Continue with 80% of Frequency Reference When Frequency Reference When Frequency Reference Is Missing (Sn-07) 0: Overtorque Detection Enabled (Sn-07) (Sn-07) 2: Operation Continued After Overtorque Is Detected (Sn-07) 3: Overtorque Detection with Current (Overtorque Detection with			1	0: Reverse Run Enabled					
010411 2 0: Control Input Terminal ①-③ are scanned twice (SIP03) 1: Control Input Terminal ①-③ are scanned once 0: Selection of item to be analog output (terminals ②-②) 1: Selection of item to be analog output (terminals ②-②) 1: Selection of item to be analog output (terminals ②-②) 1: Selection of item to be analog output (terminals ②-②) 1: Selection of item to be analog output (terminals ①-②) 0: Selection of item to be analog output (terminals ①-②) 0: Selection of item to be analog output (terminals ①-②) 1: Selection of item to be analog output (terminals ①-②) 0: Selection of item to be analog output (terminals ①-②) 0: Selection of item to be analog output (terminals ①-②) 1: Selection of item to be analog output (terminals ①-②) 0: Selection of item to be analog output (terminals ①-②) 0: Selection of item to be analog output (terminals ①-②) 1: Selection of item to be analog output (terminals ①-②) 0: Selection of item to be analog output (terminals ①-②) 0: Selection of second (Sn-06) 1: Operation to Continue with 80% of Frequency Reference is Missing (Sn-06) 3: 1: Operation to Continue with 80% of Frequency Reference When Frequency Reference Is Missing (Sn-07) 0: 0: Enabled Only If at Agreed Frequency (Sn-07) 1: 0: Operation Continued After Overtorque Is Detected (Sn-07) 2: 0: Overtorque Detection with Current 1: Overtor	0104	-	Ŀ	1: Reverse Run Not Enabled	(Sp 05)				
0106H - 1: Control Input Terminal ①-③ are scanned once 0: Selection of item to be analog output (terminals ②-③) 1: Selection of item to be analog output (terminals ②-③) 1: Selection of item to be analog output (terminals ②-④) 1: Selection of item to be analog output (terminals ①-④) 0: S-curve = 0.2 second 01: S-curve = 0.2 second 1: S-curve = 0.0 second (No S curve) 1 1: S-curve = 1.0 second 2 0: Reference Command Has Forward Characteristics 0: Reference Command Has Reverse Characteristics 0: Reference Command Has Reverse Characteristics 0: Stop by Reference Input when Frequency Reference is Missing 1: Operation to Continue with 80% of Frequency Reference When Frequency Reference Is Missing 1: Overtorque Detection Disabled 1: Overtorque Detection Enabled 1: Overtorque Detection Enabled 1: Coast to Stop If Overtorque Is Detected 1: Overtorque Detection with Current 1: Coast to Stop If Overtorque Is Detected 1: Overtorque Detection with Current 1: Overtorque Detection with Current	010411		_	2	0: Control Input Terminal ①-⑧ are scanned twice	(311-03)			
0105H - 0: Selection of item to be analog output (terminals ①-②) 0105H 0 0: S-curve = 0.2 second 0105H 0 0: S-curve = 0.2 second 0105H 2 0: Reference Command Has Forward Characteristics 0: Reference Command Has Reverse Characteristics 0: Reference Command Has Reverse Characteristics 0: Reference Command Has Reverse Characteristics 0: Stop by Reference Input when Frequency Reference is Missing 1: Operation to Continue with 80% of Frequency Reference When Frequency Reference Is Missing 1: Overtorque Detection Disabled 1: Overtorque Detection Enabled 1: Overtorque Detection Enabled 1: Overtorque Detection Enabled 1: Coast to Stop If Overtorque Is Detected 1: Coast to Stop If Overtorque Is Detected (Sn-07) SL 3 0: Overtorque Detection with Current 1: Overtorque Detection with Torque		1: Control Input Terminal (1)-(8) are scanned once		1: Control Input Terminal ①-⑧ are scanned once					
0 1: Selection of item to be analog output (terminals ①-②) 1: Selection of item to be analog output (terminals ①-③) 0: 00: S-curve = 0.2 second 01: S-curve = 0.0 second (No S curve) 1 1: S-curve = 1.0 second 2: 0: Reference Command Has Forward Characteristics 0: Reference Command Has Reverse Characteristics 0: Reference Command Has Reverse Characteristics 0: Stop by Reference Input when Frequency Reference is Missing 1: Operation to Continue with 80% of Frequency Reference When Frequency Reference Is Missing 1: Operation to Continue with 80% of Frequency Reference When Frequency Reference Is Missing 0: Overtorque Detection Disabled 1: Overtorque Detection Enabled 1: Overtorque Detection Enabled 1: Doperation Continued After Overtorque Is Detected 1: Coast to Stop If Overtorque Is Detected 1: Overtorque Detection with Current 1: Overtorque Detection with Torque			3	0: Selection of item to be analog output (terminals 2)-2)					
0 00: S-curve = 0.2 second 01: S-curve = 0.0 second (No S curve) 1 1 S-curve = 0.5 second 11: S-curve = 1.0 second 1 2 0: Reference Command Has Forward Characteristics 0: Reference Command Has Reverse Characteristics (Sn-06) 3 0: Stop by Reference Input when Frequency Reference is Missing 1: Operation to Continue with 80% of Frequency Reference When Frequency Reference Is Missing (Sn-06) 0: Overtorque Detection Disabled 1: Overtorque Detection Enabled 1 (Sn-07) 1 0: Enabled Only If at Agreed Frequency 1: Enabled During Operation (Except During DC injection) (Sn-07) 2 0: Operation Continued After Overtorque Is Detected 1: Coast to Stop If Overtorque Is Detected (Sn-07) 3 0: Overtorque Detection with Current 1: Overtorque Detection with Current (Sn-07)			Ŭ	1: Selection of item to be analog output (terminals 2)-2)					
0105H 1 01: S-curve = 0.0 second (No S curve) 1 10: S-curve = 0.5 second 11: S-curve = 1.0 second 0: Reference Command Has Forward Characteristics 0: Reference Command Has Reverse Characteristics 0: Reference Command Has Reverse Characteristics 0: Stop by Reference Input when Frequency Reference is Missing 1: Operation to Continue with 80% of Frequency Reference When Frequency Reference Is Missing 3 1: Operation to Continue with 80% of Frequency Reference When Frequency Reference Is Missing 0: Overtorque Detection Disabled 0: Overtorque Detection Enabled 1: Overtorque Detection Enabled 0: Enabled Only If at Agreed Frequency 1: Enabled During Operation (Except During DC injection) (Sn-07) 2 0: Operation Continued After Overtorque Is Detected 1: Coast to Stop If Overtorque Is Detected (Sn-07) 3 0: Overtorque Detection with Current 1: Overtorque Detection with Current 1: Overtorque Detection with Torque			0	00: S-curve = 0.2 second					
0105H 1 10.0 Source = 0.0 second (Sn-06) 2 0: Reference Command Has Forward Characteristics (Sn-06) 0: Reference Command Has Reverse Characteristics (Sn-06) 0: Stop by Reference Input when Frequency Reference is Missing (Sn-06) 3 1: Operation to Continue with 80% of Frequency Reference When Frequency Reference Is Missing 1: Operation to Continue with 80% of Frequency Reference When Frequency Reference Is Missing 0: Overtorque Detection Disabled 1: Overtorque Detection Enabled 1: Overtorque Detection Enabled 1: Enabled Only If at Agreed Frequency 1: Enabled During Operation (Except During DC injection) 2 0: Operation Continued After Overtorque Is Detected 1: Coast to Stop If Overtorque Is Detected (Sn-07) 3 0: Overtorque Detection with Current 1: Overtorque Detection with Current 1: Overtorque Detection with Torque				10: S-curve = 0.0 second (No S curve)					
0105H 2 0: Reference Command Has Forward Characteristics (Sn-06) 0: Reference Command Has Reverse Characteristics 0: Stop by Reference Input when Frequency Reference is Missing (Sn-06) 3 0: Stop by Reference Input when Frequency Reference is Missing 0: Operation to Continue with 80% of Frequency Reference When Frequency Reference Is Missing 0: Overtorque Detection Disabled 1: Overtorque Detection Disabled 0: Overtorque Detection Enabled 0: Enabled Only If at Agreed Frequency 1: Enabled During Operation (Except During DC injection) 0: Operation Continued After Overtorque Is Detected (Sn-07) 2 0: Overtorque Detection with Current 1: Overtorque Detection with Current (Sn-07)			1	11: S-curve = 1.0 second					
0: Reference Command Has Reverse Characteristics 0: Reference Command Has Reverse Characteristics 0: Stop by Reference Input when Frequency Reference is Missing 1: Operation to Continue with 80% of Frequency Reference When Frequency Reference Is Missing 0: Overtorque Detection Disabled 1: Overtorque Detection Enabled 0: Enabled Only If at Agreed Frequency 1: Enabled During Operation (Except During DC injection) 2 0: Operation Continued After Overtorque Is Detected 1: Coast to Stop If Overtorque Is Detected 1: Overtorque Detection with Current 1: Overtorque Detection with Torque	0105H		_	0: Reference Command Has Forward Characteristics	(Sn-06)				
0: Stop by Reference Input when Frequency Reference is Missing 3 1: Operation to Continue with 80% of Frequency Reference When Frequency Reference Is Missing 0: Overtorque Detection Disabled 1: Overtorque Detection Enabled 0: Enabled Only If at Agreed Frequency 1: Enabled During Operation (Except During DC injection) 2 0: Overtorque Detection with Current 1: Coast to Stop If Overtorque Is Detected 1: Overtorque Detection with Current	0.0011		2	0: Reference Command Has Reverse Characteristics	(0.1.00)				
3 1: Operation to Continue with 80% of Frequency Reference When Frequency Reference Is Missing 0 0: Overtorque Detection Disabled 1: Overtorque Detection Enabled 1: Overtorque Detection Enabled 1 0: Enabled Only If at Agreed Frequency 1: Enabled During Operation (Except During DC injection) (Sn-07) 2 0: Overtorque Detection with Current 1: Coast to Stop If Overtorque Is Detected (Sn-07)								0: Stop by Reference Input when Frequency Reference is Missing	
0106H - 1 0 0: Overtorque Detection Disabled 1 0: Enabled Only If at Agreed Frequency 1: Enabled Only If at Agreed Frequency 0: Enabled Only If at Agreed Frequency 2 0: Operation Continued After Overtorque Is Detected 0: Sn-07) 3 0: Overtorque Detection with Current 0: Overtorque Detection with Torque			3	1: Operation to Continue with 80% of Frequency Reference When					
0 0			-	0: Overtorque Detection Disabled					
0106H - 1 0: Enabled Only If at Agreed Frequency 1: Enabled During Operation (Except During DC injection) 2 0: Operation Continued After Overtorque Is Detected 1: Coast to Stop If Overtorque Is Detected (Sn-07) SL 3 0: Overtorque Detection with Current 1: Overtorque Detection with Torque			0	1: Overtorque Detection Enabled					
0106H - 1 0. Enabled Only if at Agreed Frequency (Sn-07) 2 0. Operation Continued After Overtorque Is Detected (Sn-07) 2 0. Overtorque Detection with Current (Sn-07) 3 0. Overtorque Detection with Torque									
0106H 2 0: Operation Continued After Overtorque Is Detected (Sn-07) 2 0: Overtorque Detection with Current 0: Overtorque Detection with Current (Sn-07) 3 0: Overtorque Detection with Torque 0: Overtorque Detection with Torque		-	-	-	-	1	1: Enabled During Operation (Except During DC injection)		
2 0: Operation Communed Arter Overtoique is Detected 1: Coast to Stop If Overtorque Is Detected 3 0: Overtorque Detection with Current 1: Overtorque Detection with Torque	0106H			0: Operation Continued After Overtorque Is Detected	(Sn-07)				
SL 3 0: Overtorque Detection with Current 1: Overtorque Detection with Torque			2	1: Coast to Stop If Overtorque Is Detected					
SL 3 1: Overtorque Detection with Torque					╞	0: Overtorque Detection with Current			
		SL	3	1: Overtorque Detection with Torque					

		0	0: Frequency Reference Input	by Option Card									
			1: Frequency Reference input Circuit Input Terminals	by Digital Operator or Control									
			I							0: RUN/STOP Command Inpu	t by Option Card		
0107H	-	1	1: RUN/STOP Command Input by Digital Operator or Control Circuit Input Terminals										
			00: Stop Method while 01:	Deceleration to stop (time: bn-02) Coasting to Stop									
		3	SI-M error occurred 10: 11:	Deceleration to stop (time: bn-04) Continue to Run									
			0: Analog Output (terminal	D-@) depends on Sn-05 4 th digit									
	0		and Sn-09 2 nd digit.										
			1: Analog Output (terminal @	D-22) is set by SI-M card.									
0100	-	-	0: Analog Output (terminal @	D-@)	(Sp 00)								
01088		1	1: Analog Output (terminal	D-@)	(511-09)								
		2											
	01	_	0: No Slip Compensation du	ring Regenerating									
	SL	3	1: Slip Compensation during	Regenerating									
		~	0: Stall Prevention During Ac	cceleration Enabled									
		0	1: Stall Prevention During Ac	celeration Disabled									
		4	0: Stall Prevention During De	eceleration Enabled	(Sn-10)								
010011		-	1: Stall Prevention During De	eceleration Disabled									
0109H	-		0: Stall Prevention During Ru	unning Enabled									
		2	2	2	2	2	2	2	2	2	1: Stall Prevention During Ru	unning Disabled	
					2	3	3	0: Deceleration Time During	Stall Prevention = Bn-02				
		5	1: Deceleration Time During	Stall Prevention = Bn-04									
		0	0										
			0: Fault Contact is Not Energ	gized During Retry Operation									
010AH	_		1: Fault Contact is Energized	During Retry Operation	(Sn-11)								
	- 2	2	0: Operation Stopped by Mo	mentary Power Loss Detection	(311-11)								
		2	1: Operation Continues after	Momentary Power Loss									
					3								
		0	0: External Fault Input: NO-c	contact input									
	- 1	- 1	- 1	_			Ŭ	1: External Fault Input: NC-c	ontact input				
					1	0: External Fault signal: Alwa	ays Detected						
010BH					-	-			1: External Fault signal: Dete	ected During Running Only	(Sn-12)		
		2	00: Stop Method for 01:	Deceleration to stop (time: bn-02) Coasting to Stop	· · ·								
		3	External Fault 10: 11:	Deceleration to stop (time: bn-04) Continue to Run									
		00	V/f Control Mode										
010CH	-	01	Sensorless Vector Control N	Aode Control Modo	(Sn-13)								
		11	V/f + PG Closed Control Mo	de									
			0: Motor Overload Protection	n (OL1): Effective									
	_	0	1: Motor Overload Protection	(OL1): Ineffective									
010DH		-	_	-	_	-	<u> </u>	0: Motor Overload Protection	: Standard Motor	(Sn-14)			
									1	1	1	1: Motor Overload Protection	n: Inverter Duty Motor

010DH	-	2 3	 0: Motor Overload Protection: Standard Time Constants (8 minutes) 1: Motor Overload Protection: Standard Time Constants (5 minutes) 0: Inverter Overload (OL2) Protection: 103% Continuous, 150% for 1 minute. 1: Inverter Overload (OL2) Protection: 113% Continuous, 123% for 1 minute. 			
010EH	-	00	-FF: Terminal (5) F	unction	(Sn-15)	
010FH	-	00	-FF: Terminal 6 F	unction	(Sn-16)	
0110H	-	00	-FF: Terminal ⑦ F	unction	(Sn-17)	
0111H	-	00	-FF: Terminal ⑧ F	unction	(Sn-18)	
0112H	-	00	-0F: Terminal 🔞 F	unction	(Sn-19)	
0113H	-	00	-0F: Terminal (9-(0)) Function	(Sn-20)	
0114H	-	00	-0F: Terminal 🐵-🕐) Function	(Sn-21)	
0115H	-	00	-0F: Terminal 29-20) Function	(Sn-22)	
0116		0:	English Is Used in I	LCD Operator	(Sn 22)	
	1	1:	Chinese Is Used in	LCD Operator	(311-23)	
0118H	_	0	0: Positive/Negativ AI-14B Option C 1: Only Positive Va AI-14B Option C	ve Values of Frequency Reference of Card Determine FWD/REV Operation. Alue of Frequency Reference is allowed in Card.	(Sn-25)	
	1 2	1			· · ·	
		2	2			
		3				
0119H	Digital Referenc Card (D1-08) Freq. Reference Set Mode		Digital Reference Card (D1-08) Freq. Reference Set Mode	0000: BCD 1% Resolution 0001: BCD 0.1% Resolution 0010: BCD 0.01% Resolution 0011: BCD 1Hz Resolution 0100: BCD 0.1Hz Resolution 0101: BCD 0.01Hz Resolution	(Sn-26)	
				1000: Binary Input (Input Value Displayed in Decimal on Operator)		
		0	0: Combination 1 c	1000: Binary Input (Input Value Displayed in Decimal on Operator) of Digital Output Card DO-08		
	_	0	0: Combination 1 c 1: Combination 2 c	1000: Binary Input 200/10078 1000: Binary Input (Input Value Displayed in Decimal on Operator) of Digital Output Card DO-08 of Digital Output Card DO-08		
011AH	-	0	0: Combination 1 c 1: Combination 2 c Digital Pulse (1000: Binary Input 233/10078 1000: Binary Input (Input Value Displayed in Decimal on Operator) of Digital Output Card DO-08 of Digital Output Card DO-08 000: Pulse Frequency = 1F 001: Pulse Frequency = 6E	(Sn-27)	
011AH	- GP	0 1 2	0: Combination 1 c 1: Combination 2 c Digital Pulse Monitor card PO-36F	1000: Binary Input 233/10078 1000: Binary Input (Input Value Displayed in Decimal on Operator) of Digital Output Card DO-08 1000: Pulse Frequency = 1F 1001: Pulse Frequency = 6F 1001: Pulse Frequency = 10F	(Sn-27)	
011AH	- GP	0 1 2	0: Combination 1 c 1: Combination 2 c Digital Pulse Monitor card PO-36F (F: inverter	1000: Binary Input 233/10078 1000: Binary Input (Input Value Displayed in Decimal on Operator) of Digital Output Card DO-08 of Digital Output Card DO-08 000: Pulse Frequency = 1F 001: Pulse Frequency = 6F 010: Pulse Frequency = 10F 011: Pulse Frequency = 12F	(Sn-27)	
011AH	GP	0 1 2 3	0: Combination 1 c 1: Combination 2 c Digital Pulse (Monitor card (PO-36F ((F: inverter (output frequency)	 birlin Binary Input 233/10078 1000: Binary Input (Input Value Displayed in Decimal on Operator) bir Digital Output Card DO-08 bir Digital	(Sn-27)	
011AH	GP	0 1 2 3 0	0: Combination 1 c 1: Combination 2 c Digital Pulse (Monitor card (PO-36F ((F: inverter (output frequency) Analog Monitor (Card AO-12 Channel 1 Output	 1000: Binary Input (200/100%) 1000: Binary Input (Input Value Displayed in Decimal on Operator) of Digital Output Card DO-08 of Digital Output Card DO-08 of Digital Output Card DO-08 000: Pulse Frequency = 1F 001: Pulse Frequency = 6F 010: Pulse Frequency = 10F 011: Pulse Frequency = 12F 100: Pulse Frequency = 36F 00: Output Frequency (Max Freq./100%) 01: Output Current (Rated Current/100%) 10: Output Voltage (Cn-01/100%) 11: DC voltage 400V/100%/220V) 	(Sn-27)	
011AH	GP	0 1 2 3 0	0: Combination 1 c 1: Combination 2 c Digital Pulse Monitor card PO-36F (F: inverter output frequency) Analog Monitor Card AO-12 Channel 1 Output	1000: Binary Input 233/10078 1000: Binary Input (Input Value Displayed in Decimal on Operator) of Digital Output Card DO-08 of Digital Output Card DO-08 000: Pulse Frequency = 1F 001: Pulse Frequency = 6F 010: Pulse Frequency = 12F 100: Pulse Frequency = 36F 00: Output Frequency (Max Freq./100%) 01: Output Current (Rated Current/100%) 10: Output Voltage (Cn-01/100%) 11: DC voltage 400V/100%(220V) 800V/100%(440V)	(Sn-27)	
011AH 011BH	- GP	0 1 2 3 0 1 2	0: Combination 1 c 1: Combination 2 c Digital Pulse (Monitor card (PO-36F ((F: inverter (output frequency) Analog Monitor (Card AO-12 Channel 1 Output	1000: Binary Input 233/100% 1000: Binary Input (Input Value Displayed in Decimal on Operator) of Digital Output Card DO-08 of Digital Output Card DO-08 000: Pulse Frequency = 1F 001: Pulse Frequency = 6F 010: Pulse Frequency = 10F 011: Pulse Frequency = 12F 100: Pulse Frequency = 36F 00: Output Frequency (Max Freq./100%) 01: Output Current (Rated Current/100%) 10: Output Voltage (Cn-01/100%) 11: DC voltage 400V/100%(220V) 800V/100%(440V) 00: Output Frequency (Max Freq./100%) 01: Output Frequency (Max Freq./100%) 01: Output Frequency (Max Freq./100%) 01: Output Current (Rated Current/100%) 01: Output Current (Rated Current/100%)	(Sn-27) (Sn-28)	

0200H	-	Input Voltage	(Cn-01)
0201H	-	Max Output Frequency	(Cn-02)
0202H	-	Max Output Voltage	(Cn-03)
0203H	_	Max Voltage Frequency	(Cn-04)
0204H	_	Middle Output Frequency	(Cn-05)
0205H	_	Voltage at Middle Output Frequency	
0206H	_	Min Output Frequency	(Cn-07)
0207H	-	Voltage at Min Output Frequency	(Cn-08)
0208H	-	Motor Rated Current	(Cn-09)
0209H	-	DC Injection Braking Starting Frequency	(Cn-10)
020AH	-	DC Braking Current	(Cn-11)
020BH	-	DC Injection Braking Time at Stop	(Cn-12)
020CH	-	DC Injection Braking Time at Start	(Cn-13)
020DH	-	Frequency Command Upper Bound	(Cn-14)
020EH	-	Frequency Command Lower Bound	(Cn-15)
020FH	_	Frequency Jump Point 1	(Cn-16)
0210H	_	Frequency Jump Point 2	(Cn-17)
0211H	_	Frequency Jump Point 3	(Cn-18)
0212H	_	Jump Frequency Width	(Cn-19)
0213H	-	Digital Operator Display Unit	(Cn-20)
0214H	-	Frequency Agree Detection Level	(Cn-21)
0215H	-	Frequency Agree Detection Width	(Cn-22)
0216H	-	Carrier Frequency Upper Limit	(Cn-23)
0217H	-	Carrier Frequency Upper Limit	(Cn-24)
0218H	-	Carrier Frequency Proportional Gain	(Cn-25)
0219H	-	Overtorque Detection Level	(Cn-26)
021AH	-	Overtorque Detection Time	(Cn-27)
021BH	-	Stall Prevention Level During Acceleration	(Cn-28)
021CH	-	Constant HP Area Stall Prevention	(Cn-29)
021DH	-	Stall Prevention Level During Running	(Cn-30)
021EH	-	Motor Phase-to phase Resistance	(Cn-31)
021EH	GP	Torque Iron Loss	$(Cn_{-}32)$
021111	SL	Motor Leakage Inductance (Ls)	(011-52)
0220H	GP	Torque Compensation Limit	(Cn_33)
022011	SL	Torque Limit	(011-00)
0221H	_	Motor No Load Current	(Cn-34)
0222H	-	Slip Compensation Delay Time	(Cn-35)
0223H	-	Number of Auto Restart Attempt	(Cn-36)
0224H	-	Power Loss Ride-thru Time	(Cn-37)

		SI-M communication car	d manual
0225H	_	Speed Search Detection level	(Cn-38)
0226H	_	Speed Search Time	(Cn-39)
0227H	-	Min Baseblock Time	(Cn-40)
0228H	-	V/F Curve in Speed Search	(Cn-41)
0229H	-	Voltage Recovery Time	(Cn-42)
0400H	-	Frequency Command 1	(An-01)
0401H	-	Frequency Command 2	(An-02)
0402H	-	Frequency Command 3	(An-03)
0403H	-	Frequency Command 4	(An-04)
0404H	_	Frequency Command 5	(An-05)
0405H	_	Frequency Command 6	(An-06)
0406H	_	Frequency Command 7	(An-07)
0407H	_	Frequency Command 8	(An-08)
0408H	_	Jog Command	(An-09)
0500H	_	Acceleration Time 1	(bn-01)
0501H	_	Deceleration Time 1	(bn-02)
0502H	-	Acceleration Time 2	(bn-03)
0503H	_	Deceleration Time 2	(bn-04)
0504H	_	Analog Frequency Command Gain	(bn-05)
0505H	_	Analog Frequency Command. Bias	(bn-06)
0506H	-	Auto Torque Boost Gain	(bn-07)

0507H

0508H

0509H

050AH

050BH

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Rated Slip of Motor

Energy Saving Gain

Monitor No. After Power on

Multi-Function Analog Output AO1 Gain

Multi-Function Analog Output AO2 Gain

(bn-08)

(bn-09)

(bn-10)

(bn-11)

(bn-12)

10. Fault code: Address 3DH

Fault Code	Fault	Cause
01H	Function-code fault	Function-code of PLC is not 03 or 10H
02H	Holding register code fault	Address of the holding register fault
03H	The number of holding register fault	Read/write number of holding register overruns
21H	Message setting fault	Message setting overruns
22H	Write mode fault	 PLC tries to write Sn, Cn during running PLC tries to write parameters during UV PLC tries to write parameters (except Sn-02, Sn-03) during CPF04 PLC tries to write parameters during dealing the information PLC tries to write Cn-02~08 when Sn-02 ≠ F or FF PLC tries to write message that only can be read
31H	CPU of inverter fault	 I/O PORT GUPX=1 Internal RAM detection fault (55H,AAH) External RAM detection fault (55H,AAH) PROM and detection fault
32H	DP-RAM fault 1	 Mode detection fault (CPF23) Identify fault (CPF23) Wait for INTL over 5s (CPF23) BB circuit fault (CPF02) NV-RAM, SRAM fault (CPF03)
33H	DP-RAM fault 2	BCC detection fault (CPF23)

11.Communication Example

We can use PLC to control 7200GS inverter with address 05 by RS-232, RS422/485 communication mode, as follows:



1. Let the inverter forward run by 60Hz.

2. Let the inverter forward run by 30Hz.

3. Let the inverter reverse run by 30Hz.

4. Let the inverter coast to stop.

Setting steps is listed as follows:

1. SI-M option card DIP Switch setting:



Sn-08: 0000

3. Do as follows:

• Step 1

Master (PLC)

Slave Ac	ldress	05H
Function	Code	10H
Head	High byte	00H
Address	Low byte	01H
Access	High byte	00H
Count	Low byte	02H
Data Byte	Count	04H
Data Value 1	High byte	00H
Dala value I	Low byte	01H
Data Value 2	High byte	17H
Dala value 2	Low byte	70H
	Low byte	78H
	High byte	87H

Slave (inverter)

Slave Ac	05H		
Function	Function Code		
Head	High byte	00H	
Address	Low byte	01H	
Access	High byte	00H	
Count	Low byte	02H	
	Low byte	11H	
	High byte	8CH	

The 1st byte 0001H is transmitted to address 0001H of inverter for forward running.

The 2nd byte 1770H is transmitted to address 0002H of inverter for running at 60Hz.

 Frequency command is set with conversion 100/1Hz. And it needs modifying to be hexadecimal.
 For example: If frequency command is 60Hz 60 x 100 - 6000. The

For example: If frequency command is 60Hz, $60 \times 100 = 6000$. The data written to inverter is 1770H (hexadecimal value of 6000)

• Step 2

Master (PLC)

Slave Ac	05H	
Function	Code	10H
Head	High byte	00H
Address	Low byte	01H
Access	High byte	00H
Count	Low byte	02H
Data Byte	Count	04H
Data Value 1	High byte	00H
Dala value I	Low byte	01H
Data Value 2	High byte	0BH
Data value 2	Low byte	B8H
CPC 16	Low byte	71H
	High byte	D1H

Slave (Inverter)

Slave Ac	05H	
Function	Code	10H
Head	High byte	00H
Address	Low byte	01H
Access	High byte	00H
Count	Low byte	02H
CRC 16	Low byte	11H
	High byte	8CH

The 1st byte 0001H is transmitted to address 0001H of inverter for forward running.

The 2nd byte 0BB8H is transmitted to address 0002H of inverter for running at 30Hz.

• Step 3

Master (PLC)

Slave Ac	05H	
Function	Code	10H
Head	High byte	00H
Address	Low byte	01H
Access	High byte	00H
Count	Low byte	02H
Data Byte	Count	04H
Data Value 1	High byte	00H
Data value I	Low byte	03H
Data Value 2	High byte	0BH
Dala Value Z	Low byte	B8H
CPC 16	Low byte	D0H
	High byte	11H

Slave (Inverter)

Slave Ac	05H	
Function	Code	10H
Head	High byte	00H
Address	Low byte	01H
Access	High byte	00H
Count	Low byte	02H
	Low byte	11H
	High byte	8CH

The 1st byte 0003H is transmitted to address 0001H of inverter for reverse running.

The 2nd byte 0BB8H is transmitted to address 0002H of inverter for running at 30Hz.

• Step 4

Master (PLC)

Slave Address		05H
Function Code		10H
Head Address	High byte	00H
	Low byte	01H
Access Count	High byte	00H
	Low byte	01H
Data Byte Count		02H
Data Value 1	High byte	00H
	Low byte	00H
CRC-16	Low byte	95H
	High byte	41H

Slave (Inverter)

Slave Address		05H
Function Code		10H
Head Address	High byte	00H
	Low byte	01H
Access Count	High byte	00H
	Low byte	01H
CRC-16	Low byte	51H
	High byte	8DH

The 1st byte 0000H is transmitted to address 0001H of inverter for stopping.