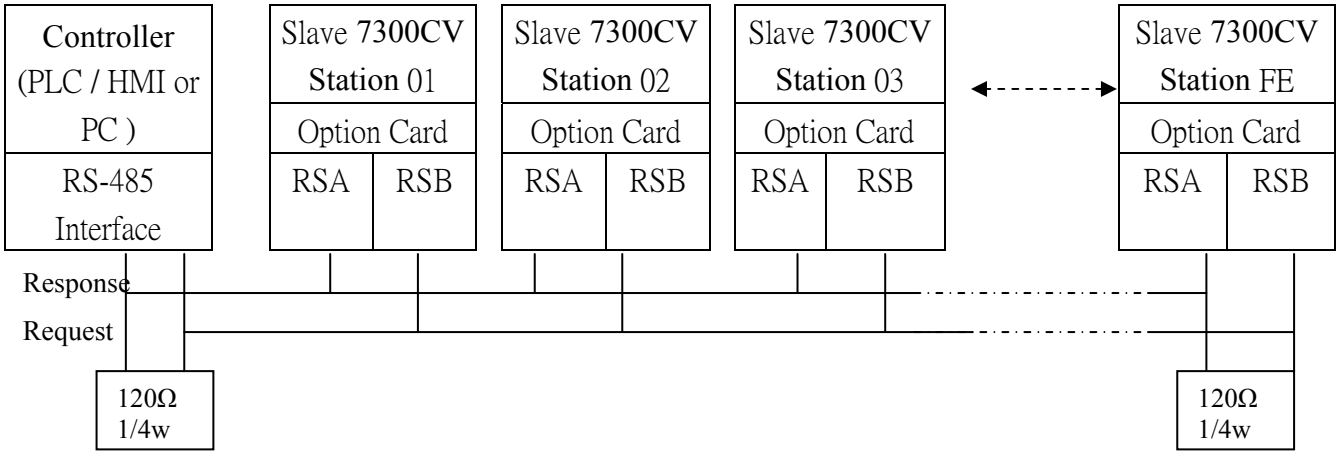
7300CV MODBUS
Communication Protocol

1. Communication Data Frame

7300CV series inverter can be communication controlled by the PC or other controller with the communication protocol, Modbus ASCII Mode & Mode RTU, RS485 or RS232.

Frame length maximum 80 bytes

1.1 Hardware installation



** The network is terminated at each end with an external terminating resistor (120 ohm, 1/4 watt).

1.2 Data format frame FOR ASCII MODE

STX(3AH)	Start Bit = 3AH
Address Hi Address Lo	Communication Address(Station): 2-digit ASCII Code
Function Hi Function Lo	Function Code (command): 2-digit ASCII Code
Command Start Address Command Start Address Command Start Address Command Start Address	Command Start byte: 4-digit ASCII Code
Data length Data length Data length Data length	The length of the command: 4-digit ASCII Code
LRC Check Hi LRC Check Lo	LRC Check Code: 2-digit ASCII Code
END Hi END Lo	End Byte : END Hi=CR(0DH), END Li = LF(0AH)

Data format frame FOR RTU MODE

MASTER (PLC etc.) send request to SLAVE, whereas SLAVE response to MASTER. The signal receiving is illustrated here.

The data length is varied with the command (Function).

SLAVE Address
Function Code
DATA
CRC CHECK
Signal Interval

** The interval should be maintained at 10ms between command signal and request

1.3 SLAVE Address

00H : Broadcast to all the drivers
01H : to the No. 01 Driver
0FH : to the No.15 Driver
10H : to the No.16 Driver
and so on...., Max to No. 254(FEH)

1.4 Function Code

03H : Read the register contents
06H : Write a WORD to register
08H : Loop test
10H : Write several data to register (complex number register write)

2.CMS (Checksum and time-out definition)

2.1 LRC

```
ex.  ADDRESS        01H
     FUNCTION       03H
     COMMAND        01H
                    00H
     DATA LENGTH    0AH
   ----------------------
                    0FH------------ true complement
   Checksum  =      F1H
     CS(H)   =      46H (ASCII)
     CS(L)   =      31H (ASCII)
```

2.2 CRC CHECK :

CRC check code is from Slave Address to end of the data. The calculation method is illustrated as follow:

(1) Load a 16-bit register with FFFF hex (all's 1). Call this the CRC register.

(2) Exclusive OR the first 8-bit byte of the message with the low-order byte of the 16-bit CRC register, putting the result in the CRC register.

(3) Shift the CRC register one bit to the right (toward the LSB), Zero-filling the MSB, Extract and examines the LSB.

(4) (If the LSB was 0): Repeat Steps (3)(another shift).(If the LSB was 1): Exclusive OR the CRC register with the polynomial value A001 hex (1010 0000 0000 0001).

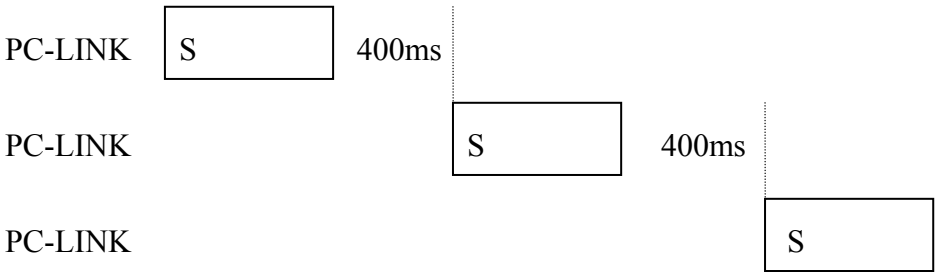
(5) Repeat Steps (3) and (4) until 8 shifts been performed. When this is done, a complete 8-bit byte will be processed.

(6) Repeat Steps (2) through (5) for next 8-bit byte of the message, Continue doing this until all bytes have been processed. The final content of the CRC register is the CRC value. Placing the CRC into the message: When the 16-bit CRC (2 8-bit bytes) is transmitted in the message, the low-order byte will be transmitted first, followed by the high-order byte, For example, if the CRC value is 1241 hex, the CRC-16 Upper put the 41h, the CRC-16 Lower put the 12h

- **CRC calculation application program**

```
UWORD ch_sum ( UBYTE long , UBYTE *rxdbuff ) {
    BYTE i = 0;
    UWORD wkg = 0xFFFF;
    while ( long-- ) {
      wkg ^= rxdbuff++;
      for ( i = 0 ; i < 8; i++ ) {
         if ( wkg & 0x0001 ) {
           wkg = ( wkg >> 1 ) ^ 0xa001;
         }
         else {
           wkg = wkg >> 1;
         }
      }
    }
   return( wkg );
}
```

2.3 TIME-OUT (400ms) & RETRY (max. : 2 times)



(When INV(PLC) time-out or detect checksum error, or INV(PLC) response error code = checksum error, PC-LINK retry maximum two times, and if two times after still error,
then display “ERR6”)

3.Command START ADDRESS

Function	Description	Command Start Address	Data length (WORD)
03	Ladder page1 read	200H	0AH
	Ladder page2 read	20AH	0AH
	Ladder page3 read	214H	0AH
	Ladder page4 read	21EH	0AH
	Ladder page5 read	228H	0AH
	Timer1 Function read	264H	05H
	Timer2 Function read	269H	05H
	Timer3 Function read	26EH	05H
	Timer4 Function read	273H	05H
	Timer5 Function read	278H	05H
	Timer6 Function read	27DH	05H
	Timer7 Function read	282H	05H
	Timer8 Function read	287H	05H
	Counter1 Function read	28CH	04H
	Counter2 Function read	290H	04H
	Counter3 Function read	294H	04H
	Counter4 Function read	298H	04H
	Encoder1 Function read	2ACH	05H
	Encoder2 Function read	2B1H	05H
	Encoder3 Function read	2B6H	05H
	Encoder4 Function read	2BBH	05H
	Analog1 Function read	2C0H	03H
	Analog2 Function read	2C3H	03H
	Analog3 Function read	2C6H	03H
	Analog4 Function read	2C9H	03H
	Control l function read	2CCH	06H
	Control 2 function read	2D2H	06H
	Control 3 function read	2D8H	06H
	Control 4 function read	2DEH	06H
	Control 5 function read	2E4H	06H
	Control 6 function read	2EAH	06H
	Control 7 function read	2F0H	06H
	Control 8 function read	2F6H	06H
	All Coil status read	2FCH~303H	08H

7300CV MODBUS COMMUNICATION PROTOCOL

Function	Description	Command Start Address	Data length (WORD)
10	Ladder page1 write	200H	0AH
	Ladder page2 write	20AH	0AH
	Ladder page3 write	214H	0AH
	Ladder page4 write	21EH	0AH
	Ladder page5 write	228H	0AH
	Timer1 Function write	264H	04H
	Timer2 Function write	269H	04H
	Timer3 Function write	26EH	04H
	Timer4 Function write	273H	04H
	Timer5 Function write	278H	04H
	Timer6 Function write	27DH	04H
	Timer7 Function write	282H	04H
	Timer8 Function write	287H	04H
	Counter1 Function write	28CH	03H
	Counter2 Function write	290H	03H
	Counter3 Function write	294H	03H
	Counter4 Function write	298H	03H
	Encoder1 Function write	2ACH	04H
	Encoder2 Function write	2B1H	04H
	Encoder3 Function write	2B6H	04H
	Encoder4 Function write	2BBH	04H
	Analog1 Function write	2C0H	03H
	Analog2 Function write	2C3H	03H
	Analog3 Function write	2C6H	03H
	Analog4 Function write	2C9H	03H
	Control l function write	2CCH	06H
	Control 2 function write	2D2H	06H
	Control 3 function write	2D8H	06H
	Control 4 function write	2DEH	06H
	Control 5 function write	2E4H	06H
	Control 6 function write	2EAH	06H
	Control 7 function write	2F0H	06H
	Control 8 function write	2F6H	06H
06	Coil status write	2FCH	01H

Function	Description	Command Start Address	Data length (WORD)
06	RUN&Stop(PLC)	330H	1
	All memory clear (Clear Plc Memory)	331H	1
	PASSWORD	332H	1

Note: 'Write Ladder page write' and 'Clear all memory' are not available under PLC running mode.

4.Error code

ASCII Mode

STX	':'
Address	'0'
	'1'
Function	'8'
	'6'
Exception code	'5'
	'1'
LRC Check	'2'
	'8'
END	'CR'
	'LF'

RTU Mode

SLAVE Address		02H
Function		83H
Exception code		52H
CRC-16	High	C0H
	Low	CDH

Under communication linking, the driver responses the Exception Code and send Function Code AND 80H to main system if there is error happened.

Error Code	Description
51	Function Code Error
52	Address Error
53	Data Amount Error
54	Data Over Range
55	Writing Mode Error

5.Command Start Address description

5.1 Ladder(*)page read

ASCII Mode

PC → INV(PLC)

3AH	STX
30H	Address
31H	
30H	Function Code
33H	
30H	*Register Number
32H	
30H	
30H	
30H	Data Length
30H	
30H	
41H	
?	CHECK SUM,
?	
0DH	END
0AH	END

INV(PLC)→PC

3AH	STX
30H	Address
31H	
30H	Function Code
33H	
31H	Data length (Byte)
34H	
Send out the data from 200H~209H, total 40 Byte	
?	CHECK SUM,
?	
0DH	END
0AH	END

RTU Mode

PC → INV(PLC)

01H	Address
03H	Function Code
02H	*Register Number
00H	
00H	Data Length
0AH	
	CRC High Byte
	CRC Low Byte

INV(PLC)→PC

01H	Address
03H	Function Code
14H	Data length
Sent out the data from 200H~209H, total 20 Byte	
?	CRC High Byte
?	CRC Low Byte

5.2 Function block read

5.2.1 Timer function block read

ASCII Mode

PC →INV(PLC)

3AH	STX
30H	Address
31H	
30H	Function Code
33H	
30H	*Register Number
32H	
36H	
34H	
30H	Data Length
30H	
30H	
35H	
?	CHECK SUM,
?	
0DH	END
0AH	END

INV(PLC)→PC

3AH	STX
30H	Address
31H	
30H	Function Code
33H	
30H	Data length (Byte)
41H	
*Send out the data from 264H~268H, total 20 Byte	
?	CHECK SUM,
?	
0DH	END
0AH	END

RTU Mode

PC → INV(PLC)

01H	Address
03H	Function Code
02H	*Register Number
64H	
00H	Data Length
05H	
	CRC High Byte
	CRC Low Byte

INV(PLC)→PC

01H	Address
03H	Function Code
0AH	Data length
*Send out the data from 264H~268H, total 10 Byte	
?	CRC High Byte
?	CRC Low Byte

5.2.2 Counter function block read

ASCII Mode

PC →INV(PLC)

3AH	STX
30H	Address
31H	
30H	Function Code
33H	
30H	*Register Number
32H	
38H	
43H	
30H	Data Length
30H	
30H	
34H	
?	CHECK SUM
?	
0DH	END
0AH	END

INV(PLC) →PC

3AH	STX
30H	Address
31H	
30H	Function Code
33H	
30H	Data Length
38H	(Byte)
*send out the data from 28CH~28FH, total 16 Byte	
?	CHECK SUM
?	
0DH	END
0AH	END

RTU Mode

PC → INV(PLC)

01H	Address
03H	Function Code
02H	*Register Number
8CH	
00H	Data Length
04H	
	CRC High Byte
	CRC Low Byte

INV(PLC)→PC

01H	Address
03H	Function Code
08H	Data length
*Send out the data from 28CH~28FH, total 8 Byte	
?	CRC High Byte
?	CRC Low Byte

5.2.3 Encoder function block read

ASCII Mode

PC →INV(PLC)

3AH	STX
30H	Address
31H	
30H	Function Code
33H	
30H	*Register Number
32H	
41H	
43H	
30H	Data Length
30H	
30H	
35H	
?	CHECK SUM
?	
0DH	END
0AH	END

INV(PLC) →PC

3AH	STX
30H	Address
31H	
30H	Function Code
33H	
30H	Data Length (Byte)
41H	
*Send out the data from 2ACH~2B0H, total 20 Byte	
?	CHECK SUM,
?	
0DH	END
0AH	END

RTU Mode

PC → INV(PLC)

01H	Address
03H	Function Code
02H	*Register Number
ACH	
00H	Data Length
05H	
	CRC High Byte
	CRC Low Byte

INV(PLC)→PC

01H	Address
03H	Function Code
0AH	Data length
*Send out the data from 2ACH~2B0H, total 10 Byte	
?	CRC High Byte
?	CRC Low Byte

5.2.4 Analog function block read

ASCII Mode

PC → INV(PLC)

3AH	STX
30H	Address
31H	
30H	Function Code
33H	
30H	*Register Number
32H	
43H	
30H	
30H	Data Length
30H	
30H	
33H	
?	CHECK SUM
?	
0DH	END
0AH	END

INV(PLC) →PC

3AH	STX
30H	Address
31H	
30H	Function Code
33H	
30H	Data Length (Byte)
36H	
*Send out the data from 2C0H~2C2H, total 12 Byte	
?	CHECK SUM,
?	
0DH	END
0AH	END

RTU Mode

PC → INV(PLC)

01H	Address
03H	Function Code
02H	*Register Number
C0H	
00H	Data Length
03H	
?	CRC High Byte
?	CRC Low Byte

INV(PLC)→PC

01H	Address
03H	Function Code
06H	Data length
**Send out the data from 2C0H~2C2H, total 6 Byte	
?	CRC High Byte
?	CRC Low Byte

5.2.5 Control function block read

ASCII Mode

PC→ INV(PLC)

3AH	STX
30H	Address
31H	
30H	Function Code
33H	
30H	*Register Number
32H	
43H	
43H	
30H	Data Length
30H	
30H	
36H	
?	CHECK SUM
?	
0DH	END
0AH	END

INV(PLC) →PC

3AH	STX
30H	Address
31H	
30H	Function Code
33H	
30H	Data Length
43H	(Byte)
*Send out the data from 2CCH~2D1H, total 24 Byte	
?	CHECK SUM
?	
0DH	END
0AH	END

RTU Mode

PC → INV(PLC)

01H	Address
03H	Function Code
02H	*Register Number
CCH	
00H	Data Length
06H	
	CRC High Byte
	CRC Low Byte

INV(PLC)→PC

01H	Address
03H	Function Code
0CH	Data length
**Send out the data from 2CCH~2D1H, total 12 Byte	
?	CRC High Byte
?	CRC Low Byte

5.2.6 Coil status read

ASCII Mode

PC →INV(PLC)

3AH	STX
30H	Address
31H	
30H	Function Code
33H	
30H	*Register Number
32H	
46H	
43H	
30H	Data Length
30H	
30H	
38H	
?	CHECK SUM
?	
0DH	END
0AH	END

INV(PLC) →PC

3AH	STX
30H	Address
31H	
30H	Function Code
33H	
31H	Data Length
30H	(Byte)
*Send out the data from 2FCH~303H, total 32 Byte	
?	CHECK SUM
?	
0DH	END
0AH	END

RTU Mode

PC → INV(PLC)

01H	Address
03H	Function Code
02H	*Register Number
FCH	
00H	Data Length
08H	
	CRC High Byte
	CRC Low Byte

INV(PLC)→PC

01H	Address
03H	Function Code
10H	Data length
*Send out the data from 2FCH~303H, total 16 Byte	
?	CRC High Byte
?	CRC Low Byte

6.3 Ladder page write

ASCII Mode

PC → INV(PLC)

3AH	STX
30H	Address
31H	
31H	Function Code
30H	
30H	*Register Number
32H	
30H	
30H	
30H	Data Length (Byte)
30H	
30H	
41H	
31H	DATA Number
34H	
*Send out the data from 200H~209H, total 40 Byte	
?	CHECK SUM
?	
0DH	END
0AH	END

INV(PLC) →PC

3AH	STX
30H	Address
31H	
30H	Function Code
33H	
30H	*Register Number
32H	
30H	
30H	
30H	Data Length
30H	
30H	
41H	
?	CHECK SUM
?	
0DH	END
0AH	END

RTU Mode

PC → INV(PLC)

01H	Address
10H	Function Code
02H	* Register Code
00H	
00H	Data Length
0AH	
14H	DATA Number
*end out the data from 200H~209H, total 20 Byte	
?	CRC High Byte
?	CRC Low Byte

INV(PLC)→PC

01H	Address
03H	Function Code
02H	* Register Code
00H	
00H	Data Length
0AH	
?	CRC High Byte
?	CRC Low Byte

6.4 Function block write

6.4.1 Timer function block write

ASCII Mode

PC →INV(PLC)

3AH	STX
30H	Address
31H	
31H	Function Code
30H	
30H	*Register Number
32H	
36H	
34H	
30H	Data Length (Byte)
30H	
30H	
34H	
30H	DATA Number
38H	
*Send out the data from 264H~267H, total 16 Byte	
?	CHECK SUM
?	
0DH	END
0AH	END

INV(PLC) →PC

3AH	STX
30H	Address
31H	
31H	Function Code
30H	
30H	*Register Number
32H	
36H	
34H	
30H	Data Length
30H	
30H	
34H	
?	CHECK SUM
?	
0DH	END
0AH	END

RTU Mode

PC → INV(PLC)

01H	Address
10H	Function Code
02H	* Register Code
64H	
00H	Data Length
04H	
08H	DATA Number
*Send out the data from 264H~267H, total 8 Byte	
?	CRC High Byte
?	CRC Low Byte

INV(PLC)→PC

01H	Address
10H	Function Code
02H	* Register Code
64H	
00H	Data Length
04H	
?	CRC High Byte
?	CRC Low Byte

6.4.2 Counter function block write

ASCII Mode

PC → INV(PLC)

3AH	STX
30H	Address
31H	
31H	Function Code
30H	
30H	*Register Number
32H	
38H	
43H	
30H	Data Length (Byte)
30H	
30H	
33H	
30H	DATA Number
36H	
*Send out the data from 28CH~28EH, total 12 byte	
?	CHECK SUM
?	
0DH	END
0AH	END

INV(PLC) →PC

3AH	STX
30H	Address
31H	
30H	Function Code
33H	
30H	*Register Number
32H	
38H	
43H	
30H	Data Length
30H	
30H	
33H	
?	CHECK SUM
?	
0DH	END
0AH	END

RTU Mode

PC → INV(PLC)

01H	Address
10H	Function Code
02H	* Register Code
8CH	
00H	Data Length
03H	
06H	DATA Number
*Send out the data from 28CH~28EH, total 6 Byte	
?	CRC High Byte
?	CRC Low Byte

INV(PLC)→PC

01H	Address
10H	Function Code
02H	* Register Code
8CH	
00H	Data Length
03H	
?	CRC High Byte
?	CRC Low Byte

6.4.3 Encoder function block write

ASCII Mode

PC →INV(PLC)

3AH	STX
30H	Address
31H	
31H	Function Code
30H	
30H	*Register Number
32H	
41H	
43H	
30H	Data Length (Byte)
30H	
30H	
34H	
30H	DATA Number
38H	
*Send out the data from 2ACH~2AFH, total 16 Byte	
?	CHECK SUM
?	
0DH	END
0AH	END

INV(PLC) →PC

3AH	STX
30H	Address
31H	
30H	Function Code
33H	
30H	*Register Number
32H	
41H	
43H	
30H	Data Length
30H	
30H	
34H	
?	CHECK SUM
?	
0DH	END
0AH	END

RTU Mode

PC → INV(PLC)

01H	Address
10H	Function Code
02H	* Register Code
ACH	
00H	Data Length
04H	
08H	DATA Number
* Send out the data from 2ACH~2AFH, total 8 Byte	
?	CRC High Byte
?	CRC Low Byte

INV(PLC)→PC

01H	Address
10H	Function Code
02H	* Register Code
ACH	
00H	Data Length
04H	
?	CRC High Byte
?	CRC Low Byte

6.4.4 Analog function block write

ASCII Mode

PC→ INV(PLC)

3AH	STX
30H	Address
31H	
31H	Function Code
30H	
30H	*Register Number
32H	
43H	
30H	
30H	Data Length (Byte)
30H	
30H	
33H	
30H	DATA Number
36H	
* Send out the data from 2C0H~2C2H, total 12 Byte	
?	CHECK SUM
?	
0DH	END
0AH	END

INV(PLC) →PC

3AH	STX
30H	Address
31H	
30H	Function Code
33H	
30H	*Register Number
32H	
43H	
30H	
30H	Data Length
30H	
30H	
33H	
?	CHECK SUM
?	
0DH	END
0AH	END

RTU Mode

PC → INV(PLC)

01H	Address
10H	Function Code
02H	* Register Code
C0H	
00H	Data Length
03H	
06H	DATA Number
* Send out the data from 2C0H~2C2H, total 6 Byte	
?	CRC High Byte
?	CRC Low Byte

INV(PLC)→PC

01H	Address
10H	Function Code
02H	* Register Code
C0H	
00H	Data Length
03H	
?	CRC High Byte
?	CRC Low Byte

6.4.5 Control function block write

ASCII Mode

PC→ INV(PLC)

3AH	STX
30H	Address
31H	
31H	Function Code
30H	
30H	*Register Number
32H	
43H	
43H	
30H	Data Length (Byte)
30H	
30H	
36H	
30H	DATA Number
43H	
* Send out the data from 2CCH~2D1H, total 24 Byte	
?	CHECK SUM
?	
0DH	END
0AH	END

INV(PLC) →PC

3AH	STX
30H	Address
31H	
30H	Function Code
33H	
30H	*Register Number
32H	
43H	
43H	
30H	Data Length
30H	
30H	
36H	
?	CHECK SUM
?	
0DH	END
0AH	END

RTU Mode

PC → INV(PLC)

01H	Address
10H	Function Code
02H	* Register Code
CCH	
00H	Data Length
06H	
0CH	DATA Number
*Send out the data from 2CCH~2D1H, total 12 Byte	
?	CRC High Byte
?	CRC Low Byte

INV(PLC)→PC

01H	Address
10H	Function Code
02H	* Register Code
CCH	
00H	Data Length
03H	
?	CRC High Byte
?	CRC Low Byte

6.4.6 Coil status write

ASCII Mode

PC→ INV(PLC)		INV(PLC→PC	
3AH	STX	3AH	STX
30H	Address	30H	Address
31H		31H	
30H	Function Code	30H	Function Code
36H		36H	
30H	*Register Number	30H	*Register Number
32H		32H	
46H		46H	
43H		43H	
*Data to be written to	16-Bit data comprising of 4 ASCII codes	*Data to be written to	16-Bit data comprising of 4 ASCII codes
*Data to be written to		*Data to be written to	
*Data to be written to		*Data to be written to	
*Data to be written to		*Data to be written to	
?	CHECK SUM	?	CHECK SUM
?		?	
0DH	END	0DH	END
0AH	END	0AH	END

RTU Mode

01H	Address	01H	Address
06H	Function Code	06H	Function Code
02H	* Register Code	02H	* Register Code
FCH		FCH	
*Data to be written to	16-Bit data	*Data to be written to	16-Bit data
*Data to be written to		*Data to be written to	
?	CRC High Byte	?	CRC High Byte
?	CRC Low Byte	?	CRC Low Byte

Note:	Write to Coil	Start code
	INPUT	02FDH
	TIMER	02FEH
	COUNTER	02FFH
	ANALOG	0300H
	ENCODER	0301H
	ANALOG	0302H
	ENCODER	0302H
	OUTPUT	0303H

6.5 Inverter Control

6.5.1 Command Data (Readable and Writable)

<table>
<tr><th>Register No.</th><th>Content</th></tr>
<tr><td>101H</td><td>
Operation Signal
<table>
<tr><th>Bit</th><th>Description</th><th>1</th><th>0</th></tr>
<tr><td>0</td><td>Operation Command</td><td>Run</td><td>Stop</td></tr>
<tr><td>1</td><td>Reverse Command</td><td>Reverse</td><td>Forward</td></tr>
<tr><td>2</td><td>External Fault</td><td>Fault (EFO)</td><td></td></tr>
<tr><td>3</td><td>Fault Reset</td><td>Reset</td><td></td></tr>
<tr><td>4</td><td>Jog Command</td><td>Jog</td><td></td></tr>
<tr><td>5</td><td>Multi-function Command S1</td><td>ON</td><td>OFF</td></tr>
<tr><td>6</td><td>Multi-function Command S2</td><td>ON</td><td>OFF</td></tr>
<tr><td>7</td><td>Multi-function Command S3</td><td>ON</td><td>OFF</td></tr>
<tr><td>8</td><td>Multi-function Command S4</td><td>ON</td><td>OFF</td></tr>
<tr><td>9</td><td>Multi-function Command S5</td><td>ON</td><td>OFF</td></tr>
<tr><td>A</td><td>Multi-function Command S6</td><td>ON</td><td>OFF</td></tr>
<tr><td>B</td><td>Multi-function Command AIN</td><td>ON</td><td>OFF</td></tr>
<tr><td>C</td><td>Multi-function Command RY1</td><td>ON</td><td>OFF</td></tr>
<tr><td>D</td><td>Multi-function Command RY2</td><td>ON</td><td>OFF</td></tr>
<tr><td>E</td><td>(Not used)</td><td></td><td></td></tr>
<tr><td>F</td><td>(Not used)</td><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>102H</td><td>Frequency Command</td></tr>
<tr><td>103H~11FH</td><td>(Reserved)</td></tr>
</table>

Note: **Write in zero for Not used BIT, do not write in data for the reserved register.**

6.5.2 Monitor Data (Only for reading)

<table>
<tr><th>Register No.</th><th>Content</th></tr>
<tr><td>120H</td><td>
<table>
<tr><th>Bit</th><th>Description</th><th>1</th><th>0</th></tr>
<tr><td>0</td><td>Operation state</td><td>Run</td><td>Stop</td></tr>
<tr><td>1</td><td>Direction state</td><td>Reverse</td><td>Forward</td></tr>
<tr><td>2</td><td>Inverter operation prepare state</td><td>ready</td><td>unready</td></tr>
<tr><td>3</td><td>Abnormal</td><td>Abnormal</td><td></td></tr>
<tr><td>4</td><td>DATA setting error</td><td>Error</td><td></td></tr>
<tr><td>5-F</td><td>(unused)</td><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>121H</td><td>
Fault Description
<table>
<tr><th>Code</th><th>Description</th><th>Code</th><th>Description</th></tr>
<tr><td>00</td><td>The inverter is normal</td><td>01</td><td>Program abnormal(CPF)</td></tr>
<tr><td>02</td><td>EEPROM abnormal (EPR)</td><td>03</td><td>Over voltage (OV)</td></tr>
<tr><td>04</td><td>Under voltage(LV)</td><td>05</td><td>Inverter over heat (OH)</td></tr>
<tr><td>06~09</td><td>(unused)</td><td>10</td><td>Over current during decelerating (OC-D)</td></tr>
<tr><td>11</td><td>Over current during accelerating (OC-A)</td><td>12</td><td>Over current at constant speed (OC-C)</td></tr>
<tr><td>13</td><td>Over voltage at constant speed / decelerating (OV-C)</td><td>14</td><td>Inverter over heat at constant speed (OH-C)</td></tr>
<tr><td>15</td><td>Inverter over speed (OVSP)</td><td>16</td><td>CPU interrupted (CTER)</td></tr>
<tr><td>17</td><td>(OC_S)</td><td>18~19</td><td>(Unused)</td></tr>
<tr><td>20</td><td>Over current at stop(OC)</td><td>21</td><td>Motor over load (OL1)</td></tr>
<tr><td>22</td><td>Inverter over load (OL2)</td><td>23</td><td>Over torque detected (OL3)</td></tr>
<tr><td>24</td><td>Under voltage during running (LV-C)</td><td>25~27</td><td>(unused)</td></tr>
<tr><td>28</td><td>(unused)</td><td>29</td><td>(Err8)</td></tr>
<tr><td>30</td><td>Stop at 0 Hz(STP0)</td><td>31</td><td>Direct start disable (STP1)</td></tr>
<tr><td>32</td><td>Control panel emergency stop (STP2)</td><td>33</td><td>Emergency stop (E.S)</td></tr>
<tr><td>34</td><td>External BB(bb)</td><td>35</td><td>Auto testing error(ATER)</td></tr>
<tr><td>36</td><td>PID feedback signal loss(PDER)</td><td>37</td><td>Communication error(EFO)</td></tr>
<tr><td>38</td><td>Encoder signal loss (ECER) *1</td><td>39</td><td>Analog converting error(Err4)</td></tr>
<tr><td>40</td><td>Parameter locked(LOC)</td><td>41</td><td>Keypad operation error (Err1)</td></tr>
<tr><td>42</td><td>Parameter setting error (Err2)</td><td>43</td><td>Modifying the parameter in communication(Err5)</td></tr>
<tr><td>44</td><td>Communication failure (Err6)</td><td>45</td><td>Parameter setting error (Err7)</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Register No.</th><th>Content</th></tr>
<tr><td>122H</td><td>
<table>
<tr><th colspan="2">Bit</th><th>Description</th><th>1</th><th>0</th></tr>
<tr><td rowspan="7">Sequence input status</td><td>0</td><td>Terminal S1</td><td>Closed</td><td>Opened</td></tr>
<tr><td>1</td><td>Terminal S2</td><td>Closed</td><td>Opened</td></tr>
<tr><td>2</td><td>Terminal S3</td><td>Closed</td><td>Opened</td></tr>
<tr><td>3</td><td>Terminal S4</td><td>Closed</td><td>Opened</td></tr>
<tr><td>4</td><td>Terminal S5</td><td>Closed</td><td>Opened</td></tr>
<tr><td>5</td><td>Terminal S6</td><td>Closed</td><td>Opened</td></tr>
<tr><td>6</td><td>Terminal AIN</td><td>Closed</td><td>Opened</td></tr>
<tr><td rowspan="4">Contact output</td><td>7~9</td><td>(unused)</td><td></td><td></td></tr>
<tr><td>A</td><td>Multi-function output1(RELAY1)</td><td>ON</td><td>OFF</td></tr>
<tr><td>B</td><td>Multi-function output 1(RELAY2)</td><td>ON</td><td>OFF</td></tr>
<tr><td>C~F</td><td>(unused)</td><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>0123H</td><td>Frequency command(V1)</td></tr>
<tr><td>0124H</td><td>Output frequency(V2)</td></tr>
<tr><td>0125H</td><td>Output voltage command (1/1V)</td></tr>
<tr><td>0126H</td><td>Output DC voltage command (1/1V)</td></tr>
<tr><td>0127H</td><td>Output current (10/1A)(V6)</td></tr>
<tr><td>0128H</td><td>Reserved</td></tr>
<tr><td>0129H</td><td>Output torque(V7)</td></tr>
<tr><td>012AH</td><td>PID Feedback value (100% / Max output frequency, 10/1%)</td></tr>
<tr><td>012BH</td><td>PID input value (100% / Max output frequency, 10/1% , sign attached)</td></tr>
<tr><td>012CH</td><td>TM2 AIN input value (1024 / 10V) *1(V3)</td></tr>
<tr><td>012DH</td><td>TM2 S6 input value (1024 / 10V) *1(V4)</td></tr>
<tr><td>012EH</td><td>KEYPAD VR input value (1024 / 10V) *1(V5)</td></tr>
</table>

Note: Do not write in data for the reserved register

6.5.3 Read the data in the holding register [03H]

Master unit reads the contents of the holding registers with the continuous numbers for the specified quantity.

(Example) Read the SLAVE station No: 01, 7300CV drive's frequency command.

ASCII Mode

Instruction Message

3AH	STX
30H	SLAVE Address
31H	
30H	Function Code
33H	
30H	Start Address
31H	
32H	
33H	
30H	Quantity
30H	
30H	
31H	
?	LRC CHECK
?	
0DH	END
0AH	

Response Message (Normal)

3AH	STX
30H	SLAVE Address
31H	
30H	Function Code
33H	
30H	DATA number
32H	
31H	First holding register
37H	
37H	
30H	
?	LRC CHECK
?	
0DH	END
0AH	

Response Message (Fault)

3AH	STX
30H	SLAVE Address
32H	
38H	Function Code
33H	
35H	Error Code
32H	
0DH	END
0AH	

RTU Mode

Instruction Message

SLAVE Address		01 H
Function Code		03H
Start Address	High	01H
	Low	23H
Quantity	High	00H
	Low	01H
CRC-16	High	74H
	Low	3CH

Response Message (Normal)

SLAVE Address		01H
Function Code		03H
DATA number		02H
First holding register	High	17H
	Low	70H
CRC-16	High	AFH
	Low	82H

Response Message (Fault)

SLAVE Address		02H
Function Code		83H
Error Code		52H
CRC-16	High	C0H
	Low	CDH

6.5.3 Loop back testing [08H]

The function code is check communication between MASTER and SLAVE, the Instruction message is returned as a response message without being change, Any values can be used for test codes or data

ASCII Mode

Instruction Message

3AH	STX
30H	SLAVE Address
31H	
30H	Function Code
38H	
30H	Test Codes
30H	
30H	
30H	
41H	DATA
35H	
33H	
37H	
?	LRC CHECK
?	
0DH	END
0AH	

Response Message (Normal)

3AH	STX
30H	SLAVE Address
31H	
30H	Function Code
38H	
30H	Test Codes
30H	
30H	
30H	
41H	DATA
35H	
33H	
37H	
?	LRC CHECK
?	
0DH	END
0AH	

Response Message (Fault)

3AH	STX
30H	SLAVE Address
31H	
38H	Function Code
38H	
32H	Error Code
30H	
?	LRC CHEC
?	
0DH	END
0AH	

RTU Mode

Instruction Message

SLAVE Address		01 H
Function Code		08H
Test Codes	High	00H
	Low	00H
DATA	High	A5H
	Low	37H
CRC-16	High	DAH
	Low	8DH

Response Message (Normal)

SLAVE Address		01H
Function Code		08H
Test Codes	High	00H
	Low	00H
DATA	High	A5H
	Low	37H
CRC-16	High	DAH
	Low	8DH

Response Message (Fault)

SLAVE Address		01H
Function Code		88H
Error Code		20H
CRC-16	High	47H
	Low	D8H

6.5.3 Write holding register [06H]

The specified data are written into the specified holding register.

(Example) Set SLAVE station No: 01, 7300EV drive's frequency command is 60.0Hz.

ASCII Mode

Instruction Message		Response Message (Normal)		Response Message (Fault)	
3AH	STX	3AH	STX	3AH	STX
30H	SLAVE Address	30H	SLAVE Address	30H	SLAVE Address
31H		31H		31H	
30H	Function Code	30H	Function Code	38H	Function Code
36H		36H		36H	
30H	Start Address	30H	Start Address	35H	Error Code
31H		31H		32H	
30H		30H		?	LRC CHECK
32H		32H		?	
31H	DATA	31H	DATA	0DH	END
37H		37H		0AH	
37H		37H			
30H		30H			
?	LRC CHECK	?	LRC CHECK		
?		?			
0DH	END	0DH	END		
0AH		0AH			

RTU Mode

Instruction Message			Response Message (Normal)			Response Message (Fault)		
SLAVE Address		01 H	SLAVE Address		01H	SLAVE Address		01H
Function Code		06H	Function Code		06H	Function Code		86H
Start Address	High	01H	Start Address	High	01H	Error Code		52H
	Low	02H		Low	02H	CRC-16	High	C3H
DATA	High	17H	DATA	High	17H		Low	9DH
	Low	70H		Low	70H			
CRC-16	High	27H	CRC-16	High	27H			
	Low	E2H		Low	E2H			

6.5.3 Write in several holding registers [10H]

Specified data are written into the several specified holding registers from the specified number, respectively.

(Example) Set SLAVE station No: 01, 7300EV drive as forward run at frequency reference 60.0Hz

ASCII Mode

Instruction Message	
3AH	STX
30H	SLAVE Address
31H	
31H	Function Code
30H	
30H	Start Address
31H	
30H	
31H	
30H	Quantity
30H	
30H	
32H	
30H	DATA Number*
34H	
30H	First DATA
30H	
30H	
31H	
31H	Next DATA
37H	
37H	
30H	
?	LRC CHECK
?	
0DH	END
0AH	

Response Message (Normal)	
3AH	STX
30H	SLAVE Address
31H	
31H	Function Code
30H	
30H	Start Address
31H	
30H	
31H	
30H	Quantity
30H	
30H	
32H	
?	LRC CHECK
?	
0DH	END
0AH	

Response Message (Fault)	
3AH	STX
30H	SLAVE Address
31H	
39H	Function Code
30H	
35H	Error Code
32H	
?	LRC CHECK
?	
0DH	END
0AH	

* Data numbers are the actual number times 2

RTU Mode

Instruction Message

SLAVE Address		01 H
Function Code		10H
Start Address	High	01H
	Low	01H
Quantity	High	00H
	Low	02H
DATA Number *		04H
First DATA	High	00H
	Low	01H
Next DATA	High	17H
	Low	70H
CRC-16	High	60H
	Low	27H

Response Message (Normal)

SLAVE Address		01H
Function Code		10H
Start Address	High	01H
	Low	01H
Quantity	High	00H
	Low	02H
CRC-16 Low	High	11H
	Low	F4H

Response Message (Fault)

SLAVE Address		01H
Function Code		90H
Error Code		52H
CRC-16	High	CDH
	Low	FDH

* Data numbers are the actual number times 2

Comparison list between parameter and register

Register No.	Function	Register No.	Function
0000H	0-0	0023H	3-11
0001H	0-1	0024H	3-12
0002H	0-2	0025H	3-13
0003H	0-3	0026H	3-14
0004H	0-4	0027H	3-15
0005H	0-5	0028H	3-16
0006H	0-6	0029H	3-17
0007H	0-7	002AH	3-18
0008H	0-8	002BH	3-19
0009H	1-0	002CH	3-20
000AH	1-1	002DH	3-21
000BH	1-2	002EH	3-22
000CH	1-3	002FH	4-0
000DH	1-4	0030H	4-1
000EH	1-5	0031H	4-2
000FH	1-6	0032H	4-3
0010H	1-7	0033H	4-4
0011H	2-0	0034H	4-5
0012H	2-1	0035H	5-0
0013H	2-2	0036H	5-1
0014H	2-3	0037H	5-2
0015H	2-5	0038H	5-3
0016H	2-6	0039H	5-4
0017H	2-7	003AH	5-5
0018H	3-0	003BH	5-6
0019H	3-1	003CH	5-8
001AH	3-2	003DH	5-7
001BH	3-3	003EH	6-0
001CH	3-4	003FH	6-1
001DH	3-5	0040H	6-2
001EH	3-6	0041H	6-3
001FH	3-7	0042H	6-4
0020H	3-8	0043H	6-5
0021H	3-9	0044H	6-6
0022H	3-10	0045H	6-7

Register No.	Function	**R**egister No.	Function
0046H	6-8	0069H	10-6
0047H	7-0	006AH	10-7
0048H	7-1	006BH	10-8
0049H	7-2	006CH	10-9
004AH	7-3	006DH	11-0
004BH	7-4	006EH	11-1
004CH	7-5	006FH	11-2
004DH	8-0	0070H	11-3
004EH	8-1	0071H	11-4
004FH	8-2	0072H	11-5
0050H	8-3	0073H	11-6
0051H	8-4	0074H	11-7
0052H	8-5	0075H	12-0
0053H	9-0	0076H	12-1
0054H	9-1	0077H	12-2
0055H	9-2	0078H	12-3
0056H	9-3	0079H	12-4
0057H	9-4	007AH	12-5
0058H	9-5	007BH	12-6
0059H	9-6	007CH	13-0
005AH	9-7	007DH	13-1
005BH	9-8	007EH	13-2
005CH	9-9	007FH	13-3
005DH	9-10	0080H	13-4
005EH	9-11	0081H	14-0
005FH	9-12	0082H	14-1
0060H	9-13	0083H	14-2
0061H	9-14	0084H	14-3
0062H	9-15	0085H	14-4
0063H	10-0	0086H	15-0
0064H	10-1	0087H	15-1
0065H	10-2	0088H	15-2(1)
0066H	10-3	0089H	15-2(2)
0067H	10-4	008AH	15-2(3)
0068H	10-5	008BH	15-3

Register No.	Function	Register No.	Function
008CH	15-4	00AFH	~
008DH	15-5	00B0H	~
008EH	15-6	00B1H	~
008FH		00B2H	~
0090H	3-23	00B3H	~
0091H	3-24	00B4H	~
0092H	3-25	00B5H	~
0093H	3-26	00B6H	~
0094H	3-27	00B7H	~
0095H	3-28	00B8H	~
0096H	3-29	00B9H	~
0097H	5-9	00BAH	~
0098H	~	00BBH	~
0099H	2-4	00BCH	~
009AH	2-8	00BDH	~
009BH	12-7	00BEH	~
009CH	12-8	00BFH	~
009DH	4-6	00C0H	~
009EH	5-10	00C1H	~
009FH	5-11	00C2H	~
00A0H	~	00C3H	~
00A1H	~	00C4H	~
00A2H	~	00C5H	~
00A3H	~	00C6H	~
00A4H	~	00C7H	~
00A5H	~	00C8H	~
00A6H	~	00C9H	~
00A7H	~	00CAH	~
00A8H	~	00CBH	~
00A9H	~	00CCH	~
00AAH	~	00CDH	~
00ABH	~	00CEH	~
00ACH	~	00CFH	~
00ADH	~	00D0H	~
00AEH	~	00D1H	~

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Register No.	Function	Register No.	Function
00D2H	~	00F7H	~
00D3H	~	00F8H	~
00D4H	~	00F9H	~
00D5H	~	00FAH	~
00D6H	~	00FBH	~
00D7H	~	00FCH	~
00D8H	~	00FDH	~
00D9H	~	00FEH	~
00DAH	~	00FFH	~
00DBH	~	~	~
00DCH	~		
00DDH	~		
00DEH	~		
00DFH	~		
00E0H	~		
00E1H	~		
00E2H	~		
00E3H	~		
00E4H	~		
00E5H	~		
00E6H	~		
00E7H	~		
00E8H	~		
00E9H	~		
00EAH	~		
00EBH	~		
00ECH	~		
00EDH	~		
00EEH	~		
00EFH	~		
00F0H	~		
00F1H	~		
00F2H	~		
00F3H	~		
00F4H	~		
00F5H	~		
00F6H	~		