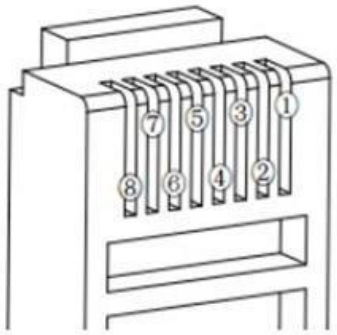
DCC Charger Controller

Modbus Protocol V1.1

二、Pin definition.：

<table>
<tr><td rowspan="9">RJ45通讯接口
 
</td><td>①</td><td>+5V (The power supply is positive and the load capacity is not less than. 200mA)</td></tr>
<tr><td>②</td><td>A (RS485 Bus signal.)</td></tr>
<tr><td>③</td><td>B (RS485 Bus signal.)</td></tr>
<tr><td>④</td><td>GND (Power/ ／ communication.)</td></tr>
<tr><td>⑤</td><td>NC (Idle, no other functions allowed.)</td></tr>
<tr><td>⑥</td><td>CAN_H (CAN bus signal.)</td></tr>
<tr><td>⑦</td><td>NC (Idle, no other functions allowed.)</td></tr>
<tr><td>⑧</td><td>CAN_L (CAN Bus signal.)</td></tr>
<tr><td colspan="2">Description. :
->RS485 Initial baud rate. 9600bps
->CAN Initial baud rate. 500Kbps
->RS485 和 CAN You can merge into one physical interface or separate it into two physical interfaces.
->无 CAN Interface requirements for the product, can ignore the CAN pin definition.</td></tr>
</table>

三、The protocol definition.：

1. Format：

Start Character	Address Code (1 Byte)	Function Code (1 Byte)	Start Address (2 Byte)	Data Length (2 Byte)	CRC Check (2 Byte)	End Character

1.Description.

1）starting character：>10ms

2）1 address code section. Range: 01H-F7H to ('decimal 1-247)," 00H is the response of the broadcast address from the machine. But return the command.

3）Function code:1 byte.

Command	Data Address Type	Function Code	Error Code
Read a single or multiple word register(s)	WORD	03H	83H
Write a single word register	WORD	06H	86H
Write multiple word register(s)	WORD	10H	90H
Restore Factory Default Settings	No Data Address	78H	F8H
Clear History	No Data Address	79H	F9H

4）Start address:2 bytes.

5）Data length:2 bytes.

6）CRC check:2 bytes, a CRC checksum for address codes, function codes, and data bytes

7）The end

characters.

>10ms

Attention.：

1）The data address and data are 2 bytes, **sending high bytes before low bytes, while CRC sends the low level before sending the high.**

2）Error code for the server issued by the frame data there is an error, the client returned the error exception answer function code: error code . . . function code . 80H.

3）Exception code description.

a、-01H -- Support for function codes.

b,、02H -- PDU start ingon address is incorrect or PDU start ingon address , data length beyond the legal range c,、03H -- read register data or write register data is too long.

d,、04H -- The client performs a

read register or writes a register failed e,、05H -- the data check code issued by the server is incorrect.

3.Instance:

1） Read the register.

Request:

Describe.	The number of bytes.	Command
The device addresses.	BYTE	1AM-F7H
功能码	BYTE	3AM
The starting address.	WORD	0000H-FFFFH
The number of words read.	WORD	0001H～007DH
校验码	WORD	CRC checksum for all bytes above.

Normal Response

Description	Data Type	Command
Address Code	BYTE	01H～F7H
Function Code	BYTE	03H
Data Length	BYTE	01H～FAH
Data Content	WORD	Data (high order byte first)
...	WORD	Data (high order byte first)
CRC Check	WORD	Sum of above bytes

Abnormal Response

Description	Data Type	Command
Address	BYTE	01H～F7H
Error Code	BYTE	83H
Diagnosis Code	BYTE	N (N=1, 2, 3, 4)
CRC Check	WORD	Sum of above bytes

(2) Write a single word register:

Request

Description	Data Type	Command
Address Code	BYTE	01H ~ F7H
Function Code	BYTE	06H
Start Address	WORD	0000H ~ FFFFH
Word to Write	WORD	0000H ~ FFFFH
CRC Check	WORD	Sum of above bytes

Normal Response

Description	Data Type	Command
Address Code	BYTE	01H ~ F7H
Function Code	BYTE	06H
Start Address	WORD	0000H ~ FFFFH
Word to Write	WORD	0000H ~ FFFFH
CRC Check	WORD	Sum of above bytes

Abnormal Response

Description	Data Type	Command
Address	BYTE	01H ~ F7H
Error Code	BYTE	86H
Diagnosis Code	BYTE	N (N=1, 2, 3, 4)
CRC Check	WORD	Sum of above bytes

(3) Write multiple word register(s):

Request

Description	Data Type	Command
Address Code	BYTE	01H ~ F7H
Function Code	BYTE	10H
Start Address	WORD	0000H ~ FFFFH
Number of Words to Write	WORD	0001H ~ 007DH
Number of Bytes to Write	BYTE	2 x Number of words to write
Data Content	WORD	Data (high order byte first)
...	WORD	Data (high order byte first)
CRC Check	WORD	Sum of above bytes

Normal Response

Description	Data Type	Command
Address Code	BYTE	01H ~ F7H
Function Code	BYTE	10H
Start Address	WORD	0000H ~ FFFFH
Number of Words to Write	WORD	0001H ~ 007DH
CRC Check	WORD	Sum of above bytes

Abnormal Response

Description	Data Type	Command
Address	BYTE	01H ~ F7H
Error Code	BYTE	90H
Diagnosis Code	BYTE	N (N=1, 2, 3, 4)
CRC Check	WORD	Sum of above bytes

(4) Restore Factory Default Settings:

Request

Description	Data Type	Command
Address Code	BYTE	01H ~ F7H
Function Code	BYTE	78H
Supplement Data	WORD	0000H
Supplement Data	WORD	0001H
CRC Check	WORD	Sum of above bytes

Normal Response

Description	Data Type	Command
Address Code	BYTE	01H ~ F7H
Function Code	BYTE	78H
Supplement Data	WORD	0000H
Supplement Data	WORD	0001H
CRC Check	WORD	Sum of above bytes

Abnormal Response

Description	Data Type	Command
Address	BYTE	01H ~ F7H
Error Code	BYTE	F8H
Diagnosis Code	BYTE	N (N=1, 2, 3, 4)
CRC Check	WORD	Sum of above bytes

(5) Restore Factory Default Settings:

Request

Description	Data Type	Command
Address Code	BYTE	01H ~ F7H
Function Code	BYTE	79H
Supplement Data	WORD	0000H
Supplement Data	WORD	0001H
CRC Check	WORD	Sum of above bytes

Normal Response

Description	Data Type	Command
Address Code	BYTE	01H ~ F7H
Function Code	BYTE	79H
Supplement Data	WORD	0000H
Supplement Data	WORD	0001H
CRC Check	WORD	Sum of above bytes

Abnormal Response

Description	Data Type	Command
Address	BYTE	01H ~ F7H
Error Code	BYTE	F9H
Diagnosis Code	BYTE	N (N=1, 2, 3, 4)
CRC Check	WORD	Sum of above bytes

四、PDU 地址分配表

PDU Address	Bytes	Read/write	Description	Data/Rage	Meaning	Unit	Note
System Info							
0000H ～ 0009H	20	-	Keep			-	
000AH	2	R	High 8 bits: The highest support voltage.	0CH	12V	V	Hex values.
			Low 8 bits: Rated charging current.	1EH	30A	A	
				32H	50A		
000BH	2	R	High 8 bits: Reserved.				
			Low 8 bits: Product type.	00(DC Assembly.) 01(DCC)			
000CH ～ 0013H	16	R	Product model.		Data format ASCII.	-	Product SKU.
0014H ～ 0015H	4	R	The software version.		Format: xx.	-	The version number of the product approval book.
0016H ～ 0017H	4	R	The hardware version.		Format: xx.	-	The version number of the product approval book.
0018H 0019H	4	R	The product serial number.				
001AH	2	R/W	Controller, device address.	1～247		-	8 bits lower.
001BH ~ 001CH	4	R	The version of the protocol.		Format: xx. Current version: 10.		The version number of the product approval book.
001DH ~ 001EH	4	R/W	Unique identification code.				The default 0xFFFFFFFFFF.
动态数据信息							
0100H	2	R	The backup battery level SOC.	0～100	The percentage of the current battery charge.	%	
0101H	2	R	The backup battery voltage.			*0.1V	

0102H	2	R	Total charge current.		Solar energy and generators together give back-up. The current of the battery charge.	*0.01A	
0103H	2	R	The internal temperature of the controller (high 8. bits)		The actual temperature value (internal two-way temperature, transmission of one high). (b7: symbol bit; b0-b6 temperature value).	℃	
			Backup battery temperature (low 8)				

			bits)				
0104H	2	R	Generator voltage.			*0.1V	
0105H	2	R	Generator charging current.			*0.01A	
0106H	2	R	The generator chargepower.			W	
0107H	2	R	Solar panel Voltage			*0.1V	
0108H	2	R	Solar panel current.			*0.01A	
0109H	2	R	Solar charging power.			W	
010AH	2	W	Keep.			-	
010BH	2	R	The lowest voltage for the backup battery for the day.			*0.1V	
010CH	2	R	The maximum voltage for the backup battery for the day.			*0.1V	
010DH	2	R	Charge the maximum current for the day.		Solar energy plus generators.	*0.01A	
010EH	2	R	Keep.			*0.01A	
010FH	2	R	Charge the maximum power for the day.		Solar energy plus generators.	W	
0110H	2	R	Keep.			W	
0111H	2	R	The # of hours charged on the day		Solar energy plus generators.	AH	
0112H	2	R	Keep.			AH	
0113H	2	R	The power generation capacity for the day.		Solar energy plus generators.	*0.001 Degree.	
0114H	2	R	Keep.			*0.001 Degree.	
0115H	2	R	Total number of running days.			days	
0116H	2	R	The total number of times the backup battery has been put.			-	
0117H	2	R	The total number of times the backup battery is full.			-	
0118H 0119H	4	R	Total charge time for the backup battery.		Solar energy plus generators.	AH	
011AH 011BH	4	R	Keep.			AH	
011CH 011DH	4	R	Cumulative power generation.		Solar energy plus generators.	*0.001 Degree.	

011EH 011FH	4	R	Keep.			*0.001 Degree.	
0120H	2	R	High 8 bits: Reserved. Low 8 8-bit: Charging status (solar/generator).		00H: Charging is not turned on. 01H:Keep. 02H:mppt Charging mode (solar energy.)) 03H:Equalization charging mode (solar/ Generator) 04H:Lifting charging mode (solar/ Generator)	-	If the solar energy is being charged, the transmitted charging state is the solar charging state, and if there is no solar charging, the charging state of the transmitted output is the charging state of the generator.

					05H:Floating charging mode (solar energy/ Generator)		
					06H: Current-limiting charging mode (solar/ Generator)		
					07H:Keep.		
					08H:Direct charge mode (generator)		
0121H	2	R	16 bits high.		B12-B15: Reserved.		Fault information: Example: A corresponding bit of 1 indicates the corresponding item out. Now fault, the corresponding bit is 0 for the corresponding item no fault, all no fault return 0000000H.
					B11:Backup battery cryogenic protection stops charging (lithium battery 0 degrees, lead-acid-35).35 degrees)		
					B10:BMS Overcharge protection.		
					B9:Start battery back-up.		
					B8:Generator overpressure protection.		
					B6-B77:保留		
					B5:发电机充电过流		
					B4: The controller temperature is over-warm.2		
					B0-B3 Keep.:		
0122H	2	R	16 bits lower.		B13～b15 Keep.		
					B12：The sun board is backed.		
					B10-B11:Keep.		
					B9: The voltage of the pv input is overvoltage.		
					B8: Fan alarm.		
					B7: 光伏输入功率过大		
					B6：The backup battery temperature is over-temperature.		
					B5:Overtemperature inside the controller. 1		
					B3-B4:Keep.		
					B2：Back-up battery underpressure warning.		
					B1:The backup battery is		

					overpressured. B0:The backup battery is over placed.		
Parameter settings.							
E001H	2	R/W	Set the charging current.	100~5000	Set the charging current.	*0.01A	Set range: 0 to rated charging current. For example, you need to set the charging current value of 20.00A, retain 2 decimal places, first expand the data 100 times 20 x 100 x 20000,, 得 to hex 07D0H, the data can be written into E001H.

E002H	2	R	The nominal capacity of the backup battery.	10~65535		AH	
E003H	2	R/W	High 8 8-bit: System voltage setting.	12	Cannot be set.	-	
			Low 8 8-bit: The voltage after recognition.	12	Cannot be set.		
E004H	2	R/W	The type of backup battery.	0~4	1 -opening, 2-sealed, 3-colloidal, 4 - Lithium battery, 0 - custom.	-	
E005H	2	R/W	Overvoltage voltage.	70～170		V	A围:17～17)V Example: You need to set an overvoltage voltage of 17.0Vand keep a decimal, first expand the data 10 times,17.0V x 10 x 170V,get decimal 00AAH, and write the data to 0103H.
E006H	2	R/W	Charge limit voltage.			V	
E007H	2	R/W	Equalize the charging voltage.			V	
E008H	2	R/W	Raise the charging voltage.			V	
E009H	2	R/W	Floating charge voltage.			V	
E00AH	2	R/W	Raise the charging return voltage.			V	
E00BH	2	R/W	The over-put return voltage.			V	
E00CH	2	R/W	The undervoltage warning voltage.			V	
E00DH	2	R/W	Over-put voltage.			V	
E00EH	2	R/W	The discharge limitvoltage.			V	
E00FH	2	R/W	8-bit high: Reserved. Low 8 bits: Reserved.			-	
E010H	2	R/W	Over-the-time delay.	0~120		S	
E011H	2	R/W	Equal charge time.	0～300		Min	
E012H	2	R/W	Increase the charging time.	10～300		Min	
E013H	2	R/W	Equalcharge interval.	0～255	0: Close.	day	
E014H	2	R/W	Temperature compensation coefficient.	0～5	0: No compensation.	mV/℃/2V	
E01EH	2	R/W	Light-controlled delay time.	0～60		Min	
E01FH	2	R/W	Optical voltage control.	1～40		V	

E020H ~ E02DH	28	R/W	Keep.				
E02EH	2	R/W	Controller charging power settings.			%	The default is 0x64.
E02FH	2	R/W	Generator charging power settings.			%	The default is 0x64.
Historical data records.							
0xF000	2	R	Historical data for the day.		The return data is in turn: The minimum battery voltage on the day of history. (Data accounts for 16 bits, high in front, low in back). The highest battery voltage on the day of history. (Data accounts for 16 bits, high in front, .		The data returned is a block of data for the number of days of data to be read, with a block size of 20 words. 节 F001 读取一天前数据，Fxxx 读取 xxx 天前数据： The data returned is(000H to 3FFH). The specific block of the day, the block size is .

					Low in the back) Maximum charging current on the day of history. (Data accounts for 16 bits, high in front, low in back). Reserve bits. (Data accounts for 16 bits, high in front, low in back). Maximum charging power on the day in history. (Data accounts for 16 bits, high in front, low in back). Reserve bits. (Data accounts for 16 bits, high in front, low in back). The number of hHs charged on the day of history. (Data accounts for 16 bits, high in front, low in back). Reserve bits. (Data accounts for 16 bits, high in front, low in back). The number of hTS charged on the day of history. (Data accounts for 16 bits, high in front, low in back). Reserve bits. (Data accounts for 16 bits, high in front, low		20 bytes, each accounting for 16 bits.

					in back).		
0xF001	2	R	Data from 1 day ago.				