54.6V40A CAN CHARGER PROTOCOL  
1.COMMUNICATION PROTOCAL

Principles followed by the data link layer:

Bus communication rate is: 500Kbps

The provisions of the data link layer mainly refer to CAN2.0B.

Using the 29-bit identifier of the CAN extended frame, and following is the allocation table for the 29 identifier

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| IDENTIFIER 11BITS | | | | | | | | | | | S  R  R | I  D  E | IDENTIFIER EXTENSION 18BITS | | | | | | | | | | | | | | | | | |
| PRIORITY | | | R | DP | PDU FORMAT（PF） | | | | | | S  R  R | I  D  E | PF | | | PDU SPECIFIC（PS） | | | | | | | SOURCE ADDRESS（SA） | | | | | | | |
| 3 | 2 | 1 | 1 | 1 | 8 | 7 | 6 | 5 | 4 | 3 |  |  | 2 | 1 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 28 | 27 | 26 | 25 | 24 | 23 | 22 | 21 | 20 | 19 | 18 |  |  | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |

8-bit PS is the target Address or group extension; 8-bit SA is the source address for sending this message;  
CAN Network address allocation table：

|  |  |
| --- | --- |
| Node name | address |
| Battery Management System（BMS） | 176 (0xB0) |
| Charger Control System（CCS） | 192 (0xC0) |
| Broadcast Address（BCA） | 240 (0xF0) |

Message format：

MSG1：（ID：0x1801C0B0）

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| OUT | IN | ID | | | | | PERIOD（ms） |
| BMS | CCS | P | R | | DP | PF | 1000 |
| 6 | 0 | | 0 | 1 |
| DATA | | | | | | | |
| POSITION | DATA NAME | | | REMARK | | | |
| BYTE1 | Maximum allowable charging terminal voltage (high byte) | | | 0.1V/bit Offset：Example：Vout=3201, Corresponding voltage is 320.1V | | | |
| BYTE2 | Maximum allowable charging terminal voltage (lower byte) | | |
| BYTE3 | Maximum allowable charging terminal current (high byte) | | | 0.1A/bit Offset： Example ：Iout=582, Corresponding current is 58.2A。 | | | |
| BYTE4 | Maximum allowable charging terminal current ( lower byte) | | |
| BYTE5 | CONTROL | | | 0：charger starts charge。1：BMS Protected,charger stops charge。 | | | |
| BYTE6 | RESERVED | | |  | | | |
| BYTE7 | RESERVED | | |  | | | |
| BYTE8 | RESERVED | | |  | | | |

MSG2：（ID：0x1801B0C0）

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| OUT | IN | ID | | | | | PERIOD （ms） |
| CCS | BMS | P | R | | DP | PF | 1000 |
| 6 | 0 | | 0 | 1 |
| DATA | | | | | | | |
| POSITION | DATA NAME | | | REMARK | | | |
| BYTE1 | Output voltage high byte | | | 0.1V/bit Offset ： Example ：Vout=3201, Corresponding voltage is 320.1V | | | |
| BYTE2 | Output voltage lower byte | | |
| BYTE3 | Output current high byte | | | 0.1A/bit Offset ： Example ：Iout=582, Corresponding current is 58.2A。 The highest BIT represents the sign, 0 is charge, and 1 is discharge. | | | |
| BYTE4 | Output current lower byte | | |
| BYTE5 | Charger temperature high byte | | | 0.1℃/bit Offset： Example ：Tchg=405,Corresponding charger temperature is 40.5℃。 The highest BIT represents the sign, 0 is the positive temperature and 1 is the negative temperature. | | | |
| BYTE6 | Charger temperature lower byte | | |
| BYTE7 | Charger STATUS | | | See below table | | | |
| BYTE8 | RESERVED | | |  | | | |

Charger status code definition

|  |  |  |
| --- | --- | --- |
| STATUS | Identification | Remark |
| Bit0 | Startup state | 0：turn on。1：turn off |
| Bit1 | Charging method | 0：CC。1：CV |
| Bit2 | Charger temperature | 0：normal。1： Charger temperature is too high, goes to stop charging. |
| Bit3 | Input voltage | 0：normal input。1：input voltage abnormal, charger stop charging. |
| Bit4 | Hardware error | 0：normal。1：Hardware error |
| Bit5 |  |  |
| Bit6 |  |  |
| Bit7 |  |  |

Operation Method

1. BMS Send control frame(MSG1) to the charger with fixed 1s interval. After receiving the message, the charger outputs according to the voltage and current settings, and returns the work information (MSG2) to BMS. If the BMS does not receive the message within 5 seconds, it enters the communication error state and send out stop charging MSG1 to charger.