CAN BUS COMMUNICATION SPECIFICATION

1. Communication Specification

The principle for data link layer

Communication speed for bus line: 2 5 0 Kbps

The provision for data link layer: Refer to the related regulation of CAN2.0B and J1939

Use and redefine 29 identifiers of CAN extended frame. The distribution of 29 identifiers are listed below

<table>
<tr><td colspan="11">IDENTIFIER 11BITS</td><td>SRR</td><td>IDE</td><td colspan="18">IDENTIFIER EXTENSION 18BITS</td></tr>
<tr><td colspan="3">PRIORITY</td><td>R</td><td>DP</td><td colspan="7">PDU FORMAT(PF)</td><td>SRR</td><td>IDE</td><td colspan="2">PF</td><td colspan="8">PDU SPECIFIC(PS)</td><td colspan="8">SOURCE ADDRESS(SA)</td></tr>
<tr><td>3</td><td>2</td><td>1</td><td>1</td><td>1</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td></td><td></td><td>2</td><td>1</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr>
<tr><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td></td><td></td><td>17</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td>0</td></tr>
</table>

Priority has 3 bits so there can be 8 priorities. R is generally 0. DP is fixed at 0. 8-bit PF is the code for the message. 8-bit PS refers to destination address. 8-bit SA refers to the source address.

There is a name and an address for every node which accesses to the network. The name is used for nodes identification and address arbitration. The address is used for data communication to node.

Every node has at least one function. Multiple nodes might have the same function or one node might have multiple functions.

2. CAN Network Address Distribution

Obtain the node address of CAN Bus from the definition of J 1939 Standard:

Node Name	SOURCE ADDRESS(SA)
(BMS) Battery Management System	244 (0XF4)
(OBC) Charger Control System	229 (0XE5)
(BCA) Broadcast Address	80 (0X50)

3. Message Format

Message1: (ID:0X 1806E5F4)

OUT	IN	ID				CYCLE TIME (ms)
BMS	OBC	P	R	DP	PF	500
		6	0	0	6	
Date						
Location	**Date name**					
BYTE0	Max Allowable Charging Terminal Voltage High Byte	0.1V/byte offset:0 e.g. Vset=3201, its corresponding 320.1V				
BYTE1	Max Allowable Charging Terminal Voltage Low Byte					

BYTE2	Max Allowable Charging Current High Byte	0.1A/byte offset:0 e.g. Iset=582, its corresponding 58.2A
BYTE3	Max Allowable Charging Current Low Byte	
BYTE4	Control	0: Charger starts charging 1: Charger stops outputting 2: Charger starts heating
BYTE5	Reserved	
BYTE6	Reserved	
BYTE7	Reserved	

Message2: (ID:0X 18FF50E5)

OUT	IN	ID				CYCLE TIME (ms)
OBC	BCA	P	R	DP	PF	500
		6	0	0	0XFF	

date		
location	**Date name**	
BYTE0	Output Voltage High Byte	0.1V/byte offset:0 e.g. Vout=3201, its corresponding 320.1V
BYTE1	Output Voltage Low Byte	
BYTE2	Output Current High Byte	0.1A/byte offset:0

BYTE3	Output Current Low Byte	e.g. Iout=582, its corresponding 58.2A
BYTE4	Status Flags	
BYTE5	Input Voltage High Byte	0.1V/byte offset:0 e.g. Vin=2200, its corresponding 220.0V
BYTE6	Input Voltage Low Byte	
BYTE7	Temperature	e.g. BYTE7=120 Temp=80℃

STATUS	Mark	
Bit0	Hardware Failure	0: Normal. 1: Hardware Failure
Bit 1	Temperature of Charger	0: Normal. 1: Over temperature protection
Bit2	Input Voltage	0: Input voltage is normal. 1. Input voltage is wrong, the charger will stop working.
Bit3	Starting state	0: Charger detects battery voltage and starts charging 1: Charger stays turned off (to prevent reverse polarity)
Bit4	Communication State	0: Communication is normal 1: Communication receive time-out
Bit5-7	Reserved	

4. Workflow

The BMS sends operating information (Message 1) to charger at fixed interval of 500ms. After receiving the message, the charger will work under the Voltage and Current in Message. If the Message is not received within 5s, it will enter into communication error state and stop charging.

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The charger send broadcast message (Message 2) at intervals of 500ms. The display meter can show the status of the charger according to up-to-date information.

VERSION 1.2 2017/7/24
Add temperature byte . VERSION 1.3 2024/3/04
Add input voltage byte . VERSION 1.3 2024/3/04
Change periods . VERSION 1.4 2024/8/10