BMS: CAN BUS COMMUNICATION SPECIFICATION

1. Communication Specification

The principle for data link layer.

Communication speed for bus line: 250Kbps.

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:

IDENTIFIER 11 BITS											SRR	IDE	IDENTIFIER EXTENSION 18 BITS															
PRIORITY			R	DP	PDU FORMAT(PF)						SRR	IDE	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

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.

CAN Network Address Distribution

Obtain the node address of CAN Bus from the definition of J1939 Standard：

Node Name	SOURCE ADDRESS(SA)
Motor Controller	239(0xEF)
Battery Management System（BMS）	244(0xF4)
Charger Control System（CCS）	229(0xE5) Also available: E7, E8 and E9
Broadcast Address（BCA）	80(0x50)

Message Format

Message1: (ID: 0x1806E5F4)

OUT	IN	ID				Cycle Time (ms)
BMS	CCS	P	R	DP	PF	1000
		6	0	0	6	
Data						
Position	**Data Name**					
BYTE1	Max Allowable Charging Terminal Voltage High Byte	0.1V/byte offset:0 e.g. Vset=3201, its corresponding 320.1V				
BYTE2	Max Allowable Charging Terminal Voltage Low Byte					
BYTE3	Max Allowable Charging Current High Byte	0.1A/byte offset:0 e.g. Iset=582, its corresponding 58.2A				
BYTE4	Max Allowable Charging Current Low Byte					
BYTE5	Control	0: Start charging 1: Stop charging				
BYTE6	Reserved					
BYTE7	Reserved					
BYTE8	Reserved					

Message 2: (ID: 0x18FF50E5)

OUT	IN	ID				Cycle Time(ms)
CCS	BCA	P	R	DP	PF	1000
		6	0	0	0xFF	
Data						
Position	**Data Name**					
BYTE1	Output Voltage High Byte	0.1V/byte offset:0 e.g. Vout=3201, its corresponding 320.1V				
BYTE2	Output Voltage Low Byte					
BYTE3	Output Current High Byte	0.1A/byte offset:0 e.g. Iout=582, its corresponding 58.2A				

BYTE4	Output Current Low Byte	
BYTE5	Status Flags	
BYTE6	Reserved	
BYTE7	Reserved	
BYTE8	Reserved	

STATUS	Mark	Description
Bit 0	Hardware Failure	0: Normal. 1: Hardware Failure
Bit 1	Temperature of Charger	0: Normal. 1: Over temperature protection
Bit 2	Input Voltage	0: Input voltage is normal. 1. Input voltage is wrong, the charger will stop working.
Bit 3	Starting state	0: Charger detects battery voltage and starts charging. 1: Charger stays turned off (to prevent reverse polarity).
Bit 4	Communication State	0: Communication is normal. 1: Communication receive time-out.
Bit 5		
Bit 6		
Bit 7		

Operation Mode

1. The BMS sends operating information (Message 1) to charger at fixed interval of 1s. 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.

2. The charger send broadcast message (Message 2) at intervals of 1s. The display meter can show the status of the charger according to up-to-date information.

3. If your charger came with a CAN adapter module and a 2-pin mating connector, connect pin 1 of the mating connector to CAN-L and pin 2 to CAN-H on your BMS. No other ground or shield connection is required. Add a 120 ohm termination resistor between pins 1 and 2 if there isn't one already on the CAN bus. If you have a newer charger with integrated CAN bus, it comes with a oval water tight CAN mating connector. Connect pin 1 (brown wire) to CAN-H and pin 2 (blue wire) to CAN-L on your BMS.