BMS CAN Communication 1.3

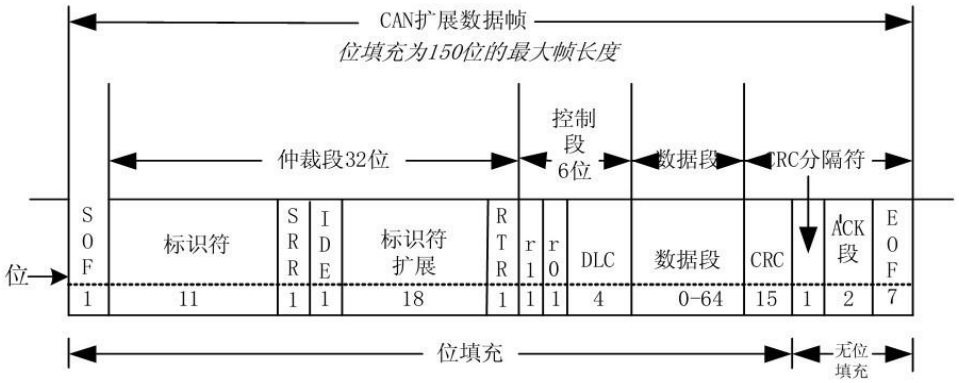
1 Overview

This manual defines the CAN communication protocol for ATESS BMS system.

2 Physical layer interface

The physical link layer interface of this protocol is CAN bus. The message format follows can2.0B specification and all messages adopt

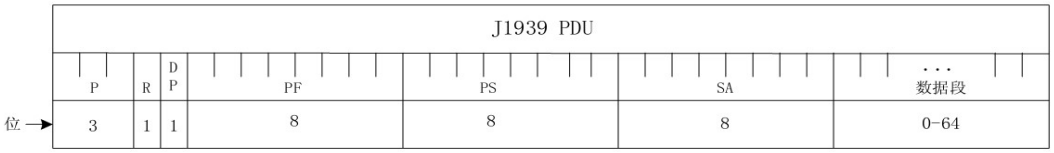
CAN extension frame format is as follows:



3 Protocol data unit（PDU）

The protocol data unit of this protocol refers to J1939 protocol. PDU consists of seven parts, namely priority, reserved bit, data page, PDU format, specific PDU (which can be used as target address, group extension or dedicated), source address and data domain, as follows:

Definition: P is priority, R is reserved bit, DP is data page, PF is PDU format, PS is specific PDU，



SA is the source address
This agreement provides that PF is a protocol message command code
PS is the destination address
SA is the source address
Communication baud rate 250K
High byte before low byte after (except CRC check)

4 Agreement Content

4.1 ID: 0x180150F1

Send code：BMS；Receive： The bus：200ms；Date length：8 Byte；

Byte	content	length	unit	Note
0-1	Cell Max Voltage	2Byte	0.001V	
2-3	Cell Min Voltage	2Byte	0.001V	
4	SOC	1Byte	1%	0~100
5	SOH	1Byte	1%	0-100
6	NA	1Byte		
7	Relay state	1Byte		0：open 1：close

4.2 ID: 0x180250F1

Send code：BMS；Receive： The bus：200ms；Date length：8 Byte；

Byte	content	length	unit	Note
0~1	Total Voltage	2Byte	0.1V	
2~3	Total Current	2Byte	0.1A	
4~5	Charge Max current	2Byte	0.1A	
6~7	Discharge Max current	2Byte	0.1A	

4.3 ID: 0x180350F1

Send code：BMS；Receive： The bus：200ms；Date length：8 Byte；

Byte	content	length	unit	Note
0	Max cell voltage group number	1Byte		1~255
1	Max cell voltage pack number	1Byte		1~255
2	Max cell voltage box number	1Byte		1~255

3	Max Temp group number	2Byte		1~255
4	Max Temp Pack number	1Byte		1~255
5	Max Temp	1Byte	1℃	-30~80
6	NA	1Byte		
7	NA	1Byte		

4.4 ID: 0x180450F1

Send code：BMS；Receive： The bus：200ms；Date length：8 Byte；

Byte	content	length	unit	Note
0	Min cell voltage group number	1Byte		1~255
1	Min cell voltage pack number	1Byte		1~255
2	Min cell voltage box number	2Byte		1~255
3	Max Temp group number	1Byte		1~255
4	Max Temp Pack number	1Byte		1~255
5	Max Temp	1Byte	1℃	-30~80
6	NA			
7	NA			

4.6 ID:0x180650F1

Send code：BMS；Receive： The bus：200ms；Date length：8 Byte；

Byte	content	length	unit	Note
0	Battery State	1Byte		0：Wait 1：Forbid charge and discharge:2：Forbid charge 3：Forbid discharge 4:charging 5：discharging
1	System State	1Byte		
2	Warning Level_1	1Byte		
3	Warning Level_2	1Byte		

4	BMS Control Bit	1Byte	Bit0-Bit1	0:Normal 1:Silence
			Bit2-Bit3	0:Normal 1:Battery forbid balance
			Bit4-Bit7	Reserved
5	NA	1Byte		
6	CRC16_L	1Byte		
7	CRC16_H	1Byte		

4.7 ID:0x180750F1

Send code：BMS；Receive： The bus：200ms；Date length：8 Byte；

Byte	content	length	unit	Note
0	Warning Level2_1	1Byte		
1	Warning Level2_2	1Byte		
2	Protection Level3_1	1Byte		
3	Protection Level3_2	1Byte		
4	Protection Level3_3	1Byte		
5	NA			
6	CRC16_L	1Byte		
7	CRC16_H	1Byte		

4.8 PCS 状态 ID:0x1801F150

Send code：The bus；Receive：BMS：200ms；Date length：8 Byte；

Byte	content	length	unit	Note
0	Heartbeat	1Byte		1-255
1	Inverter state	1Byte		
2-3	Battery power	2Byte	1kW	
4	Inverter response	1Byte	Bit0-Bit1	0:Normal 1: Silence ok
			Bit2-Bit3	0: Normal 1: Battery forbid balance response ok
			Bit4-Bit7	Reserved
5	NA	1Byte		
6	CRC16_L	1Byte		
7	CRC16_H	1Byte		

System state：

Bit0	Bit1	Bit2	Bit3	Bit4	Bit5	Bit6	Bit7
System waiting	Charging finish	Discharging finish	Level 1 warning	Level 2 warning	Level 3 protection	Level 4 protection	Reserved

Warning Level1_1：

Bit0	Bit1	Bit2	Bit3	Bit4	Bit5	Bit6	Bit7
Temp high	Temp low	Temp different high	total voltage high	total voltage low	Cell voltage high	Cell voltage low	Cell voltage different high

Warning Level1_2：

Bit0	Bit1	Bit2	Bit3	Bit4	Bit5	Bit6	Bit7
Charge current high	Discharge current high	SOC high	SOC low	Group voltage different high	Reserved	Reserved	Reserved

Warning Level2_1：

Bit0	Bit1	Bit2	Bit3	Bit4	Bit5	Bit6	Bit7
Temp high	Temp low	Temp different high	total voltage high	total voltage low	Cell voltage high	Cell voltage low	Cell voltage different high

Warning Level2_2：

Bit0	Bit1	Bit2	Bit3	Bit4	Bit5	Bit6	Bit7
Charge current high	Discharge current high	SOC high	SOC low	Reserved	Reserved	Reserved	Reserved

Protection Level3_1：

Bit0	Bit1	Bit2	Bit3	Bit4	Bit5	Bit6	Bit7
Temp high	Temp low	Temp different high	total voltage high	total voltage low	Cell voltage high	Cell voltage low	Cell voltage different high

Protection Level3_2：

Bit0	Bit1	Bit2	Bit3	Bit4	Bit5	Bit6	Bit7
Charge current high	Discharge current high	Short circuit fault	Reserved	Battery open circuit fault	Cell SPI acquisition Fault	Master Slave communication Fault	Reserved

Protection Level3_3：

Bit0	Bit1	Bit2	Bit3	Bit4	Bit5	Bit6	Bit7

Positive relay backcheck fault	Negative relay backcheck fault	The battery tripping	Insulation fault	Temp Level 4 Fault	Reserved	Reserved	Reserved