4 CAN COMMUNICATION

Isolated CAN communication is adopted to communicate with the BMS or battery control system.

4.1 CAN BUS Parameters/CAN

4.1.1 **Baud Rate 500kbps/CAN**
4.1.2 **CAN 2.0A/11bits Mode**

11-bit CAN identifiers (CAN 2.0A) with CAN speed of 500 kbit/s.

The endian is little endian throughout, e.g. a CAN datafield:

	Bit 7 (MSB)	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0 (LSB)
Byte 1	DATA (MSB)							
Byte 0	DATA (LSB)							

Powerland sample CAN frame refers to dbc file 'PowerLand_Charger_V04_Curtiss'.

4.2 Charger broadcast

4.2.1 **CHG_INDIVIDUSL_CTRL**

Frame	**CHG_Individual_Ctrl**	**Identifier**	**0x3f0(Master) 0x3d0(Slave)**	**DLC**	**8 Bytes**
Emitter	**VCU**	**Type**	Periodic	**Period**	**<1000mS**
Parameter	**Description**	**Start (bit)**	**Len (bit)**	**Bit order**	**Value**
C_ENABLE	Charger Software Enable	0	8	--	0:Off 1:On
C_PWR_REF	Charger Power Reference	8	16	Little	0.0%-100.0%
C_MAX_V	Charge Voltage Reference	24	16	Little	0.0-6553.5V
C_MAX_I	Charge Current Reference	40	16	Little	0.0-6553.5A
S2_ENABLE	The S2 switch enable for master charger, but no sense for slave charger	56	8	--	0:Off 1:On
Note: The ID and message should be sent to charger through CAN communicaiton periodically as below. For master charger: ID:0x3f0 message:01 E8 03 68 10 64 00 01 For slave charger: ID:0x3d0 message:01 E8 03 68 10 64 00 00					

4.2.2 **CHG_STATUS_1**

Frame	**CHG_Status_1**	**Identifier**	**0x3f1(Master) 0x3d1(Slave)**	**DLC**	**8 Bytes**
Emitter	**Charger**	**Type**	Periodic	**Period**	**200mS**
Parameter	**Description**	**Start (bit)**	**Len (bit)**	**Bit order**	**Value**
C_STATUS	Charger Status	0	8	--	---
C_MAINS_V	Charger Mains Supply Voltage	8	16	Little	0.0-6553.5V
C_MAINS_C	Charger Mains Supply Current	24	8	--	0.0-25.5A
AC_AVAI_PWR	Charger Input Available Power From EVSE	32	16	Little	0.0-6553.5W
C_P_TEMP	Charger Primary Temp	48	8	--	-127-127
C_S_TEMP	Charger Secondary Temp	56	8	--	-127-127

4.2.3 **CHG_STATUS_2**

Frame	CHG_Status_2	Identifier	0x3f2(Master) 0x3d2(Slave)	DLC	8 Bytes
Emitter	Charger	Type	Periodic	Period	200mS
Parameter	Description	Start (bit)	Len (bit)	Bit order	Value
C_DC_V	Chatger DC Bus Voltage	0	16	Little	0.0-6553.5V
C_DC_C	Charger DC Bus Current	16	8	--	0.0-25A
C_PWR_REF	Charger Power Reference	24	16	Little	0.0-6553.5W
C_DC_PWR	Charger Actual Output Power (Limited by Temperature and Mains Derating)	40	16	Little	0.0-100.0%
CP_Duty	The Duty of J1772 CP	56	8	--	0.0-100.0%

4.2.4 **CHG_ERROR**

Frame	CHG_Error	Identifier	0x3f3(Master) 0x3d3(Slave)	DLC	8 Bytes
Emitter	Charger	Type	Periodic	Period	200mS
Parameter	Description	Start (bit)	Len (bit)	Bit order	Value
OUT_OC	Output Over Current Protect	0	1	--	0:Normal 1:Protect
OUT_OV	Output Over Voltage Protect	1	1	--	0:Normal 1:Protect
OUT_SC	Short-circuit Protect	2	1	--	0:Normal 1:Protect
OUT_UV	Output Under Voltage Protect	3	1	--	0:Normal 1:Protect
CASE_OT	Case Over Temperature Protect	4	1	--	0:Normal 1:Protect
PFC_OT	PFC HS Over Temperature Protect	5	1	--	0:Normal 1:Protect
D2D_OT	D2D HS Over Temperature Protect	6	1	--	0:Normal 1:Protect
CAN_TO	CAN Comm.Timeout	7	1	--	0:Normal 1:Protect
AC_OV	AC Over Voltage Protect	8	1	--	0:Normal 1:Protect
AC_UV	AC Under Voltage Protect	9	1	--	0:Normal 1:Protect
SCI_TO	Internal Communication Error	10	1	--	0:Normal 1:Protect
BUS_ERR	PFC Bus Voltage Error	11	1	--	0:Normal 1:Protect
PP_Level	The Level of Proximity Voltage	16	4	--	0-8
CP_Level	The Level of Pilot Voltage	20	4	--	0-8
C_RES1	Reserved(NOT USED)	12	4	--	---
C_RES2	Reserved(NOT USED)	24	40	--	---

CP_Level					PP_Level				Control Pilot	Proximity Pilot
0	0	0	0		X	X	X	X	0V	X
0	0	0	1		X	X	X	X	3V	X
0	0	1	0		X	X	X	X	6V	X
0	0	1	1		X	X	X	X	9V	X
0	1	0	0		X	X	X	X	12V	X
1	1	1	1		X	X	X	X	Not valid voltage	X
X	X	X	X		0	0	0	0	X	0V
X	X	X	X		0	0	0	1	X	1.53V
X	X	X	X		0	0	1	0	X	2.77V
X	X	X	X		0	0	1	1	X	4.46V
X	X	X	X		0	1	0	0	X	5V
X	X	X	X		1	1	1	1	X	Not valid voltage

4.2.5 **CHG_SN**

Frame	CHG_SN	Identifier	0x3f4(Master) 0x3d4(Slave)	DLC	8 Bytes
Emitter	Charger	Type	Periodic	Period	200mS
Parameter	Description	Start (bit)	Len (bit)	Bit order	Value
HW_V_1	Hardware Major Version Number	0	8	--	0-255
HW_V_2	Hardware Minor Version Number	8	8	--	0-255
HW_V_3	Hardware Maintenance Version Number	16	8	--	0-255
SW_V_1	Software Major Version Number	24	8	--	0-255
SW_V_2	Software Minor Version Number	32	8	--	0-255
SW_V_3	Software Maintenance Version Number	40	8	--	0-255
C_RES	Reserved(NOT USED)	48	16	--	---

4.3 Bootloader

For Main MCU：

0x4A0: Erase Flash

0x4A1: Program Flash

0x4A3: Enter Bootloader mode

0x4A5: Execute Application program

0x4A8: Command successful code

0x4A9: Command failure code

For J1772 MCU：

0x4B0: Erase Flash

0x4B1: Program Flash

0x4B3: Enter Bootloader mode

0x4B5: Execute Application program

0x4B8: Command successful code

0x4B9: Command failure code

5 ENVIRONMENTAL

The power supply shall operate normally, and sustain no damage as a result of the environmental conditions listed in this section.