

# **MXR100080B-DCs Charging Module**

## **CAN Communication Protocol**

Version	Notes
V1.00.00	New Design
V1.00.01	Instructions for modifying fault location

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## Contents

<b>1. Overview .....</b>	<b>3</b>
<b>2. CAN Frame Format Definition .....</b>	<b>3</b>
2.1 Frame Format .....	3
2.2 Frame ID Identifier .....	3
2.2.1 MXR_ID .....	3
2.2.2 MODULE_TYPE .....	3
2.2.3 DSTADDR .....	3
2.2.4 SRCADDR .....	4
2.3 Data Domain .....	4
2.3.1 Setting Module Parameters .....	4
2.3.2 Read Module Data .....	4
2.3.3 Data Field Appendix .....	4
2.4 Example of Commands .....	7

## 1. Overview

The power module is configured by sending CAN messages

## 2. CAN Frame Format Definition

CAN communication baud rate: 125kbps;

Data transmission: Data items are transmitted with the high byte first, followed by the low byte.

### 2.1 Frame Format

Frame is the basic unit for transmitting information. The frame format of CAN 2.0B is shown as below:

Field name	Code
Start of Frame	sof(1 bit)
Arbitration Field	<b>Identifier(11bit)</b>
	SRR
	IDE
	<b>Identifier(18bit)</b>
	RTR
Control Field	reseal(2 bits)
	Data Len(4 bits)
Data Field	<b>data(8 bytes)</b>
CRC Field	CRC(2bits)
End of Frame	(7 bits)

The controllable part by users:

Identification Domain	Data Domain			
29 Bit	1byte	1byte	.....	1byte
Frame ID	Frame DATA (1-8byte)			

### 2.2 Frame ID Identifier

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
MXR_ID (5 bits)					MODULE_TYPE (8 bits)								DSTADDR (8 bits)								SRCADDR (8 bits)							

#### 2.2.1 MXR\_ID

Default: MXR\_ID is 0x15

#### 2.2.2 MODULE\_TYPE

Module Type: 0x81

#### 2.2.3 DSTADDR

Destination Address:

Module address range: 00~0x63; (can be set via the panel button)

Monitor address is fixed to: 0xA0;

Broadcast address: 0xFF;

Extended group Broadcast : 0xE0 (group 0), 0xE1 (group 1), 0xE2 (group 2) ... 0xEF (group 15)

## 2.2.4 SRCADDR

Source address:

Module address range: 0~0x63

Monitor address is fixed to: 0xA0

## 2.3 Data Domain

### 2.3.1 Setting Module Parameters

Used to set the voltage, current, start up and shut down of the power module.

Transmit frame data field format							
Byte0	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7
Reserved	Reservd	Register Number		Data			
00	00	Refer to Table 1		Data to set (Refer to Table 1)			

### 2.3.2 Read Module Data

The module data can only be read for a single module address, and the global broadcast and group broadcast messages can't be used to read information.

Transmit frame data field format							
Byte0	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7
Reserved	Reserved	Register Number		Data			
00	00	Refer to Table 1		Unconstrained, 0000 is ok			

Respond frame data field format							
Byte0	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7
Return error code	Reserved	Register Number		Returned data			
F0: Return to normal F1: Return to normal, but is forcibly set to the default value. F2: Failure, this frame should be discarded.	00	Refer to Table 1		Returned data (Refer to Table 1)			

### 2.3.3 Data Field Appendix

Register	Data Description	Data Format	Property	Format description
0x0001	Output voltage	Float point	Read-only	1.0 corresponds to 1V
0x0002	Output current	Float point	Read-only	1.0 corresponds to 1A
0x0004	Input voltage	Float point	Read-only	1.0 corresponds to 1V
0x0006	Air inlet temperature	Float point	Read-only	1.0 corresponds to 1°C
0x0100	Alarm information	Integer	Read-only	Refer to Table 2.1
0x0101	Situation status	Integer	Read-only	Refer to Table 2.3
0x0102	High/low voltage status	Integer	Read-only	Refer to Table 2.4
0x0110	ON/OFF status	Integer	Read-only	0x00 00 00 01—shut down command 0x00 00 00 00—start up command
0x0121	Module group number	Integer	Read-only	1 stands for group number is 1
0x0122	Module software version	Integer	Read-only	1 stands for the version is 1
0x0151	Alarm Information Extension	Integer	Read-only	Refer to Table 2.2

0x0160	Locked state	Integer	Read-only	Refer to Table 2.5
0x0301	Troubleshooting	Integer	Write only	0x00 00 00 01—enable 0x00 00 00 00—off
0x0311	Module group number	Integer	Write only	1 stands for group number is 1
0x0400	Set the module start up/shut down	Integer	Write only	0x00 00 00 00—start up 0x00 00 00 01—shut down
0x0410	Set up output voltage	Float point	Write only	1.0 corresponds to 1V
0x0411	Set up output current	Float point	Write only	1.0 corresponds to 1A

1: float point type is single precision; integer type is signed 32 bits.

Table 2.1-Alarm Information	
Bit	Illustration (0 invalid, 1 valid)
0	Input voltage overvoltage
1	Input voltage undervoltage
2	Output voltage overvoltage
3	Output voltage undervoltage
4	Input external overvoltage
5	Input external undervoltage
6	Output external overvoltage
7	Output external undervoltage
8	Air inlet temperature is low
9	Reserved
10	Module internal over temperature 1
11	Module internal over temperature 2
12	Air inlet over temperature
13	The module internal reference voltage 1 is abnormal
14	The module internal reference voltage 2 is abnormal
15	Fan failure
16	Input voltage fast overvoltage protection
17	Output voltage fast overvoltage protection
18	Overcurrent protection
19	Emergency stop signal enable
20	CAN communication failure
21	CAN bus fault
22	Reserved
23	Reserved
24	Overvoltage disconnect relay action
25	Reserved
26	Output short circuit
27	Reserved
28	Reserved
29	Reserved
30	Module lock up
31	Reserved

Table 2.2-Alarm Information Extension	
Bit	Illustration (0 invalid, 1 valid)
0	Communication Address Duplicated
1	Leakage fault
2	Reserved
3	Reserved
4	Reserved
5	Reserved
6	Reserved
7	Reserved
8	Reserved
9	Reserved
10	Reserved
11	Reserved
12	Reserved
13	Reserved
14	Reserved
15	Reserved

Table 2.3--Status Information	
Data Format	Illustration
0x0000	Power-on default state
0x0001	Initialization state
0x0002	Fault state
0x0003	Standby
0x0004	Start delay state
0x0004	Relay action state
0x0006	Soft start state
0x0007	Running state

Table 2.4-High/low voltage	
Data Format	Illustration
0x0001	High voltage interval
0x0003	Low voltage interval

Table 2.5-Lock up status information	
Bit	Illustration (0 invalid, 1 valid)
0	Reserved
1	Output undervoltage
2	Reserved
3	Output short circuit
4	Over current protection
5	Reserved
6	Reserved
7	Reserved
8	Reserved
9	Reserved

10	Reserved
11	Reserved
12	Reserved
13	Reserved
14	Reserved
15	Reserved
16	Reserved
17	Reserved
18	Reserved
19	Reserved
20	Reserved
21	Reserved
22	Reserved
23	Reserved
24	Reserved
25	Reserved
26	Reserved
27	Reserved
28	Reserved
29	Reserved
30	Reserved
31	Reserved

## 2.4 Example of Commands

Example 1: The host computer control the power module with address 01 to start up.

Data sending format:

Frame ID: 0x158101A0

Data field format: 00 00 04 00 00 00 00 00

Example 2: The host computer read the output voltage of the power module at address 02, when the output voltage is 700 V.

Frame ID: 0x158102A0

Data field format: 00 00 00 01 00 00 00 00

Data return format:

Frame ID: 0x1581A002

Data field format: F0 00 00 01 44 2F 00 00

Example 3: The host computer controls the power module at address 00 output voltage value of 800V.

Data sending format:

Frame ID: 0x158100A0

Data field format: 00 00 04 10 44 48 00 00

Example 4: The host computer controls the power module at address 00 output limit current value of 50A

Data sending format:

FrameID: 0x158100A0

Data field format: 00 00 04 11 42 48 00 00