

I2C TEST

LPRDS-CMS-2011 QA AUDIT TECHNICAL MEMO

TEST: I2C TEST
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TEST DESCRIPTION

This test will exhaust every command in the I²C API and verify that each and every command works as specified.

PRE CONDITIONS

- OBPP board must be connected to a 4-cell LiFePO₄ pack
- Connect a current meter in series with the OBPP and the MPJA9604PS
- Connect Simulink probes across each cell in order to measure voltage
- USB to I²C interface must be connected to a PC and the OBPP board
- RealTerm must be open and configured to use the USB connection

TEST Using Board: 01, Firmware Version 1.3
I²C command format

I2C Command Format

0h54	Memory Address (8 bits)	Argument (16 bits)
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- Enter the following command to read data from the Board Number register
 - 0x541BF000
- You should receive back a 16-bit response in RealTerm which is the board number

Board Number: 0001 = 0x0001

- Enter the following command to read data from the Version Number register
 - 0x541AF000
- You should receive back an 16-bit response in RealTerm which is the version number

Version Number: 0010 = 0x0010

- Enter the following command to read the I²C address from the board. The address will be an 16-bit hexadecimal value
 - 0x5410F000

I²C Address: 0054 = 0x0054

- Enter the following command to change the I²C address from the board to 0x24. The address should be an 8-bit hexadecimal value

○ 0x54100024

- Enter the following command to read the I²C address from the board. The address will be an 16-bit hexadecimal value

○ 0x2410F000

I²C Address: 0024 = 0x0024

- Enter the following command to change the I²C address from the board to 0x54. The address should be an 8-bit hexadecimal value

○ 0x24100054

- Enter the following command to read the System Mode. A 16-bit value will be returned: 0x0000 is auto mode and 16x00FF is non-auto mode.

○ 0x5412F000

System Mode: 0000 = 0x0000

- Enter the following command to read the current sensor

- 0x5400F000
- Hexadecimal Value: _____

Current Reading: 0.06 = Actual Current Reading: 1 A (+/- 5%)

$$\left(\frac{7844}{EB4} \cdot 50 \right) - 25 = 0.06 A$$

- Enter the following four commands to read the voltages of each of the four cells

- 0x5401F000
- Hexadecimal Value: 0ABE

Voltage Reading 1: 3.339 = Actual Voltage Reading 1: 3.340 (+/- 5%)

- 0x5402F000
- Hexadecimal Value: 0AD6

Voltage Reading 2: 3.369 = Actual Voltage Reading 2: 3.364 (+/- 5%)

- 0x5403F000
- Hexadecimal Value: 0AB5

Voltage Reading 3: 3.328 = Actual Voltage Reading 3: 3.314 (+/- 5%)

- 0x5404F000
- Hexadecimal Value: 0AD4

Voltage Reading 4: 3.367 = Actual Voltage Reading 4: 3.364 (+/- 5%)

$$\frac{\text{result}}{0XFFF} \cdot 4.974$$

