Product Change Notification

PCN No: 2006-07-19-07
Report Date: July 19, 2006
Subject: XBOARD PCB 2.0 New Board Revision Release

List of New Products:
Xboard S PCB 2.0

Reason for Change:
Matix Orbital's Xboard S series have been upgraded to offer new features and benefits; the physical connections on the PCB boards have been standardized and the components are now RoHS compliant.

Product Change:
The following list of hardware and firmware changes are all effective on all the variants of the Xboard S as stated under 'List of New Products'. The old PCB 1.0 is now superseded by PCB 2.0, and the old firmware version v1.0 is now superseded by v5.1. The changes are stated to compare the old and the new PCB revision.

Hardware Changes:
1) Physical placement of the GPO connector, power / data connector and the configuration jumpers are different in the PCB 2.0 to conform with our other products.
2) Provision for manual backlight and contrast setting (as opposed to the available software setting) is now offered in the new PCB via the jumpers on the board.

Firmware Changes:

<u>Release v5.0 (released March 20, 2006):</u>

1) We have now implemented a different configuration set up for the Xboard. Please see page 8 of the manual:

   <u>http://www.matrixorbital.ca/manuals/xboard/s_series/XBoard_rev_20.pdf</u>

   for a more detailed step by step configuration, and some figures and pictures for reference.

2) We now offer 16 bytes of EEPROM for the customers

   - Customer data upload: Command: 254/52/<16 bytes>
   - Customer data download: Command: 254/53
   The display now has 16 bytes to store whatever the customer would like. These 16 bytes can be used for anything including serial numbers, addresses, or whatever you can think of that will fit in 16 bytes.

3) Added a watch dog timer: The units now make full use of a watchdog timer to prevent the display from remaining locked up. The default timeout is approximately 2.1 seconds (depending on ambient temperature). Upon a watchdog reset the display will send 254/212 to the host to indicate that watchdog has reset the module.

4) The old PCB revision used to have an 80-byte buffer. We have increased the buffer size to 128 bytes in the new PCB rev.

5) The Init Narrow Vertical Bar command (115) now needs extra initialization before use. The custom characters that make up the narrow vertical bar needs to be sent via command Store Custom Chars (193) and loaded by Load Custom Chars (192)

   - Command 193: Store Custom Characters: 254 / 192 / <bank> / <Id> / <8 char definition>

   This command stores the custom chars in the EEPROM in the <bank> specified. Eg if the user specifies bank 1, he may be making custom chars for horizontal bars, and he may utilize these custom chars by sending

commands 104 and 124 (Init Horizontal Bar and Place Horizontal Bar), but he also may make a totally different set of custom chars that he may load whenever he wants by using the following command. The definition for the old horizontal, vertical, medium numbers are all default in the module.

- Command 192: Load Custom Characters: 254 / 192 / <bank>

This command loads the custom chars defined in the <bank> specified. Again, for the example above, the user may send this command with bank 1 as parameter, and he may now use the characters just by issuing the Id (which is 0x00 to 0x07).

6) The display now has an enhanced data locking capability. The users can now lock the module in different levels.

- Command 202: Set Data Lock: 254 / 202 / 245 / 160 / <level>

- Command 203: Set and Save Data Lock: 254 / 203 / 245 / 160 / <level>

Level is an 8-bit value with the following bits defined:

bit 7 – when this bit is 1, users can not display anything on the module
bit 6 – when this bit is 1, users can not send any commands to the module but commands 202 / 203
bit 5 – reserved and should be left 0
bit 4 – when this bit is 1, users can not alter the module settings (internal EEPROM)
bit 3 – reserved and should be left 0
bit 2 – reserved and should be left 0
bit 1 – reserved and should be left 0
bit 0 – reserved and should be left 0
Eg: to lock the display (no text will be displayed) send command: 254 / <202 or 203> / 245 / 160 / 128
Eg: to lock the display propertied (no commands will be followed, with the exception of the Data lock command) send command: 254 / <202 or 203> / 245 / 160 / 192

7) List of New or Changed Commands:

Special Characters Related Commands:

115: Init Narrow Vertical Bar   - changed, as described in item # 5

124: Place Horizontal Bar   - changed, as described in item # 5

192: Load Custom Characters   - new command, as described in item # 5

193: Store Custom Characters   - new command, as described in item # 5

Module Property Query Commands:

52: Write Customer Data   - changed, as described in item # 2

53: Read Customer Data   - changed, as described in item # 2

Display Screen Control Commands:

202: Set Data Lock   - new command, as described in item # 6

203: Set and Save Data Lock   - new command, as described in item # 6

Please see the manual for in depth details.

Release v5.1 (released July 11, 2006):

1) Horizontal bar graph change. Only one directional horizontal bar graph can appear on the screen at a time. Either left facing or right facing horizontal graph can be used at a time. Trying out both directions within the same screen will garble the bars. If this is an issue with your design, please contact a Sales Rep for your options.

2) Firmware version 1.0 have the following control characters implemented:

   0x08 – Back Space

   0x0A – Line Feed

   0x0D – Carriage Return

   0x0C – Clear Screen

   Firmware version 5.1 has the same control characters implemented with a difference in implementation of 0x0A. Firmware version 5.1 scrolls the display up when control character 0x0A is sent when the display is at the last row (row 2), and inserts a new line and puts the next insertion point on the start of the new line. With firmware version 1.0, when 0x0A is sent when the display is at the last row, the next insertion point goes back to home position; there is no scrolling of the text.

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Reference Documents/Attachments:

Location: http://www.matrixorbital.ca/manuals/

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