

**AIO-16 Memory Write Corruptions / Keypanel Lockout**

<b>Issue Severity:</b>	<b>Product(s) Affected:</b>
<input type="checkbox"/> <b>High:</b> URGENT – Immediate Action Required  <input checked="" type="checkbox"/> <b>Medium:</b> Bosch Security Systems, Inc. strongly recommends you take the action(s) described below.  <input type="checkbox"/> <b>Low:</b> Advisory	<ul style="list-style-type: none"><li>All AIO-16 cards manufactured after August 2007</li></ul>
<b>Notification Applies To:</b>	<b>Access Restrictions:</b>
<input checked="" type="checkbox"/> Technical Support (TSS) <input checked="" type="checkbox"/> Repair (ASA) <input checked="" type="checkbox"/> Sales (NSO / RSO)	<input type="checkbox"/> Internal Distribution <b><u>ONLY</u></b> <input checked="" type="checkbox"/> <b><u>No</u></b> Restrictions (Internal & External Distribution)

**1.0 Issue**

Customer reports have identified an issue where keypanels connected to an AIO-16 card appear disconnected. When a keypanel is affected by this issue, the front panel alpha displays go to all stars "\*\*\*\*\*" and all audio and data communications do not function. The failure occurs most frequently (but not exclusively) on ports 7 and 15 of the respective AIO-16 card. The problem is often cleared by resetting the AIO-16 card in the system to restore keypanel connections. After an indeterminate period of normal operation, the problem often reoccurs.

The root cause of this issue is a violation of timing specifications between the FPGA device and the SRAM memory device located on the AIO-16 front card. The timing violations create corrupted data in volatile memory. Resetting the AIO-16 card clears the corrupted data and restores normal operation until the next corruption occurs.

The timing violation was introduced into the AIO-16 in August 2007 when the FPGA device was modified. Due to the nature of memory corruptions, this issue may produce additional failures or symptoms not described here. For this reason, all AIO-16 cards manufactured after August 2007 should be considered at risk of unstable operation.

Note: A number of customers experiencing this memory corruption issue have mistakenly reported a problem localized to an AIO-16 back card. Customer reports concerning keypad connection issues to an AIO-16 card set should be evaluated to determine whether the problem lies in the front card or back card. This technical bulletin addresses keypad connection issues associated with the AIO-16 front card.

## 2.0 Resolution / Corrective Actions

The two primary software components on the AIO-16 are comprised of application firmware and a FPGA configuration image. The solution to this issue is to update both software components. The updated software revisions that fix this issue are firmware release 1.4.2 and FPGA release 1.4. The existing software releases are firmware 1.4.0 and FPGA 1.3. Both the firmware *and* FPGA must be updated to resolve the memory corruption issue.

The firmware and FPGA can be updated via AZedit. It is not necessary for customers to return units to ASA. Some customers may require ASA to upgrade a large number of units at the customer location.

Please follow the attached procedure to update the firmware and FPGA configuration image.

## 3.0 Detailed Software Upgrade Instructions

### Software requirements:

- AZedit (any version)
- Firmware upgrade file "aio-16.hex" version 1.4.2
- FPGA upgrade file "aio-16\_FPGA.hex" version 1.4

AIO-16 firmware release 1.4.2 is compatible with the following system controllers:

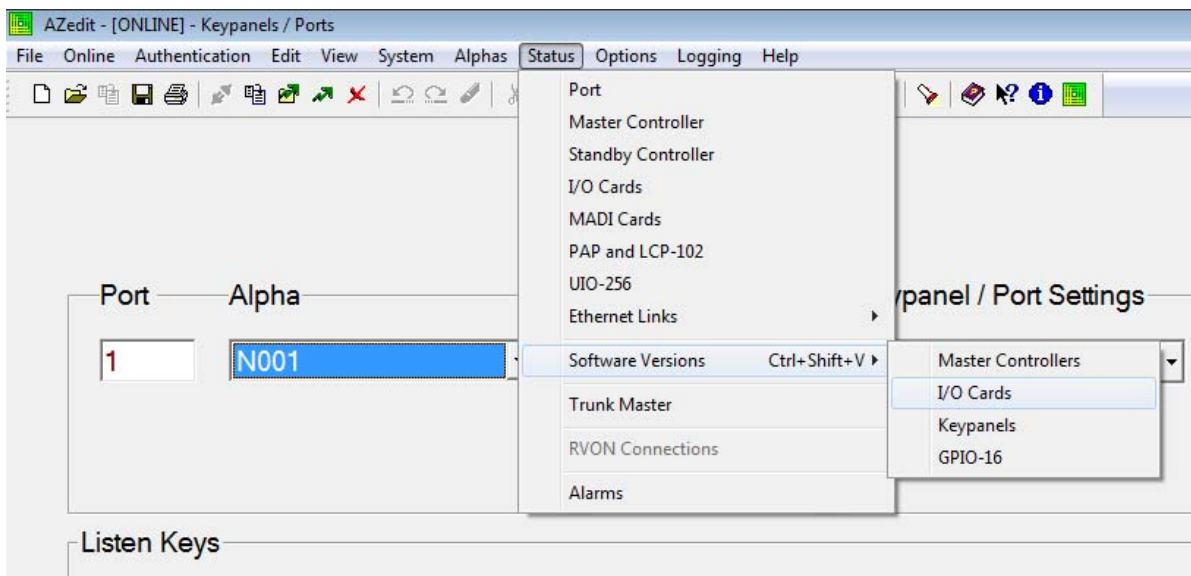
- ADAM Master Controller v9.22.0 or later (single frame)
- ADAM MCII-e v1.0.0 or later (single frame)
- ADAM Peripheral Controller v10.13.0 or later (DBX systems)
- ADAM PeriphII-e v1.14.0 or later (DBX systems)
- ADAM MCII-e v2.0.5 or later (single frame, or multi-frame Tri-Bus)

# RTS™ TECHNICAL BULLETIN

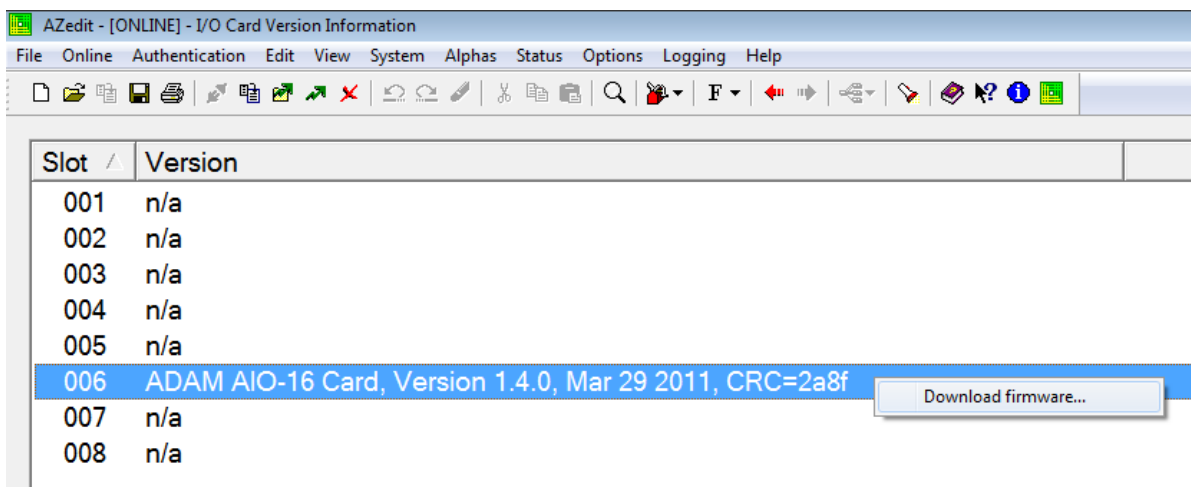
## Software Upgrade Steps:

**CAUTION:** It is absolutely crucial the following steps are executed in the order presented and in the manner described. Failure to do so may result in inoperable AIO-16 cards.

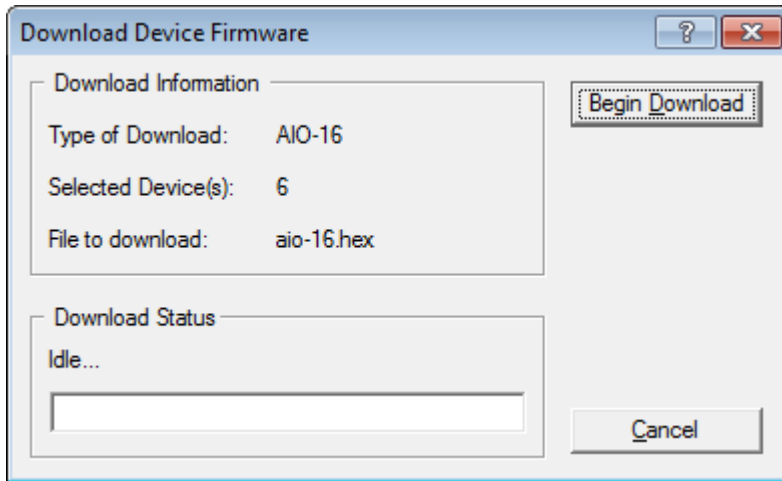
- 1) Insure firmware and FPGA upgrade files are located in a known directory.
- 2) Open AZedit on a PC connected to the system controller (e.g. MCII-e). Insure communication between the PC and system controller is configured correctly.
- 3) Navigate to the Software Versions screen for I/O Cards.



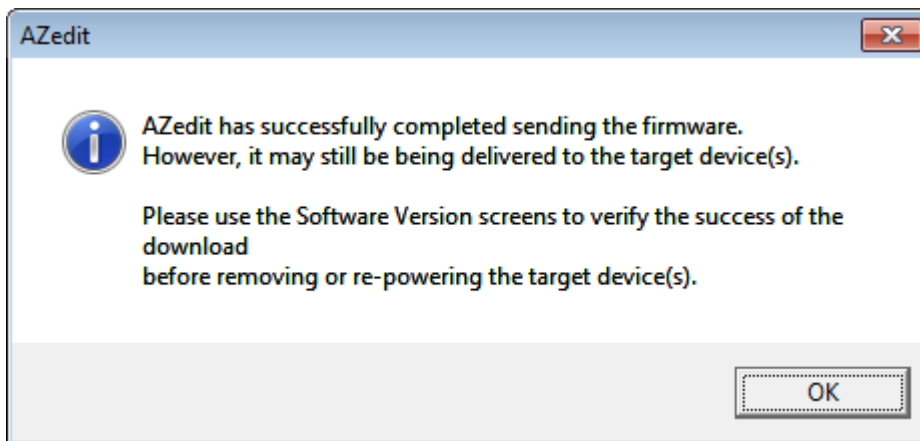
- 4) Right + Click on the AIO-16 card to be updated. Select "Download firmware..."



- 5) In the Firmware Download window, navigate to the directory containing the application firmware upgrade file "aio-16.hex". Select the upgrade file and click "Open" and then select "Begin Download". **CAUTION: Do not reset the AIO-16 or remove power until step (7) is complete.**

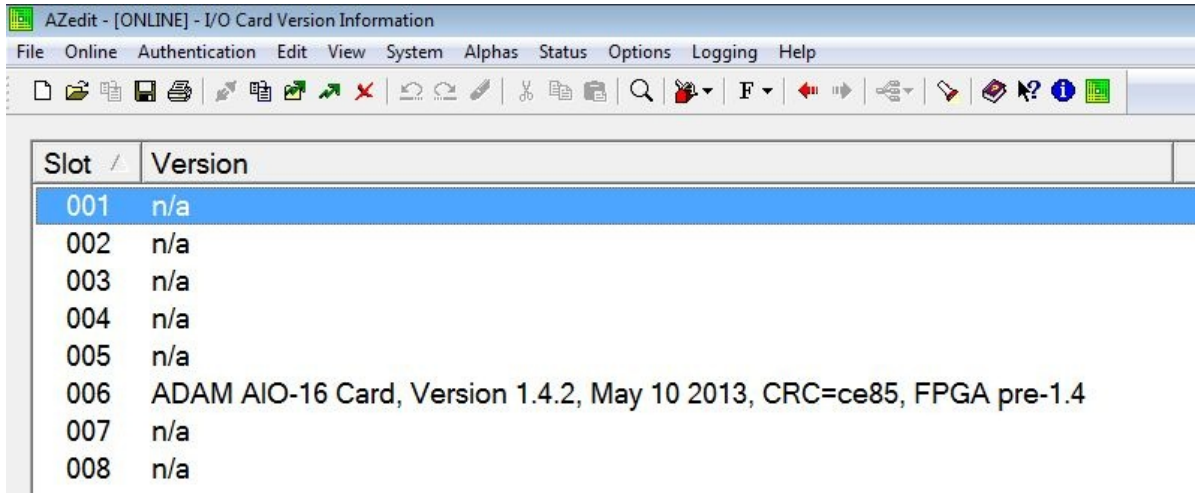


- 6) The following window will open if AZedit successfully sent the firmware to the system controller.



# RTS™ TECHNICAL BULLETIN

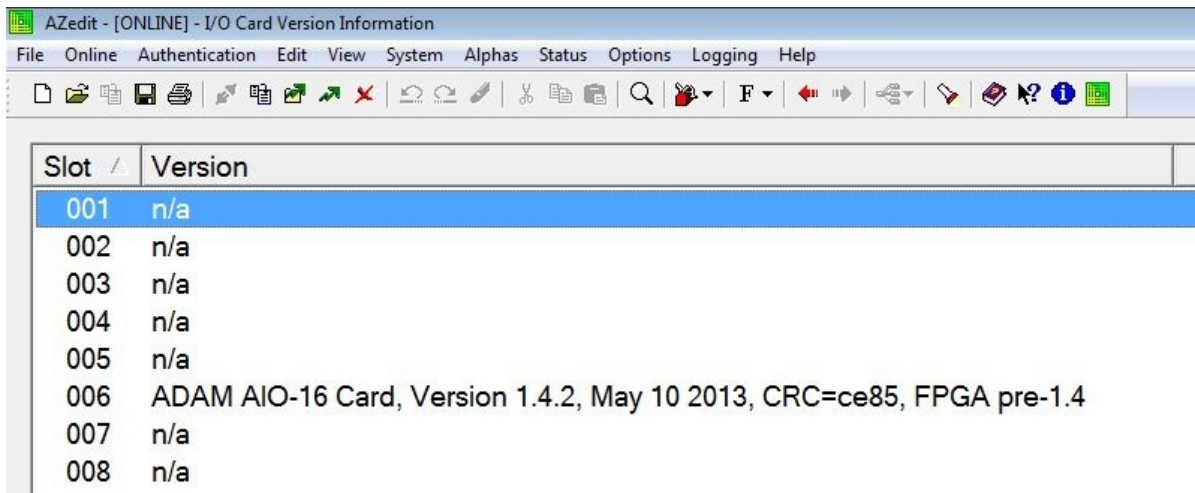
- 7) Verify successful application firmware upgrade of the AIO-16. The AIO-16 card should report Version 1.4.2. Note the FPGA version is "pre-1.4".



The screenshot shows a web-based interface titled "AZedit - [ONLINE] - I/O Card Version Information". It features a menu bar with "File", "Online", "Authentication", "Edit", "View", "System", "Alphas", "Status", "Options", "Logging", and "Help". Below the menu is a toolbar with various icons. The main content area displays a table with two columns: "Slot" and "Version".

Slot	Version
001	n/a
002	n/a
003	n/a
004	n/a
005	n/a
006	ADAM AIO-16 Card, Version 1.4.2, May 10 2013, CRC=ce85, FPGA pre-1.4
007	n/a
008	n/a

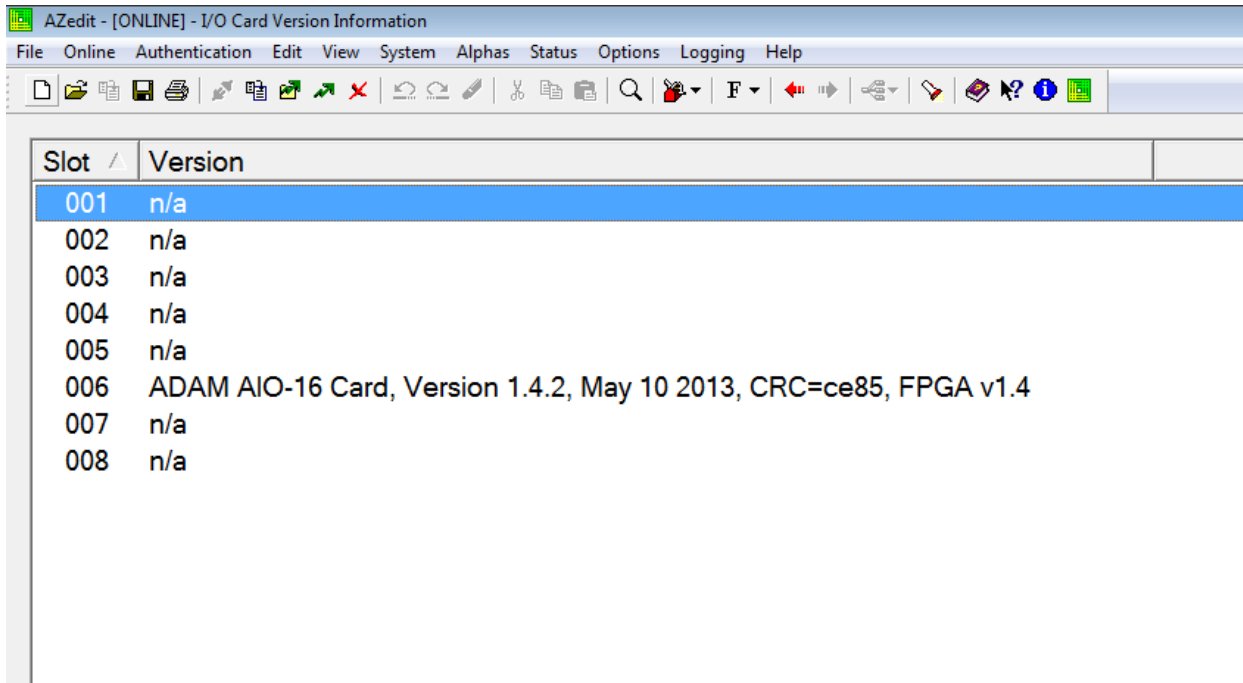
- 8) Repeat steps 4 through 6 **except use FPGA upgrade file "aio-16\_FPGA.hex"**. After the pop-up window shown in step (6) appears, observe the two red LEDs on the AIO-16 front card (nearest to the reset button). After approximately 10 seconds, the LEDs will blink and then remain off. At this time, the Software Versions screen will show "n/a" temporarily. The AIO-16 will then report the following version:



The screenshot shows the same web-based interface as above, but the table content has changed. The "Version" for slot 006 is now "ADAM AIO-16 Card, Version 1.4.2, May 10 2013, CRC=ce85, FPGA pre-1.4".

Slot	Version
001	n/a
002	n/a
003	n/a
004	n/a
005	n/a
006	ADAM AIO-16 Card, Version 1.4.2, May 10 2013, CRC=ce85, FPGA pre-1.4
007	n/a
008	n/a

- 9) The AIO-16 still reports "FPGA pre-1.4". At this time, the FPGA upgrade file is downloaded into flash memory but the FPGA has not reconfigured. Reset the AIO-16 using the push button to reconfigure the FPGA. The AIO-16 now reports the following version:



Slot	Version
001	n/a
002	n/a
003	n/a
004	n/a
005	n/a
006	ADAM AIO-16 Card, Version 1.4.2, May 10 2013, CRC=ce85, FPGA v1.4
007	n/a
008	n/a

- 10) Software upgrade complete.