

Restore/Upgrade  
Instructions

# M9036A PXIe Embedded Controller AG21 or AG21- M BIOS

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## Safety Information

### CAUTION

A CAUTION denotes a hazard. It calls attention to an operating procedure or practice that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a CAUTION notice until the indicated conditions are fully understood and met.

### WARNING

A WARNING denotes a hazard. It calls attention to an operating procedure or practice, that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

# Safety Information

The following general safety precautions must be observed during all phases of operation of this instrument. Failure to comply with these precautions or with specific warnings or operating instructions in the product manuals violates safety standards of design, manufacture, and intended use of the instrument. Keysight Technologies assumes no liability for the customer's failure to comply with these requirements.

## General

**Do not use this product in any manner not specified by the manufacturer. The protective features of this product must not be impaired if it is used in a manner specified in the operation instructions.**

### Before Applying Power

**Verify that all safety precautions are taken. Make all connections to the unit before applying power. Note the external markings described under "Safety Symbols".**

### Ground the Instrument

Keysight chassis' are provided with a grounding-type power plug. The instrument chassis and cover must be connected to an electrical ground to minimize shock hazard. The ground pin must be firmly connected to an electrical ground (safety ground) terminal at the power outlet. Any interruption of the protective (grounding) conductor or disconnection of the protective earth terminal will cause a potential shock hazard that could result in personal injury.

### Do Not Operate in an Explosive Atmosphere

Do not operate the module/chassis in the presence of flammable gases or fumes.

### Do Not Operate Near Flammable Liquids

Do not operate the module/chassis in the presence of flammable liquids or near containers of such liquids.

### Cleaning

Clean the outside of the Keysight module/chassis with a soft, lint-free, slightly dampened cloth. Do not use detergent or chemical solvents.

### Do Not Remove Instrument Cover

Only qualified, service-trained personnel who are aware of the hazards involved should remove instrument covers. Always disconnect the power cable and any external circuits before removing the instrument cover.

### Keep away from live circuits

Operating personnel must not remove equipment covers or shields. Procedures involving the removal of covers and shields are for use by service-trained personnel only. Under certain conditions, dangerous voltages may exist even with the equipment switched off. To avoid dangerous electrical shock, DO NOT perform procedures involving cover or shield removal unless you are qualified to do so.

### DO NOT operate damaged equipment

Whenever it is possible that the safety protection features built into this product have been impaired, either through physical damage, excessive moisture, or any other reason, REMOVE POWER and do not use the product until safe operation can be verified by service-trained personnel. If necessary, return the product to an Keysight Technologies Sales and Service Office for service and repair to ensure the safety features are maintained.

### DO NOT block the primary disconnect

The primary disconnect device is the appliance connector/power cord when a chassis used by itself, but when installed into a rack or system the disconnect may be impaired and must be considered part of the installation.

### Do Not Modify the Instrument

Do not install substitute parts or perform any unauthorized modification to the product. Return the product to an Keysight Sales and Service Office to ensure that safety features are maintained.

### In Case of Damage

Instruments that appear damaged or defective should be made inoperative and secured against unintended operation until they can be repaired by qualified service personnel

## CAUTION

**Do NOT block vents and fan exhaust:** To ensure adequate cooling and ventilation, leave a gap of at least 50mm (2") around vent holes on both sides of the chassis.

**Do NOT operate with empty slots:** To ensure proper cooling and avoid damaging equipment, fill each empty slot with an AXle filler panel module.

**Do NOT stack free-standing chassis:** Stacked chassis should be rack-mounted.

All modules are grounded through the chassis: During installation, tighten each module's retaining screws to secure the module to the chassis and to make the ground connection.

## WARNING

**Operator is responsible to maintain safe operating conditions. To ensure safe operating conditions, modules should not be operated beyond the full temperature range specified in the Environmental and physical specification. Exceeding safe operating conditions can result in shorter lifespan, improper module performance and user safety issues. When the modules are in use and operation within the specified full temperature range is not maintained, module surface temperatures may exceed safe handling conditions which can cause discomfort or burns if touched. In the event of a module exceeding the full temperature range, always allow the module to cool before touching or removing modules from the chassis.**

# Safety Symbols








## CAUTION

A CAUTION denotes a hazard. It calls attention to an operating procedure or practice, that, if not correctly performed or adhered to could result in damage to the product or loss of important data. Do not proceed beyond a CAUTION notice until the indicated conditions are fully understood and met.

## WARNING

A WARNING denotes a hazard. It calls attention to an operating procedure or practice, that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

Products display the following symbols:

-  Warning, risk of electric shock
-  Refer to manual for additional safety information.
-  Earth Ground.
-  Chassis Ground.
-  Alternating Current (AC).
-  Standby Power. Unit is not completely disconnected from AC mains when switch is in standby.
-  Antistatic precautions should be taken.
- CAT I IEC Measurement Category I, II, III, or IV
- CAT II
- CAT III
- CAT IV

For localized Safety Warnings, Refer to Keysight Safety document (p/n 9320-6792).



The CSA mark is a registered trademark of the Canadian Standards Association and indicates compliance to the standards laid out by them. Refer to the product Declaration of Conformity for details.



Notice for European Community: This product complies with the relevant European legal Directives: EMC Directive (2004/108/EC) and Low Voltage Directive (2006/95/EC).



The Regulatory Compliance Mark (RCM) mark is a registered trademark. This signifies compliance with the Australia EMC Framework regulations under the terms of the Radio Communication Act of 1992.

## ICES/NMB-001

ICES/NMB-001 indicates that this ISM device complies with the Canadian ICES-001.



This symbol represents the time period during which no hazardous or toxic substance elements are expected to leak or deteriorate during normal use. Forty years is the expected useful life of this product.



South Korean Class A EMC Declaration. This equipment is Class A suitable for professional use and is for use in electromagnetic environments outside of the home.

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This product complies with the WEEE Directive (2002/96/EC) marking requirement. The affixed product label (see below) indicates that you must not discard this electrical/electronic product in domestic household waste.

Product Category: With reference to the equipment types in the WEEE directive Annex 1, this product is classified as a "Monitoring and Control instrumentation" product.

Do not dispose in domestic household waste.

To return unwanted products, contact your local Keysight office for more information.



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# Keysight Technologies M9036A PXIe Embedded Controller

The following instructions describe how to restore or upgrade to BIOS versions AG21 and AG21-M in your M9036A PXIe Embedded Controller. Use this table to determine which version of BIOS you should use.

Feature	BIOS AG21	BIOS AG21-M
Chassis support	one or two PXIe chassis	three or four PXIe chassis
	one PXIe chassis and one AXIe chassis	one, two, or three PXIe chassis and one AXIe chassis
Supported OS	Windows 7 Pro (both 32-bit and 64-bit)	Windows 7 64-bit
	WES 7 (both 32-bit and 64-bit)	WES 7 64-bit
	Windows XP (32-bit)	

To determine which BIOS is currently installed:

- 1** Turn chassis power off and then on again.
- 2** At startup, press the Delete key when the Keysight Splash screen appears. This opens the BIOS menu displaying the installed version of BIOS.

## Installation Process Overview

The instructions on the following pages contain detailed steps on how to restore or upgrade the Keysight M9036A BIOS. The process contains these four stages:

- 1 Important:** When upgrading the BIOS from Keysight AG19 or a previous version, you must install *Microsoft Fix it 50470* before updating to AG21 or AG21-M. See [Step 1: Install Microsoft Fix it 50470](#) for detailed information.
- 2** Download the BIOS files from [www.Keysight.com](http://www.Keysight.com).
- 3** Download the AMI BIOS utility from [AMI.com](http://AMI.com).
- 4** Update the M9036A BIOS and verify BIOS version.



## Step 1: Install *Microsoft Fix it 50470*

Only do this step if you are upgrading from AG19 or a previous version.

Keysight BIOS AG19 used the SATA mode of IDE, while later BIOS versions use the SATA mode of AHCI. Transitioning between different versions of BIOS requires first installing *Microsoft Fix it 50470* to allow your M9036 to operate with either SATA mode. Failure to do this can cause your M9036 to no longer be able to boot Windows (a recoverable situation, see instructions below).

To run *Microsoft Fix it 50470*:

- 1 Exit all Windows-based programs on the Keysight M9036A
- 2 Connect the Keysight M9036A to the Internet
- 3 Go to <http://support.microsoft.com/kb/922976>
- 4 Follow the instructions on the screen to install and run the *Microsoft Fix it 50470*.

### NOTE

If you are not able to connect the M9036A to the internet, you can download and save the utility to a flash drive or a CD (external USB) and then run it on the M9036A.

If you fail to run *Microsoft Fix it 50470*, your M9036A may fail to boot Windows on subsequent system boots. If this happens, perform the following:

To keep your existing disk image<sup>1</sup>:

- 1 Boot to BIOS setup by pressing the **Delete** key at the Keysight splash screen.
- 2 Go to the **Advanced** Tab, then SATA Configuration. Reconfigure the SATA mode from AHCI to IDE mode.
- 3 Save and exit the BIOS setup.
- 4 Reboot to Windows.
- 5 Install **Microsoft Fix it 50470**.
- 6 Reboot to BIOS setup (again).
- 7 Go to the Advanced Tab, then SATA Configuration. Reconfigure SATA mode from IDE to AHCI mode.
- 8 Save and exit the BIOS setup.
- 9 Reboot to Windows. This should correct the problem.

<sup>1</sup> You may also use the Windows 7 or Windows XP disk recovery. This will completely erase your disk, but will fix this problem.

## Step 2: Download the BIOS from www.Keysight.com

- 1 Open your browser to: [www.keysight.com/find/M9036A](http://www.keysight.com/find/M9036A).
- 2 Click on **Visit Technical Support**.
- 3 Click the **Drivers, Firmware & Software** tab.
- 4 Select M9036A BIOS Downloads.



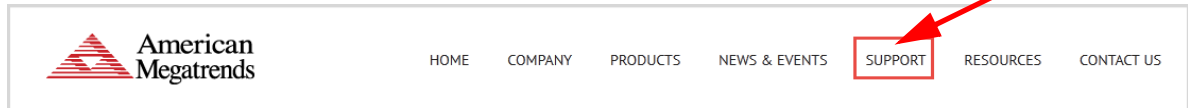
The screenshot shows the Keysight website interface for the M9036A PXIe Embedded Controller. The navigation bar includes 'Products & Services', 'Technical Support', 'Industries & Technologies', and 'About Keysight'. The breadcrumb trail is 'Home > Products & Services > ... > PXI Chassis and Controllers > M9036A PXIe Embedded Controller > Technical Support'. The main heading is 'M9036A PXIe Embedded Controller' with a status of 'Currently Orderable | Currently Supported'. Below this, there are image thumbnails and a '360°' view option. A navigation bar at the bottom of the product page includes 'Document Library', 'Drivers, Firmware & Software' (which is selected), 'FAQs', and 'Training & Events'. Under 'Refine the List', there are two sections: 'By Class' and 'By Type of Content'. In the 'By Class' section, 'M9036A BIOS Downloads' is highlighted with a red circle, with sub-links for 'New and old BIOS'es for the M9036A...' and 'Previous Versions'. The 'By Type of Content' section shows 'M9036A Embedded Controller Driver with IVI and MATLAB Drivers' as the selected item, with sub-links for 'View the details of the latest driver version.' and 'Previous Versions'.

- 5 Click the **Download** button. Select the desired BIOS.
- 6 Click **Download** to save the zip file containing the BIOS you selected.
- 7 Move the zip file you just downloaded to a temporary folder. Unzip the files and save them in the same folder. You should now see the files as shown in this table::

AG21 BIOS Files:	AG21-M BIOS Files:
3970AG21.rom	AG21-M.ROM
FLASHROM.CMD	FLASHROM.CMD
HISTORY_rev.TXT	HISTORY-M_rev.TXT
README.TXT	README-M.TXT

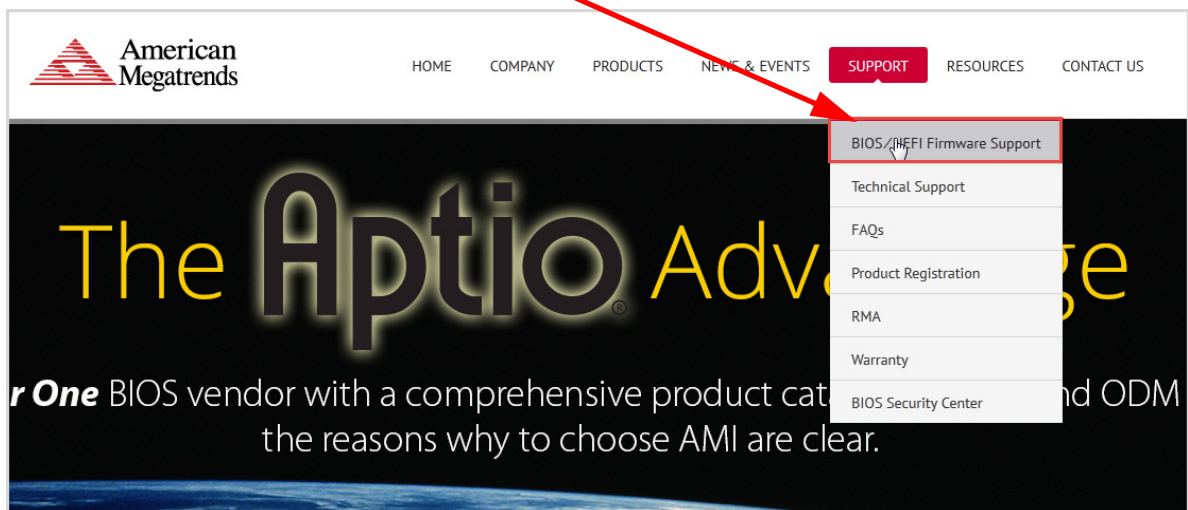
## Step 3: Install the AFUWIN utility

- 1 Go to the American Megatrends, Inc. (AMI) website: <http://ami.com>
- 2 From the AMI home page, select **Support**:

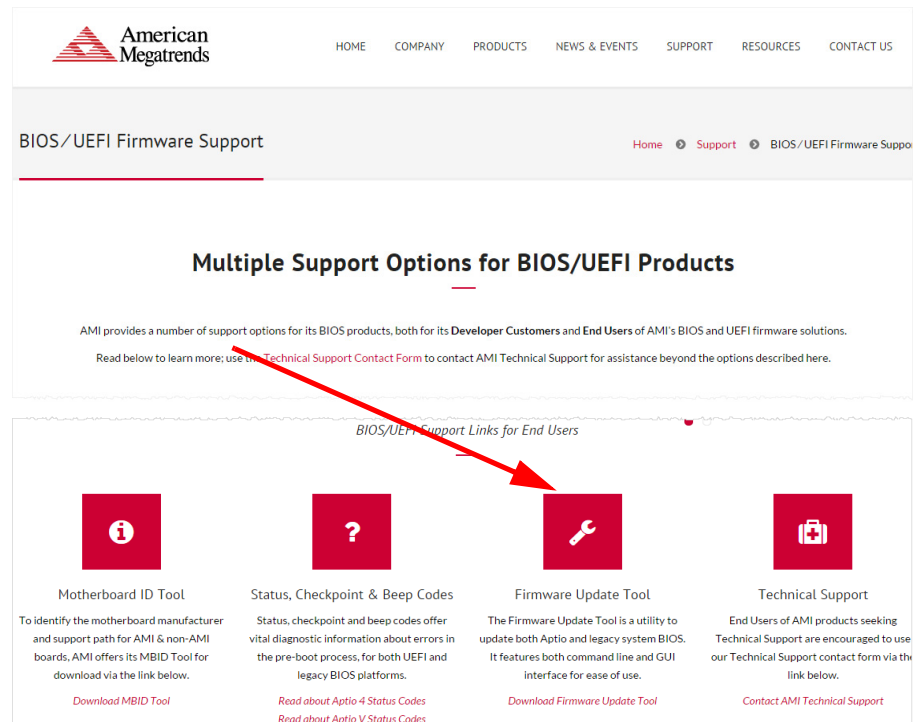


This opens the AMI Support web page.

- 3 Click **BIOS/UEFI Firmware Support**:



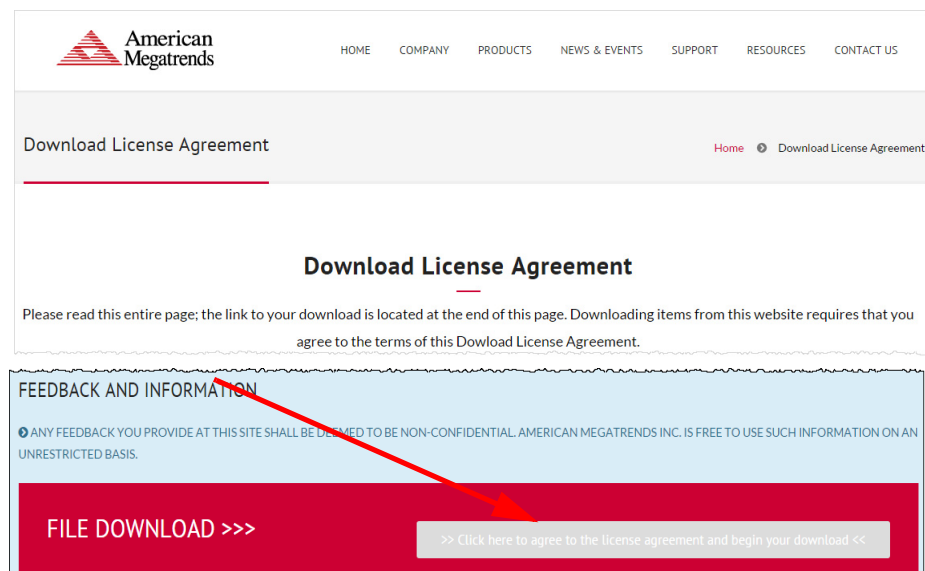
- The following screen displays. Scroll down to near the bottom of the web page.



- Left click on **Firmware Update Tool**.

This license agreement opens next. You should read the license agreement prior to agreeing to it.

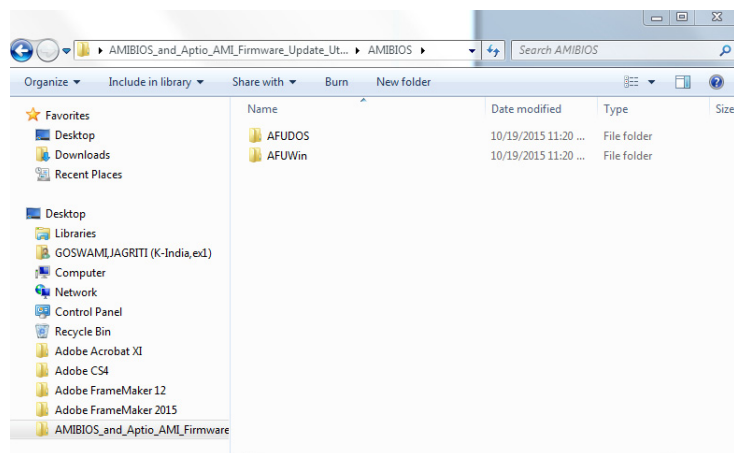
- Scroll down to near the bottom of the License Agreement web page.



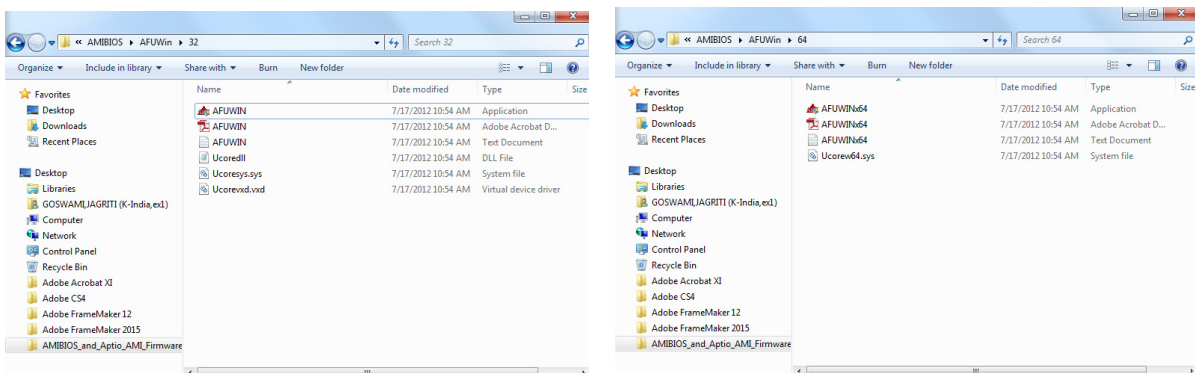
- 7 Click the black box **Click here to agree to license agreement and begin your download.**
- 8 Save the .zip file to the M9036A PC DeskTop.
- 9 The .zip file will download. Look for the *AMIBIOS\_and\_Aptio\_AMI\_Firmware\_Update\_Utility.zip* icon on your PC's desktop
- 10 Right-click on icon and choose **Extract All.**
- 11 Use the default destination folder. Left-click the **Extract** button.

When it is finished extracting the files, Windows File Explorer opens showing the folder contents.

- 12 Open the **AMIBIOS-> afuwin** folder.

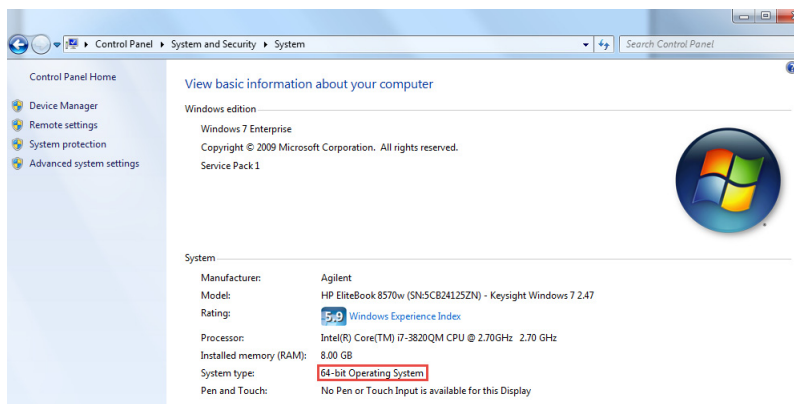


- 13 Open the appropriate correct folder that matches your M9036A Operating System – either 32 for 32-bit OS or 64 for 64-bit OS:



**NOTE**

You can determine whether you have a 32-bit or a 64-bit Operating System in **Start->Control Panel->System**.



The *AFUWIN* folder has two subfolders: *32* (used for 32-bit systems) and *64* (used for 64-bit systems). If you have a 32-bit system, go to step 14. If you have a 64-bit system, go to step 15.

- 14** If you have a 32-bit system, in folder *32*, unzip the *afuwin32.zip* file. This unzips multiple files to a folder named *afuwin32*. From the folder *afuwin32*, copy just the *afuwin.exe* and *amifldr32.sys* files and paste them into the folder you created earlier. Skip step 15.
- 15** If you have a 64-bit system, in folder *64*, unzip the *afuwin64.zip* file. This unzips multiple files to a folder named *afuwin64*. From the folder *afuwin64*, copy just the *afuwinx64.exe* and *amifldr64.sys* files and paste them into the folder you created earlier.

At this point, you should have six files in the folder you created earlier:

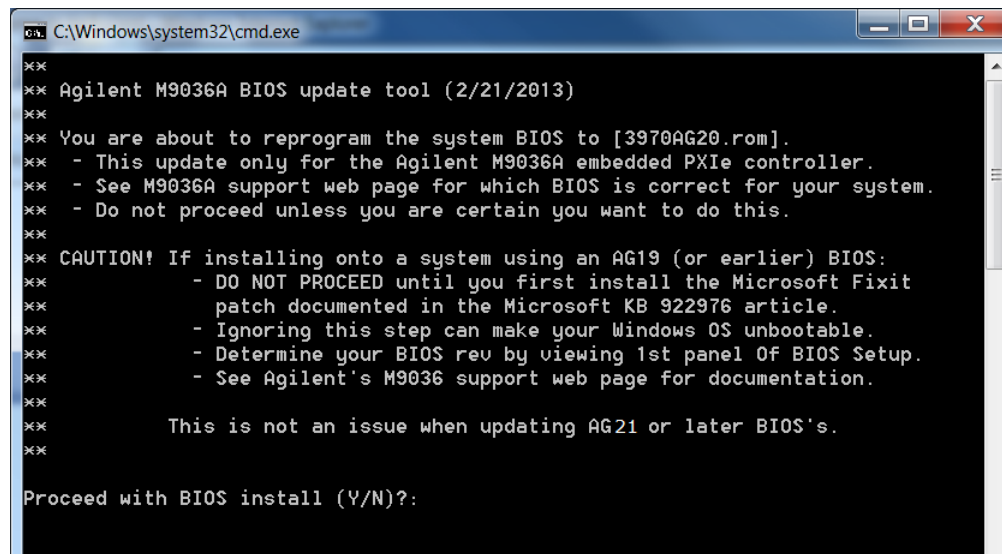
For AG21		For AG21-M
For a 32-bit system:	For a 64-bit system:	For a 64-bit system:
3970AG21.rom	3970AG21.rom	AG21-M.rom
FLASHROM.CMD	FLASHROM.CMD	FLASHROM.CMD
HISTORY_rev.TXT	HISTORY_rev.TXT	HISTORY-M_rev.TXT
README.TXT	README.TXT	README-M.TXT
afuwin.exe	afuwinx64.exe	afuwinx64.exe
amifldr32.sys	amifldr64.sys	amifldr64.sys

## Step 4: Update the M9036A BIOS

### NOTE

In order to restore or upgrade the BIOS, you must be logged in on the Keysight M9036A controller as a single user with Administrator privileges. If you are not, you must logout and then login again as a single user to an account with Administrator privileges. Set the User Account Control to the default position.

- 1 In Windows Explorer, navigate to the folder created in Section I, Step 1.
- 2 To begin the BIOS update procedure, double click on the *FLASHROM.COMD* file. This opens the following screen:

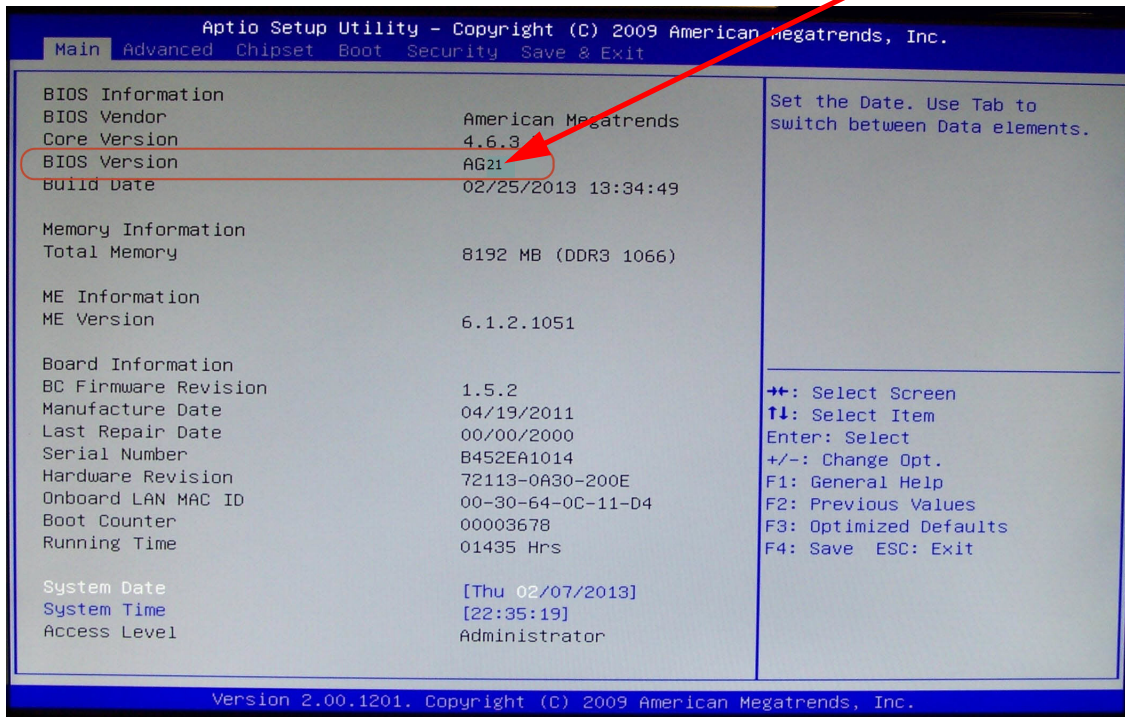


```
C:\Windows\system32\cmd.exe
**
** Agilent M9036A BIOS update tool (2/21/2013)
**
** You are about to reprogram the system BIOS to [3970AG20.rom].
** - This update only for the Agilent M9036A embedded PXIe controller.
** - See M9036A support web page for which BIOS is correct for your system.
** - Do not proceed unless you are certain you want to do this.
**
** CAUTION! If installing onto a system using an AG19 (or earlier) BIOS:
** - DO NOT PROCEED until you first install the Microsoft Fixit
**   patch documented in the Microsoft KB 922976 article.
** - Ignoring this step can make your Windows OS unbootable.
** - Determine your BIOS rev by viewing 1st panel Of BIOS Setup.
** - See Agilent's M9036 support web page for documentation.
**
** This is not an issue when updating AG21 or later BIOS's.
**
Proceed with BIOS install (Y/N)?:
```

- 3 Type Y and press **Enter**. Do not cycle power until the BIOS has successfully updated.
- 4 After the utility completes, the BIOS will be updated.

### Verify BIOS Version

- 1 Restart M9036A.
- 2 When the M9036A beeps, press the **DEL** key several times to enter the Setup Menu.
- 3 Ensure that the BIOS version is the correct BIOS version.



#### 4 Exit the BIOS Setup Menu.







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