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General Information

Supported models

This firmware is used on the following Keithley Instruments product models:

Models 3706A, 3706A-S, 3706A-NFP, 3706A-SNFP, and all Series 3700 cards.

Because this firmware is used on multiple models, this version of firmware may be available for use on one or more models while still being unqualified for use on the others. Please refer to the upgrade considerations section below for the product of interest for more details.

Installation instructions

To install this firmware, please follow the installation instructions in the Reference Manual.

Upgrade Considerations

The 1.51 and higher firmware releases can only be used on 3700A models. These releases are not compatible with 3700 (non-A) models.

The following table lists the considerations that should be made when deciding whether to upgrade your Series 3700A instrument firmware to version 1.55.

Consideration for upgrade	From version 1.51	From version 1.52	From version 1.53	From version 1.54
Recalibration required?	No	No	No	No
Backward compatibility concerns?	No	No	No	No
Requalification recommended?	No	No	No	No
Should you upgrade?	Review ¹	Review ¹	Review ¹	Review ¹

¹ Review the entire list of changes made in all firmware versions between your current version and version 1.55. Upgrade if any of the fixes or enhancements are needed.

Version 1.55 Release

Upgrade considerations

The 1.55 release can only be used on 3700A models. This release is not compatible with 3700 (non-A) models. This release is the first to support the new 3760, 3761, 3762, and 3765 switch cards.

Overview

The following table lists the exact version numbers of the available Series 3700 components.

Model	Version
Series 3700A Mainframe	1.55a
Series 3700A High Performance DMM	1.50c
3720 Dual 1x30 Multiplexer	1.40h
3721 Dual 1x20 Multiplexer	1.40h
3722 Dual 1x48 High Density Multiplexer	1.40h
3723 Dual 1x30 High Speed Reed Relay Multiplexer	1.40j
3724 Dual 1x30 FET Multiplexer	1.40j
3730 Dual 6x16 High Density Matrix	1.40h
3731 Dual 6x16 High Speed Reed Matrix	1.40j
3732 Quad 4x28 High Speed Reed Matrix	1.40m
3740 32 Channel Isolated Switch	1.40h
3750 Multifunction I/O Card	1.40j
3760 10-ch Hi-I Multiplexer	1.50b
3761 10-ch Lo-I Multiplexer	1.50a
3762 10-ch Hi-V Multiplexer	1.50b
3765 Hall Effect	1.50c

Critical fixes

PR-61206 **Models affected:**

Models 3706A, 3706A-S, 3706A-NFP, 3706A-SNFP.

Symptom:

The instrument skips a scan step when two consecutive steps are identical. LAN trigger is generated after the first step, but not after the second one.

Workaround:

None.

Resolution:

This issue has been corrected.

PR-59260 Models affected:

Models 3706A, 3706A-S, 3706A-NFP, 3706A-SNFP.

Symptom:

The instrument causes Error 5511 Low-Power when configuring a scan while some channels are already closed.

Workaround:

None.

Resolution:

This issue has been corrected.

PR-44535 Models affected:

Models 3706A, 3706A-S, 3706A-NFP, 3706A-SNFP.

Symptom:

From the web-page, Step by Step will treat scan list of items all from same channel like 1 step

Workaround:

None.

Resolution:

This issue has been corrected.

Enhancements

The new 3760, 3761, 3762, and 3765 switch cards are now supported in this firmware release.

Non-critical fixes

None.

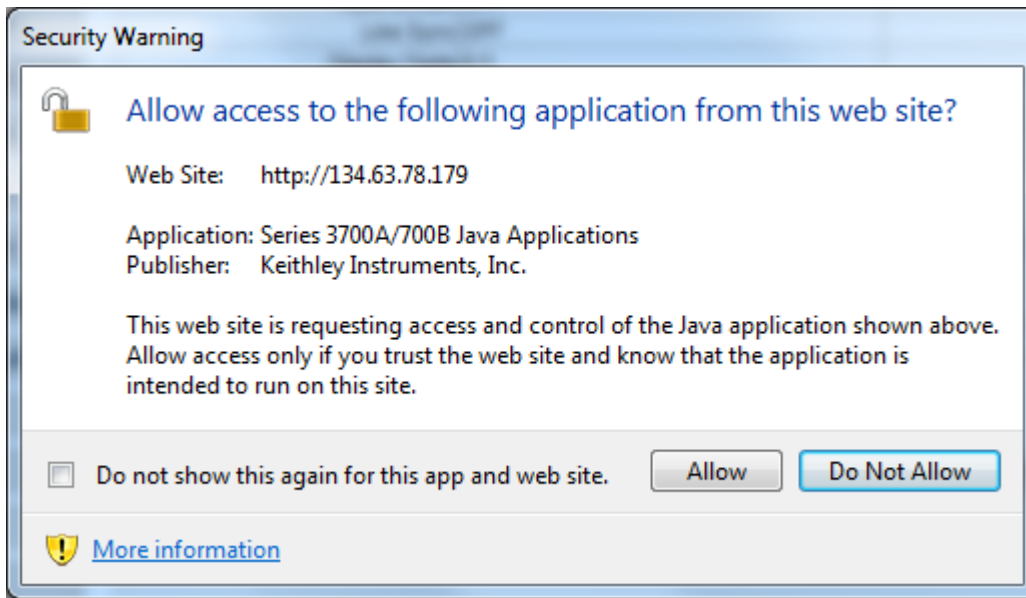
Known issues

PR51964 **Models affected:**

Models 3706A, 3706A-S, 3706A-NFP, 3706A-SNFP.

Symptom:

When switching from one web application to another for the first time, a Java security warning window similar to the one shown below is used to get the user's permission. In the most recent versions of Java (7u65 and 8u11), the security warning window appears **behind** the web browser when using Internet Explorer. Until the security warning window is acknowledged, the web browser will appear to be unresponsive. This only happens with Internet Explorer.



Workaround:

Enable the "Do not show this again for this app and web site." check-box prior to clicking the "Allow" button.

PR53151 **Models affected:**

Models 3706A, 3706A-S, 3706A-NFP, 3706A-SNFP.

Symptom:

The first attempt to open TSB Embedded does not complete and users must click a second time for the applet to start.

Workaround:

Click the TSB Embedded link again.

PR53153 Models affected:

Models 3706A, 3706A-S, 3706A-NFP, 3706A-SNFP.

Symptom:

If the user edits a script in TSB Embedded and clicks a non-applet link such as Sync Config prior to saving, when they return to TSB Embedded the changes are gone and no script is displayed in the editor.

Workaround:

Be sure to save your work before selecting another link.

PR60403 Models affected:

Models 3706A, 3706A-S, 3706A-NFP, 3706A-SNFP.

Symptom:

Upgrading or Downgrading to firmware version 1.54a might cause the instrument to lock-up.

Workaround:

Power cycle the instrument. On very rare occasions the instrument has been permanently disabled and needs to be serviced.

Version 1.54 Release

Upgrade considerations

The 1.54 release can only be used on 3700A models. This release is not compatible with 3700 (non-A) models.

Overview

The following table lists the exact version numbers of the available Series 3700 components.

Model	Version
Series 3700A Mainframe	1.54a
Series 3700A High Performance DMM	1.50c
3720 Dual 1x30 Multiplexer	1.40h
3721 Dual 1x20 Multiplexer	1.40h
3722 Dual 1x48 High Density Multiplexer	1.40h
3723 Dual 1x30 High Speed Reed Relay Multiplexer	1.40j
3724 Dual 1x30 FET Multiplexer	1.40j
3730 Dual 6x16 High Density Matrix	1.40h
3731 Dual 6x16 High Speed Reed Matrix	1.40j
3732 Quad 4x28 High Speed Reed Matrix	1.40m
3740 32 Channel Isolated Switch	1.40h
3750 Multifunction I/O Card	1.40j

Critical fixes

PR55435 Models affected:

Models 3706A, 3706A-S, 3706A-NFP, 3706A-SNFP.

Symptom:

Default Cal password incorrect.

Workaround:

None.

Resolution:

This issue has been corrected.

PR55219 Models affected:

Models 3706A, 3706A-S, 3706A-NFP, 3706A-SNFP.

Symptom:

The instrument shows an overflow value after switching to detector-bandwidth of 300 when measuring AC-volts. The autodelay function does not prevent the overflow.

Workaround:

None.

Resolution:

This issue has been corrected.

PR56938 Models affected:

Models 3706A, 3706A-S, 3706A-NFP, 3706A-SNFP.

Symptom:

When identical relays are closed/opened in two or more consecutive scan-steps, the Channel Ready trigger event is generated only when the first identical step is executed. It is not generated when the subsequent identical steps are executed.

Workaround:

None.

Resolution:

This issue has been corrected.

PR54842 Models affected:

Models 3706A, 3706A-S, 3706A-NFP, 3706A-SNFP.

Symptom:

An error occurs when scan.add() used in a loop for more than 91 times when multiple switching cards are used.

Workaround:

None.

Resolution:

This issue has been corrected.

PR58235 Models affected:

Models 3706A, 3706A-S, 3706A-NFP, 3706A-SNFP.

Symptom:

Autoranged 4-wire resistance measurement of a 10 ohm resistor returns overflow on the 10 ohm range when the lead resistance exceeds the Maximum 4WΩ Lead Resistance specification for the range.

Workaround:

None.

Resolution:

This issue has been corrected. For the case of a 10 ohm resistor with excessive lead resistance, the autoranging process will now bump the range up to the next highest range (100 ohms) and take the measurement.

PR58247 **Models affected:**

Models 3706A, 3706A-S, 3706A-NFP, 3706A-SNFP.

Symptom:

Unstable AC readings after manually changing the bandwidth to 300 from a different value.

Workaround:

None.

Resolution:

This issue has been corrected.

Enhancements

None.

Non-critical fixes

None.

Version 1.53 Release

Upgrade considerations

The 1.53 release can only be used on 3700A models. This release is not compatible with 3700 (non-A) models.

Overview

The following table lists the exact version numbers of the available Series 3700 components.

Model	Version
Series 3700A Mainframe	1.53c
Series 3700A High Performance DMM	1.50b
3720 Dual 1x30 Multiplexer	1.40h
3721 Dual 1x20 Multiplexer	1.40h
3722 Dual 1x48 High Density Multiplexer	1.40h
3723 Dual 1x30 High Speed Reed Relay Multiplexer	1.40j
3724 Dual 1x30 FET Multiplexer	1.40j
3730 Dual 6x16 High Density Matrix	1.40h
3731 Dual 6x16 High Speed Reed Matrix	1.40j
3732 Quad 4x28 High Speed Reed Matrix	1.40m
3740 32 Channel Isolated Switch	1.40h
3750 Multifunction I/O Card	1.40j

Critical fixes

None.

Enhancements

PR51416 Models affected:

Models 3706A, 3706A-S, 3706A-NFP, 3706A-SNFP.

Enhancement:

Keithley has updated its digital signature on all of its Series 3700A Java applications to a stronger 2048-bit certificate.

Non-critical fixes

PR51207 Models affected:

Models 3706A, 3706A-S, 3706A-NFP, 3706A-SNFP.

Symptom:

Series 3700A web applications (DMM, Cards, Scan Builder, TSB Embedded and Unit) are blocked from running in Java version 7 update 51 (or later) because the JAR file manifest does not contain the Permissions attribute.

Workaround:

None.

Resolution:

This issue has been corrected.

PR51547 Models affected:

Models 3706A, 3706A-S, 3706A-NFP, 3706A-SNFP.

Symptom:

Unexpected behavior with scan.background() and schedule.alarm commands.

Workaround:

None.

Resolution:

This issue has been corrected.

PR51864 Models affected:

Models 3706A, 3706A-S, 3706A-NFP, 3706A-SNFP.

Symptom:

When run using Java plug-in version 7u25 or later, Series 3700A web applications will eventually stop working after it is re-loaded.

Workaround:

None.

Resolution:

This issue has been corrected.

PR51955 Models affected:

Models 3706A, 3706A-S, 3706A-NFP, 3706A-SNFP.

Symptom:

When running a Series 3700A web application, a JAVA security prompt may ask for your confirmation for running the application. An incorrect application name was shown on the security dialog window.

Workaround:

None.

Resolution:

This issue has been corrected.

PR51958 Models affected:

Models 3706A, 3706A-S, 3706A-NFP, 3706A-SNFP.

Symptom:

Series 3700A web applications do not work correctly in Internet Explorer 11. Users cannot switch from one web application to another without going through the Home page.

Workaround:

None.

Resolution:

This issue has been corrected.

PR51967 Models affected:

Models 3706A, 3706A-S, 3706A-NFP, 3706A-SNFP.

Symptom:

When running Series 3700A web applications using Internet Explorer 11 with Java plug-in version 7 or 8, a warning message is shown to tell the user that "This application would like to use a version of Java (1.6*) that is not installed on your system."

Workaround:

None.

Resolution:

This issue has been corrected.

PR51000 Models affected:

Models 3706A, 3706A-S, 3706A-NFP, 3706A-SNFP.

Symptom:

USB host port issue - USB flash drives not recognized

Workaround:

None.

Resolution:

This issue has been corrected.

Version 1.52 Release

Upgrade considerations

The 1.52 release can only be used on 3700A models. This release is not compatible with 3700 (non-A) models.

Overview

The following table lists the exact version numbers of the available Series 3700 components.

Model	Version
Series 3700A Mainframe	1.52g
Series 3700A High Performance DMM	1.50b
3720 Dual 1x30 Multiplexer	1.40h
3721 Dual 1x20 Multiplexer	1.40h
3722 Dual 1x48 High Density Multiplexer	1.40h
3723 Dual 1x30 High Speed Reed Relay Multiplexer	1.40j
3724 Dual 1x30 FET Multiplexer	1.40j
3730 Dual 6x16 High Density Matrix	1.40h
3731 Dual 6x16 High Speed Reed Matrix	1.40j
3732 Quad 4x28 High Speed Reed Matrix	1.40m
3740 32 Channel Isolated Switch	1.40h
3750 Multifunction I/O Card	1.40j

Critical fixes

None.

Enhancements

PR47100 **Models affected:**

PR47160 Models 3706A, 3706A-S, 3706A-NFP, 3706A-SNFP.

Enhancement:

Allow channel.open, channel.close, channel.getstate and channel.createspecifier to run while a background scan is running. These commands can slow a scan down if they are called while the scan is running. If there is no scan running then these commands function as normal.

- channel.open can only be used on a slot that is not part of the scan list that is running. While a scan is running channel.open will not accept "allslots" or "slot#" as the parameter. While a scan is running channel.open will only accept a channel or list of channels.
- channel.close can only be used on a slot that is not part of the scan list that is running.

Non-critical fixes

PR46705 **Models affected:**

Models 3706A, 3706A-S, 3706A-NFP, 3706A-SNFP.

Symptom:

When communicating with the product using USB it did not correctly report that it is capable of asserting triggers.

Workaround:

None.

Resolution:

The TRIGGER functionality had been implemented, but was not reported in the device and interface capabilities. The appropriate bits in the capability words are now set and resolve this issue.

PR47097 **Models affected:**

PR47098 Models 3706A, 3706A-S, 3706A-NFP, 3706A-SNFP.
PR47099

Symptom:

In the Java applet some of the file extension drop down boxes did not have a default extension selected. This only happens when using Java JRE 7.

Workaround:

Using Java JRE 6.

Resolution:

The Java applet now requests a default file extension to be selected in the drop down box.

PR47131 **Models affected:**

Models 3706A, 3706A-S, 3706A-NFP, 3706A-SNFP.

Symptom:

In the Java applet the Pattern and Generate Report buttons were not working.

Workaround:

None.

Resolution:

The previous firmware release inserted an issue that caused these buttons to not work properly. This has been corrected.

PR47136 **Models affected:**

Models 3706A, 3706A-S, 3706A-NFP, 3706A-SNFP.

Symptom:

According to VXI-11.1 rule B.4.12, the status poll (device_readstb) should automatically clear the RQS bit, but if a second status poll is executed, the RQS bit is still set. This means the RQS bit was not automatically clearing.

Workaround:

Manually call a status clear after a status poll.

Resolution:

The RQS bit now automatically clears after a status poll.

PR47137 Models affected:

Models 3706A, 3706A-S, 3706A-NFP, 3706A-SNFP.

Symptom:

When communicating with the product using USB and using the Read Status Byte bus operation it always returned 0.

Workaround:

None.

Resolution:

It now returns the correct status byte.

Version 1.51 Release

Supported models

This firmware is used on the following Keithley Instruments products:

Models 3706A, 3706A-S, 3706A-NFP, 3706A-SNFP, and all Series 3700 cards

Overview

Note: The 1.51 release can only be used on 3700A models. This release is not compatible with 3700 (non-A) models.

The following table lists the exact version numbers of the available Series 3700 components.

Model	Version
Series 3700A Mainframe	1.51b
Series 3700A High Performance DMM	1.50b
3720 Dual 1x30 Multiplexer	1.40h
3721 Dual 1x20 Multiplexer	1.40h
3722 Dual 1x48 High Density Multiplexer	1.40h
3723 Dual 1x30 High Speed Reed Relay Multiplexer	1.40j
3724 Dual 1x30 FET Multiplexer	1.40j
3730 Dual 6x16 High Density Matrix	1.40h
3731 Dual 6x16 High Speed Reed Matrix	1.40j
3732 Quad 4x28 High Speed Reed Matrix	1.40m
3740 32 Channel Isolated Switch	1.40h
3750 Multifunction I/O Card	1.40j

Critical fixes

NOTE: Firmware version 1.51 is the initial firmware release for the 3700A series and should not be installed on non-A (for example 3706) models. For non-A series instruments, V1.41c is the latest firmware version. The information provided below is only used to inform customers who had been previously using a model 3706 with firmware release 1.41c.

PR45880 Models affected:

3706A, 3706A-S, 3706A-NFP, 3706A-SNFP

Symptom:

A repeated call to dmm.open was causing a memory leak.

Resolution:

The firmware was modified to free up allocated memory correctly.

PR45951 Models affected:

3706A, 3706A-S, 3706A-NFP, 3706A-SNFP

Symptom:

It was observed that reading large amounts of data using VXI would occasionally cause the data to be terminated early.

Resolution:

During heavy amounts of reading the VXI driver would set the EOI bit too early terminating the data transfer. This was corrected.

Enhancements

None.

Noncritical fixes

PR45677 **Models affected:**
3706A, 3706A-S, 3706A-NFP, 3706A-SNFP

Symptom:

The login window of the Java applet was not sized properly.

Resolution:

The resolution of the login window was set to correct values.

PR45017 **Models affected:**
3706A, 3706A-S, 3706A-NFP, 3706A-SNFP

Symptom:

channel.calibration.verifydate returns a misleading error for cards that do not support calibration.

Resolution:

For cards that do not support calibration the error was changed to "Card not supported".