



A Tektronix Company

Keithley Instruments
28775 Aurora Road
Cleveland, Ohio 44139-1891
1-888-KEITHLEY
www.keithley.com

Contents

General Information .....2
Version A15 Release .....3
Version A14 Release .....4
Version A13 Release .....5
Version A12 Release .....6
Version A11 Release .....8
Version A10 Release .....11
Version A09 Release .....12
Version A08 Release .....14

## General Information

### Supported models

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

2750

### Installation instructions

Contact Keithley Instruments Application support to obtain the Keithley Flash Wizard32 program to upgrade firmware.

### Upgrade considerations for Model 2750

Determine the firmware revision of your instrument using front panel or bus operation.

- For front panel operation:  
The firmware revision is briefly displayed during power sequence. When the instrument is turned on, the display annunciators will turn on for a short period of time. After that, the firmware revision will be briefly displayed as follows:

REV: *yyy zzz*

where:

*yyy* is the mainframe revision (e.g., A09 of the Model 2750).

*zzz* is the display board firmware revision (e.g., A01), which does not apply to this upgrade.

- For remote operation:  
Use the `*IDN?` query command.  
After sending the `*IDN?` command and addressing the instrument to talk, the following response message is sent to the computer:

KEITHLEY INSTRUMENTS INC.,MODEL *www*,*xxxxxxx*,*yyy/zzz*

where:

*www* is the mainframe model (2750).

*xxxxxxx* is the serial number of the mainframe.

*yyy* is the firmware revision of the mainframe.

*zzz* is the display board firmware revision

The following table outlines the considerations that should be made when deciding whether or not to upgrade your Model 2750 firmware to version A15.

Consideration	From A06	From A07	From A08	From A09	From A10	From A11	From A12	From A13	From A14
Recalibration Required	Yes	No	No	No	No	No	No	No	No
Re-qualification Suggested	Yes <sup>1</sup>	Yes <sup>1</sup>	Yes <sup>1</sup>	Yes <sup>1</sup>	Yes <sup>1</sup>	Yes <sup>1</sup>	Yes <sup>1</sup>	Yes <sup>1</sup>	Yes <sup>1</sup>
Should you upgrade?	Review <sup>2</sup>	Review <sup>2</sup>	Review <sup>2</sup>	Review <sup>2</sup>	Review <sup>2</sup>	Review <sup>2</sup>	Review <sup>2</sup>	Review <sup>2</sup>	Review <sup>2</sup>

<sup>1</sup> New firmware should be evaluated in user application

<sup>2</sup> Review the list of changes made in this version and all versions in between your current version and this version. Upgrade if any of the fixes or enhancements are desired.

## Version A15 Release

---

### Overview

Model 2750 version A15 firmware was created to support hardware changes on revision G of the 2750-102 board.

Firmware version A15 is required for proper operation of the 2750-102G board, but is fully backwards compatible with previous hardware versions. Users with previous hardware revisions will notice no change in performance. An upgrade is not required.

Note: All 2750 units with 2750-102G boards are shipped with firmware version A15 pre-installed.

### Critical fixes

There are no critical fixes in the A15 release.

### Enhancements

There are no enhancements in the A15 release.

### Non-critical fixes

There are no non-critical fixes in the A15 release.

### Known issues

There are no known issues in the A15 release.

## Version A14 Release

---

### Overview

Model 2750 version A14 firmware was created to support additional flash memory devices, and to address manufacturing built-in test requirements.

### Critical fixes

PR37485 **Models affected:**

2750

**Symptom:**

Unit may not return readings when changing between voltage and frequency/period functions.

**Resolution:**

This issue has been corrected.

### Enhancements

There are no enhancements in the A14 release.

### Non-critical fixes

There are no non-critical fixes in the A14 release.

### Known issues

There are no known issues in the A14 release.

## Version A13 Release

---

### Overview

Model 2750 version A13 firmware was created to address the critical fixes listed below.

### Critical fixes

PR31814 **Models affected:**

2750

**Symptom:**

Sending :ROUT:CLOS:COUN? will cause +900 execution error.

**Resolution:**

This issue has been corrected.

### Enhancements

There are no enhancements in the A13 release.

### Non-critical fixes

There are no non-critical fixes in the A13 release.

### Known issues

There are no known issues in the A13 release.

## Version A12 Release

---

### Overview

Model 2750 version A12 firmware was created to address the fixes listed below.

### Critical fixes

PR27943 **Models affected:**

2750

**Symptom:**

Unit will occasionally time out and locks up in RS-232 mode when sending MEAS:FREQ? query.

**Resolution:**

This issue has been corrected.

### Enhancements

There are no enhancements in the A12 release.

### Non-critical fixes

PR27942 **Models affected:**

2750

**Symptom:**

Units are displayed incorrectly when scanning using user-defined units with MX + B.

**Resolution:**

This issue has been corrected.

PR26496 **Models affected:**

2750

**Symptom:**

The SRQ does not occur to indicate the buffer is full. The fixed buffer overflow status bit is not reported correctly when using the always buffer.

**Resolution:**

This issue has been corrected.

**PR27937 Models affected:**

2750

**Symptom:**

The Real Time Timestamp of a front panel scan uses 61 instead of 60 seconds in every minute. Absolute timestamp works correctly.

**Resolution:**

This issue has been corrected.

**Known issues**

There are no known issues in the A12 release.

## Version A11 Release

---

### Overview

Model 2750 version A11 firmware was created to address the fixes listed below.

### Critical fixes

**PR26354 Models affected:**

2750

**Symptom:**

The unit will lock up instead of having the buffer wrap properly when using monitor channel in the infinite scan mode and query the buffer with “:TRACe:NEXT? “ command.

**Resolution:**

This issue has been corrected.

**PR26179 Models affected:**

2750

**Symptom:**

Potential lock up occurs when scanning one channel for multiple readings for temperature or DC Volts.

**Resolution:**

This issue has been corrected.

### Enhancements

There are no enhancements in the A11 release.

### Non-critical fixes

**PR26152 Models affected:**

PR26281  
2750

**Symptom:**

Does not return the correct timestamp format. When using the READ? or the scratch buffer is configured for a real time clock, the clock data will bring back 0.000, or relative clock information. Setting the trace buffer for the real time clock, then using the scratch buffer returns the real time clock information from the scratch buffer.

This remains true until the instrument is power cycled. Then only the relative clock information is returned until configure the trace buffer for the real time clock again.

**Resolution:**

This issue has been corrected.



**PR26166 Models affected:**

2750

**Symptom:**

Front panel operation, exiting ratio generates a "lockup 01" error.

**Resolution:**

This issue has been corrected.

**PR26169 Models affected:**

2750

**Symptom:**

Ratio mode does not use 1V range. It jumps from the 100mV to the 10V range, losing resolution.

**Resolution:**

Corrected the display formatting so that ratio and MX + B readings between 1.0 and 10. 0 are no longer displayed on the 10-volt range. This has been corrected in A11.

**PR26202 Models affected:**

2750

**Symptom:**

Timeout when sending the command "`syst:pcard1 c7702`" with a long scan list.

**Resolution:**

This issue has been corrected.

**PR26284 Models affected:**

2750

**Symptom:**

Incorrect range chosen for Ratio / Channel average when channel average was used between two channels with different ranges.

**Resolution:**

This issue has been corrected.

**PR26463 Models affected:**

2750

**Symptom:**

SRQ not generated for buffer full with a small size buffer. The buffer will not stop if only 2 points are stored, and the buffer full status bit is not enabled.

**Resolution:**

This issue has been corrected.

**Known issues**

There are no known issues in the A11 release.

## Version A10 Release

---

### Overview

Model 2750 version A10 firmware was created to address the fixes listed below.

### Critical fixes

**PR25541 Models affected:**

2750

**Symptom:**

ACV 675V/64kHz gives incorrect (low) readings.

At 675V/50kHz ACV readings are correct. Increasing frequency to about 64kHz will cause readings to drop to approximately 150V.

**Resolution:**

This issue has been corrected.

**PR25476 Models affected:**

2750

**Symptom:**

Temperature is out of specifications on some TC channels with system using multiple 7708 cards. The measurement error is not seen if using the simulated junction for temperature. The error is proportional to the number of cards inserted. Removing cards 3, 4, and 5 cause the error to disappear in a linear fashion. Using 7708 cards individually shows that each of them has a negligible error, but by adding cards in slot 2 and 3 the temperature readings begin to go out of spec on certain channels. (more often in slot 2)

**Resolution:**

The problem was due to errors introduced by differences in the CJC temperature between cards. This has been corrected in A10.

### Enhancements

There are no enhancements in the A10 release.

### Non-critical fixes

There are no non-critical fixes in the A10 release.

### Known issues

There are no known issues in the A10 release.

## Version A09 Release

---

### Overview

Model 2750 version A09 firmware was created to address the fixes listed below.

### Critical fixes

**PR24124 Models affected:**

2750

**Symptom:**

A lock up error occurs if the temperature transducer is changed from 2-wire to 4-wire while the channel is already closed.

**Resolution:**

This issue has been corrected.

### Enhancements

There are no enhancements in the A10 release.

### Non-critical fixes

**PR24339 Models affected:**

2750

**Symptom:**

When doing a scan, the units viewed through RECALL would not be correct for MX+B math. Similarly the units would be returned over the bus incorrectly if a READ? query was used to start a scan and return the results.

**Resolution:**

This issue has been corrected.

**PR23799 Models affected:**

2750

**Symptom:**

Timestamp can jump by as much as 200 ms in the middle of a scan. For example: a Model 7710 is programmed to scan two voltage channels with both AutoZero, and Display disabled, and a delay of 20 ms. After gathering 202 sample points and waiting for the buffer to fill, review the data's time stamp. It is possible to randomly see a data point is delayed by about 200 ms.

**Resolution:**

This issue has been corrected.

**PR24511 Models affected:**

2750

**Symptom:**

Incorrect readings until the function is changed or the power is re-cycled if Linesync feature is enabled.

**Resolution:**

This issue has been corrected.

**PR24593 Models affected:**

2750

**Symptom:**

Unable to change the scan settings (min/ max channels) if the user set up was saved as power on default, and the unit was flash upgraded.

**Resolution:**

The Flash upgrade routine now forces the factory default as the power up setting. The correction is implemented in A09.

**Known issues**

There are no known issues in the A09 release.

## Version A08 Release

---

### Overview

Model 2750 version A08 firmware was created to address the fixes listed below.

### Critical fixes

**PR23088 Models affected:**

2750

**Symptom:**

The display reads zero ohms with the Input Hi lead open, OCOMP enabled, Sense hi, Sense lo, and Lo shorted. With any of the Input or Sense leads open, the 2750 should read overflow. If OCOMP is disabled, the reading reads overflow as expected.

**Resolution:**

Firmware A05 and analog board revision “D” added open lead detection. With Input or sense leads open. The OCOMP bits were not updated correctly. This has been corrected in A08.

**PR23497 Models affected:**

2750

**Symptom:**

The response is different length than expected, due to some channels not being scanned. The :ROUT:SCAN:LSEL does not always do all the steps it is supposed to.

**Resolution:**

This issue has been corrected.

### Enhancements

There are no enhancements in the A08 release.

### Non-critical fixes

**PR23109 Models affected:**

2750

**Symptom:**

The up and down arrow keys don't work properly in 7706 card configure menu. Using the down arrow, the analog out selections can't be seen. Need to use up arrow to get to them.

**Resolution:**

This issue has been corrected.