KEITHLEY

2700
B09 Firmware Release Notes

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Contents

Contents 1
General Information 1
  Supported Models 1
  Installation Instructions 1
B09 Release 2
  Overview 2
  Upgrade Considerations for 2700 2
  Installation Instructions 3
  Critical Fixes 4
  Enhancements 4
  Non-critical Fixes 4
B08 Release 4
  Critical Fixes 4
  Enhancements 5
  Non-critical Fixes 5
B07 Release 6
  Overview: 6
B06 Release 6
  Overview: 6
  Critical Fixes 6
  Enhancements 7
  Non-critical Fixes 7
B05 Release 8
  Critical Fixes 8
  Enhancements 9
  Non-critical Fixes 9

General Information

Supported Models

This firmware is used on the following Keithley products: Model 2700

Installation Instructions

To aid in installation, the Flash Wizard software and Firmware file are bundled together as one file. This bundled package is located on the Keithley website at www.Keithley.com. Search for Firmware by Model 2700 under the support tab.

B09 Release

Overview

Upgrade is available for those who wish to have the latest firmware enhancements and upgrades installed on their instrument. Upgrade to B09 as needed to address the specific problems listed in the non critical fixes section.

Upgrade Considerations for 2700

Due to hardware differences, the instrument must be at Firmware revision B01 or higher to upgrade to B09. If the unit has A01,A02 or A03 firmware revision, A03 is the highest upgrade possible without a Hardware upgrade. Attempting to upgrade from version AXX to BXX without needed hardware requirements will damage the instrument and cannot be used. Contact Keithley Service Center for instructions and cost to upgrade Firmware from version AXX to version BXX.

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

For front panel: 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., A04 of the Model 2700).
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 wwww,xxxxxxx,yyy/zzz
where:
wwww is the mainframe model (2700).
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 to upgrade to this version or not from any previous version.

Consideration	**From** B08	**From B07**	**From B06**	**From B05**	**From B04**	**From B03**	**From B02**
Recalibration Required	No	No	No	Yes	No	No	No
Modules supported:							
Model 7708	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Model 7707, 7709	Yes	Yes	Yes	Yes	Yes	Yes	No
Model 7710	Yes	Yes	Yes	Yes	No	No	No
Model 7711, 7712	Yes	Yes	Yes	Yes	Yes	No	No

Installation Instructions

The Minimum System requirements to perform the ROM upgrade:
Pentium-class PC running Windows 95 or later.
Either IEEE-488 interface or a RS-232 communication port

1) If using the IEEE-488 interface: Flash software supports either Capital Equipment Corporation (CEC) or National Instruments (NI) IEEE-488.2 interfaces. Also requires a standard GPIB cable
2) If using the RS-232 interface: use an RS-232C cable to connect the communications port to the Model 2700. NOTE: With RS-232, upgrade takes approximately 20 minutes.

ROM upgrade procedure:

1. From Windows, click Start->Settings->Control Panel>Add/ Remove Programs, and then remove any Model 2700 ROM upgrades if previously installed. NOTE: All saved scanlists, setups, and buffer readings will be lost with this upgrade.
2. Download the 2700 B09 Firmware upgrade.exe file from the Keithley Web site, www.keithley.com to a temporary directory on your PC.
3. From Windows click Start->Run. Click the Browse button and navigate to temporary directory and select the 2700 B09 Firmware upgrade.exe file. This should return you to the Run dialog box. Click OK to run the WinZip Self-Extractor. Specify a temporary directory to unzip the install files to and click Unzip. When the unzip operation has finished click OK and then Close.
4. From Windows click Start->Run. Click the Browse button and navigate to the temporary directory where you unzipped the files and select the setup.exe file. This should return you to the Run dialog box. Click OK to run the setup and follow all prompted instructions.
5. From Windows click Start->Programs->Keithley Instruments-> Model 2700 Flash Upgrade vB09 and follow all prompted instructions.
6. Perform Step 1 above (determine the firmware revision of your mainframe) to verify correct installation. NOTE: Error +516,"Battery Backed Memory Lost" will be displayed after the first power cycle after upgrade.

Critical Fixes

PR27873 ***Symptom:***

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

Resolution:

This has been corrected.

Enhancements

There are no Enhancements implemented in B09 release

Non-critical Fixes

PR27417 ***Symptom:***

Incorrect units are displayed when using user-defined units with MX + B in scan mode.

Resolution:

This has been corrected

PR26488 ***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:

The buffer overflow status bit now correctly reports the buffer status.

B08 Release

Critical Fixes

PR24118 ***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 has been corrected.

PR25242 ***Symptom:***

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

Resolution:

This has been corrected.

PR25101 ***Symptom:***

Using monitor channel in the infinite scan mode while sending command: :TRACe:NEXT? When reaching the end of the buffer, the unit will lock up instead of having the buffer wrap around properly.

Resolution:

This has been corrected

PR26082 ***Symptom:***

A “lockup 01” error occurs when exiting ratio from the front panel.

Resolution:

This has been corrected

PR26264 ***Symptom:***
PR25241

Does not return correct timestamp format. When using the READ? or scratch buffer 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. Only the relative clock information is returned until configure the trace buffer for the real time clock again.

Resolution:

This has been corrected.

Enhancements

There are no Enhancements for this release.

Non-critical Fixes

PR25241 ***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 10volt range.

PR26464 ***Symptom:***

Unit does not SRQ on 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 has been corrected.

PR25102 ***Symptom:***

A 2 wire, 4 wire pairing problem occurs if channel autocongfigure is enabled and the function is changed while the channel is closed. If the configured function is 2 pole when the channel was closed, but 4 pole is selected after the channel is closed, the sense relays are not closed (left open).

Resolution:

This has been corrected. The sense relays are now closed if function is changed after the channel is closed.

PR26263 ***Symptom:***

Incorrect ranges occur on Ratio / Channel average when channel average was used between two channels with different ranges.

Resolution:

This has been corrected.

PR24526 ***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 has been corrected.

B07 Release

Overview:

B07 was not released. Corrections were implemented in B08.

B06 Release

Overview:

Upgrading to B06 will result in a loss of User settings and communication configuration.
In rare instances where customers choose to Downgrade from B06 or higher to version B05 (or lower) the instrument will require a recalibration to preserve the accuracy of Low Frequency AC measurements.

Critical Fixes

PR21267 ***Symptom:***

Scanning RTDs can read overflow or give false readings. Occurs only when Trigger count is greater than 1.

Resolution:

This has been corrected.

PR21358 ***Symptom:***

First channel of RTD (4 wire scanning) is incorrect

Resolution:

Relays are updated properly so that if the channel happens to be closed prior to starting the scan, and to prevent false or overflowed readings while scanning.

This has been corrected

PR21762 ***Symptom:***

Does not give correct reading when using :MEAS:FRES? the first time. The first time results in an overflow reading. If send the :MEAS:FRES?a second time, the correct reading is returned.

Resolution:

This has been corrected

Enhancements

PR23015 Improved inconsistent arrow key operation. Changed Model 7706 card configuration menu to allow up and down arrow key to access AOUT options

Non-critical Fixes

PR22451 ***Symptom:***

Channel AutoConfigure gets reset when send * RST and :SYST:PRES

Resolution:

This has been corrected. AutoConfigure state is not a parameter affected by BUS resets.

PR20932 ***Symptom:***

Auto Scan does not work if power is interrupted between scans.

Resolution:

This has been corrected.

PR20739 ***Symptom:***

:MEAS:FRES? Query is closing the channel out of sequence with the selected function between 2 wire versus 4 wire.

Resolution:

This has been corrected.

PR23015 ***Symptom:***

If send a ROUT:MULTI:OPEN then ROUT:CLOS, the channel doesn't close.

Resolution:

This has been corrected.

PR22805 ***Symptom:***

:SYST:KEY 17 does not put the unit into LOCAL mode

Resolution:

This has been corrected.

PR23798 ***Symptom:***

When scanning channels, occasionally the timestamp jumps by 200-300ms.

Resolution:

This has been corrected.

B05 Release

Critical Fixes

PR19443 ***Symptom:***

Does not meet Model 7703 ACV scanning specifications. The specification is 155 rdgs/sec, but maximum achieved is about 100 rdgs/ sec

Resolution:

This has been corrected.

PR19080 ***Symptom:***

Scanning TC's for temperature with internal reference junctions and subjecting the unit and card to a large temperature shock results in temperature readings considerably out of specifications. This issue was introduced in B04.

Resolution:

This has been corrected.

PR18574 ***Symptom:***

Does not meet Model 7703 DCV scanning specifications. The specification is <185rdgs/sec, but the maximum achieved is about 132 rdgs / sec. This issue was introduced in B04.

Resolution:

This has been corrected.

PR18834 ***Symptom:***

TRACE buffer data would be lost if using the Real Time timestamp and the power was cycled.

Resolution:

This has been corrected.

Enhancements

Added support for Model 7710 Solid State Relay Module

PR19050 Added ability to reset the trigger model during Monitor scans. Send command :ROUT:SCAN:LSEL NONE

PR18577 Minimized possibility of overloading the front end circuits and improve accuracy on the ACV scans by configuring Scan operations across different functions / ranges differently. The sequence was to open old channel, close new channel, and change measurement configuration. The sequence is now to open old channel, configure the measurement, then close the new channel

PR18854 Instrument will provide an overflow reading if negative voltages are seen in 4 wire ohm measurements

Non-critical Fixes

PR18193 ***Symptom:***

SCPI short form command :CURR:APER results in a –113 undefined header error. SCPI long form command CURRent:APERture works correctly.

Resolution:

This has been corrected. Short form command does not give –113 error.

PR18270 ***Symptom:***

If Auto channel configuration is enabled, and a 4W measurement channel is closed, followed by a 2W measurement channel on the second half of a scan card, an "Invalid Chan" error occurs on the front panel and a "-221 Settings Conflict" error occurs on the bus.

Resolution:

This has been corrected.

PR18391 ***Symptom:***

If user setup has a CALC1 format other than PDEV and CALC1, the math result is incorrect when the user setup is recalled.

Resolution:

This has been corrected.

PR18863 ***Symptom:***

*RST does not display correct function. For example, is change function to 2 Wire resistance measurement and a *RST is sent, the display remains in Ohms function instead of changing to Volts as per *RST default.

Resolution:

This has been corrected. *RST now changes function to Volts.

PR19489 ***Symptom:***

Filter type is not selectable from front panel when measurement is Continuity, Frequency or Period.

Resolution:

This has been corrected.

PR19174
PR19536 ***Symptom:***

With Auto-Configure enabled and a scan list that contains at least one channel with ratio or Channel Average, moving the front panel left/right keys to close the channel that is using ratio/chan avg does not always pair the channels correctly.

Resolution:

The paired channel was getting left closed depending on when the next close command was executed relative to which phase the Ratio/ Average measurement was being done. The unit now opens all slot relays before closing the next channel if ratio/ chan ave is enabled.

PR19843 ***Symptom:***

The Real Time Clock (RTCL) gives bogus readings UNLESS readings have been stored in buffer.

Resolution:

This has been corrected.

PR18853 ***Symptom:***

RTD user type parameters, when saved as part of user saved setup, are reset after instrument is powered down and the setup is recalled.

Resolution:

This has been corrected.

PR19331
PR19344
PR19377 ***Symptom:***

:ROUT:MULT:OPEN command correctly opens all channels but will incorrectly close the source and sense backplane relays (channel 24 and 25 on Model 7700 and Channel 44 and 45 on Model 7702).

Resolution:

This has been corrected. Backplane channels are no longer closed.

PR19275 ***Symptom:***

In the return string, the positions reporting the paired channels, 21st and 23rd position, PAIR does not show up.

Resolution:

This has been corrected.

PR18214 ***Symptom:***

Model 7712 response to SYST:CARDx:VMAX? returns 60 volts instead of 42.

Resolution:

This has been corrected. Response now returns 42 volts when query maximum voltage.

PR19941 ***Symptom:***

Invalid year is returned in the Recall buffer feature.

Resolution:

This has been corrected.

PR19875 ***Symptom:***

Out of specifications for RTD measurements at 600 degrees C.

Resolution:

This has been corrected.

PR19344 ***Symptom:***

While sending ROUT:OPEN:ALL or ROUR:CLOS:ALL, or scanning with a channel closed will intermittently cycle the backplane relays on.
The 7700 and 7702 will close the relays unnecessarily.
The 7701, 7703, 7708, 7709, 7710 will open the relays unnecessarily.

Resolution:

This has been corrected.

PR18818 ***Symptom:***

Intermittent overflow readings in DCV with AC input signal applied.

Resolution:

This has been corrected.

PR20470 When a channel is configured for frequency measurement either in a front panel advanced scan or a advanced scan over the bus, the measurements are not taken at the specified gate time/rate setting. Additionally, the buffer timestamps of the frequency channel and the channels that precede and follow the channel, are not logical. Occurs only in advanced scan, the measurements and buffer are acquired correctly for a simple scan configuration.

Resolution:

This has been corrected.