KEITHLEY
A Tektronix Company

Series 2400

Version C34 Firmware Release Notes

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Contents

General Information

Supported models

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

> 2400, 2400-C
> 2410, 2410-C
> 2420, 2420-C
> 2425, 2425-C
> 2430, 2430-C
> 2440, 2440-C

Installation instructions

Download the following from the Keithley Support Website (http://www.keithley.com/support):
- Keithley Flash Wizard program (if you don't already have this)
  - o Unzip the files in a folder of your choice and then run the "setup.exe" program.
  - o Follow the instructions to install the program.
- The firmware revision image file you want to install on your Series 2400 instrument

Perform the following steps to install the firmware revision onto Series 2400 the instrument:
1. Run the Flash Wizard program.
2. Select the appropriate interface at the Communications Select screen and follow any subsequent instructions.
3. Ultimately the program should auto-detect the 2400.
4. You will then be asked to specify the firmware file.
5. The upgrade proceeds from there.

It typically only takes a few minutes using the GPIB interface.

Contact Keithley (http://www.keithley.com/company) if you have any problems.

Upgrade considerations for supported models

The following table outlines the considerations that should be made when deciding whether or not to upgrade your Series 2400 instrument firmware to version C34.

Consideration for upgrade	From any 'C' version
Recalibration Required	No
Re-qualification Suggested	No
Should you upgrade?	Review[1]

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[1] 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 C34 Release

Overview

Version C34 added GUARD2 OutputOff mode and fixed a problem with External-Trigger-4.

Critical fixes

PR 57186 **Models affected:**

2400, 2400-C, 2410, 2410-C, 2420, 2420-C, 2425, 2425-C, 2430, 2430-C, 2440, 2440-C

Symptom:

Tlink line 4 only responds once to an appropriate trigger instead of continuously.

Resolution:

The issue has been corrected.

Enhancements

PR57340 **Models affected:**

2400, 2400-C, 2410, 2410-C, 2420, 2420-C, 2425, 2425-C, 2430, 2430-C, 2440, 2440-C

Symptom:

There are spikes on the output line when turning Output Off in any existing mode in certain environments.

Resolution:

A new Output Off mode has been added to handle those environments.

Version C33 Release

Overview

Version C33 fixes the issue of powering up with a low line-voltage (90 volts in Japan) for models 2420, 2425, 2430, 2440. Upgrading to this version of firmware will add a 5-second delay to power-up for all models running it.

Critical fixes

PR55590 **Models affected:**

2400, 2400-C, 2410, 2410-C, 2420, 2420-C, 2425, 2425-C, 2430, 2430-C, 2440, 2440-C

Symptom:

The instrument will power up, but the digital circuitry will not work properly. Therefore, there is voltage on the output and no readings are accurate.

Resolution:

The issue has been corrected.

Enhancements

There were no enhancements included in this release.

Version C32 Release

Overview

Version C32 fixes the false reporting of "over-temperature".

Critical fixes

PR42558 **Models affected:**

2400, 2400-C, 2410, 2410-C, 2420, 2420-C, 2425, 2425-C, 2430, 2430-C, 2440, 2440-C

Symptom:

Instruments may report error code +112, "OVER-TEMPERATURE" when they are not overheating.

Resolution:

The issue has been corrected.

Enhancements

There were no enhancements included in this release.

Version C31 Release

Overview

Version C31 addresses several issues as listed below.

Critical fixes

PR31544 **Models affected:**

2400, 2400-C, 2410, 2410-C, 2420, 2420-C, 2425, 2425-C, 2430, 2430-C, 2440, 2440-C

Symptom:

Instrument may stop responding if output ON/OFF is pressed when in an infinite sweep with the display turned off.

Resolution:

The issue has been corrected.

PR40971 **Models affected:**

2400, 2400-C, 2410, 2410-C, 2420, 2420-C, 2425, 2425-C, 2430, 2430-C, 2440, 2440-C

Symptom:

Instrument may give error code +822, "Too small for sense range" when setting current compliance with compliance range synchronization turned on.

Resolution:

The issue has been corrected.

Enhancements

There were no enhancements included in this release.

Non-critical fixes

PR30035 **Models affected:**

2400, 2400-C, 2410, 2410-C, 2420, 2420-C, 2425, 2425-C, 2430, 2430-C, 2440, 2440-C

Symptom:

Instrument may occasionally display "Not a Num" for a reading if offset-compensated ohms is used and leads are not connected to a load.

Resolution:

The issue has been corrected.

Version C30 Release

Overview

Version C30 addresses several issues as listed below.

Critical fixes

PR28880 **Models affected:**

2400, 2400-C, 2410, 2410-C, 2420, 2420-C, 2425, 2425-C, 2430, 2430-C, 2440, 2440-C

Symptom:

When the OVP is flickering on the display, the instrument locks up or times out on the GPIB. OVP can be caused by electrically noisy environments.

Resolution:

The issue has been corrected.

PR24684 **Models affected:**

2420, 2420-C, 2425, 2425-C, 2430, 2430-C, 2440, 2440-C

Symptom:

When using the Offset Compensation Ohms math function, the instrument displays "Not a Num".

Resolution:

The issue has been corrected.

Enhancements

There were no enhancements included in this release.

Non-critical fixes

PR25266 **Models affected:**

2400, 2400-C, 2410, 2410-C, 2420, 2420-C, 2425, 2425-C, 2430, 2430-C, 2440, 2440-C

Symptom:

The Autorange function does not work correctly in current mode.

Resolution:

The issue has been corrected.

Version C29 Release

Overview

Version C29 was not released.

Version C28 Release

Overview

Version C28 was only released for Model 2420 to implement corrections for internal manufacturing issues.

Version C27 Release

Overview

Version C27 addresses several issues as listed below.

Critical fixes

PR22327 **Models affected:**

2400, 2400-C, 2410, 2410-C, 2420, 2420-C, 2425, 2425-C, 2430, 2430-C, 2440, 2440-C

Symptom:

If using the *SRE register, the MAV bit is reported incorrectly in the RS-232 communication. This will lead to the SRQ not being generated.

Resolution:

The issue has been corrected.

PR23912 **Models affected:**

2420, 2420-C, 2425, 2425-C, 2430, 2430-C, 2440, 2440-C

Symptom:

In the 488.1 mode, the unit can lock up the bus if using external trigger and addressed to talk. If the trigger hasn't occurred, the unit will time out. The BUS will not respond again until the unit is power cycled.

Resolution:

The issue has been corrected.

Enhancements

There were no enhancements included in this release.

Non-critical fixes

PR23012 **Models affected:**

2400, 2400-C, 2410, 2410-C, 2420, 2420-C, 2425, 2425-C, 2430, 2430-C, 2440, 2440-C

Symptom:

From front panel operation only: the Current source delay is limited to changes in the 100 microsecond resolution, whereas the voltage source delay can be changed within 10 microsecond. Both delays should be configurable to 10 microsecond resolution.

Resolution:

The issue has been corrected.

PR23886 **Models affected:**

2400, 2400-C, 2410, 2410-C, 2420, 2420-C, 2425, 2425-C, 2430, 2430-C, 2440, 2440-C

Symptom:

Transients occur between steps in the custom sweep when the instrument switches configuration from a voltage source to a current source.

Resolution:

The issue has been corrected.

Version C26 Release

Overview

Version C26 addresses several issues as listed below.

Critical fixes

PR20014 **Models affected:**

2400, 2400-C, 2410, 2410-C, 2420, 2420-C, 2425, 2425-C, 2430, 2430-C, 2440, 2440-C

Symptom:

While the Compliance Range Sync feature is enabled, incorrect current measurements are possible, the value may be off by orders of magnitude.
For example, the displayed reading is 100.05 mA instead of the expected 100 uA.
This was introduced in version C24 when the Compliance Range Sync feature was introduced.

Resolution:

The issue has been corrected.

PR20130 **Models affected:**

2420, 2420-C, 2425, 2425-C, 2430, 2430-C, 2440, 2440-C

Symptom:

The Range Hold Delay feature causes incorrect output voltages when the voltage source range is increased. For example, when increasing the instrument's output from 0 volts (200 mV range) to 7 volts (10 volt range), the output is at 0.2 volts instead of 7.

Resolution:

The issue has been corrected.

Enhancements

PR21121 **Models affected:**

2400, 2400-C, 2410, 2410-C, 2420, 2420-C, 2425, 2425-C, 2430, 2430-C, 2440, 2440-C

Enhancement:

Simplified front panel bi-polar sweep capability for Log and Stair sweeps. Version C26 changed the configuration sweep menus to allow editing the sign of the values without having to use the sign key. Custom sweep not affected by enhancement. Still requires the use of the sign key.

PR19965 **Models affected:**

2400, 2400-C, 2410, 2410-C, 2420, 2420-C, 2425, 2425-C, 2430, 2430-C, 2440, 2440-C

Enhancement:

Add ability to have the current measure range temporarily go to the compliance during a source memory sweep. This is so any current transients due to cable capacitance can go away quickly at the higher compliance range, but then be able to take a reading on the lower measure range. Otherwise, the instrument requires a long delay before a reading or a higher measure range.

PR19966 **Models affected:**

2400, 2400-C, 2410, 2410-C, 2420, 2420-C, 2425, 2425-C, 2430, 2430-C, 2440, 2440-C

Enhancement:

Add ability to do source memory branching on both pass and fail.

PR21051 **Models affected:**

2400, 2400-C, 2410, 2410-C, 2420, 2420-C, 2425, 2425-C, 2430, 2430-C, 2440, 2440-C

Enhancement:

In keeping with the new nomenclature for the output enable (previously referred to as the INTERLOCK), the following commands were added.
- :OUTPut[1]:ENABle[:STATe] ON|OFF
- :OUTP1:ENABle:TRIPped

Non-critical fixes

PR22599 **Models affected:**

2400, 2400-C, 2410, 2410-C, 2420, 2420-C, 2425, 2425-C, 2430, 2430-C, 2440, 2440-C

Symptom:

Binary data transfer sometimes delivers more data than expected.

Resolution:

The issue has been corrected.