**KEITHLEY**
A Tektronix Company

# Model 2400 & 2410 SourceMeter®
## Version D03 Firmware Release Notes

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## Contents

# General Information

## Supported models

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

Model 2400 SourceMeter®          Model 2400-C SourceMeter®
Model 2410 SourceMeter®          Model 2410-C SourceMeter®

## Installation instructions

Download the following from the Keithley Support Website:
- Keithley Flash Wizard program (if you do not already have this)
  - Unzip the files in a folder of your choice and then run the "setup.exe" program.
  - Follow the instructions to install the program.
- The firmware revision image file you want to install on your Model 2400 or 2410 instrument.

Perform the following steps to install the firmware revision onto Model 2400 or 2410 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 or 2410.
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  if you have any problems.

## Upgrade considerations for supported models

The following table outlines the considerations that should be made when deciding to upgrade to this version or not from any previous version.

| Consideration for upgrade | From Cxx | From D01 | From D02 |
|---|---|---|---|
| Recalibration Required | --- | No | No |
| Re-qualification Suggested | --- | No | No |
| Should you upgrade? | No | Review | Review |

Model 2400 and 2410 instruments with Version 'C' firmware, such as C34, are incompatible with Version 'D' firmware, such as D02. Version 'C' should not be upgraded to any D versions. Contact Keithley Instruments if you require upgrades.

# Version D03 Release

## Overview

Version D03 release fixes issues with RS-232 flash upgrades, RS-232 break-byte functionality, and a range-change problem.

## Critical fixes

AR 66391    **Models affected:**

2400, 2400-C, 2410, 2410-C

**Symptom:**

Flash upgrades utilizing RS-232 would fail at all baud rates.

**Resolution:**

The issue has been corrected.

## Non-critical fixes

AR 67009    **Models affected:**

2400, 2400-C, 2410, 2410-C

**Symptom:**

When sourcing 100 mA at 2 V compliance and measuring voltage, switching the source range to the 1 A range would cause a problem that would cause the measured value to be incorrect.

**Resolution:**

The issue has been corrected.

AR 66390    **Models affected:**

2400, 2400-C, 2410, 2410-C

**Symptom:**

When attempting to send a break-byte character to the unit, the pending operation would not be stopped.

**Resolution:**

The issue has been corrected.

# Version D02 Release

## Overview

Version D02 release is to address issues with RS-232 on the new hardware in the Model 2400 SourceMeter® and Model 2410 SourceMeter®.

## Critical fixes

PR 61943  **Models affected:**

2400, 2400-C, 2410, 2410-C

**Symptom:**

RS-232 serial communication experiences issues when the baud rate is greater than 9600. Additionally, a baud rate of 300 is not supported on new hardware.

**Resolution:**

The communication issues when the baud rate is greater than 9600 have been corrected. Removed option of 300 baud rate from unit.

## Enhancements

There are no enhancements included in this release.

# Version D01 Release

## Overview

Version D01 release is to support the new hardware in the Model 2400 SourceMeter® and Model 2410 SourceMeter®.

## Critical fixes

There are no critical fixes included in this release.

## Enhancements

There are no enhancements included in this release.

# 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 has not 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.