

Keithley Instruments
ExceLINX-1A
ExceLINX software for the Model 2700, 2701 and 2750
Release Note for Version C06

9/4/2013

IMPORTANT: To work properly with ExceLINX, your instrument must have a compatible version of firmware. Refer to section 2 (System Requirements) below for specific details regarding the required firmware version for your instrument. Visit www.keithley.com for upgrade instructions if your instrument's firmware is not a compatible version. The instrument's firmware version is shown on the display when the instrument is first powered up, immediately to the right of the model number.

This document provides additional information for the installation and use of ExceLINX for the Model 2700, 2750, and 2701. Please review the contents of this file before installing or using the software.

For the purpose of brevity, ExceLINX for the 2700, 2750 AND 2701 is referred to simply as "ExceLINX" in the remainder of this document. Keithley offers versions of ExceLINX that support other instruments and Data Acquisition Products. Visit www.keithley.com for details.

Table of Contents

1	Introduction.....	3
1.1	Included in this release	3
1.1.1	ExceLINX-1A Software	3
1.1.2	KE2700 IVI Driver for the 2700, 2701, and 2750.....	3
1.1.3	Keithley I/O Layer	3
1.2	New Features in this Release.....	5
1.2.1	New Features in ExceLINX C06.....	5
1.2.2	New Features in ExceLINX C05.....	5
1.2.3	New Features in ExceLINX C04.....	5
1.2.4	New Features in ExceLINX C03.....	6
1.2.5	New Features in ExceLINX C02.....	6
2	System Requirements	6
2.1	Supported Operating Systems and System Software.....	6
3	Installation	7
3.1	GPIB Controller Installation.....	7
3.1.1	Keithley GPIB Cards and USB-to-GPIB Interfaces	7
3.2	Connecting your Computer to your Instrument.....	8
3.3	Upgrading ExceLINX.....	8
3.3.1	Opening Saved Worksheets after Upgrading	8
3.3.2	Upgrading ExceLINX.....	8

3.4	ExceLINX Installation.....	9
3.4.1	Installing the Software from CD.....	9
3.4.2	Installing ExceLINX from the Web	10
3.4.3	Installing only the KE2700 IVI Instrument Driver from the CD	10
3.4.4	Installing only the Keithley I/O Layer from the CD.....	10
3.5	Uninstalling ExceLINX.....	10
4	Configuring Instrument Communications	11
4.1	Virtual Instruments	11
4.2	Specifying a Virtual Instrument.....	11
5	Running the software.....	12
5.1	Status and error messages.....	13
5.2	Using the ExceLINX toolbar	13
5.3	Detecting the presence and type of switching modules.....	13
5.4	ExceLINX and front panel interaction	14
5.5	Scan and Configure tasks.....	14
5.6	Recommended data location.....	15
5.7	Recovering from power loss or network disconnect (2701 only).....	15
6	Access to advanced IVI Driver features	15
6.1	QueryInstrStatus	15
6.2	RangeCheck.....	15
6.3	Caching	16
7	Known problems and issues	16
7.1	Instrument features that are not supported in ExceLINX.....	16
7.2	Instrument not configured when out-of-range settings exist.....	16
7.3	Large data sets overflow sheet.....	16
7.4	Data location reset when changes are made to tasks	17
7.5	Change tracking not supported	17
7.6	Data not written to last row or last column.....	17
7.7	Invalid options for Continuity function	17
7.8	Large trigger counts treated as infinity	17
7.9	Can not configure display digits per channel	18
7.10	Configuration values are cached.....	18
7.11	Invalid values for alarm limits accepted.....	18
7.12	Invalid values for filter count accepted	18
7.13	Invalid limit values problems	18
7.14	Cannot configure threshold value for frequency measurements	19
7.15	Reference value for DB and RelDB not channel based.....	19
7.16	Large trigger delay or timer values do not work	19
7.17	Math functions disabled for Totalizer function	19
7.18	Disabled channels shown in Monitor Channel List.....	19
7.19	Task allows invalid data location	19
7.20	Reading count of 0 not flagged as invalid	19
7.21	Adding new task after delete gives error	20
7.22	User not warned when paired channel used	20
7.23	When logging to floppy, no disk full warning.....	20
7.24	Scaling units not stored in buffer.....	20

7.25	Limits cannot be used with continuity	20
7.26	Quitting ExceLINX while task running causes error	20
7.27	Trigger delay and timer have wrong upper limit	20
7.28	Relative Acquire does not work	21
7.29	Manual Trigger Fails	21
8	Copyright Notice	21

1 Introduction

1.1 *Included in this release*

The components described below are provided as part of the CD version of ExceLINX-1A. The Web version just contains the ExceLINX software. The Ke2700 IVI driver and Keithley I/O Layer must be downloaded separately from the Keithley Web site.

1.1.1 ExceLINX-1A Software

ExceLINX is a Microsoft Excel add-in for the 2700, 2701, and 2750 systems. Within minutes of installing ExceLINX-1A on a PC, users can acquire data dynamically within Excel, then employ the familiar Excel graphics, charting, and analysis capabilities. No Programming is required to use ExceLINX - a few mouse clicks are all it takes to configure channels, set parameters, triggers, scan lists, etc.

1.1.2 KE2700 IVI Driver for the 2700, 2701, and 2750

ExceLINX uses the KE2700 IVI driver and the Keithley I/O layer (VISA) to communicate with your instrument. IVI (Interchangeable Virtual Instruments) and VISA (Virtual Instrument Software Architecture) provide a common foundation for application development across multiple communication buses and multiple instrument vendors. This software driver supports many Application Development Environments under Windows, such as Visual Basic, C/C++, LabVIEW, LabWindows/CVI, and TestPoint.

Numerous examples and an on-line help utility are provided to help programmers build their custom applications. A shortcut for the driver help is added to the Keithley Instruments folder on your Start Menu.

1.1.3 Keithley I/O Layer

The Keithley I/O Layer software is an installer that contains many subcomponents used to configure IVI drivers and manage the communications between Keithley instrument drivers and software applications and the instrument itself.

1.1.3.1 Keithley Configuration Panel and Wizard

The Keithley Configuration Panel is provided to allow you to setup or modify the communications between the driver and your instrument.

For an IVI driver to be truly interchangeable you need to create a virtual instrument configuration which points to the VISA resource to use, the name of the DLL to use and the prefix for the function calls in the DLL. The Configuration Panel and Wizard allow you to do this.

The installation pre-configures instruments for Serial ports COM1 and COM2, and for a GPIB instrument at GPIB address 16. If you are using one of these, you may skip the configuration panel. Otherwise, you must create a new instrument configuration using the Keithley Configuration Panel and Wizard. See instructions below.

1.1.3.2 VISA Runtime

VISA (Virtual Instrument Software Architecture) software actually performs the communications with the instruments. The Keithley Configuration Panel configures VISA to work with your instruments, and the Keithley Communicator, instrument drivers, and applications use VISA to perform instrument communications.

1.1.3.3 Keithley SCPI-based Instrument Driver

The Keithley SCPI-based Instrument IVI-C Driver is used to support the Keithley Configuration Panel Wizard and Keithley Communicator functionality. It contains simple functions for opening, configuring, taking measurements from, and closing the instrument.

1.1.3.4 IVI Compliance Package (ICP)

The NI IVI Compliance Package is a software package that contains IVI class drivers and support libraries necessary for the development and use of applications that leverage IVI instrument interchangeability. The IVI Compliance Package also is based on and is compliant with the latest version of the instrument programming specifications defined by the IVI Foundation.

1.2 New Features in this Release

1.2.1 New Features in ExceLINX C06

ExceLINX C06 has the following new features:

- Support for Microsoft Excel 2010 (32-bit & 64-bit). 64-bit support is new; 32-bit support was declared in version C05.
- Updated versions of NI VISA, the 27XX Instrument driver, the Keithley Configuration Panel and Keithley Communicator, and the IVI Compliance software, all of which are used in conjunction with the ExceLINX software.
- No Longer Supports Microsoft Windows 2000
- Corrected a problem with the Read task not retrieving any data for certain scenarios set up with the front panel
- Now clears external trigger before each Scan task

1.2.2 New Features in ExceLINX C05

ExceLINX C05 has the following new features:

- Support for Microsoft Windows 7 and Windows Vista.
- Support for Microsoft Excel 2010 (32-bit only). In Excel 2007 and 2010 only, the worksheet size is 16,384 columns by 1,048,576 rows. See section 7 for limitations with other Excel versions.
- Updated versions of NI VISA, the 27XX Instrument driver, the Keithley Configuration Panel and Keithley Communicator, and the IVI Compliance software, all of which are used in conjunction with the ExceLINX software.

1.2.3 New Features in ExceLINX C04

ExceLINX C04 has the following new features:

- Support for Microsoft Windows Vista (32-bit only).
- Support for Microsoft Excel 2007. In Excel 2007 only, the worksheet size is now 16,384 columns by 1,048,576 rows. See section 7 for limitations with other Excel versions.
- Updated versions of NI VISA, the 27XX Instrument driver, the Keithley Configuration Panel and Keithley Communicator, and the IVI Compliance software, all of which are used in conjunction with the ExceLINX software.

1.2.4 New Features in ExceLINX C03

- Version C03 is the same as version C02 except the installer is repackaged to include a newer version of the Keithley I/O Layer.

1.2.5 New Features in ExceLINX C02

- Version C02 is a maintenance release that fixes several problems discovered in version C01. The following issues have been corrected in version C02.
- ExceLINX now installs properly in all supported foreign language versions of Windows. See section 2 for system requirements.
- Relative and absolute time stamps now work properly under foreign language versions of Windows.
- The Read Task now works properly under foreign versions of Windows.
- Several miscellaneous installation and un-installation issues have been corrected.

2 System Requirements

Pentium-class PC.

2700 firmware release B03 or later.

2701 firmware release A01 or later.

2750 firmware release A02 or later.

Supported GPIB controller (see section 3.1), RS-232 Serial, or Ethernet (2701 only) port for communications with the instrument.

ExceLINX-1A supports the following switch cards: 7700, 7701, 7702, 7703, 7705, 7706, 7707, 7708, 7709, 7710, 7711, and 7712. Not all features of all the cards are supported. See section 3 below.

NOTE: It is strongly recommended that your computer and instrument be powered by an Uninterruptible Power Supply (UPS) when running a critical application. If a computer running Excel loses power, all your data may be lost.

2.1 Supported Operating Systems and System Software

Microsoft Windows 7 Professional (32-bit & 64-bit) service pack 1 or later
Microsoft Windows Vista Business & Enterprise & Ultimate (32-bit & 64-bit) service pack 2 or later

Microsoft Windows XP Professional service pack 3 or later (32-bit only)

NOTE: Microsoft Windows 95, Windows 98, Windows ME, Windows NT, Windows 2000, Windows XP (64-bit) operating systems are not supported

Excel 2010 (32-bit & 64-bit) service pack 1 or later

Excel 2007 service pack 2 or later

Excel 2003 service pack 1 or later

Excel 2002 (XP) service pack 2 or later

Excel 2000 service pack 3 or later

Excel 97 service release 1 or later

ExceLINX has been tested with a variety of International versions of Microsoft Windows and Excel, including Chinese (Simplified and Traditional), Japanese, German, and French. Note that Microsoft Windows 95, Windows 98, Windows ME, Windows NT, Windows 2000, and Windows XP (64-bit) are not supported in any language.

3 Installation

3.1 GPIB Controller Installation

If you will be using GPIB to communicate with your instrument, you must have a compatible GPIB controller card and associated software driver installed in your computer before installing ExceLINX

ExceLINX is compatible with the following GPIB controller cards:

Keithley Instruments GPIB cards (ISA, PCI, and USB)

CEC GPIB cards (ISA, PCI)

National Instruments GPIB cards (ISA, PCI, PCMCIA and USB)

Follow the manufacturer's instructions for installing the controller card and software, and for verifying correct operation of the card and software driver.

3.1.1 Keithley GPIB Cards and USB-to-GPIB Interfaces

Model	Driver Name	Minimum Version	Operating Systems Supported
KPCI-488	CEC-488	6.0	2000, XP
KPCI-488A	GPIB-488	9.3	2000, XP, Vista (32, 64), 7 (32, 64)
KUSB-488	GPIB-488	9.0	2000, XP, Vista (32, 64)
KUSB-488A	GPIB-488	9.3	2000, XP, Vista (32, 64), 7 (32, 64)
KPCI-488LP	KI-488	3.12	2000, XP, Vista (32, 64), 7 (32, 64)

KPCI-488LPA KI-488	3.12	2000, XP, Vista (32, 64), 7 (32, 64)
KUSB-488B KI-488	3.12	2000, XP, Vista (32, 64), 7 (32, 64)

The Keithley I/O Layer software supports the above listed GPIB controllers. Versions of these drivers may be downloaded from the Keithley Web site, www.Keithley.com/support by entering the appropriate model number and selecting Software Driver.

3.2 Connecting your Computer to your Instrument

Connect your Keithley 2700 or 2750 to your computer using a standard GPIB interface cable or a "straight through" (not null-modem) serial RS-232 cable.

For 2701 Ethernet Connections, refer to the quick start guide that is provided with the instrument.

3.3 Upgrading ExceLINX

3.3.1 Opening Saved Worksheets after Upgrading

After you have upgraded from some very old ExceLINX versions to the newer version, you may encounter this problem where you can view worksheets that were saved using the older version, but you will not be able to edit or execute any tasks on the old worksheets. If you want to execute any tasks saved under the old version, you must recreate the tasks using the new version of ExceLINX. Before you upgrade, you may wish to print out any existing worksheet that you wish to duplicate so you have a record of all the task settings. If you prefer, after upgrading, you can view the old worksheet in one instance of Excel, and open a second instance of Excel to create the new tasks and enter the same settings used in the old version.

When you open a worksheet saved using a previous version of ExceLINX, you will receive two error messages:

1. ExceLINX cannot update task sheet. Please do not edit Excel workbooks until the current ExceLINX task has finished.
2. Cannot write value to host. Host is busy.

Press the OK button after each error message is displayed. After you acknowledge the second error message, all menus and controls will be disabled. Once you are finished viewing the old worksheet, you can close Excel.

3.3.2 Upgrading ExceLINX

If you have an earlier version of the software installed on your computer, uninstall it by following the steps below before installing this version.

Important Note: If you have ExceLINX for another instrument also installed on your computer, please upgrade both at the same time.

Using the Add/Remove Programs Wizard in the Control Panel, uninstall the following components:

- Keithley ExceLINX-1A
- Keithley 2700 IVI Instrument Driver
- Keithley I/O Layer
- Keithley I/O Layer Suite
- Keithley SCPI IVI Instrument Driver

The Keithley I/O Layer software installer also installed the following components which don't require removing first:

- IVI Shared Components
- Under the National Instruments Software entry there will be:
 - NI-VISA x.x.x Runtime (x.x.x will be the VISA version)
 - NI IVI Compliance Package xxx (xxx will be the ICP version number)

Reboot your computer.

3.4 ExceLINX Installation

Important note: When installing the software the logged-in user must have administrator privileges. If a reboot is requested, please log in as the same user to finish installation.

3.4.1 Installing the Software from CD

The ExceLINX software is included on the Software CD provided with the Instrument.

If you have a previous version of the software installed on your computer, uninstall it as described above before installing the new version.

Before installing from the CD, it is recommended you visit www.keithley.com/support to see if a newer version of the software is available.

Insert the Software CD in your computer. The installation utility should start automatically. If it does not start automatically, run the setup.exe file in the root directory of the CD.

Follow the instructions on the screen to install the software.

Reboot your computer during installation if so instructed by the installation utility.

3.4.2 Installing ExceLINX from the Web

If you have a previous version of the software installed on your computer, uninstall it as described above before installing the new version.

Download the software from the Keithley Web site, www.keithley.com/support . The software is a single compressed file and should be downloaded to a temporary directory.

Run the downloaded file from the temporary directory.

Follow the instructions on the screen to install the software.

Reboot your computer during installation if so instructed by the installation utility.

3.4.3 Installing only the KE2700 IVI Instrument Driver from the CD

Installing ExceLINX automatically installs the Keithley KE2700 IVI Instrument Driver, the Keithley I/O Layer and NI- VISA runtime. If you wish to install only the instrument driver, run the setup.exe file in the KE2700 subdirectory of the CD.

3.4.4 Installing only the Keithley I/O Layer from the CD

Installing ExceLINX automatically installs the Keithley KE2700 IVI Instrument Driver, the Keithley I/O Layer and NI- VISA runtime. If you wish to install only the I/O Layer and not ExceLINX or the instrument driver, run the setup.exe file in the KeithleyIOLayer subdirectory of the CD.

3.5 Uninstalling ExceLINX

Important Note: If you have ExceLINX for another instrument also installed on your computer (e.g. ExceLINX-2A for 6485 or ExceLINX for Data Acquisition Cards), you should answer "no" when prompted to remove shared components during the uninstallation. Otherwise, answer "yes" when prompted to remove shared components. You may receive this prompt more than one time; answer the same way each time.

Using the Add/Remove Programs Wizard in the Control Panel, uninstall the following components:

- Keithley ExceLINX-1A

- Keithley 2700 IVI Instrument Driver
- Keithley I/O Layer
- Keithley I/O Layer Suite
- Keithley SCPI IVI Instrument Driver

The following components are installed or upgraded by the Keithley I/O Layer software but maybe used by other software or drivers on you system so be careful about uninstalling them:

- IVI Shared Components
- Under the National Instruments Software entry there will be:
 - NI-VISA x.x.x Runtime (x.x.x will be the VISA version)
 - NI IVI Compliance Package xxx (xxx will be the version number)

Reboot your computer.

4 Configuring Instrument Communications

4.1 Virtual Instruments

Before ExceLINX can communicate with your instrument, a virtual instrument configuration must exist in the VISA software. ExceLINX pre-configures instruments for Serial ports 1 and 2, and for a GPIB instrument at GPIB address 16. If you are using one of these, you may skip the rest of this step. Otherwise, you must create a new instrument configuration using the Keithley Configuration Wizard. Open the Wizard by selecting Start>Programs>Keithley Instruments>Keithley Configuration Panel, and wait for the Wizard to start. Follow the Wizard instructions to create a new virtual instrument configuration or modify an existing one. After making changes in the Keithley Configuration Panel, you must restart Excel so that ExceLINX recognizes the changes.

4.2 Specifying a Virtual Instrument

When you use ExceLINX, you must specify which virtual instrument ExceLINX should use to communicate with your instrument. This is done by selecting a virtual instrument in the "Device" field of the ExceLINX configuration task. You must also select the appropriate instrument in the "Model" field.

If you created or modified a virtual instrument configuration in step 4.1 above, you would select that virtual instrument in the "Device Field". Otherwise, select one of the default virtual instruments according to the following guidelines:

Note: The default virtual instruments all have KE2700 as part of the name, but may be used for 2700, 2750 & 2701 model instruments. If you prefer, you may change the default name using the configuration panel and wizard.

If your instrument is at GPIB address 16 and you are using a National Instruments GPIB card, select KE2700_GPIB16 as your device. If KE2700_GPIB16 does not appear in the "Device" field list, then select KE2700ExampleInstr. KE2700ExampleInst is a logical name equivalent to KE2700_GPIB16 by default.

If your instrument is at GPIB address 16 and you are using a Keithley Instruments or CEC ISA or PCI GPIB card, select KE2700_GPIB1_16 as your device.

If your instrument is at GPIB address 16 and you are using a Keithley Instrument or INES PCMCIA GPIB card, select KE2700_GPIB2_16 as your device.

If you are using COM Port 1, select KE2700_COM1 as your device.

5 Running the software

Refer to ExceLINX help if necessary to perform the following tasks. ExceLINX help may be accessed via the ExceLINX menu in Excel.

A) Start Excel. If you are using Excel 2007 or later you will have to click on the Add-Ins Tab to display the ExceLINX toolbar.

B) Create a new Configuration task and a new Scan task.

C) On the Configuration Task page, in the Device field, select the device corresponding to your instrument. Use KE2700_COM1 if your instrument is connected to the first serial port or KE2700_COM2 for the second serial port. There are three default device configurations for GPIB. All three are for an instrument at GPIB address 16, if your instrument is not at address 16, you will need to create a new or modify one of the default configurations as described above.

If you are using a National Instruments GPIB card, select KE2700_GPIB16
(or KE2700_GPIB0_16) as your device.

If you are using a Keithley Instruments or CEC ISA or PCI GPIB card,
select KE2700_GPIB1_16 as your device.

If you are using a Keithley Instrument or INES PCMCIA GPIB card, select KE2700_GPIB2_16 as your device.

There is no default device configuration for Ethernet. If you are using an Ethernet connection to a 2701, you must create a device configuration using the Keithley configuration panel and wizard as described above.

D) From the ExceLINX menu, select DMMConfig and then Detect Device. If your communications connection is properly configured and working, ExceLINX will display information about the switching modules installed in your instrument on the Configuration Task Page. You are now ready to begin using ExceLINX.

5.1 Status and error messages

When you run an ExceLINX task, the status of the command and any error messages that are returned are displayed in the Status/Cmds field of each ExceLINX task spreadsheet. If the message is truncated because of the limited size of the Status/Cmds field, click on the field to select it. The entire text of the message may now be viewed in the Excel edit bar at the top of the spreadsheet. Error messages are displayed in red, while normal status messages are displayed in black.

If you enter an invalid value into an ExceLINX field, ExceLINX will change the invalid value's color to red. Invalid entries do not prevent the task from executing, but the invalid value is not sent to the instrument. To rectify an invalid value, change the value to a valid value, and click on any other cell to trigger the validation logic.

Note, because some values are related or interact, it is possible for a value in one cell to cause other cells to be marked invalid. If cells marked in red appear to be correct, examine other related cells for correct values. (PR16035, 15612, 15933, 19201, 15516)

5.2 Using the ExceLINX toolbar

ExceLINX provides a toolbar for executing commonly used functions. If you are using Excel 2007 or later you will have to click on the Add-Ins Tab to display the ExceLINX toolbar. The toolbar may be left floating or docked similar to any other Excel toolbar. Refer to Excel help for details on displaying, hiding, docking or undocking the toolbar.

When using the toolbar, you must first select an ExceLINX task in the list box on the left end of the toolbar. Once you have selected a task in the list, the applicable toolbar buttons will be enabled. All commands issued using the toolbar apply only to the task selected in the list box.

5.3 Detecting the presence and type of switching modules

In the Instrument section of the configuration task spreadsheet, there are five fields for display of the switching module type. The first two fields are valid for 2700 and 2750, the remaining three fields only apply to 2750s.

When a new configuration spreadsheet is created, the Slot 1 and Slot 2 fields will display "Undetected", while Slot 3-5 are blank. ExceLINX assumes you are using a 2700 until you actually communicate with the instrument. To populate these fields with the actual module types present in the instrument, select the proper device in the device field, and then execute the Detect Device command from the toolbar or the ExceLINX menu.

After performing the Detect Device function, the Slot fields will list the model number of the module present in that slot. If there is no module in the slot, "Empty" will be displayed. A blank field indicates that that slot is not present on your instrument. (PR15607, 15893)

5.4 ExceLINX and front panel interaction

When using ExceLINX to configure and operate your instrument, you should not use the instrument's front panel to view or modify configuration. ExceLINX does not determine when changes have been made on the front panel, and incorrect operation can result.

Furthermore, ExceLINX does not send all configuration information to the instrument every time a configuration task is executed. Only items that have been changed within ExceLINX since the last time the configuration task was run are written to the instrument. This means that if the instrument is turned off or settings are changed from the front panel while ExceLINX is in use, the instrument may become configured incorrectly. To avoid this problem, avoid turning the instrument off or using the front panel while ExceLINX is in use. (PR15996)

To make it easier to prevent inadvertent changes via the front panel, ExceLINX can optionally lock out the front panel when ExceLINX is using the instrument. This is controlled using the Front Panel Lockout field on the Configuration task. By default, Front Panel Lockout is set to on, meaning the front panel is locked out while ExceLINX is using the instrument.

When Front Panel Lockout is set to on, the front panel will be locked out the first time ExceLINX access the instrument. To release the front panel lockout, close Excel.

5.5 Scan and Configure tasks

The first time a scan task is executed, it automatically executes the associated configure task. If no configuration data is changed, the configuration task may not be executed on subsequent runs of the scan task. The configuration task can always

be run by itself to configure the instrument without executing any measurements. See also the note in the known issues section of this document regarding configuration data caching.

5.6 Recommended data location

Although, for convenience, ExceLINX allows you to display data on the scan or read task work sheets, it is recommended that you configure the tasks to place the data on a separate spreadsheet. Because the ExceLINX cells are protected from revisions and format changes, and because Excel protects the entire column not just certain cells, you cannot alter the format of cells on the task worksheets. This means that date information can be displayed in an undesired format. Furthermore, when cells are first used to display one type of information, such as a date, and then a different type of data, such as a reading, the format will be incorrect, and the protection prevents altering it to the desired setting.

By always placing data on a separate work sheet, all these problems are avoided. (PR15733)

5.7 Recovering from power loss or network disconnect (2701 only)

If your 2701 loses power while in use by ExceLINX, or if the Ethernet connection is interrupted, you must close and reopen Excel to reestablish the network connection.

6 Access to advanced IVI Driver features

ExceLINX uses the KE2700 IVI Instrument driver for communication with the instrument. IVI drivers support several features and functions that can improve performance and error checking. Advanced users can access these settings using the Keithley Configuration Panel. Several important advanced features are described below.

6.1 QueryInstrStatus

If this feature is enabled the driver will query the instrument after every function call to see if there where any errors. This is useful while you are writing your application but once it is finalized then you can disable this feature to gain extra performance.

6.2 RangeCheck

If enabled the IVI engine will check to see if the parameters you are passing in are within range. Disabling this feature in the final application will also gain some performance increase.

6.3 Caching

The driver has the option of caching all the settings it sends to the instrument so that it doesn't send a setting to the instrument a second time if it hasn't changed. By default this is enabled.

7 Known problems and issues

7.1 Instrument features that are not supported in ExceLINX

This release of ExceLINX does not support analog outputs, digital outputs, or digital inputs on any module.

7.2 Instrument not configured when out-of-range settings exist

In certain circumstances, when an out-of-range value is specified on the configuration task sheet, the instrument will not be configured properly. With a few exceptions described elsewhere in this document, ExceLINX marks out of range values by showing them in red. Correct any red settings before running an ExceLINX task. (PR19717, 16035)

7.3 Large data sets overflow sheet

All Excel worksheets, prior to version 2007, are limited to a maximum of 256 columns and 65536 rows. It is possible with certain combinations of settings for ExceLINX to overflow one or both of these limitations. The current version of ExceLINX may overwrite data or may not record some data points if these limits are exceeded. Make certain that the combination of settings you select for Scan list length, reading count, Display location, and Data organization, and auto wrap will allow all your data to fit on a single sheet. If you must collect more data than will fit on a single Excel worksheet, you may turn on logging to a file. When file logging is enabled, all data is written to the file, regardless of whether or not it fits on a worksheet. If more data is logged than can fit on the worksheet, the message "Not all data displayed" will appear in the status area.

In addition to the limits described above for spreadsheet size, Excel can run out of memory if you attempt to create a very large spreadsheet with all the cells containing data. Excel will run very slowly or generate error messages if it begins to run out of memory. The point at which this happens is dependent on the amount of primary and virtual memory available on your computer. (PR15897, 15991)

In Excel 2007, the worksheet size is 16,384 columns by 1,048,576 rows.

7.4 Data location reset when changes are made to tasks

ExceLINX maintains a data location pointer so it knows where to write the next data item read back from the instrument. When a task is executed for the first time, the pointer is set to the value specified in the Starting Row and Starting Column fields. After each data item is stored in the spreadsheet, the pointer is incremented one row or column depending as required by the Organize by rows or Organize by columns setting and other factors.

You can manually reset the pointer to the initial settings using the Reset Data Location function on the toolbar or ExceLINX menu.

However, changing any of the settings in the Data Location or Data Display sections of the Scan Task may reset the Data Location pointer to its initial value. This means that the next time the scan task is run, it will begin writing data in the cell specified by the Starting Row and Starting Column parameters. This can overwrite any data that might have been previously written to that location. Changing the list of channels to be scanned by modifying the channel list in the configuration task can also cause this problem.

To avoid this problem, it is recommended that you use a trial run to make sure you have the proper channels configured and the Data Location and Data Display parameters adjusted to your desired settings. Then clear the trial run data using the ExceLINX erase function or Excel's clear contents function. Finally, reset the data location to its initial setting using the Reset Data Location function, you can now run the scan task to acquire data. (PR15988, 14738, 15898, 15764)

7.5 Change tracking not supported

ExceLINX will not work properly if you have change tracking enabled. Do not enable Excel Change Tracking when using the ExceLINX software. (PR18991)

7.6 Data not written to last row or last column

The current version of ExceLINX will not write data to column IV or row 65536. Adjust data location settings to avoid writing data into those cells. (PR16105)

7.7 Invalid options for Continuity function

The current version of ExceLINX allows you to specify sampling rate when the function is set to continuity. This is not allowed by the instruments and the setting is ignored. (PR14771)

7.8 Large trigger counts treated as infinity

Valid trigger count values are 1-55,000 and infinity for the 2700, 1-110,000 and infinity for the 2750, and 1-450,000 for the 2701. ExceLINX allows you to enter values above 55,000, and 110,000 respectively, but they are treated as infinity. Therefore, if you set the trigger count to a value greater than the above limits, the task will run until you manually stop it. (PR15897, 15773, 16023, 16024, 16025)

7.9 Can not configure display digits per channel

The 2700 and 2750 allow you to specify a different value for the Displayed Digits setting for each channel. ExceLINX only allows one setting for all channels. (PR15792)

7.10 Configuration values are cached

ExceLINX attempts to maximize performance by only sending configuration values to the instrument when they have been changed. For example, when a configuration task is run for the first time, all configuration values are sent to the instrument. If the task is run again without changing anything, most of the values will not be written again. This improves performance.

Caching of configuration values can cause problems if the instrument is turned off, or values are changed from the front panel instead of using ExceLINX. This can cause unexpected results. To avoid this problem, following a power interruption to the instrument, or manual alteration of settings from the front panel, you should close and re-open Excel, and then run the configuration or scan task. This will force ExceLINX to send all configuration data to the instrument. The optional local lockout setting allows you to configure ExceLINX to block access to the instruments front panel when ExceLINX is using the instrument. (PR15937)

7.11 Invalid values for alarm limits accepted

Invalid alarm limit values are not flagged in red. (PR19718)

7.12 Invalid values for filter count accepted

Valid range for the filter count setting is 1-100. ExceLINX accepts values outside this range, but the instrument will report an error. (PR15657)

7.13 Invalid limit values problems

If invalid values are entered for the limit values, but the limits are disabled, the invalid values will still be sent to the instrument resulting in an instrument error. Do not enter invalid values for the limit settings.

ExceLINX allows entry of invalid values for limit settings, but they will result in an instrument error when the task is executed. (PR16031, 16032)

7.14 Cannot configure threshold value for frequency measurements

ExceLINX does not provide a way to specify the threshold setting for frequency measurements. (PR19685)

7.15 Reference value for DB and RelDB not channel based

ExceLINX allows you to specify a different value for DB reference or RelDB reference for each channel, but the instruments do not support this. Only one global reference value is allowed. Specify the same reference value on all channels using DB or RelDB. (PR16111)

7.16 Large trigger delay or timer values do not work

ExceLINX does not correctly handle trigger timer values over 999,999. (PR16164)

7.17 Math functions disabled for Totalizer function

ExceLINX does not allow you to use math functions when the measurement function is set to totalizer, although the instrument supports this. (PR16170)

7.18 Disabled channels shown in Monitor Channel List

The drop down list for the monitor channel selection will include any disabled channels. Do not select a disabled channel or the ExceLINX task will run without collecting any data until manually stopped. (PR16113)

7.19 Task allows invalid data location

Under certain unusual circumstances, the scan task will not flag an invalid Starting Row or Starting Column. Starting row should be 36 or greater when data will be placed on the scan task worksheet. (PR14739)

7.20 Reading count of 0 not flagged as invalid

If the reading count on the scan task is set to zero, it is not flagged as invalid. If the task is then executed, it will run until manually stopped, and will then display an error message. The reading count must be non-zero. (PR15583, 16219)

7.21 Adding new task after delete gives error

If a task sheet is deleted, and then a new task is created, ExceLINX incorrectly warns of a duplicate name. Clicking yes on the displayed dialog will force ExceLINX to use the name. (PR15904)

7.22 User not warned when paired channel used

When performing 4 wire measurements, the instruments automatically pair two channels. ExceLINX does not warn the user if an attempt is made to separately configure the paired channel on the same configuration spreadsheet. Exercise care when configuring 4 wire measurements so the paired channel is not configured separately. (PR15925)

7.23 When logging to floppy, no disk full warning

When logging to a floppy disk, no warning is generated when the floppy becomes full. It is recommended that logging be to hard disk. The file can be transferred to floppy when required. (PR15967)

7.24 Scaling units not stored in buffer

ExceLINX allows you to specify the scaling units character for each channel. The instruments will display this unit while scanning, but the character is not stored in the instruments buffer with the reading. Therefore, using the DMM Read task to upload buffer contents will not display the proper units. (PR15987)

7.25 Limits cannot be used with continuity

ExceLINX allows you to specify limits settings when the function is set to continuity, but the instrument does not allow this. Do not enable limits when using continuity. (PR15994)

7.26 Quitting ExceLINX while task running causes error

Under Excel 97, quitting ExceLINX while a task is running will cause a run-time error. After the error occurs, ELXSDMMI.dll is left loaded and will prevent ExceLINX from functioning when it is restarted. Restart your computer, or use the Windows task manager to stop ELXSDMMI to recover. Stop any running tasks before quitting Excel. (PR16106)

7.27 Trigger delay and timer have wrong upper limit

The trigger delay and timer fields accept values up to 99,999,999.0 but the instrument's maximum allowed value is 999,999.999. Do not exceed the instrument's maximum value. (PR16161, 16163)

7.28 Relative Acquire does not work

Setting the Rel field on the configuration task to ACQ is intended to take a reading from the specified channel and then use that as the relative reference for subsequent measurements. In this release, when ACQ is specified, the relative reference is set to zero regardless of the input signal value.

Specifying a relative reference manually by entering a value in the Rel field works properly. (PR19846)

7.29 Manual Trigger Fails

When using manual trigger from within ExceLINX, if either the "Add Channels" or "Add Units" options are set to yes in the Data Display Section of the Scan task, the Trigger Icon on the toolbar will be disabled and a manual trigger cannot be sent to the instrument. When using manual trigger mode, set Add Channels and Add Units to off. (PR19769)

8 Copyright Notice

The ExceLINX software is Copyright (c) 2001-2013 Keithley Instruments. All Rights Reserved.

The VISA software supplied with ExceLINX is Copyright (c) 1995-2013 National Instruments Corporation. All Rights Reserved.

The KE2700 instrument driver supplied with ExceLINX is Copyright (c) 2001-2013 Keithley Instruments. All Rights Reserved.

End of Release notes.