

ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Visit our website - *Click HERE*

Keithley Instruments
ExceLINX-2A
ExceLINX software for the Model 6485,6487 and 6514
Release Note for Version C04

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 6485 Picoammeter, 6487 Picoammeter with voltage source, and 6514 Electrometer. Please review the contents of this file before installing or using the software.

For the purpose of brevity, ExceLINX for the 6485 Picoammeter, 6487 Picoammeter with voltage source, and 6514 Electrometer 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
  1.1 Included in this release
    1.1.1 ExceLINX-2A Software
    1.1.2 KE6485 IVI Driver for the 6485, 6487, and 6514
    1.1.3 Keithley I/O Layer
  1.2 New Features in this Release
    1.2.1 New Features in ExceLINX C04
2 System Requirements
  2.1 Supported Operating Systems and System Software
3 Installation
  3.1 GPIB Controller Installation
    3.1.1 Keithley GPIB Cards and USB-to-GPIB Interfaces
  3.2 Connecting your Computer to your Instrument
  3.3 Upgrading ExceLINX
    3.3.1 Opening Saved Worksheets after Upgrading
    3.3.2 Upgrading ExceLINX
  3.4 ExceLINX Installation
    3.4.1 Installing the software from CD

3.4.2 Installing ExceLINX from the Web
3.4.3 Installing only the KE6485 IVI Instrument Driver from the CD
3.4.4 Installing only the Keithley I/O Layer from the CD
3.5 Uninstalling ExceLINX
4 Configuring Instrument Communications
4.1 Virtual Instruments
4.2 Specifying a Virtual Instrument
5 Examples
5.1 Simple Scan Example
5.2 Fast Scan Example
5.3 Voltage Sweep Example (6487 only)
5.4 Alternating Voltage Example (6487 only)
6 Tips for using ExceLINX
6.1 Status and error messages
6.2 Using the ExceLINX toolbar
6.3 ExceLINX and front panel interaction
6.4 Scan and Configure tasks
6.5 Recommended data location
6.6 Infinite sample count
6.7 Run Continuous mode
6.8 VSource Display
6.9 Status Data Display
7 Access to advanced IVI Driver features
7.1 QueryInstrStatus
7.2 RangeCheck
7.3 Caching
8 Known problems and issues
8.1 DDC Mode
8.2 6514 Option Settings
8.3 Type Mismatch Error
8.4 6487 Interlock Option
8.5 Sampling Rate on International Version of Windows
8.6 Primary Error: (Hex 0xBFFA4001)
8.7 Query Interrupted Error
8.8 Serial Baud rate
8.9 Instrument not configured when out-of-range settings exist
8.10 Change tracking not supported
8.11 Configuration values are cached
9 Copyright Notice

---

1 Introduction

1.1 Included in this release

The components described below are provided as part of the CD version of ExceLINX-2A. The Web version just contains the ExceLINX software. The Ke6485 IVI driver and Keithley I/O Layer must be downloaded separately from the Keithley Web site.

1.1.1 ExceLINX-2A Software

ExceLINX is a Microsoft Excel add-in for the 6485 Picoammeter, 6487 Picoammeter with voltage source, and 6514 Electrometer. Within minutes of installing ExceLINX-2A on a PC, users can acquire data dynamically within Excel, and 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 the instrument and collect data.

1.1.2 KE6485 IVI Driver for the 6485, 6487, and 6514

ExceLINX uses the KE6485 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 C04

ExceLINX C04 has the following new features:

- Support for Microsoft Windows 7
- Support for Microsoft Excel 2010 (32-bit & 64-bit)
- Updated versions of NI VISA, the 6485 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
- Fixed Scan task sheet's initial Configure task sheet being set to itself
- Fixed task sheet sometimes not being pre-populated
- Fixed returned elements reverting to READing only after first scan

2 System Requirements

Pentium-class PC.

6485 firmware release B02 or later. DDC Mode is not supported by the driver or by ExceLINX.

6487 firmware release A02 or later. DDC Mode is not supported by the driver or by ExceLINX.

6514 firmware release A11 or later. DDC Mode is not supported by the driver or by ExceLINX.

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

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)

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

3.3 Upgrading ExceLINX

3.3.1 Opening Saved Worksheets after Upgrading

After you have upgraded ExceLINX, you can view any 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-2A
- Keithley 6485 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 KE6485 IVI Instrument Driver from the CD

Installing ExceLINX automatically installs the Keithley KE6485 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 KE6485 subdirectory of the CD.

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

Installing ExceLINX automatically installs the Keithley KE6485 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-2A
- Keithley 6485 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 KE6485 as part of the name, but may be used for 6485, 6487, and 6514 model instruments. If you prefer, you may change the default name using the configuration panel and wizard.
>
> If your instrument is at GPIB address 14 and you are using a National Instruments GPIB card, select KE6485_GPIB14 as your device. If KE6485_GPIB14 does not appear in the "Device" field list, then select KE6485ExampleInstr. KE6485ExampleInst is a logical name equivalent to KE6485_GPIB14 by default.
>
> If your instrument is at GPIB address 14 and you are using a Keithley Instruments or CEC ISA or PCI GPIB card, select KE6485_GPIB1_14 as your device.
>
> If your instrument is at GPIB address 14 and you are using a Keithley Instrument or INES PCMCIA GPIB card, select KE6485_GPIB2_14 as your device.
>
> If you are using COM Port 1, select KE6485_COM1 as your device.

If you are using COM Port 2, select KE6485_COM2 as your device.

5 Examples

The following sections show two examples of using ExceLINX to configure and operate your 6485, 6487, or 6514. The examples assume you are using one of the default virtual instrument configurations described in the previous section. If you are using a custom virtual instrument configuration, select it in place of one of the standard configurations called for in the examples.

5.1 Simple Scan Example

This example demonstrates using ExceLINX to configure and operate the instrument to take 10 readings using all the default settings.

A. Launch Microsoft Excel:

   Select Excel from the Start programs menu.

B. Create a new blank workbook:

   Select the File >> New menu entry.

C. Create a new ExceLINX Meter Config Worksheet:

   Select the ExceLINX >> Create >> Configure Meter menu entry.

D. Configure the Instrument device:

   In the Instrument section, click the Device pull down arrow and choose the appropriate virtual instrument:

   KE6485_GPIB_14 or KE6485ExampleInstr -- if using a National Instruments GPIB card
   KE6485_GPIB1_14 -- if using a Keithley Instruments or CEC GPIB card
   KE6485_GPIB2_14 -- if using an INES GPIB card
   KE6485_COM1 -- if using a RS-232 COM Port 1
   KE6485_COM2 -- if using a RS-232 COM Port 2

E. Select the Proper Instrument Model

   In the Instrument section, click the Model pull down arrow and choose the model number of your instrument.

F. Create a new ExceLINX Meter Scan Worksheet:

Select the ExceLINX >> Create >> Scan Meter menu entry.

G. Set the Arm Trigger Count:

In the Arm Trigger section, click the Count field and type in the number of desired counts (e.g. 10). Click in a different field to ensure Excel accepts the value you entered.

H. Start the Scan:

Select the ExceLINX >> Meter Scan >> Start entry. The instrument should configure, collect data, and then display the data in the Meter Scan worksheet, Task Data section.

5.2 Fast Scan Example

This example demonstrates using ExceLINX to configure and operate the 6485 to take 10 readings with the instrument configured to take readings as fast as possible.

A. Launch Microsoft Excel:

Select Excel from the Start programs menu.

B. Create a new blank workbook:

Select the File >> New menu entry.

C. Create a new ExceLINX Meter Config Worksheet:

Select the ExceLINX >> Create >> Configure Meter menu entry.

D. Configure the Instrument device:

In the Instrument section, click the Device pull down arrow and choose the appropriate virtual instrument:

KE6485_GPIB_14 or KE6485ExampleInstr -- if using a National Instruments GPIB card
KE6485_GPIB1_14 -- if using a Keithley Instruments or CEC GPIB card
KE6485_GPIB2_14 -- if using an INES GPIB card
KE6485_COM1 -- if using a RS-232 COM Port 1
KE6485_COM2 -- if using a RS-232 COM Port 2

E. Select the Proper Instrument Model

In the Instrument section, click the Model pull down arrow and choose the model number of your instrument.

F. Set Auto Zero to Off:

   In the Setup section, select the Auto Zero field. Click on the pull down arrow and change the value from On to Off.

G. Set Display Digits to None (turns off the instrument front panel display):

   In the Setup section, select the Display Digits field. Click on the pull down arrow and change the value from 5½ to None.

H. Turn Auto-ranging Off:

   In the Instrument Configuration section, select the Measurement Range field. Click on the pull down arrow and change the value from Auto to a fixed range value (e.g. 20 mA)

I. Set Sampling Rate to 0.01:

   In the Instrument Configuration section, select the Sampling Rate field. Change the rate from Slow to 0.01 by typing in the new value and pressing the tab key.

J. Create a new ExceLINX Meter Scan Worksheet:

   Select the ExceLINX >> Create >> Scan Meter menu entry.

K. Set the Arm Trigger Count:

   In the Arm Trigger section, click the Count field and type in the number of desired counts (e.g. 10). Click in a different field to ensure Excel accepts the value you entered.

L. Start the Scan:

   Select the ExceLINX >> Meter Scan >> Start entry. The instrument should configure, collect data, and then display the data in the Meter Scan worksheet, Task Data section.

5.3 Voltage Sweep Example (6487 only)

This example demonstrates using ExceLINX to configure and operate the 6487 to perform a Voltage Sweep scan and return all data.

A. Launch Microsoft Excel:

   Select Excel from the Start programs menu.

B. Create a new blank workbook:

   Select the File >> New menu entry.

C. Create a new ExceLINX Meter Config Worksheet:

   Select the ExceLINX >> Create >> Configure Meter menu entry.

D. Configure the Instrument device:

   In the Instrument section, click the Device pull down arrow and choose the appropriate virtual instrument:

   KE6485_GPIB_14 or KE6485ExampleInstr -- if using a National Instruments GPIB card
   KE6485_GPIB1_14 -- if using a Keithley Instruments or CEC GPIB card
   KE6485_GPIB2_14 -- if using an INES GPIB card
   KE6485_COM1 -- if using a RS-232 COM Port 1
   KE6485_COM2 -- if using a RS-232 COM Port 2

E. Select the Proper Instrument Model:

   In the Instrument section, click the Model pull down arrow and choose the model 6487, if not already shown.

F. Select Source Configuration On:

   In the Source Configuration section, select the Stimulus Enb field. Click on the pull down arrow and change the value from Off to On.

G. Select the Voltage Sweep Function:

   In the Source Configuration section, select the Stimuls Function field. Click on the pull down arrow and change the value from DC to VSweep.

H. Select the Voltage Sweep Parameters:

   In the Voltage Sweep Parameters section, enter any changes to the default voltage sweep parameters, as desired: Start Voltage, Stop Voltage, Step Voltage, Step Time.

I. Create a new ExceLINX Meter Scan Worksheet:

Select the ExceLINX >> Create >> Scan Meter menu entry.

J. Start the Scan:

Select the ExceLINX >> Meter Scan >> Start entry. The instrument should configure, collect data, and then display the data in the Meter Scan worksheet, Task Data section.

5.4 Alternating Voltage Example (6487 only)

This example demonstrates using ExceLINX to configure and operate the 6487 to perform an Alternating Voltage scan and return all data.

A. Launch Microsoft Excel:

Select Excel from the Start programs menu.

B. Create a new blank workbook:

Select the File >> New menu entry.

C. Create a new ExceLINX Meter Config Worksheet:

Select the ExceLINX >> Create >> Configure Meter menu entry.

D. Configure the Instrument device:

In the Instrument section, click the Device pull down arrow and choose the appropriate virtual instrument:

KE6485_GPIB_14 or KE6485ExampleInstr -- if using a National Instruments GPIB card
KE6485_GPIB1_14 -- if using a Keithley Instruments or CEC GPIB card
KE6485_GPIB2_14 -- if using an INES GPIB card
KE6485_COM1 -- if using a RS-232 COM Port 1
KE6485_COM2 -- if using a RS-232 COM Port 2

E. Select the Proper Instrument Model:

In the Instrument section, click the Model pull down arrow and choose the model 6487, if not already shown.

F. Select Source Configuration On:

In the Source Configuration section, select the Stimulus Enb field. Click on the pull down arrow and change the value from Off to On.

G. Select the Alternating Voltage Function:

   In the Source Configuration section, select the Stimuls Function field. Click on the pull down arrow and change the value from DC to Alternating.

H. Select the Measurement Range:

   In the Measurment Configuation section, select the Measurement Range field. Click on the pull down arrow and change the value from Auto to a fixed range value (e.g. 20 mA).

I. Select the Sampling Rate:

   In the Measurment Configuation section, select the Sampling Rate field. Click on the pull down arrow and change the value from SLOW to a fixed range value (e.g. 6).

J. Select the Alternating Voltage Parameters:

   In the Alternating Voltage Parameters section, enter any changes to the default alternating voltage parameters, as desired: Voltage, Time, Readings Per Voltage Phase, Cycles, Clear Buffer Before Each Scan.

K. Create a new ExceLINX Meter Scan Worksheet:

   Select the ExceLINX >> Create >> Scan Meter menu entry.

L. Start the Scan:

   Select the ExceLINX >> Meter Scan >> Start entry. The instrument should configure, collect data, and then display the data in the Meter Scan worksheet, Task Data section.

6 Tips for using ExceLINX

6.1 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.

6.2 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 un-docking 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.

6.3 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.

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.

6.4 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

6.5 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.

6.6 Infinite sample count

If you have the sample count set to "INF" (infinite) and the arm scan mode set to "Run Once", the instrument will begin taking readings when you run the scan task. No data will be displayed on your Excel worksheet until you stop the scan task by pressing the stop button on the tool bar or select ExceLINX>>Scan Meter>>Stop from the menu. After the instrument stops, all the readings from the buffer will be loaded into Excel. These will be the last 2500 or 3000 (depending on model) readings that were taken. This is normal operation for the instrument and software.

6.7 Run Continuous mode

When you have "Run Continuously" selected on the Scan Task, there is a slight delay between each run or set of readings. This is normal operation.

6.8 VSource Display

The Meter Scan and Meter Read tasks now have a field in the Data Display section for "VSource". When this field is set to "Yes", the commanded VSource value will be displayed along with the instrument readings. When it is set to "No", display of VSource value is suppressed. This is primarily intended to simplify graphing of voltage sweep data by providing both the source voltage and measurement values on the same sheet, where they may be easily graphed using Excel's graphing tools. There is no entry in the online help for this function. (PR21706)

6.9 Status Data Display

The Meter Scan and Meter Read tasks have an additional selection in the Status Data field of the Data Display section. There are now three choices in the drop down menu for this field: Yes, No, and Limit failure bits only. When set to "Yes", ExceLINX displays the entire reading status word for each reading. The value is in base 10 or decimal, so it must be converted to binary or hexadecimal to determine the specific bits that are set. When it is set to "Limit failure bits only", ExceLINX will only display the limit failure bits for each reading. If neither limit failure bit is set, ExceLINX will display 0. If L2 is set, ExceLINX will display 10. If L1 is set, ExceLINX will display 1. The limit failure bits only function is not described in the online help. (PR21706)

7 Access to advanced IVI Driver features

7.1 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.

7.2 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.

7.3 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.

8 Known problems and issues

8.1 DDC Mode

DDC mode is not supported by the instrument driver or by ExceLINX for any of the instrument models. If you place the instrument in DDC mode, neither the driver nor ExceLINX will be able to communicate properly with the instrument and will display the following error message in the status field: Primary Error (Hex 0xBFFF000E) The given session or object reference is invalid.

8.2 6514 Option Settings

For Model 6514, when the measurement function is set to voltage, there is no option setting for turning Guarding on or off. The online help states that this option exists.

For Model 6514, when the measurement function is set to voltage, there is no option setting to turn External Feedback (XFBK) on or off. The online help states that this option exists. (PR21707)

8.3 Type Mismatch Error

Under certain conditions, it is possible for the Meter Scan Configuration Worksheet field to be set to "Meter Scan" in error. This field should always contain the name of the associated Meter Configuration task. If you try to run the Scan task when this field is incorrectly set, you will receive a "Type Mismatch" error. To correct the problem, select the proper Configuration task in this field. (PR21718)

8.4 6487 Interlock Option

For Model 6487, when performing a VSource operation with voltage set less than or equal to 10 volts and the safety interlock option set to "On", ExceLINX does not properly set the interlock on. This is not a safety concern because the instrument automatically enforces the interlock when sourcing voltages greater than 10 volts. (PR21773)

8.5 Sampling Rate on International Version of Windows

When using ExceLINX under International versions of Windows where the comma is the fractional part separator instead of the decimal point, and with the stimulus function set to alternating voltage, the Sampling Rate field on the Meter Config task

does not properly accept localized values. For example, 0,1 is not accepted but 0.1 is accepted. Work around is to use the decimal point as the separator for this field only. (PR21724)

8.6 Primary Error: (Hex 0xBFFA4001)

On rare occasions the following error can be encountered: "Primary Error: (Hex 0xBFFA4001) Unknown status value 0xBFFA4001. Elaboration: This operation is not allowed when A-V ohms samples are in the instrument data buffer. If the VSweep is restarted, the error will be cleared and the sweep with execute successfully. (PR21774)

8.7 Query Interrupted Error

Following certain rare sequences of operations, ExceLINX can display a "Query Interrupted" error. Generally, retrying the last operation will clear the error and execute successfully. (PR21727)

8.8 Serial Baud rate

ExceLINX works correctly only if the serial baud rate is set to 9600. This problem is only in the driver and will be fixed in the next release. This does not affect GPIB connections.

8.9 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.

8.10 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.

8.11 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

9 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 KE6485 instrument driver supplied with ExceLINX is Copyright (c) 2001-2013 Keithley Instruments. All Rights Reserved.

End of Release notes.

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP