ACS Basic Edition

Version 3.3 Release Notes

Contents

GENERAL INFORMATION

This document describes the features added to the Keithley Instruments Automated Characterization Suite (ACS) Basic Edition software (version 3.3).

The Keithley Instruments ACS Basic Edition software supports component characterization testing of packaged parts and wafer-level testing using a manual probe station. ACS Basic Edition software can be installed on any computer, including Keithley Instruments Model 4200A-SCS Parameter Analyzer, or Model 4200 Semiconductor Characterization System (4200-SCS).

SUPPORTED OPERATING SYSTEMS

ACS Basic Edition software is supported on the following operating systems:

Microsoft® Windows® 11, 64-bit

Microsoft Windows 10, 64-bit

Microsoft Windows 10, 32-bit

Microsoft Windows 7, 64-bit (with Service Pack 1)

Microsoft Windows 7, 32-bit (with Service Pack 1)

ACS BASIC EDITION REVISION HISTORY

Version	Release date
3.3	November 2023
3.2.1	March 2023
3.2	November 2022
3.1	March 2022
3.0	August 2021
2.1.5	November 2017
2.1	November 2015
2.0	September 2012
1.3	July 2011
1.2	September 2010

INSTALL ACS BASIC

To install ACS software on a personal computer:

1. Log in to your computer as an Administrator.
2. Open the ACS Basic executable file.
3. Follow the software installation instructions.
4. Select **Yes** if you have an older version of ACS Basic installed, as shown in the following figure.

Figure 1: ACS Basic Software installation
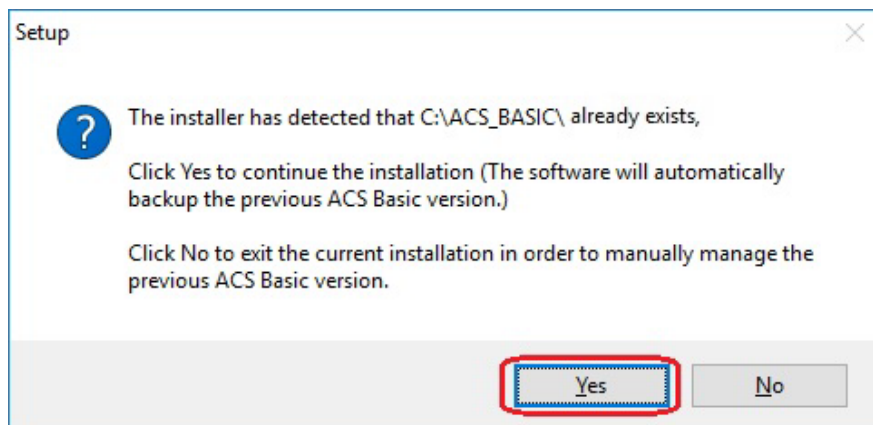
5. Follow the instructions to specify how you want to install the software on your system.
6. If you have projects you need to backup or restore from a previous version of ACS Basic, see Update previous versions of ACS Basic files.
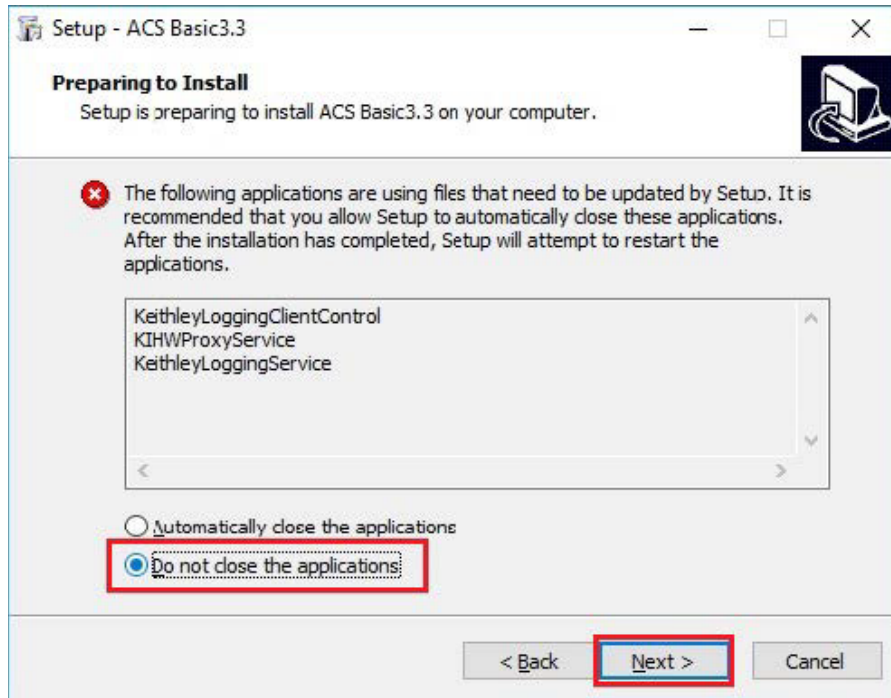
NOTE

If you are installing ACS on a Model 4200A-SCS Parameter Analyzer, see the following information.

Install ACS Basic on a 4200A-SCS Parameter Analyzer

If you are installing ACS Basic on a 4200A-SCS Parameter Analyzer, the following dialog box displays indicating that the applications identified are needed for installation. Make sure you select **Do not close applications** and **Next** to install (see the following figure).

Figure 2: ACS Basic 3.3 prepare to install

NOTE

If you are installing Clarius+ and ACS Basic on the same system, Clarius+ must be installed first.

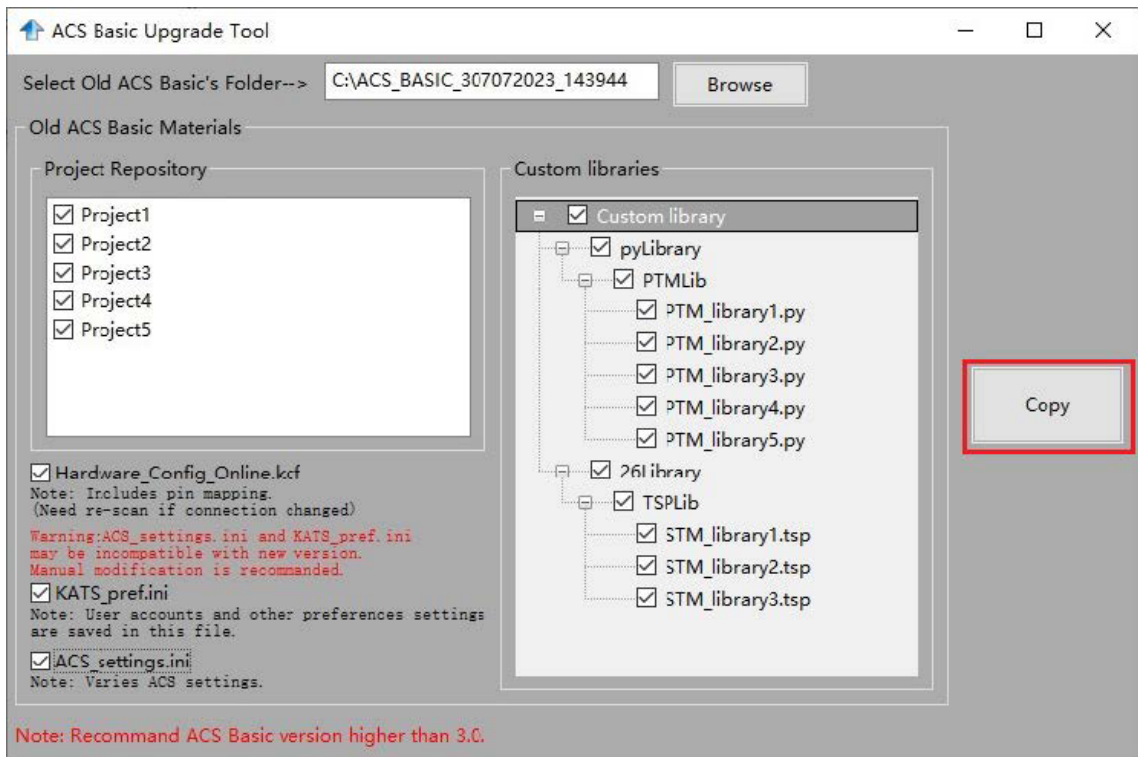## UPDATE PREVIOUS VERSIONS OF ACS BASIC FILES

NOTE

Once ACS Basic is installed, you can use `UpgradeTool.exe` to convert your ACS Basic version 3.0 files or later to the present version, which includes projects, libraries, and settings from previous versions. ACS Basic files before version 3.0 cannot be converted using this method.

To update previous software files:

1. Go to `C:\ACS_BASIC\UpgradeTool\`.
2. Double-click **UpgradeTool.exe**.
3. Choose the items in the folder you want to update (see the following figure).

Figure 3: ACS Basic Upgrade Tool

5. Select **Copy**.

When the updated version of ACS Basic is installed, the previous version is renamed. You can copy the projects and libraries from the previous version using the following steps.

NOTE

If you have ACS Basic version 2.1.5 or later, you must manually copy the projects and libraries by following the steps below.

To copy and paste folders:

1. Find the `C:\ACS_BASIC_DDMMYYYY_HHMMSS\Projects\` folder.

2. Copy and paste to the present `C:\ACS_BASIC\Projects\` folder.

3. Find the `C:\ACS_BASIC_DDMMYYYY_HHMMSS\library\pyLibrary\PTMLib\` folder.

4. Copy and paste to the present `C:\ACS_BASIC\library\pyLibrary\PTMLib\` folder.

5. Find the `C:\ACS_BASIC_DDMMYYYY_HHMMSS\library\26library\` folder.

6. Copy and paste to the present `C:\ACS_BASIC\library\26library\` folder.

NOTE

ACS Basic 3.3 is based on the Python 3.7 programming language. If you customized your projects in a previous version of ACS Basic you may need to change the projects created in the older version of ACS Basic, which includes the Python language test module (PTM) script libraries. You can go to this site to review the Python changes for more detail:
https://docs.python.org/3/whatsnew/3.7.html#porting-to-python-37

Install ACS Basic after installing NI-488.2 drivers

If you are installing ACS Basic on a system that contains NI-488.2 drivers, the following dialog box displays indicating that the applications identified are needed for installation. Make sure you select **Do not close applications** and **Next** to install (see the following figure).

Figure 4: ACS Basic 3.3, Preparing to Install
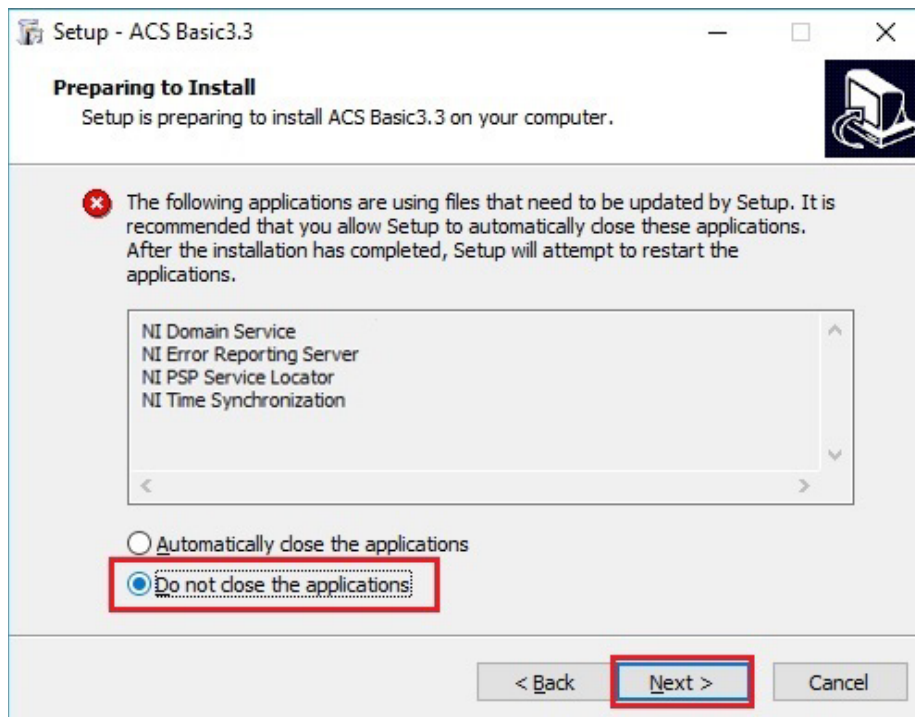
SUPPORTED MODELS AND TEST CONFIGURATIONS

ACS Basic Edition software is used to characterize semiconductor devices with a variety of Keithley Instruments products in a variety of different configurations. The *ACS Basic Reference Manual* (part number ACSBASIC-901-01) contains detailed information about the supported hardware and test configurations.

The following table summarizes the instruments supported in the ACS Basic test libraries.

Instrument type	Supported models
SMU Instruments	2600B Series: 2601B, 2602B, 2604B, 2611B, 2612B, 2614B, 2634B, 2635B, 2636B
	2600A Series: 2601A, 2602A ,2611A, 2612A, 2635A, 2636A
	2400 Graphical Series SMU (KI24XX): 2450, 2460, 2460-NFP, 2460-NFP-RACK, 2460-RACK, 2461, 2461-SYS, 2470
	2400 Standard Series SMU: 2401, 2410, 2420, 2430, 2440
	2650 Series for High Power: 2651A, 2657A
Parameter Analyzers	4200A and supported cards/modules: 4210-CVU, 4215-CVU, 4225-PMU/4225-RPM, 4225-RPM-LR, 4200-SMU, 4201-SMU, 4210-SMU, 4211-SMU, 4200-PA, 4200A-CVIV
DMMs	DMM6500, DMM7510, 2010 Series
Ultra-sensitive Current Sources and Nanovoltmeter	6220,6221, 2182A
Switching and data acquisition systems	DAQ6510, 707A/B, 708A/B, 3700A
Pulse Generators	3400 Series

NOTE

The graphical interactive test module (ITM) supports 24xx Graphical Series SMU instruments and 26xx instruments at the same time. The 24xx instrument should be connected as the primary instrument, and the 26xx connected as the subordinate.

You can control any Test Script Processor (TSP™) instrument using a script test module (STM) script.

You can control any instrument using a Python language test module (PTM) script, including instrumentation from other vendors.

Existing ACS Basic STM and PTM libraries support specific instruments based on the library definition.
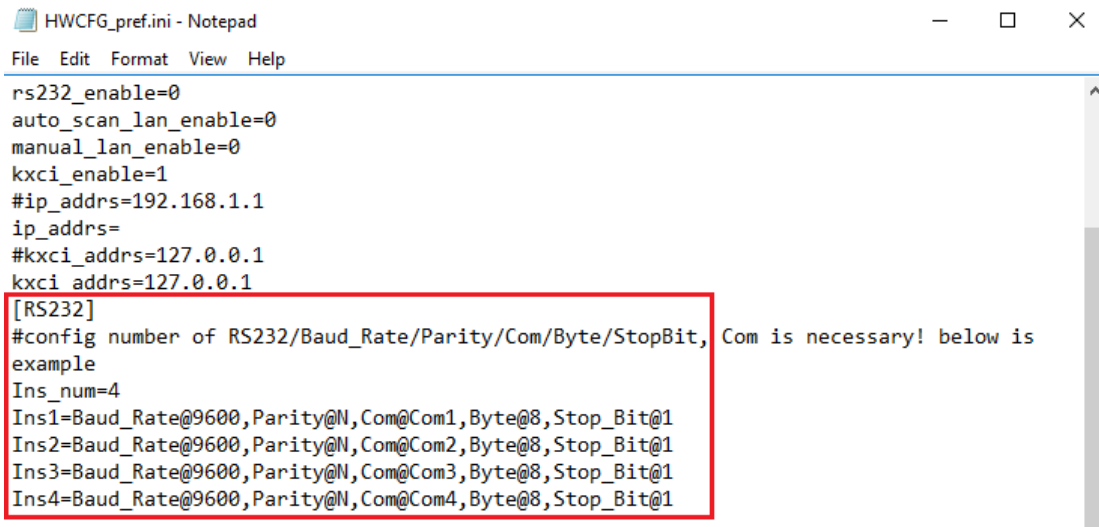
SUPPORTED COMMUNICATION INTERFACES

- GPIB
- LAN (Auto Scan and LAN)
- USB
- RS-232

NOTE

If you are using an RS-232 connection, the instrument is not automatically added to the hardware configuration. Add instruments connected with RS-232 manually and change the hardware configuration file that is in the following directory on your computer to the following: `C:\ACS_BASIC\HardwareManagementTool\HWCFG_pref.ini`. In this file you can change the baud rate, parity, byte, and stopBit settings. Review the following figure for details.

Figure 5: RS-232 connection

SOFTWARE LICENSE

ACS Basic allows you to create tests, manipulate settings, and view previous data without a license. However, you must have a license for ACS Basic in to control and retrieve data from a physical instrument. You can launch a one-time, 60-day trial for ACS Basic after the initial installation. Once the license expires, you need to purchase a full license to use the software.

**Figure 6: ACS Basic 3.3 license information**
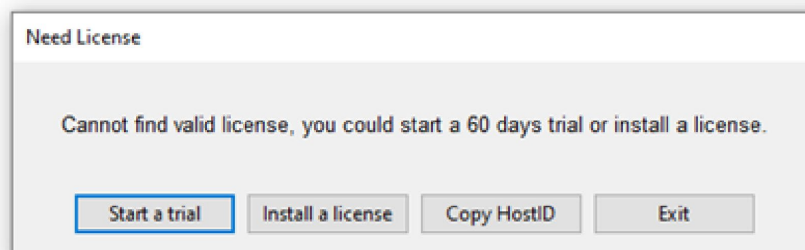
LICENSE MANAGEMENT

The ACS Basic software license is managed using the Tektronix Asset Management System (TekAMS).

To generate a license file:

1. You must submit your Host ID to TekAMS. For more information on TekAMS, see tek.com/products/product-license.

2. To find the host ID, open the License Manager dialog box from the ACS Basic Help menu. Select **License** > **Host ID**, then **Click to copy** to copy the Host ID.

3. Select **Install**.

Figure 7: ACS Basic Host ID 3.3 license information
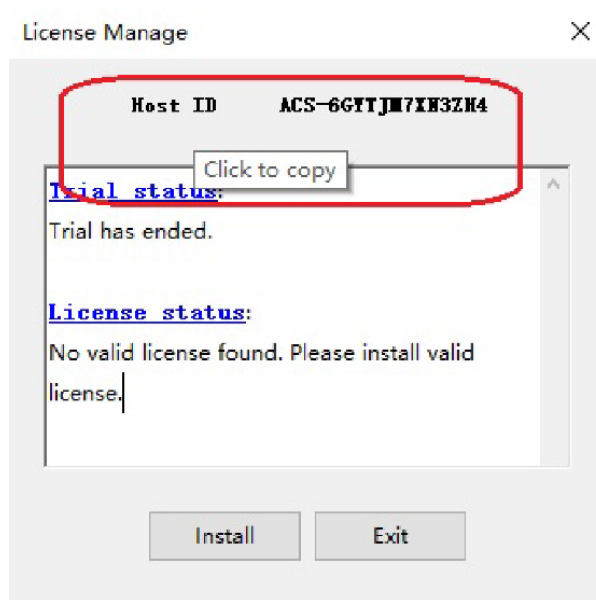
ACS BASIC VERSION 3.3

ENHANCEMENTS

Hardware configuration	
Issue number:	ACS-784, CAS-209266-Y5K4F1
Enhancement:	Support for the Keysight E4980A added.
Issue number:	ACS-716
Enhancement:	Support for TSP-Link connections to the DMM6500 and DMM7510.
Issue number:	ACS-677
Enhancement:	Add Hardware Scan Tool support scanning for: • 6221 through GPIB and ethernet • 6220 through GPIB • 2182 and 2182A through RS232 or Trigger Link cable to the 6220 or 6221

ACS Basic software and libraries	
Issue number:	ACS-766, CAS-199477-J6M6T8
Enhancement:	Switching speed when switching between PTMs and ITMs has been optimized.
Issue number:	ACS-762
Enhancement:	Support added for saving data to the Excel® format, `.xlsx`.
Issue number:	ACS-724
Enhancement:	Shared-Stress App: Added an example library and project to show how to use the built-in shared stress functions.
Issue number:	ACS-718
Enhancement:	DMM7510 and DMM6500 support: Added TSP library `DMM_SMU_lib.tsp` including the functions `FIMV_Sweep` and `FIMV_Sample`.
Issue number:	ACS-717
Enhancement:	2601B and DMM7510 support: Added `LIV_Lib.tsp` library.
Issue number:	ACS-713, ACS-712
Enhancement:	Added test library `VTH_SiC` under device PowerMosfet for ACS Basic.
Issue number:	ACS-690, ACS-689
Enhancement:	Added the standard `PTM KI622x_2182_Lib.py` library to support delta and differential measurements using the Keithley Instruments Model 6220 or 6221 used with a Model 2182A.
Issue number:	ACS-681, ACS-680, ACS-679
Enhancement:	Added Shared-Stress App: Added python library `Share_Stress_App.py` and `shared_Stress_Demo.py`.
Issue number:	ACS-676
Enhancement:	Add a PTM demo script to run a UTM library remotely on the 4200A-SCS through KXCI.
Issue number:	ACS-664, CAS-143278-Z7L7T3
Enhancement:	Added support for generalized Shared-Stress testing.
Issue number:	ACS-653, CAS-124875-V3W1G7
Enhancement:	`UpgradeTool.exe` was added to help convert your ACS 6.0 files or later to the present version, including projects, libraries, and settings from previous versions.

ACS Basic manual updates	
Issue number:	ACS-757, ACS-744, ACS-743, ACS-733, ACS-711
Enhancement:	*Automated Characterization Suite (ACS) Basic Software Reference Manual* update.
Issue number:	ACS-790, ACS-785, ACS-719, ACS-715, ACS-714, ACS-711
Enhancement:	*Automated Characterization Suite (ACS) Basic Edition Libraries Reference Manual* update.
Issue number:	ACS-711
Enhancement:	*ACS Basic Software Quick Start Guide* update.

RESOLVED ISSUES

| Issue number:	ACS-763, CAS-198461-L5X8W7
Enhancement: Resolution:	When ACS Formulator formula VTCI returns #REF, the data cannot be saved to an `.xls` file. This issue has been corrected.
Issue number:	ACS-758
Enhancement: Resolution:	ITM 2461 Pulse mode incorrectly reached compliance at current lower than the `limiti` setting. This issue has been corrected.

Issue number:	ACS-755
Enhancement:	Formulator from the last device-level running file is copied to all ITMs.
Resolution:	This issue has been corrected.
Issue number:	ACS-753, CAS-191970-C6C2F3
Enhancement:	ACS Basic graph problem: Fixed Scale applied incorrectly to Y2.
Resolution:	This issue has been corrected.
Issue number:	ACS-752, CAS-191977-V4N4T0
Enhancement:	ACS Basic graph problem with Log Scale.
Resolution:	This issue has been corrected.
Issue number:	ACS-751, CAS-191987-Q2T8Q5
Enhancement:	ACS Basic graph scale format error (scientific linear).
Resolution:	This issue has been corrected.
Issue number:	ACS-750, CAS-191988-X7C2L0
Enhancement:	ACS Basic graph scale format error (scientific LOG).
Resolution:	This issue has been corrected.
Issue number:	ACS-740
Enhancement:	The 2450, DMM6500, and DAQ6510 report errors when starting ACS Basic.
Resolution:	This issue has been corrected.
Issue number:	ACS-737, CAS-183556-J8P1L6
Enhancement:	Cannot enable High C mode in an ITM when connected to a Model 2657A.
Resolution:	This issue has been corrected.
Issue number:	ACS-732
Enhancement:	Cannot enable High C mode in an ITM when connected to a Model 2657A.
Resolution:	This issue has been corrected.
Issue number:	ACS-706
Enhancement:	`sintgv()` is missing in TSPLPT.
Resolution:	This issue has been corrected.
Issue number:	ACS-705
Enhancement:	The Combine SMU button is disabled in configure demo mode in the Hardware Management Tool.
Resolution:	This issue has been corrected.
Issue number:	ACS-704, CAS-168192-R6R9C0
Enhancement:	When measuring a CF sweep (from 10 kHz to 100 kHz) on a sample that has a capacitance value of about 100 pF, inaccurate data was shown at 10 kHz frequency.
Resolution:	This issue has been corrected.
Issue number:	ACS-699
Enhancement:	When a customer enters a pattern, subsite, or device name that starts with a number, the project is damaged.
Resolution:	This issue has been corrected by displaying a message if the user tries to use a name that starts with a number.
Issue number:	ACS-695
Enhancement:	TSPLPT `delcon` command is not working correctly.
Resolution:	This issue has been corrected.
Issue number:	ACS-688
Enhancement:	ACS Basic cannot scan a Model 707B Switching System that contains a 7072B cards in the Hardware Management Tool.
Resolution:	This issue has been corrected.

Issue number:	ACS-687, CAS-157136-K7R9R0
Enhancement:	High Open Offset Capacitance issue on PCT HVCV Test.
Resolution:	This issue has been corrected.
Issue number:	ACS-686
Enhancement:	Added ACSLPT `sweepX`, `bsweepX` functions for 4200A SMU.
Resolution:	This issue has been corrected.
Issue number:	ACS-685
Enhancement:	Y1/Y2 min/max scale in the plot setting is automatically changed when running a test.
Resolution:	This issue has been corrected.

SOFTWARE COMPATIBILITY

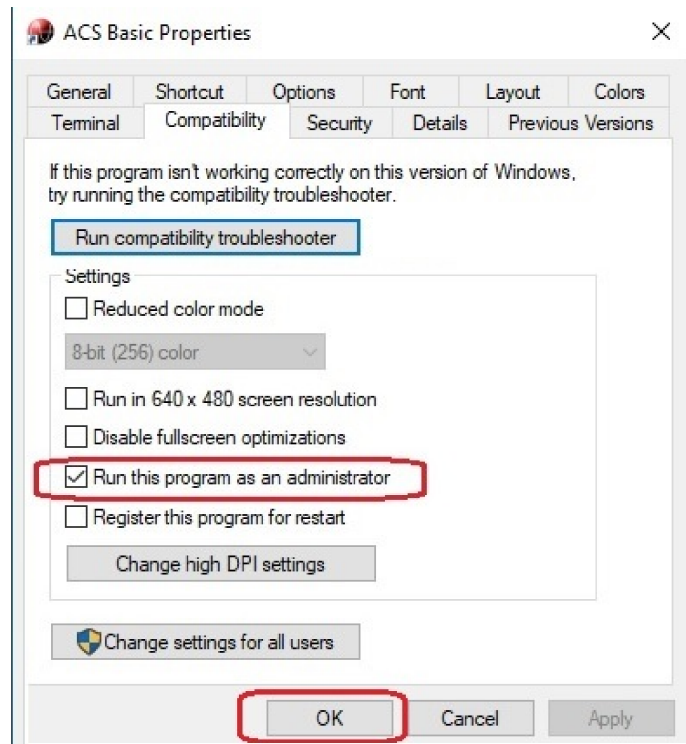| Issue number:	N/A
Resolution:	When you start ACS Basic on a 4200A-SCS that has Clarius software version 1.4 or later (with the Windows 10 operating system), a warning message may appear indicating that KXCI did not start successfully. Select **Cancel** to dismiss the warning.

Figure 8: KXCI did not start
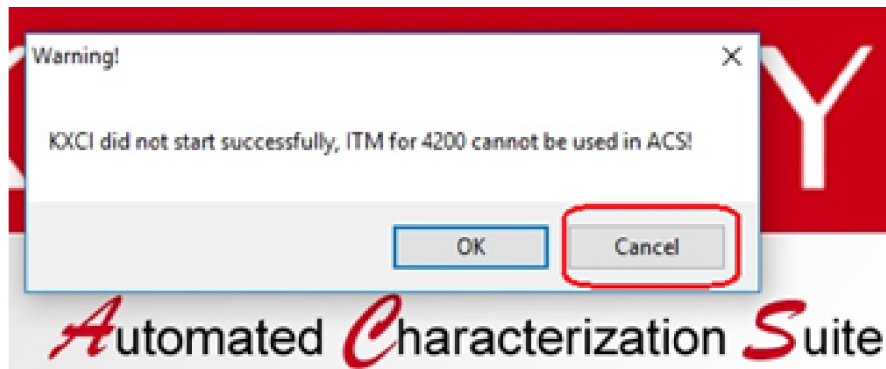
To manually configure the compatibility settings:

1. Right-click the **ACS Basic icon** and select **Properties**.

2. Open the **Compatibility** tab.

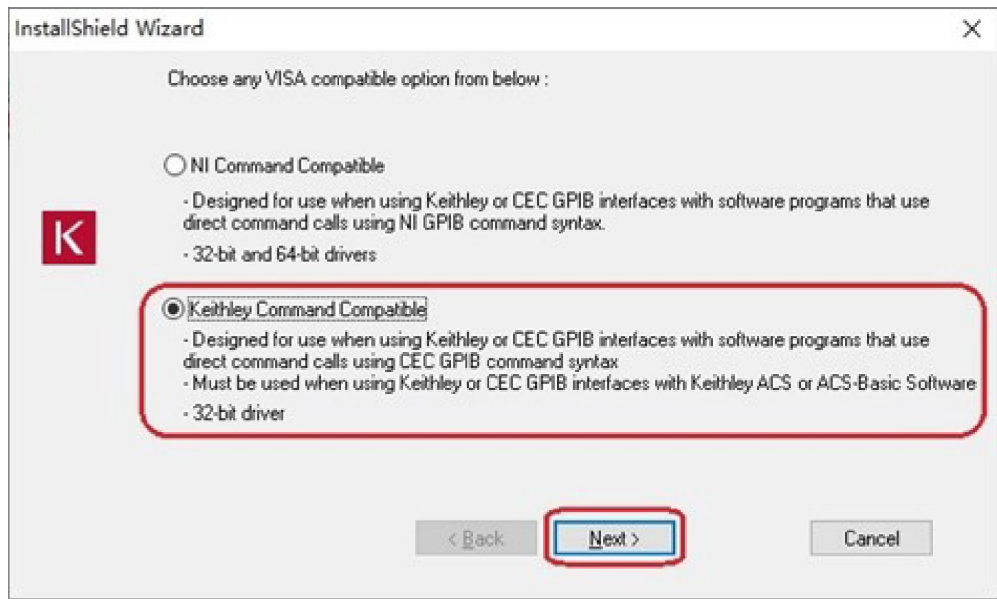3. Select **Run this program as an administrator** and select **OK** to save.

Figure 9: ACS Basic properties

USAGE NOTES

Issue number:	N/A
Resolution:	If you install a KUSB-488B GPIB driver, the following message displays. You must select the **Keithley Command Compatible** option. Select **Next** to continue the installation.

Figure 10: ACS Basic command compatible

Issue number:	ACS-691, CAS-162126-B3Y7Y6
Resolution:	**Microsoft® Windows® mapped network drive error.**
	When installing ACS Basic on a personal computer, Microsoft policy settings can limit ACS Basic from accessing mapped network drives in its file windows.
	Modifying the registry fixes this issue.
	To modify the registry:
	1. Run regedit.
	2. Navigate to `HKEY_LOCAL_MACHINE/SOFTWARE/Microsoft/Windows/CurrentVersion/Policies/System`.
	3. If one does not exist, create a new DWORD (32-bit) entry named `EnableLinkedConnections`.
	4. Set the value to 1.
	5. Restart the computer.