ACS Basic Edition

Version 3.4 Release Notes

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CONTENTS

GENERAL INFORMATION

This document describes the features added to the Keithley Instruments Automated Characterization Suite (ACS) Basic Edition software (version 3.4).

The Keithley 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 that meets the minimum requirements, including the Keithley 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
- Windows 7, 64-bit (with Service Pack 1)
- Windows 7, 32-bit (with Service Pack 1)

ACS BASIC EDITION REVISION HISTORY

Version	Release date
3.4	August 2024
3.3	November 2023
3.2.1	March 2023

Version	Release date
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

NOTE

If you are installing ACS Basic on a Model 4200A-SCS Parameter Analyzer, refer to Install ACS Basic on a 4200A-SCS.

If you are using a GPIB interface, it is recommended that you install the GPIB card and its associated driver before installing ACS Basic. For more information on the installation of a GPIB card driver, refer to the GPIB interface documentation from the GPIB manufacturer.

To install ACS Basic software on a personal computer:

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

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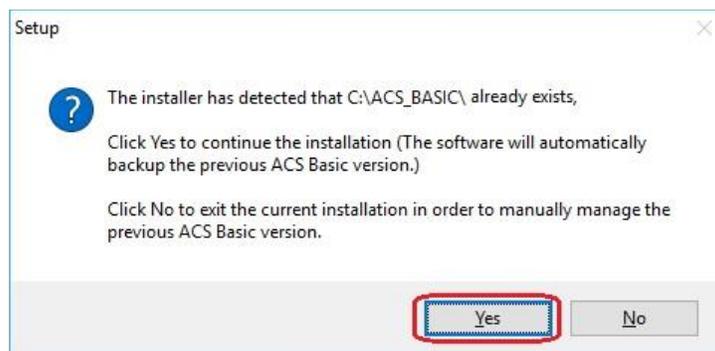
6. Follow the instructions to specify how you want to install the software on your system.
7. If you have projects you need to backup or restore from a previous version of ACS Basic, see Update previous versions of ACS Basic files.

UPDATE PREVIOUS VERSIONS OF ACS BASIC FILES

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. The converted files will include 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 2: ACS Basic Upgrade Tool
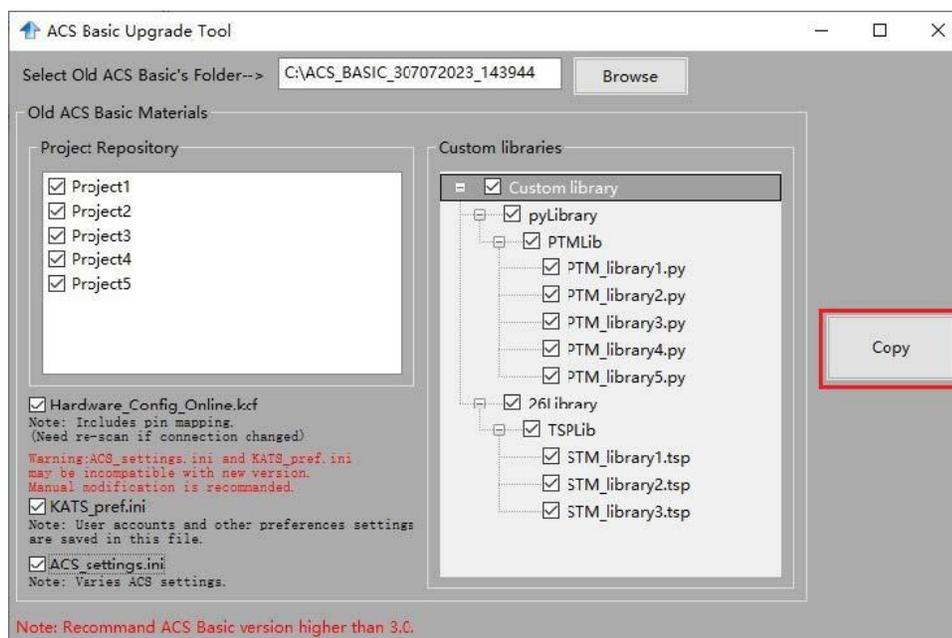
4. Select **Copy**.

When the updated version of ACS Basic is installed, the folders used in the previous version are 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 using the following steps.

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 3.4 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 ON A 4200A-SCS

NOTE

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

When you install ACS Basic on a 4200A-SCS Parameter Analyzer, the following dialog is displayed. It indicates 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 3: ACS Basic 3.4 prepare to install
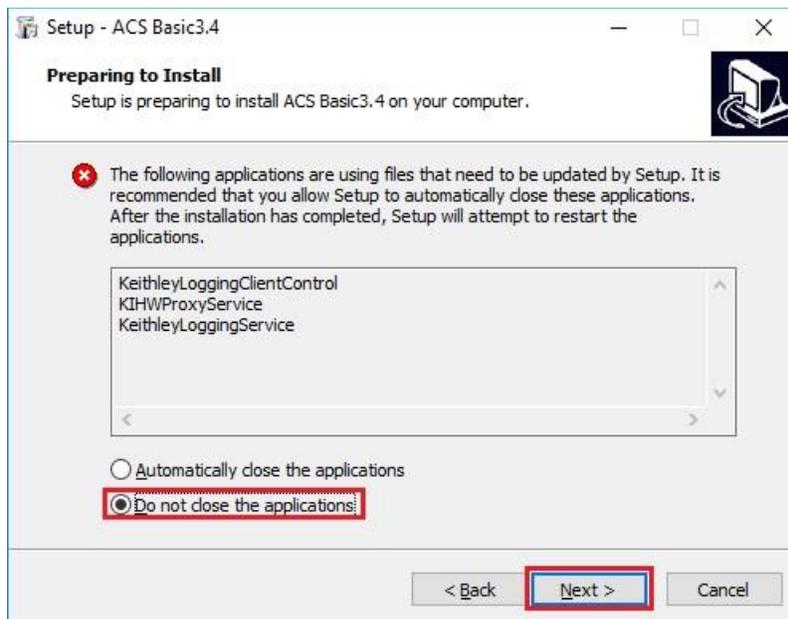
INSTALL ACS BASIC AFTER INSTALLING NI-488.2 DRIVERS

If you are installing ACS Basic on a system that contains NI-488.2 drivers, the following dialog is displayed, 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 3.4 Preparing to Install dialog
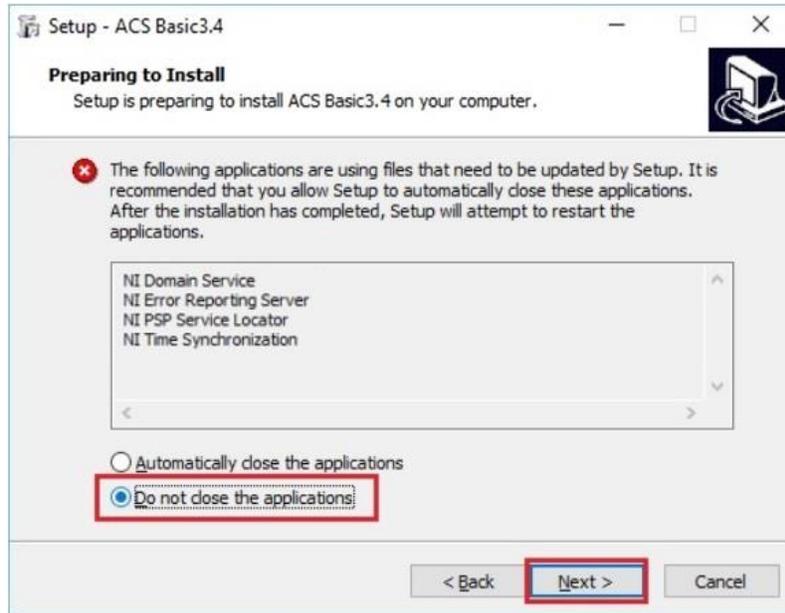
SUPPORTED MODELS AND TEST CONFIGURATIONS

ACS Basic Edition software is used to characterize semiconductor devices with a variety of Keithley Instruments products in a variety of different configurations.

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

Instrument type	Supported models
SMU instruments	**2600B Series:** 2601B-PULSE (DC only), 2601B, 2602B, 2604B, 2611B, 2612B, 2614B, 2634B, 2635B, 2636B
	2600A Series: 2601A, 2602A, 2611A, 2612A, 2635A, 2636A
	2400 Graphical Series SMUs (KI24XX TTI): 2450, 2460, 2460-NFP, 2460-NFP-RACK, 2460-RACK, 2461, 2461-SYS, 2470
	2400 Standard Series: 2401, 2410, 2420, 2430, 2440
	2650 Series for High Power: 2651A, 2657A
Parameter analyzers	4200A, including the following 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
Sensitive	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 COMMUNICATIONS INTERFACES

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

CONNECTING RS-232 INSTRUMENTS

If you are using an RS-232 connection, the instrument is not automatically added to the hardware configuration.

To add RS-232 instruments:

1. Add instruments connected with RS-232 manually.
2. Open the hardware configuration file, located at `C:\ACS_BASIC\HardwareManagementTool\HWCFG_pref.ini`. An example is shown in the following figure.
3. In the `[RS232]` section, change the baud rate, parity, byte, and stopBit settings to match your setup.

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 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 trial expires, you need to purchase a full license to use the software.

Figure 6: ACS Basic 3.4 license information
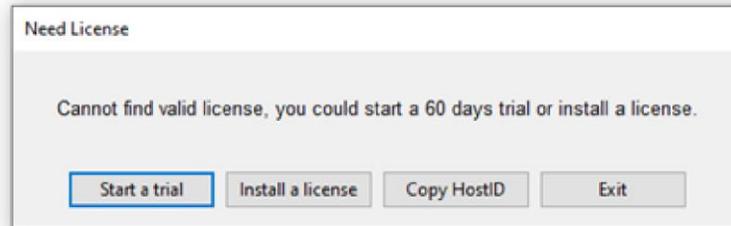
LICENSE MANAGEMENT

The ACS Basic software license is managed using the Tektronix Asset Management System (TekAMS). For more information about TekAMS, see tek.com/products/product-license.

To generate a license file, you need to submit your Host ID to TekAMS and install the license file, as described in the following procedure.

To generate a license file:

1. In ACS Basic, select **Help**, then select **License**.
2. Select the Host ID, shown in the following figure, to copy it to the clipboard.

Figure 7: ACS Host ID license information
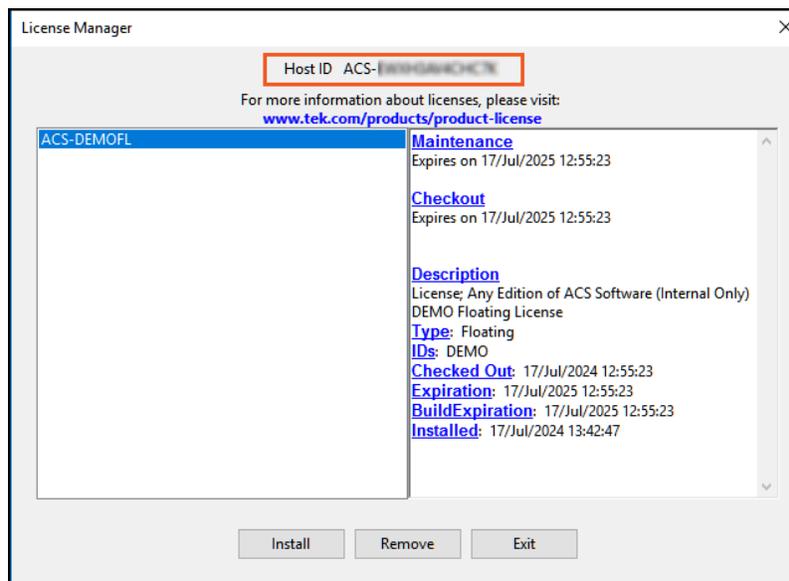
3. Go to tek.com/products/product-license.
4. Submit your Host ID to TekAMS.
5. When you receive the license file, on the License Manager dialog, select **Install** to select the file.

ACS BASIC VERSION 3.4

ENHANCEMENTS

Hardware configuration	
Issue number	ACS-828, CAS-260880-D0W1L1
Enhancement	You can now use ACS Basic to control K4200 using GPIB.
ACS Basic software and libraries	
Issue number	ACS-891
Enhancement	In the PowerSupplyLib, an error is now displayed to alert the user when the 2290 interlock is not engaged.
Issue number	ACS-869
Enhancement	The ACS Basic user interface no longer flickers when running tests.
Issue number	ACS-840
Enhancement	Restored the `Resistor_4T` device to the user interface for single-mode and multi-mode.
Issue number	ACS-827
Enhancement	ITM speeds for large data sets such as 1000 points × 25 columns were improved.
Issue number	ACS-822
Enhancement	Responsiveness of the Instrument tree of the Comparison page improved.
ACS Basic manual updates	
Issue number	ACS-885
Enhancement	Updated all manuals for changes to ACS Basic v3.4.
Issue number	ACS-884
Enhancement	Updated the 4200A-SCS LPTs in the *ACS Basic Edition Libraries Reference Manual*, document number ACSBASIC-908-01E.
Issue number	ACS-819
Enhancement	Added instructions for the updated `VgVdBothSweep` in the `VthSiC_JEP183` library in the *ACS Basic Edition Libraries Reference Manual*, document number ACSBASIC-908-01E.
Issue number	ACS-808
Enhancement	Updated the Shared Stress Application (`Shared_Stress_app.py`) instructions in the *ACS Basic Edition Libraries Reference Manual*, document number ACSBASIC-908-01E, to include new demo projects.

RESOLVED ISSUES

Issue number	ACS-908, CAS-330340-B8R8M5
Symptom	ACS Basic V3.3 4200A ITM: Certain current ranges are not available.
Resolution	This issue has been corrected.
Issue number	ACS-899
Symptom	ACS Basic software trial stopped after 10 days, but should have run for 30 days.
Resolution	This issue has been corrected.
Issue number	ACS-897
Symptom	The NI-VISA runtime version for ACS Basic was outdated.
Resolution	This issue has been corrected.
Issue number	ACS-887
Symptom	When the devlibraries are opened from a SingleMode project, the plot settings are missing.
Resolution	This issue has been corrected.
Issue number	ACS-886
Symptom	When the user scans a 4200A using GPIB but does not save, there is incorrect information in the online configuration file
Resolution	This issue has been corrected.
Issue number	ACS-881
Symptom	License Broken Error message is potentially confusing.
Resolution	This issue has been corrected.
Issue number	ACS-874
Symptom	Sometimes the ACS Basic installation stops when an old ASC_BASIC folder is renamed.
Resolution	This issue has been corrected.
Issue number	ACS-868, CAS-305404-H4B2T9
Symptom	When using the Repeat button to run an ITM, all history data is deleted.
Resolution	This issue has been corrected.
Issue number	ACS-855, CAS-296265-P1Y9P0
Symptom	ITMs freeze if run multiple times.
Resolution	This issue has been corrected.
Issue number	ACS-850, CAS-290833-G3T9W1
Symptom	ACS Basic installation issues.
Resolution	This issue has been corrected.
Issue number	ACS-849, CAS-289688-Q5Z8S7
Symptom	When aborting an ITM, ACS Basic will freeze and lose communication with the 2470.
Resolution	This issue has been corrected.

Issue number	ACS-844
Symptom	The `exceptions.log` is too big; invalid log messages need to be removed from the `exceptions.log` file.
Resolution	This issue has been corrected.
Issue number	ACS-830
Symptom	If CVU compensation fails, the `.csv` file cannot be opened.
Resolution	This issue has been corrected.
Issue number	ACS-826
Symptom	When switching between the run history data page and the run test many times when communicating with a 2636A, communication with the 2636A is lost and the test is not continued.
Resolution	This issue has been corrected.
Issue number	ACS-793
Symptom	In the Hardware Management Tool, setting one 24XX Graphical Touchscreen Series SMU to rear output changes all 24xx Graphical Touchscreen Series SMUs to the rear output. Users should be able to set different outputs for different 24XX instruments.
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
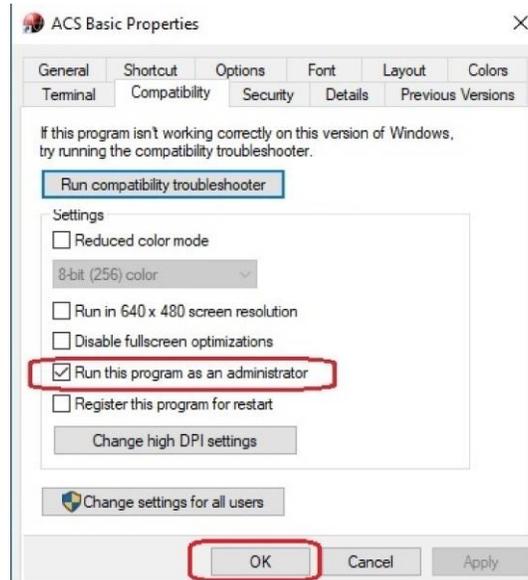
USAGE NOTES

Issue number	N/A
Resolution	If you install a KUSB-488B GPIB driver, the following message is displayed. 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.