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General information

This document describes the features added to the Keithley Instruments Automation Characterization Suite (ACS) Standard Edition software (version 6.0).

The Keithley Instruments ACS Standard Edition software supports component characterization testing of packaged parts and wafer-level testing using probers. ACS Standard 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 Standard Edition software is supported on the following operating systems:

Windows® 10, 64-bit

Windows® 10, 32-bit

Windows® 7, 64-bit

Windows® 7, 32-bit



ACS Standard revision history

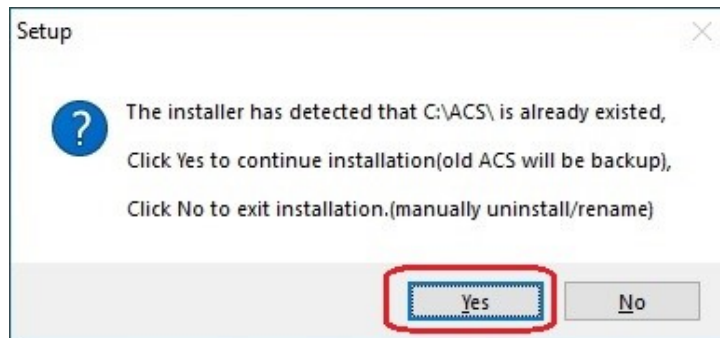
| Version | Release date |
|---------|----------------|
| 6.0 | August 2021 |
| 5.4 | February 2021 |
| 5.3 | December 2017 |
| 5.2.1 | September 2015 |
| 5.2 | December 2014 |
| 5.1 | May 2014 |
| 5.0 | February 2013 |
| 4.4 | December 2011 |
| 4.3.1 | June 2011 |
| 4.3 | March 2011 |
| 4.2.5 | October 2010 |
| 4.2 | June 2010 |

Install ACS

To install ACS software:

1. Log in to your computer as an Administrator.
2. Open the ACS executable file.
3. Select **Yes** if you have an older version of ACS installed.

Figure 1: ACS Software installation



4. Follow the instructions to specify how you want to install the software on your system.

Once the new version of ACS is installed, the older version will be renamed. You can copy the projects and libraries from the previous version using the following steps.

To copy and paste folders:

1. Find the C:\ACS_DDMMYYYY_HHMMSS\Projects\ folder; copy and paste to the current C:\ACS\Projects folder.
2. Find the C:\ACS_DDMMYYYY_HHMMSS\library\pyLibrary\PTMLib\ folder; copy and paste to the current C:\ACS\library\pyLibrary\PTMLib\ folder.
3. Find the C:\ACS_DDMMYYYY_HHMMSS\library\26library\ folder; copy and paste to the current C:\ACS\library\26library\ folder.

NOTE

ACS 6.0 is based on the Python 3.7 programming language. If you customized your projects in a previous version of ACS you may need to change the projects created in the older version of ACS, 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>

NOTE

When installing ACS on a 4200A-SCS Parameter Analyzer, the following applications use files needed to close applications. Select **Do not close applications** and click **Next** to install (see the following figure). If you select **Automatically close the applications**, you must restart the computer after the installation has completed.

Figure 2: ACS 6.0 preparation for installation



Supported models and test configurations

ACS software can be used with the following Keithley Instruments in a variety of different testing configurations. The *ACS Reference Manual* (part number ACS-901-01) contains detailed information about the supported hardware and test configurations.

- Perform multi-group testing with Series 2600B and 2400 TTI instruments using ACS software installed on a personal computer or laptop.
- Control hardware using ACS software installed on the Model 4200A-SCS Parameter Analyzer or Model 4200-SCS.

- Perform combined group testing with a 4200A-SCS Parameter Analyzer or 4200-SCS, and Series 2600B instruments using the combined test-execution engine in ACS software.
- Control other external GPIB, LAN, or USB instruments using ACS software installed on a personal computer or laptop (for this use case, you must create your own test library).

The following table summarizes the instruments supported in the ACS 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 Touchscreen Series SMU (KI24XX TTI): 2450, 2460, 2460-NFP, 2460-NFP-RACK, 2460-RACK, 2461, 2461-SYS, 2470 |
| | 2400 Standard Series SMU: 2401, 2410, 2420, 2430, 2440 |
| | 2606B High Density SMU |
| | 2650 Series for High Power: 2651A, 2657A |
| Parameter Analyzers | 4200A |
| DMMs | DMM7510, 2010 Series |
| Switching Systems | 707A/B, 708A/B, 3700A |
| Pulse Generators | 3400 Series |

The following probers are supported in ACS:

| | |
|---------|--|
| Probers | Manual Prober Micromanipulator 8860 Prober Suss MicroTec PA200/Cascade CM300 Prober Cascade 12000 Prober Cascade S300 Prober Electroglas EG2X Prober Electroglas EG4X Prober TEL P8/P12 Prober TEL 19S Prober Tokyo Semitsu TSK9(UF200/UF3000/APM60/70/80/90) Prober Wentworth Pegasus 300S Prober with SRQ check Micromanipulator P300A Prober Yang Sagi3 Prober with SRQ check Signatone CM500 Prober (WL250) TEL T78S/80S Prober MPI SENTIO Prober |
|---------|--|

NOTE

The graphical interactive test module (ITM) supports 24xx Touch Test Invent® (TTI) instruments and 26xx instruments at the same time.

You can control any test script processor (TSP™) instrument using script test module (STM) script.

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

Also, existing ACS Basic STM and PTM libraries support specific instruments based on the library definition.

Supported communication interfaces

- GPIB
- LAN (LXI Mode)
- USB
- RS-232

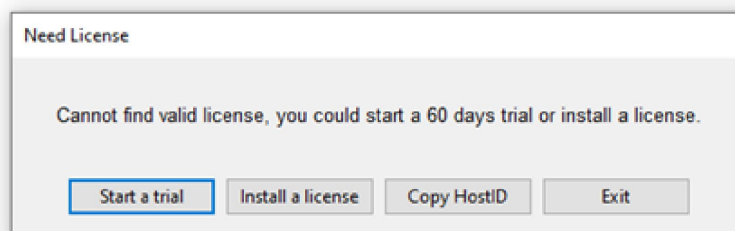
NOTE

The GPIB, LAN, and USB interfaces can be used together at the same time. GPIB and USB supports automatic hardware scan when you first start ACS. For the LAN cable connection, you must manually add an IP address. You should add the IP address in the `ACS_setting.ini` file that is in the C: drive `C:\ACS\KATS\ACS_setting.ini`.

Licensing

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

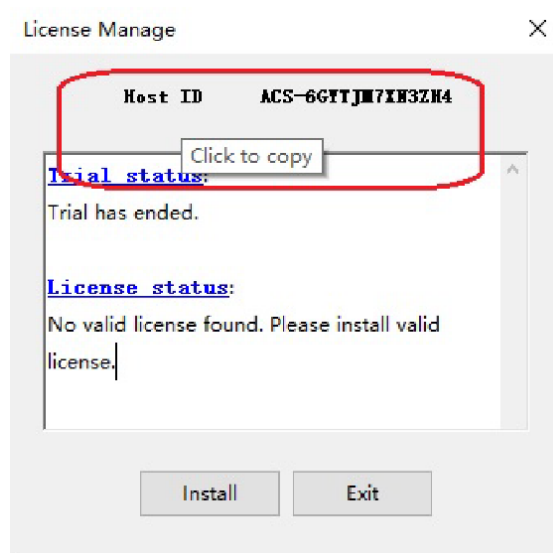
Figure 3: ACS 6.0 license information



License management

The ACS software license is managed using the Tektronix Asset Management System (TekAMS). To generate a license file, you must submit your Host ID to TekAMS. For more information on TekAMS, see tek.com/products/product-license. To find the host ID, open the License Manage dialogue box from the ACS Help menu. Select **License > Host ID** > click to copy the Host ID. Select **Install**.

Figure 4: ACS Host ID 6.0 license information



ACS Standard version 6.0

Enhancements

| Hardware configuration | |
|------------------------|--|
| Issue number: | ACS-20 |
| Resolution: | Added communication support using GPIB, LAN, and USB. |
| Issue number: | ACS-28 |
| Resolution: | Updated software to use pyVISA as a fundamental way to communicate with instruments. |
| Issue number: | ACS-167 |
| Resolution: | Added support for the following Keithley Instruments: 4201-SMU, 4211-SMU, 4215-SMU. |
| Test modules | |
| Issue number: | ACS-19 |
| Resolution: | Added ITM support for Keithley Instruments, 2450, 2460, 2461, 2470, 2606B, and 26x4B models. |
| Data management | |
| Issue number: | ACS-22, ACS-109 |
| Resolution: | Run history is available for ITM, STM, and PTM modules in SingleMode and MultiMode testing. Run history automatically stores all previous data to eliminate accidental overwriting of data. Data must now be explicitly deleted. |

General test PTM

| | |
|---------------|---|
| Issue number: | ACS-60 |
| Resolution: | Added PTM support for LAN and LXI mode. |
| Issue number: | ACS-72 |
| Resolution: | Added support to communicate in TSP mode with all Model 24xx TTI instruments. |

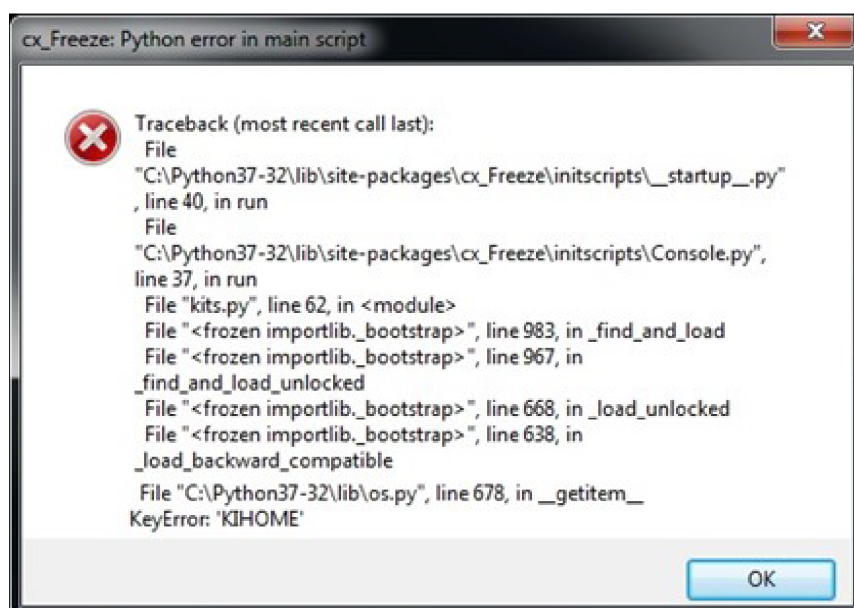
Resolved issues

| | |
|---------------|---|
| Issue number: | ACS-2 (AR-64233) |
| Symptom: | ACS add new module in the Script Editor does not work. |
| Resolution: | This issue has been corrected. |
| Issue number: | ACS-3 (AR-64234) |
| Symptom: | ACS insert test and insert device in the test tree does not work. |
| Resolution: | This issue has been corrected. |
| Issue number: | ACS-4 (AR-64240) |
| Symptom: | ACS HVCV measurement with Bias Tee does not work. |
| Resolution: | This issue has been corrected. |
| Issue number: | ACS-11 (AR-64323) |
| Symptom: | ACS Prober control in Fake mode does not send a command to the prober. |
| Resolution: | This issue has been corrected. |
| Issue number: | ACS-17 (AR-64445) |
| Symptom: | ACS Data output order is not correct. |
| Resolution: | This issue has been corrected. |
| Issue number: | ACS-18 (AR-64447) |
| Symptom: | ACS ITM Measurement Delay is not correct. |
| Resolution: | This issue has been corrected. |
| Issue number: | ACS-63 (AR-64594) |
| Symptom: | ACS version 5.4 indicates a Script Unsaved error when more than one STM is in the project. |
| Resolution: | This issue has been corrected. |
| Issue number: | ACS-65 (AR-64627) |
| Symptom: | ACS does not communicate through GPIB when connected to a Wentworth Prober Station when using a 4200A-SCS instrument with ACS software installed. |
| Resolution: | This issue has been corrected. |
| Issue number: | ACS-233 (AR-65178) |
| Symptom: | ACS version 5.4 user access points (UAP) for GenerateExcelFile.py are not functional. |
| Resolution: | This issue has been corrected. |
| Issue number: | ACS-300 (AR-66256) |
| Symptom: | ACS Output Enable Action is not functional. |
| Resolution: | This issue has been corrected. |

Known issue

| | |
|---------------|--|
| Issue number: | N/A |
| Resolution: | If you uninstall Clarius software from the 4200A-SCS, ACS may fail to start. The message below indicates an error in the main script. To resolve this issue, you must run Initialize New User from the Windows Start menu. Go to Program > ACS 6.0 > Initialize New User . Once that is completed, reboot the computer. |

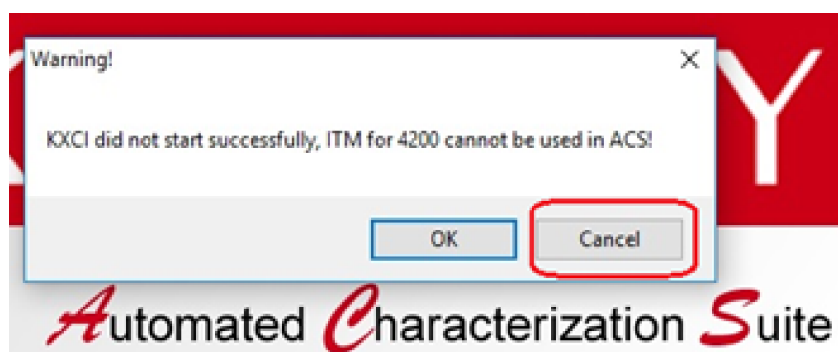
Figure 5: ACS 6.0 Python error



Software compatibility

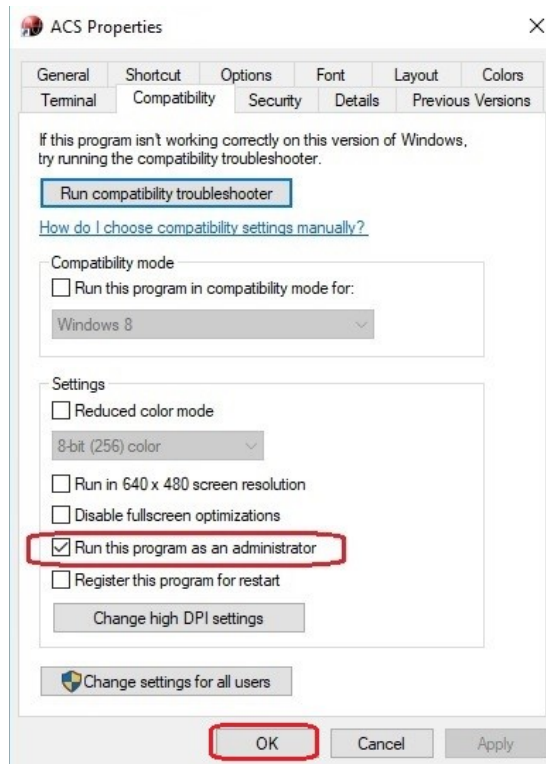
| | |
|---------------|--|
| Issue number: | N/A |
| Resolution: | When you start ACS on the 4200A-SCS that has Clarius software version 1.4 or higher (with the Windows 10 operating system), a warning message may appear indicating that KXCI did not start successfully. Select Cancel to dismiss the warning.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

Figure 6: KXCI did not start



To manually configure the compatibility settings:

1. Right-click the **ACS icon** and select **Properties**.
2. Open the **Compatibility** tab.
3. Select **Run this program as an administrator** and click **OK** to save.

Figure 7: ACS properties

Usage note

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

Figure 8: ACS command compatible

