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GENERAL INFORMATION

This document describes the features added to the Keithley Instruments Automation Characterization Suite (ACS) Standard Edition software (version 6.6).

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 the Keithley Instruments Model 4200A-SCS Parameter Analyzer and Model 4200 Semiconductor Characterization System (4200-SCS).

SUPPORTED OPERATING SYSTEMS

ACS Standard 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 STANDARD REVISION HISTORY

Version	Release date
6.6	August 2026
6.5	October 2025
6.4	August 2024
6.3	November 2023
6.2	November 2022
6.1	March 2022
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

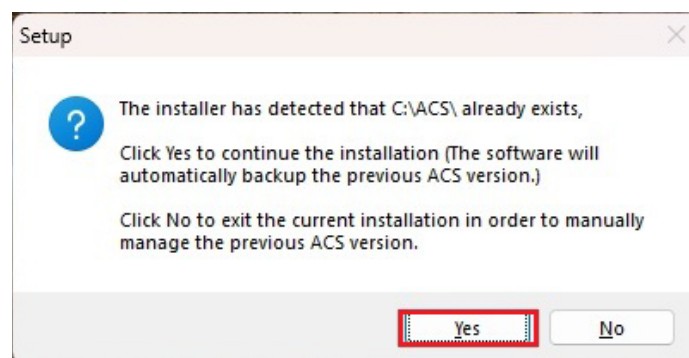
INSTALL ACS

You can install ACS on a personal computer or a 4200A-SCS Parameter Analyzer.

To install ACS software on a personal computer:

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

Figure 1: ACS 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, see [Update previous versions of ACS files](#).

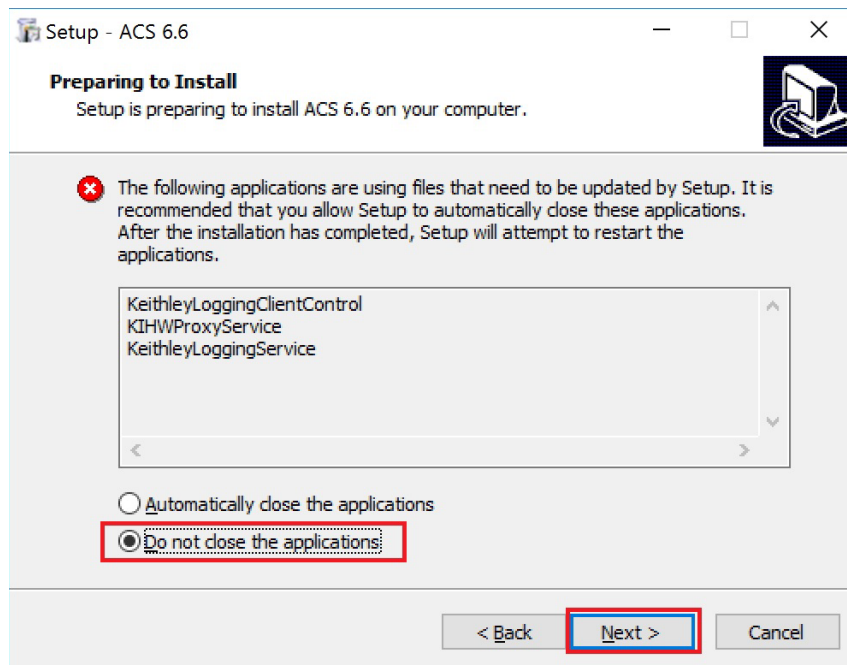
Install ACS on a 4200A-SCS Parameter Analyzer:

NOTE

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

When you are installing ACS 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 2: ACS 6.6 Preparing to Install dialog

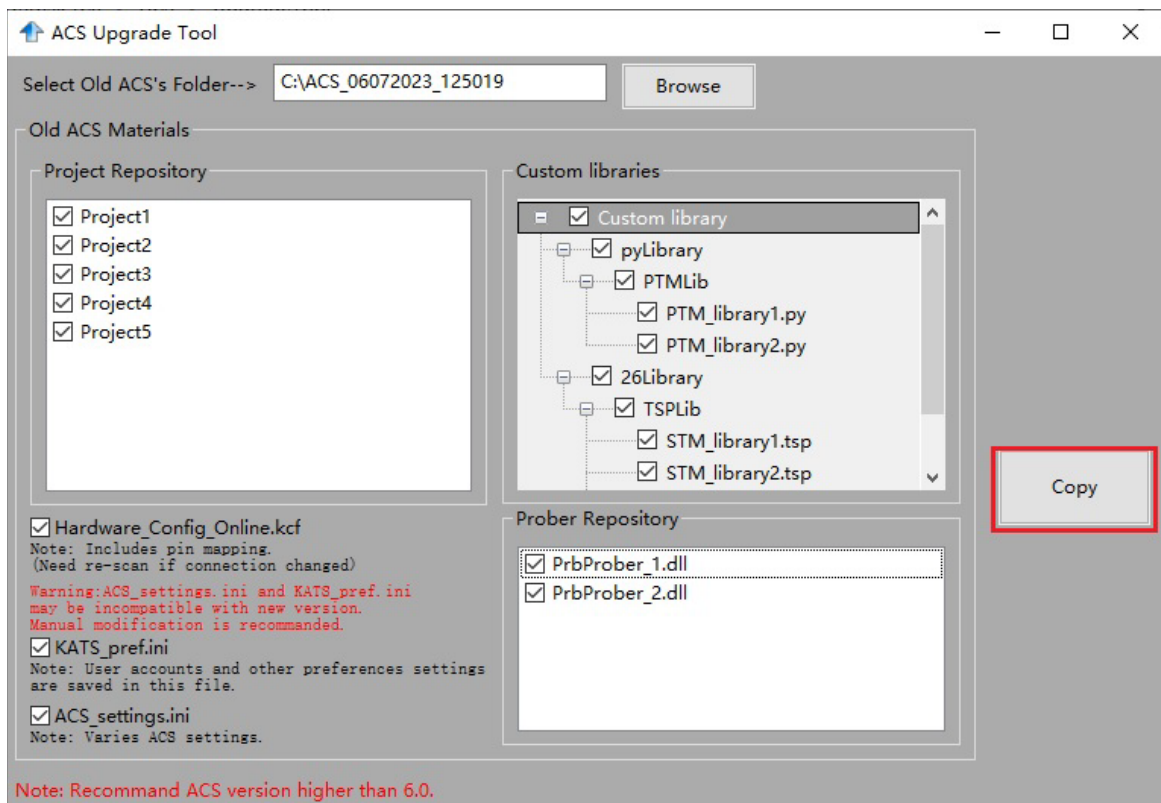


UPDATE PREVIOUS VERSIONS OF ACS FILES

Once ACS is installed, you can use the `UpgradeTool.exe` to convert your ACS 6.0 files or later to the present version, which includes projects, libraries, and settings from previous versions.

To update previous software files:

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

Figure 3: ACS Upgrade Tool

4. Select **Copy**.

When the updated version of ACS 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 version 5.4, or a previous version, you must manually copy the projects and libraries using the following steps.

To copy and paste folders:

1. Locate the C:\ACS_DDMMYYYY_HHMMSS\Projects\ folder.
2. Copy and paste to the present C:\ACS\Projects\ folder.
3. Locate the C:\ACS_DDMMYYYY_HHMMSS\library\pyLibrary\PTMLib\ folder.
4. Copy and paste to the present C:\ACS\library\pyLibrary\PTMLib\ folder.
5. Locate the C:\ACS_DDMMYYYY_HHMMSS\library\26library\ folder.
6. Copy and paste to the present C:\ACS\library\26library\ folder.

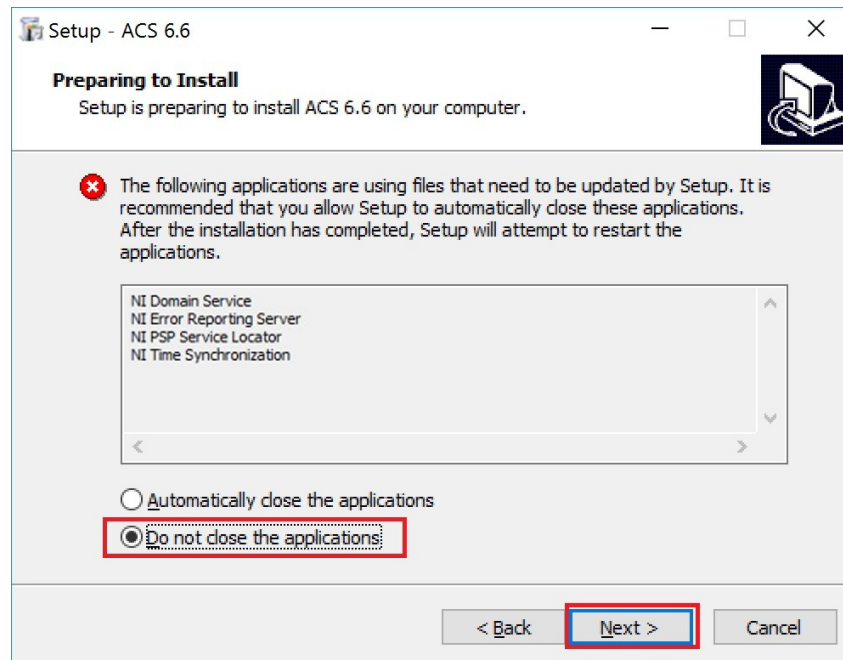
NOTE

ACS 6.6 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 previous 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>.

INSTALL ACS AFTER INSTALLING NI-488.2 DRIVERS

If you are installing ACS 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 6.6 prepare to install



SUPPORTED MODELS AND TEST CONFIGURATIONS

ACS software is used to characterize semiconductor devices with a variety of Keithley Instruments products in a variety of different test configurations. The *ACS Fundamentals Reference Manual* (part number ACS-914-01) and *ACS Advanced Features Reference Manual* (part number ACS-908-01) contain detailed information about the supported hardware and test configurations.

- Perform multi-group testing with the Series 2600B and 2400 Graphical Series SMU 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.

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 Series SMU (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
MP5000 series	MSMU60, MPSU50
DMMs	DMM6500, DMM7510, 2010 Series
Sensitive	6220, 6221, 2182A
Switching and data acquisition systems	DAQ6510, 707A/B, 708A/B, 3700A
Pulse generators	3400 Series

The following types of probes 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 Semiprobe SPFA Prober MJC AP-80 (SP-80) prober Apollowave AP200/AP300 Prober Vector Semiconductor AX/VX Series prober HiSOL prober (Python code)
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NOTE

For MP5000 series, users can develop STM with TSP commands to control SMU and PSU. Only limited TSP LPT functions are supported (refer to ACS Programmer's Manual - ACS TSP LPT library reference - TSP LPT functions).

For MP5000 series, users can develop PTM to control SMU and PSU with pyvisa module sending commands and receiving data. Only limited Python LPT functions are supported (refer to ACS Programmer's Manual - ACS Python LPT library reference - Python LPT functions).

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 STM and PTM libraries support specific instruments based on the library definition.

SUPPORTED COMMUNICATIONS INTERFACES

- GPIB
- LAN (Auto Scan and LAN)
- USB
- RS-232 (see following topic)

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\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.

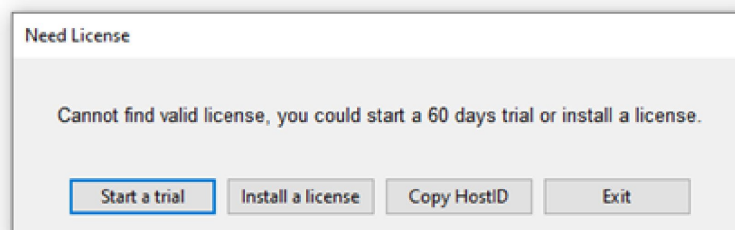
Figure 5: RS-232 connection



SOFTWARE LICENSE

ACS allows you to create tests, manipulate settings, and view previous data without a license. However, you must have a license for ACS 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 trial expires, you need to purchase a full license to use the software.

Figure 6: ACS 6.6 license information



LICENSE MANAGEMENT

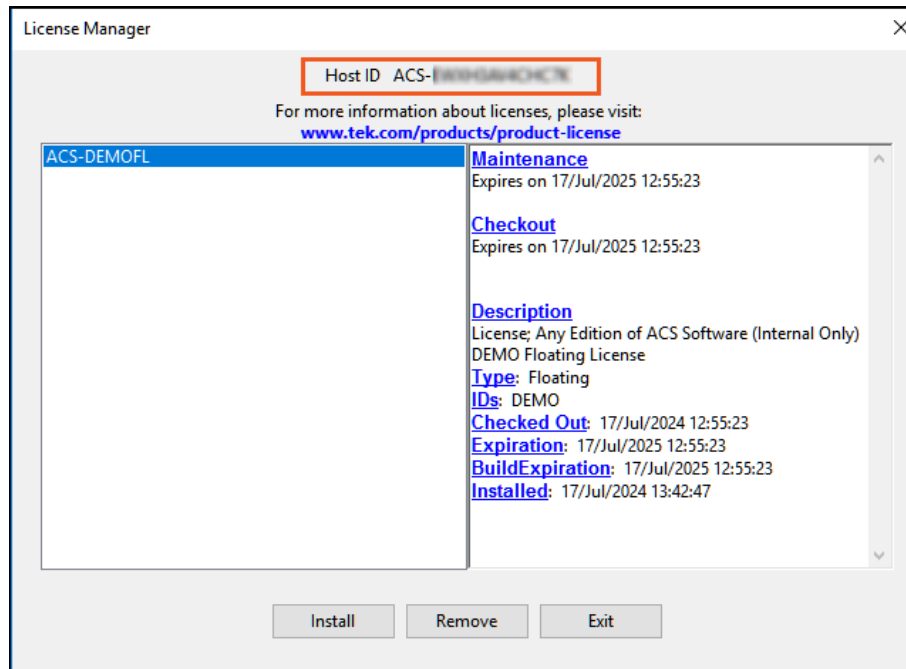
The ACS software license is managed using the Tektronix Asset Management System (TekAMS). For more information about TekAMS, see tek.com/products/product-license.

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, 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 STANDARD VERSION 6.6

ENHANCEMENTS

Hardware configuration	
Issue number	ACS-1382
Enhancement	AHMT: Configuration GUI support MP5000 TSP-Lined system.
Issue number	ACS-1381
Enhancement	AHMT: Comparison GUI support MP5000 TSP-Linked system.
Issue number	ACS-1362
Enhancement	AHMT: Scanning function support MP5000 TSP-Linked with 26xx/24xxTTI/Matrix/DMM.
Issue number	ACS-1360
Enhancement	AHMT: Scanning function support MP5000 TSP-Linked with DMM.
Issue number	ACS-1345
Enhancement	AHMT: Scanning function support MP5000 TSP-Linked with Matrix.
Issue number	ACS-1344
Enhancement	AHMT: Scanning function support MP5000 TSP-Linked with 26xx/24xx.
ACS software and libraries	
Issue number	ACS-1472
Enhancement	Add the Hardware_Config_Online.kcf to the Support_info.zip folder generated in ACS Troubleshooting function.
Issue number	ACS-1455
Enhancement	Optimize cassette list selection function.
Issue number	ACS-1449
Enhancement	MP5000 Support: Write a script example to demo waveform capture function by 1us fast sampling.
Issue number	ACS-1397
Enhancement	ACS ITM: MP5000 Compliance Exit there should be "stop and next stepV" option.
Issue number	ACS-1388
Enhancement	LPT functions for MP5000 in ACSv6.6.
Issue number	ACS-1354
Enhancement	ACS ITM: MP5000 SMU/PSU working with 26xxB and 24xx TTI SMU.
Issue number	ACS-1346
Enhancement	MP5000-Add the PSU information in global_dict - UNITDICT.

Issue number	ACS-1333
Enhancement	TSPLPT optimization-verify measure commands for PSU and optimize related functions.
Issue number	ACS-1332
Enhancement	TSPLPT optimization-set nodenum to local to avoid interfering among functions.
Issue number	ACS-1331
Enhancement	TSPLPT optimization-Constants MODEL_MP5, MODEL_MP5_PSU, MODEL_MP5_SMU.
Issue number	ACS-1330
Enhancement	TSPLPT optimization-Verify format.data & format.byteorder for 24xx to optimize postbuffer().
Issue number	ACS-1325
Enhancement	gpibsend() & gpibenter() in ACSLPT.py should be changed to more general names than "gpib".
Issue number	ACS-1324
Enhancement	Adding the new quasistatic CV to ACS.
Issue number	ACS-1216
Enhancement	Add 'Firmware Refresh Kit' tool in HW management tool.
Issue number	ACS-1005
Enhancement	EUCRA support in ACS6.6.
ACS manual updates	
Issue number	ACS-1393
Enhancement	Manual updates for ACS v6.6.
Issue number	ACS-1392
Enhancement	Manual-LPT functions for MP5000 part1 update in ACS Programmers' Manual.
Issue number	ACS-1387
Enhancement	EUCRA Manual Documents in ACSv6.6.
Issue number	ACS-1379
Enhancement	Manual-Support TSP-Link of MP5000-24xx-26xx.
Issue number	ACS-1377
Enhancement	Manual-AHMT MP5000 LAN connection with password.

RESOLVED ISSUES

Issue number	ACS-1481
Symptom	Fixed prober rel-move floating issue for Vector prober driver.
Resolution	This issue has been corrected.
Issue number	ACS-1457, CAS-681794-J8Z7M4
Symptom	ACS HMT selecting MPI Prober causes error in.
Resolution	This issue has been corrected.
Issue number	ACS-1444
Symptom	Subsite configuration does not appear when opening an old ACS5.3 project.
Resolution	This issue has been corrected.
Issue number	ACS-1443
Symptom	4200ITM output 0 after changing the hold time and running the test.
Resolution	This issue has been corrected.
Issue number	ACS-1407
Symptom	disable() is not in C:\ACS\KATS\sys\preload_scp.bin (TSP_source_code\2426LPT).
Resolution	This issue has been corrected.
Issue number	ACS-1376
Symptom	Manual- modifications in ACSLPT-bsweepi/bsweepv.
Resolution	This issue has been corrected.
Issue number	ACS-1371
Symptom	bsweepv + trigig does not work when using 4201 SMU.
Resolution	This issue has been corrected.
Issue number	ACS-1369
Symptom	ACS will fail to start when only connect a 26xx (-286 nil value error occur).
Resolution	This issue has been corrected.

Issue number	ACS-1348
Symptom	The default compliance value is 0 will cause ITM parameter too small runtime error.
Resolution	This issue has been corrected.
Issue number	ACS-1347
Symptom	The time is not getting captured in data sheet for PSU when timestamp is enabled.
Resolution	This issue has been corrected.
Issue number	ACS-1337
Symptom	AHMT: issue that in the scanned instruments deletion function needs to be fixed.
Resolution	This issue has been corrected.
Issue number	ACS-1322
Symptom	The Limits values will be overwritten by the previous project.
Resolution	This issue has been corrected.
Issue number	ACS-1320
Symptom	Manual- delete setmode(SMU,KI_MEASDELAY,KI_DELAY_AUTO) for MP5000 both TSPLPT & ACSLPT.
Resolution	This issue has been corrected.
Issue number	ACS-1217
Symptom	Update the 'Firmware Refresh Kit' step1 to support GPIB/LAN/USB.
Resolution	This issue has been corrected.

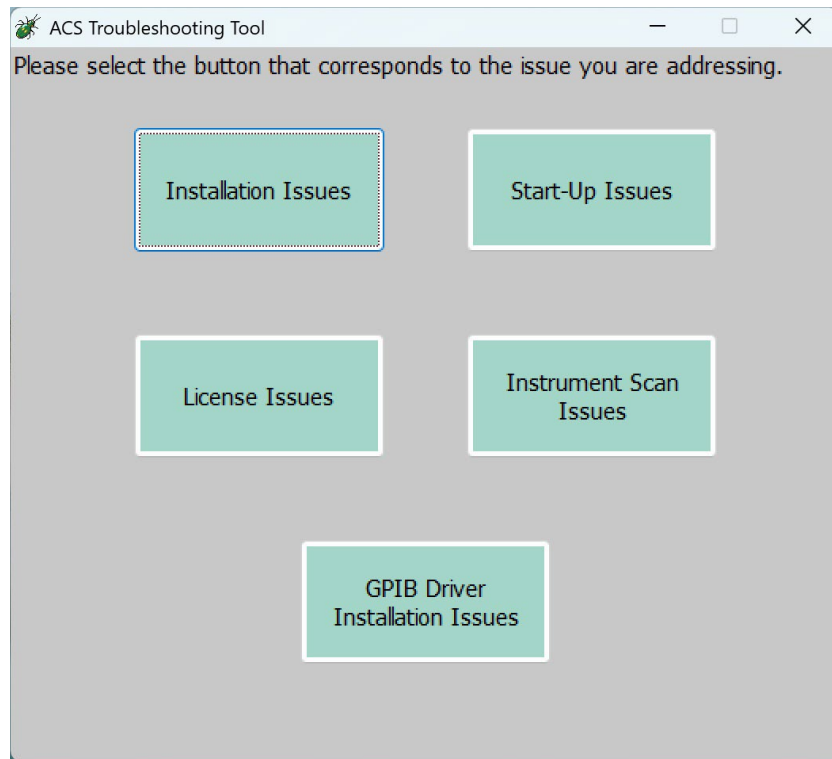
TROUBLESHOOTING TOOL

When you meet an error while starting ACS, you have 2 ways to start Troubleshooting Tool:

1. You can double-click the TroubleshootingTool.exe file to start it. (The file exists in C:\ACS\TroubleshootingTool)
2. There may be a Troubleshooting button in the error reporting window, similar to the following picture.



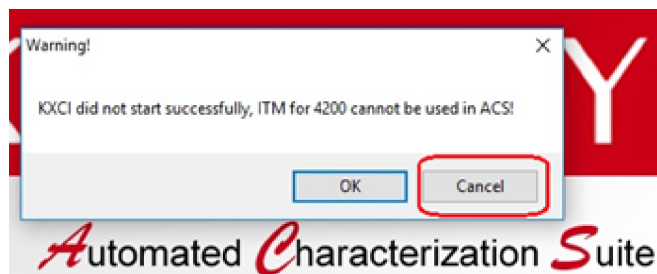
Click the button and Troubleshooting Tool will start. Select the issue button according to the situation, and the corresponding instructions of solution will be shown.



SOFTWARE COMPATIBILITY

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

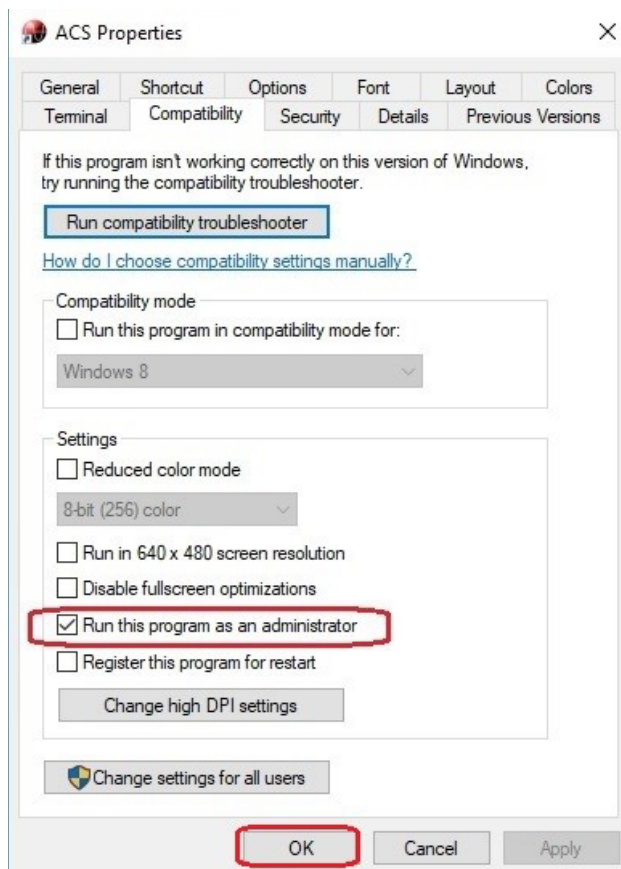
Figure 8: KXCI did not start



To manually configure the compatibility settings:

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

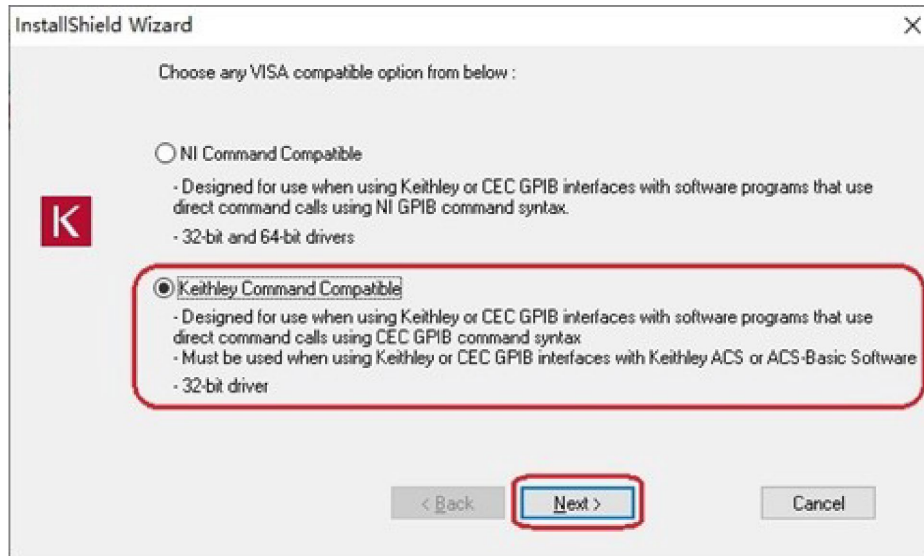
Figure 9: ACS properties



USAGE NOTES

Issue number	N/A
Resolution	When 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 command compatible



Issue number	ACS-691, CAS-162126-B3Y7Y6
Resolution	Microsoft® Windows® mapped network drive error. When installing ACS on a personal computer, Microsoft policy settings can limit ACS from accessing mapped network drives in its file windows. You can modify the registry to fix 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.