



TA Instruments New Features in ITCRun™ Software

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Software Upgrade Access

The individual instrument software described in this manual is shipped with all appropriate shipments of Nano ITC, Nano DSC and MC DSC instruments. For all previous versions of the software provided with these instruments, upgrades are available via on-line downloads from the TA Instruments website. Contact TA Instruments customer service or your TA Instruments account manager for details.

Important: TA Instruments Manual Supplement

Please click the [TA Manual Supplement](#) link to access the following important information supplemental to this Getting Started Guide:

- TA Instruments Trademarks
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New Features ITCRun v3.8.4

New Features and Functionality

Allow longer injection intervals on Affinity ITC instruments. Use caution with long injection intervals due to diffusion effects between the cell and injection canula.

Bug Fixes

- Fixed issue with being able to save/export files to folders with “Delete” access denied.
- Users now cannot run a manual mode experiment when total volume in the experiment exceeds the syringe volume.
- Affinity1 device driver for Windows 10 is now installed correctly.

New Features ITCRun v3.8.0

New Features and Functionality

Added option to store data files in text (.CSV) format in addition to the .nitc format.

Bug Fixes

- Fixed issue with Affinity heat rate data appearing noisy after the instrument is left on for several weeks (collected data was still valid).
- Change default hastelloy LV cell volume to 204 uL.
- Fixed issue with changing Temperature Regulation to Medium. Some PID coefficients were being set to old, less optimized values.

New Features ITCRun v3.7.3

New Features and Functionality

Added option to store data files in text (.CSV) format in addition to the .nitc format.

Bug Fixes

Fixed issue with Affinity heat rate data appearing noisy after the instrument is left on for several weeks. (Collected data was still valid.)

New Features ITCRun v3.7.0

Bug Fixes

- Removed error message when USB is not communicating for more than 10 seconds. The "ONLINE" LED icon in the software already shows this information.
- Fixed maintenance cleaning in fully automatic mode only using the storage solution. Now it uses correct solution based on the method chosen. Also added storage fill procedure to end of maintenance clean in full auto mode.
- Affinity only: Fixed issue with a bubble appearing in the syringe after running an Autosampler cleaning method after running an experiment in manual mode.
- Fixed an issue with the Autosampler method tab appearing when the software is started in manual fill mode.
- Fixed not being able to set injection volumes to the minimum volume on Affinity instruments (0.01µL.)
- Fixed inline editing of injection volume. The changed volume was not stored correctly when saved to a file.
- Fixed Affinity injection arm moving to outside position after a maintenance clean in automated mode.
- Fixed issue with well volume calculation when filling syringe once for multiple experiments.
- Software is now FIPS 140 compliant.
- Fixed issue with Electrical Calibration not starting under certain conditions.

New Features ITCRun v3.6.5

Bug Fixes

Improved USB error detection and enumeration with Affinity instruments.

New Features ITCRun v3.6.0

New Features and Functionality

- Serial number is now saved in the data files.
- Organic solvent-based mode is introduced via additions to the loading and cleaning functionalities.

Bug Fixes

- If a user stops an experiment while an injection is being collected, the injection is now added to the data as long as the collected injection interval is at least 20 seconds.
- Fixed Exotherm Up setting not working on updated Affinity instruments.
- TTop control is now limited in the cooling direction. Under rare conditions, too much cooling could result in self heating.
- Improved multi-threading code to improve software responsiveness.
- 90-second start delay for dual-board Affinity instruments to allow settling time.
- Other minor fixes.

New Features ITCRun v3.5.6

Bug Fixes

- Optimized parameters released for stepper motor drive on Affinity and Affinity Auto ITC.
- Fixed issue with Cleaning box under Experiment Method not being enabled with semi-automatic instruments.

New Features ITCRun v3.5.1

New Features and Functionality

Supports enhanced peak width control available with Affinity ITC instruments with serial number 20501 and above.

New Features ITCRun v3.5.0

New Features and Functionality

- For Affinity ITC instruments with serial numbers 20501 or above, there is a new data smoothing algorithm that provides improved resolution of injection peaks (Peak Height to Width Ratio control).
- Added automatic injection interval functionality.
- Improved speed of autosampler module scripts.
- Improved equilibration time.
- Added Maintenance Cleaning functionality for Affinity ITC instruments.
- Added Service Cleaning functionality for Fully Automatic Affinity ITC instruments.
- Support for updated Affinity ITC electronics.
- Cosmetic improvements.

Bug Fixes

- Fixed potential issue during syringe cleaning with semi-automated Affinity instruments.
- Added Windows 10 device drivers (required by Anniversary Edition and beyond).
- Guardian notifications are now stored in a location that is not specific to any single user.
- Fixed issue with Basic Guardian user being able to update/save methods under some conditions.
- Fixed cell sample reclamation.
- Fixed issue with error messages when loading settings from a file. Missing or corrupt settings in the file are set to default values.
- Fixed issue where pressing the delete key after selecting Syringe Cleaning Method items would delete items that were not selected.
- Only one instance of ITCRun at a time can be started.
- Fixed a bug that allowed a user to overwrite a data file when Guardian is enabled.

New Features ITCRun v3.4.23

New Features and Functionality

- Added automatic injection interval functionality which reduces the overall running time of incremental injection experiments.
- Improved the execution speed of Autosampler scripts.
- Cosmetic improvements.
- Guardian notifications are now stored in C:\ProgramData\TAInstruments\MCAApplication\Notifications, changed from the previously-used user-specific locations.

Bug Fixes

- Fixed potential issue with syringe motions during syringe cleaning in semi-automated Affinity instruments.
- Added Windows 10 device drivers (required by Windows Anniversary Edition and beyond).

New Features ITCRun v3.4.11

Bug Fixes

- Fixed an issue that occasionally caused a reset of the recorded position of the injection syringe mechanism in Affinity, which could prevent an experiment from starting.
- Fixed an issue with the Nano ITC in some cases taking an unusually long time to respond when ITCRun was started.

New Features ITCRun v3.4.6

New Features and Functionality

- Improved baseline noise levels.
- Data collection is now not affected by computer speed.
- If an experiment is in progress when ITCRun is closed, the user will be asked if they are sure they want to close the software.

Bug Fixes

- Fixed an issue with Spark Autosampler error message appearing incorrectly under some circumstances.
- Fixed syringe limit switch issues.

New Features ITCRun v3.3.9

New Features & Functionality

- Updated and enabled “Load Cell” and “Inject Load” buttons in manual mechanical control.
- Added LVH option in settings.
- AutoEquilibrate is now the default option with a new install.
- Start Delay now defaults to 600 rather than 0 for new installs.
- Affinity default and recommended stirring speeds are now 125 RPM across the board regardless of gold, hastelloy, low volume, or standard volume cells.

Bug Fixes

Nano ITC serial number is not visible in the About dialog.

New Features ITCRun v3.3

New Features & Functionality

- Introduced Guardian, an implementation of 21 CFR Part 11.
- Changed the minimum injection time period from 900 to 450 seconds in continuous injection experiments.
- Added the option to continue or stop experiment when pre-clean method is missing or corrupt.
- Allow Least Squares extrapolation to be disabled for PID-controlled signals.
- When an error occurs with the Spark-Holland Autosampler, the ITCRun error dialog now displays the Autosampler error message rather than a generic error message.
- Added the option to run cleaning after manual-fill experiment.
- Added the option to enable sample reclamation. Cell contents recovery can occur automatically within Autosampler sequences.
- Instrument serial number is now visible in the About dialog.
- Injection rate is now saved to the data file.
- Added Affinity syringe plunger “Up” button.
- Added Affinity syringe contents reclamation wizard, executed manually under software guidance.

Bug Fixes

- ITCRun now checks if the file path text for each Autosampler experiment in an Autosampler method is beyond the Windows limit. This check occurs after the user starts an experiment and chooses a path and base file name. It also occurs when the user adds, replaces, or inline edits an item in the Autosampler method while an experiment is running.
- When the “Cell Sample Name” and/or “Syringe Sample Name” is chosen to be included in the File Template for Autosampler experiments, any characters in the names that are not allowable in Windows® file paths are removed from the file name.
- Fixed a bug that was causing irregular data intervals when the software is run on slow computers.
- Fixed an issue with setting access rights for standard users to the TA Instruments program data folder.
- Fixed an issue with attempting to run cleaning after an experiment with a pre-Affinity ITC instrument.

New Features ITCRun v3.2.0

New Features & Functionality

- All settings can now be stored to and retrieved from computer files.

Bug Fixes

- Improved algorithm for Affinity automatic syringe cleaning and filling. The possibility of leaving liquid in the cleaning side is removed.
- Updated code for setting user access rights to settings and default methods path.
- Signed device drivers for Windows 7, 8.1, and 10 for both 32- and 64-bit versions. (No drivers in NanoAnalyze.)
- Other minor fixes and improvements.

New Features ITCRun v3.1.19

New Features & Functionality

- All settings can now be stored to and retrieved from computer files.

Bug Fixes

- Improved algorithm for Affinity automatic syringe cleaning and filling. The possibility of leaving liquid in the cleaning side is removed.
- Other minor fixes and improvements.

New Features ITCRun v3.1.5

Bug Fixes

- Improved the reliability of solvent selector valve in the Affinity ITC.
- Fixed incorrect well volume calculations for the Affinity Auto.
- Fixed an issue with the Affinity ITC and Affinity Auto ITC regarding the preparation of the injection syringe for manual loading.

New Features ITCRun v3.1.2

New Features & Functionality

- Increased volume limits for syringe cleaning methods (Affinity model).

Bug Fixes

- Fixed a timing issue in the syringe cleaning methods (Affinity model).

New Features ITCRun v3.1.0

New Features & Functionality

- Supports Affinity ITC Auto, Affinity ITC, and Nano ITC.
- Added graphic for used cell wells in the left Autosampler tray. In the previous version, this only existed for the syringe wells.
- Improved performance on slower computers. (Acquisition loop does not take as much CPU usage.)
- Improved load time.
- Several cosmetic improvements.

New Features ITCRun v3.0

New Features & Functionality

- Added support for the Affinity automated ITC.

Bug Fixes

- Fixed issue with Nano ITC instrument where starting a second experiment did not work.
- Installer updates:
 - Fixed issue where starting ITCRun would ask for a reboot.
 - New wording for driver installation including reference to Autosampler installation.

New Features ITCRun v2.2.5

Bug Fixes

- Fixed PID parameters to work correctly in all regions when the Temperature Regulation drop-down box is used to select a setting.
- Fixed issue with being able to set 2°C and 80°C upper and lower temperatures respectively due to offset between the cell block and the upper temperature. The calculated upper temperature is now clipped to the range of −4°C and 90°C.
- Fixed a bug that prevented an Electrical Calibration from running correctly when the injection or pulse table was empty in the Setup tab.
- Fixed a bug that prevented the data file from being automatically saved during Electrical Calibrations.

New Features ITCRun v2.2.3

New Features & Functionality

- Added option for exotherm up or down. NanoAnalyze automatically imports the setting.
- Added auto-scroll bar to **Setup** tab in ITCRun.
- Auto-zeros heat rate signal at start of experiment data collection. The offset is viewable in NanoAnalyze.
- Added exotherm direction symbol.
- The collection software has been updated to better handle disconnecting and reconnecting USB. This includes the "Online" LED in the software turning on and off. ITCRun software will continue where it left off after USB is reconnected. It should be noted that if power to the instrument is disrupted, the collection software should be shut down and restarted.
- Added a user-selectable setting for temperature regulation to reduce baseline noise caused by variations in ambient temperature conditions.
- Other minor enhancements.

Bug Fixes

- First point in monitor graph is now real data, not (0, 0.).
- Fixed a bug in which inline updating any injection interval in the injection table changes the injection interval of the currently running injection.
- Changed Heater Calibration Factor (not the overall calibration factor) setting limits to: 0.8–1.2 for gold, 0.7–1.3 for Hastelloy.
- Made sure auto equilibration timeout defaults to 1800 the first time ITCRun is started.
- Other minor fixes.

New Features ITCRun v2.1.7

Bug Fixes

- Changed the default PID coefficients for the Temperature channel to 1.5, 0.15, 0 as an optimization.
- Fixed issue where syringe size could change.
- Other minor issues.

New Features ITCRun v2.1.1

New Features & Functionality

- Added a syringe calibration setting: added a wizard to guide the user through the process of performing a syringe volume calibration. The syringe volume field at the top of the screen now displays the updated remaining volume in the syringe; in prior versions this field contained static text representing the nominal full volume.
- Fixed an issue with continuous titration injection rate experiments.
- Fixed a minor issue with injection interval timing.
- Other minor fixes and enhancements.

New Features ITCRun v2.0.1

New Features & Functionality

- The injection volume of each injection of an experiment method is now automatically adjusted when switching the syringe size setting. Injection volumes are also automatically adjusted when loading an experiment method.
- The stirring speed and initial and final baselines are now stored with an experiment method.

New Features ITCRun v2.0.0

New Features & Functionality

- Compatible with Microsoft Windows 7 32-bit and 64-bit.
- ITCRun has been completely re-written with an improved user interface.
- Better feedback of experiment and syringe states.
- New options for control of the state of the stirrer at the end of an experiment.
- A warning is displayed when starting an experiment if the stirrer is stopped.
- New data file format requiring NanoAnalyze version 2.2.0.
- Experiment and instrument parameters are stored in the data file and retrieved by NanoAnalyze.
- ITCRun 2.0 will only work with ITC 2G or later. Support for the pre-2G instruments will be in the v1.9.x version family.

New Features ITCRun v1.9.18

Bug Fixes

Fixed a bug in version 1.9.17 that caused split peaks under some operating conditions.

New Features ITCRun v1.9.17

Bug Fixes

Improved the reliability of instrument firmware updates.

New Features ITCRun v1.9.10

New Features & Functionality

Disabled the option to use differential mode temperature control for the ITC models 5301, 5302, 5303, 601000, 601001, and 601002. Differential mode is appropriate for use only in the prior ITC models.

New Features ITCRun v1.9.9

New Features & Functionality

Device driver has been updated for improved compatibility with Windows 7.

New Features ITCRun v1.9.6

Bug Fixes

- Fixed issue with device driver not installing on non-English versions of Windows.
- Fixed issue with last integration extending to end of data when experiment is stopped prematurely.

New Features ITCRun v1.9.5

Bug Fixes

- Improved the precision of small sample injections in incremental titration experiments.
- Changed default values of the control loop parameters for the **Temperature** zone from {1.5, 0.15, 0} to {0.5, 0.05, 0}. This is a secondary control zone that isolates the instrument from changes in the operating environment. The new values are an optional update that increases the protection from sudden changes in ambient conditions, and can be downloaded to the instrument by selecting **Load default settings** in the **Experiment** menu.

New Features ITCRun v1.9.2

New Features & Functionality

Allow installation on non-English versions of Windows.

Bug Fixes

- Fixed Windows 7 installation issues.
- Other minor fixes.

New Features ITCRun v1.8.8

New Features & Functionality

- Buret **Reset Home** function is required after switching on power to the Nano ITC.
- Added functionality allowing users to move the buret to a specific location.
- Added functionality to “reset home” the buret. This allows the software to keep track of the location of the buret. A new text box at the top of the ITCRun window shows the current status of the syringe.

Bug Fixes

- Fixed an issue where the auto equilibrate criteria would be satisfied if:
 - The baseline had stabilized before the experiment started.
 - The buret handle was removed quickly and returned after starting an experiment with auto equilibration enabled.
- Other minor bug fixes.

New Features in ITCRun v1.8.5

New Features & Functionality

- Added mouse scroll wheel zooming on **Monitor** graph.

Bug Fixes

- Fixed an issue where the units in the **Injection/Pulse** table were incorrect when starting ITCRun if **Electrical Pulses** had been selected when closing ITCRun.
- Fixed an issue with clicking on the depressurize button does not stop the burette. Fixed burette changing directions when pressurize button is clicked twice.
- Fixed memory overrun.
- Other minor improvements and fixes.

New Features in ITCRun v1.8.2

New Features & Functionality

- Added auto equilibration functionality.

Bug Fixes

- Fixed possibility of experiment stopping after one injection.
- Fixed possible memory leak.
- Other minor fixes and enhancements.

New Features in ITCRun v1.7

The TA Instruments ITCRun v1.7 software was updated to support hardware changes for the Nano ITC^{2G} for improved sensitivity and raw data collection.



NOTE: If running a beta version of ITCRun, select the **Start** menu > **Settings** > **Control Panel** > **Add or Remove Programs**, and remove the software from your system before installing a new version. If you are unsure of whether or not you are running a beta version of ITCRun, remove the software. After removing the software, proceed with the instructions in the *ITCRun Getting Started Guide*.

New Features & Functionality

- Each user is able to enter the **Experimental Details** on the **Setup** tab prior to starting the experiment. These values are saved in the raw data file and retrieved by NanoAnalyze during data analysis.
- The cell volume for an instrument is now entered in the **Program Settings** and is automatically stored in experiment data files and automatically retrieved into NanoAnalyze during data analysis. The cell volume entered should be the cell volume printed on the back of the instrument, minus 50 μL for the injection syringe in the cell during an experiment.
- Instruments settings now include the ability to enter the cell volume and designate an instrument with Hastelloy cells.
- A new menu item **Start Electrical Calibration** has been added to which automatically sets up and runs a calibration with the correct settings, number of pulses, and pulse size.
- The **Equilibration Time Setting** has been renamed to **Initial Baseline**. A new setting called **Final Baseline** has been added for collection of data after the final injection interval. A new setting called **Start Delay** has been added which allows time for the compensation signal to equilibrate before collecting data. A new **LED** has been added to the **Setup** tab called **EQUILIBRATE** which is on during the equilibration time.
- Added minor changes to how the **Monitor** tab displays information.

- Included minor bug fixes to enhance instrument control, timing, and software running.



Important Note: TA Instruments recommends that all Nano ITC^{2G} users periodically perform a calibration on their instrument using a chemical sample with known results. The user documentation provided as part of this software upgrade provides instructions. This calibration is important when optimum accuracy of the enthalpy (H) measurement is required. If you have not performed any calibration on your Nano ITC^{2G}, TA Instruments recommends that as a part of this software update, an electrical calibration followed by a chemical sample calibration be performed. If you never perform a full calibration, then your enthalpy results are considered qualitative. The electrical calibration procedure will give a good approximation of the calibration constants, but the most accurate calibration will be achieved by running a chemical sample with known results. A full step-by-step method for completing the calibration is attached to this letter. Note that if you never performed a full calibration in the past, and do not plan on doing a full calibration after upgrading to this software, you will see differences in the enthalpy values as a result of the enhancements made to calibration routine in this new version. Please contact TA Applications Support if you have any questions on these calibration procedures.

Bug Fixes

The program is more stable and will not shut down after running an experiment with a very large number of injections, or when running a significant number of experiments without shutting down the software.

New Features in ITCRun v1.6.1

Bug Fixes

- Fixed a bug in the syringe motor drive that caused a slight warming of the burette assembly during Continuous Injection experiments.
- Fixed a bug in which the software would halt on the first time that it was started on any particular computer.

New Features in ITCRun v1.6.0

- The TA Instruments ITCRun v1.6.0 software was updated to support hardware changes for the Nano ITC^{2G} for the improved sensitivity and raw data collection.
- Operation of the calorimeter and data collection are more tolerant of power line faults.

Bug Fixes

- Fixed inability to handle language setting with a dialect.
- Instability of USB connection on older computers has been repaired.

New Features in ITCRun v1.4.0

The TA Instruments ITCRun v1.4.0 software was updated to support hardware changes for the Nano ITC^{2G} for the improved sensitivity and raw data collection. This new instrument control software gives added flexibility to the standard isothermal titration calorimetry measurements. For example, the improvements in electronics and sensor functions allow the Nano ITC^{2G} to provide more stable baselines and more precise measurements of the exotherms and endotherms produced during a binding reaction. These improvements combined the improved data analysis features in the NanoAnalyze further enhances the Nano ITC^{2G} control and data collection software flexibility.

New Features & Functionality

- Software is compatible with all Nano ITC instruments.
- Added enhanced capability with new hardware and electronics in Nano ITC^{2G}.
- Continuous injection ITC experiments are user-selectable.
- Software is compatible with the new NanoAnalyze data analysis package.

Bug Fixes

- Added support for languages that use the comma symbol as a decimal point.
- Improved overall stability of instrument operating software.
- Monitor chart now automatically rescales after an experiment completes.

TA Instruments Offices

For information on our latest products, contact information, and more, see our web site at:

<http://www.tainstruments.com>

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