

Product Information

Genie™ 4.0 Release Notes

Introduction

Genie™ Spectroscopy Software is a comprehensive environment for data acquisition, display and analysis of gamma and alpha spectrometry data from Mirion Technologies. This installation contains the spectroscopy functions for operation of current Mirion MCAs, including the Lynx MCA, Lynx-II, DSA-LX, Osprey Digital Tube Base, and Aegis HPGe Portable Spectrometer. Functions provided with this software include hardware acquisition and control, live spectral data display, energy/shape calibration, peak analysis, and reporting. This installation also includes spectroscopy analysis software for background subtraction, efficiency calibration and correction, nuclide identification and activity calculation, interference corrections, cascade summing corrections, and minimum detectable activity calculations for both Curie and ISO11929 methodologies. Genie Spectroscopy Software now also includes Genie Quality Assurance application, the Genie Interactive Peak Fit application, Genie-FieldPro, and Genie Batch Programming Tools in all Genie-Single and Genie-Multi Suite licenses.

User documentation is provided electronically in PDF format and copied to the local directory during installation. Additionally, the Genie Operations Manual, Genie Customizations Tools Manual, Geometry Composer Manual and Genie Tutorials Manual are available in printed copy by request. Please contact Mirion directly.

Please note: It is necessary to have installed a PDF reader in order to view the user documentation. A free Adobe® PDF¹ reader is available for download at www.adobe.com

Major Enhancements with Genie Version 4.0

These Release Notes present the change introduced by the Genie 4.0 release. Genie 4.0 targets to improve the user experience and drive more accurate results while maintaining

compatibility with legacy Genie 2000 procedures and processes. A summary of these changes are as follows:

- **Redefined product models:** With this release, the legacy Genie 2000 S500, S502, S504, S501, S505, S506, S509, S511, and S520 Genie product models are discontinued. Instead, Mirion introduces the Genie-Single and Genie-Multi comprehensive Genie Spectroscopy Suite options as well as a GenieLite options for acquisition and basic analysis functionality. Additionally, the S573 ISOCS Software and S574 LabSOCS software are replaced with the single product model “ISOCS” ISOCS/LabSOCS Efficiency Calibration software.
- **Consolidated Installations:** A single Genie 4.0 installer will install GenieLite, Genie Spectroscopy Suite, and the optional ISOCS software. There is no longer the need to install each package individually.
- **Genie 4.0 introduces electronic software licensing and obsoletes the legacy USB licensing dongle.** This licensing model enables time-based subscription plans as well as trial versions.
- **Genie 4.0 Interactive Reports:** A major enhancement to Genie 4.0 is the introduction of Interactive Reports. These reports launch in a separate window, use a clean and modern design, and present many new features to help the gamma spectroscopist be more efficient at data review.
- **Python Scripting Compatibility:** The Post-NID Analysis Step in Genie 4.0 now has the option to directly select and execute a python script on any open datasource. In addition, python scripting can call Genie datasources and CAM parameters outside of the Genie interface for other applications.
- **Updates to the FWHM Calibration:** Genie 4.0 now provides the option to select the following model when developing a FWHM or Shape calibration: $FWHM = \sqrt{a + bE + cE^2}$. This model is called the Square Root of Polynomial calibration fit.
- **Support for correlations in calibration standards:** The certificate file editor and several algorithms in Genie V4.0 were updated to enable users to identify correlations in their efficiency calibration standards and have the results propagated through to the nuclide activity uncertainty results. After identifying the correlation in the certificate editor, the user can select the new “NID with Correlations” analysis step to propagate the correlations in uncertainty to the measured results.
- **Support for N42 Files:** It is now possible to open N42 files in Genie 4.0 and analyze using Genie spectroscopy engines.
- **Support for Mirion’s ProSpect Educational software *.AVA files:** It is now possible to open spectral files collected in Mirion’s ProSpect software directly in Genie 4.0, with no need for file conversion from the ProSpect application.
- **Minor updates to Cascade Summing Correction Nuclide Library:** The following nuclides will demonstrate improvement when performing the Genie cascade summing correction – Co-58, Tb-161, Cd-115, and Mo-99

In addition, Genie 4.0 addresses 41 software performance reports (SPR) and includes infrastructure updates to maintain supportability and compliance with current operating systems. Additional details about these enhancements are provided in the following sections of these release notes. A listing of the resolved SPRs is provided at the end of this document.

Qualifications

Mirion Technologies (Canberra), Inc quality management system is used for software qualification assurance testing of the Genie software applications. This is in compliance of the following standards: ISO 9001, ASME NQA-1c-1992, ASME NQA-2-1900 Part 2.7, and latest revision of IEEE 730.1

Operating System Compliance

At the time of the Genie 4.0 release, Genie 4.0 Spectroscopy Software Suite, GenieLite Software, and ISOCS Efficiency Calibration software have been verified as compatible with Windows 10 (64-bit) and Windows 11 (64-bit) operating systems.

In addition, qualifications efforts are ongoing to verify Genie 4.0 software applications compatible with Windows Server 2019 and Windows Server 2022. This qualification will be announced with the release of Apex-Gamma V1.5.1.

Genie software applications will no longer support the Window 7 (x86 32-bit and x64 64-bit), Windows 8.1(x64) Windows Server 2008 (x86 32-bit), Windows Server 2008 R2 (x64 64-bit) or Windows Server 2012 (x64 64-bit) operating systems.

Mirion qualifies Genie 4.0 on English, French, and German operating systems.

Compatible Mirion Devices

Genie 4.0 Spectroscopy Software Suite and GenieLite 4.0 Software are qualified with the following Mirion devices:

- Osprey® DTB (USB and Ethernet)
- InSpector™ 2000 (USB)
- Falcon 5000® Instrument
- DSA-LX® DSA (USB)
- Lynx® MCA (Ethernet)
- Lynx® II DSA (USB and Ethernet)
- Multiport II™ MCA (Ethernet)
- Alpha Analyst™ Spectrometer (Ethernet)
- Aegis™ Portable HPGe Spectrometer (WiFi and Ethernet)
- Sample Changers

Note that the Aegis Portable HPGe Spectrometer is fully supported with Genie 4.0 Spectroscopy Software Suite and GenieLite 4.0 Software. It is no longer necessary to use S504 V3.4.2 for operation of the Aegis. Additionally, the Aegis may be connected and operated simultaneously with the Lynx MCA, Lynx-II MCA and other devices.

The Lynx-II USB driver is provided with the installation. It is not necessary to separately install the Lynx-II USB driver from external media for operation of the Lynx-II by USB connection.

With this release, the model 556A/B AIM and DSA-1000 multi-channel analyzers are no longer formally supported or qualified with Genie applications. Additionally, legacy MCA files and documentation are removed from the installer. Upgraded systems may still have this information available for use, but installations onto a new computer system will not.

Recommended Screen Resolutions

The majority of Genie 4.0 testing is performed on monitors with 1920 x 1080 screen resolutions. Several minor issues have been observed on particularly small screens with high resolutions. It is recommended to adjust the monitor settings to achieve 1920 x 1080 screen resolution if possible.

Product Models

Genie 4.0 introduces five new base Genie Models:

Genie-Multi	<p>Genie-Multi is a comprehensive Spectroscopy Software Suite with ability to connect to multiple MCA inputs simultaneously. Genie-Multi supports all the features described in this document, including full activity analysis, efficiency calibration, cascade summing corrections, Geometry Composer, Quality Assurance, Interactive Peak Fit, and Python scripting. Genie-Multi also includes Genie-Fieldpro and Genie Batch Support kit, although these are separate installers.</p> <p>Legacy Genie model numbers: S500 Genie Basic, S501 Gamma Analysis, S505 Quality Assurance, S506 Interactive Peak Fit, S509 Alpha Analysis, S561 Genie Batch Support, Genie-Fieldpro</p>
Genie-Single	<p>Genie-Single is a comprehensive Spectroscopy Software Suite with ability to connect to one detector input at a time. Genie-Multi supports all the features described in this document, including full activity analysis, efficiency calibration, cascade summing corrections, Geometry Composer, Quality Assurance, Interactive Peak Fit, and Python scripting. Genie-Multi also includes Genie-Fieldpro and Genie Batch Programming kit, although these are</p>

	<p>separate installers.</p> <p>Legacy Genie model numbers: S502/S504 Genie Basic, S501 Gamma Analysis, S505 Quality Assurance, S506 Interactive Peak Fit, S509 Alpha Analysis, S561 Genie Batch Support, Genie-Fieldpro</p>
GenieLite-Multi	<p>GenieLite-Multi provides acquisition capability for multiple detectors simultaneously, peak locate and peak area algorithms, and ability to perform energy and shape calibrations. GenieLite does not support efficiency calibrations, activity or MDA calculations, or VbScript/Python scripting. It also does not include the Interactive Peak Fit utility or the Quality Assurance application.</p> <p>Legacy Genie model numbers: S500 Genie Basic</p>
GenieLite-Single	<p>GenieLite-Single provides acquisition capability for one detector input at a time only, peak locate and peak area algorithms, and ability to perform energy and shape calibrations. GenieLite does not support efficiency calibrations, activity or MDA calculations, or VbScript/Python scripting. It also does not include the Interactive Peak Fit utility or the Quality Assurance application.</p> <p>Legacy Genie model numbers: S502/S504 Genie Basic</p>
ISOCS	<p>ISOCS Efficiency calibration software now includes all the templates and features previously provided with S573 ISOCS software and S574 LabSOCS software. This includes also the complex beaker template and ISOCS Uncertainty Estimator.</p> <p>Legacy Genie model numbers: S573 ISOCS, S574 LabSOCS</p>

Each base model is available with one of three license types: 1-year license, 3-year license, and perpetual or non-expiring license. The 1-year and 3-year licenses include updates as released and are not tied to a specific release version. The perpetual license is particular to the version purchased and does not support updates. Each license is for the right to use the software on one computer or virtual machine.

Moving forward, the Apex-Gamma, Apex-InVivo, and Apex-Alpha product lines follow the same convention, and a layered product must have the same license terms as the Genie application installed on the same computer.

Review your local licensing plans for more information.