# Release Notes for Thermo Scientific Exactive Series 2.12 Instrument Control Software Kit

This document lists all new features, improvements, fixed defects, and known issues that exist in the Thermo Scientific Exactive Series 2.12 Instrument Control Software release. For information regarding the installation, features, functionality, and use of this product, refer to the following sources of information:

- DVD Insert
- Operating Manual
- Online Help
- Software Manual
- Quick Start Guide

**Contents**

## Installation Notes

### Supported Target Systems

- Thermo Scientific Exactive GC mass spectrometer
- Thermo Scientific Exactive Plus mass spectrometer
- Thermo Scientific Exactive Plus EMR mass spectrometer
- Thermo Scientific Q Exactive mass spectrometer
- Thermo Scientific Q Exactive Focus mass spectrometer
- Thermo Scientific Q Exactive GC mass spectrometer
- Thermo Scientific Q Exactive HF mass spectrometer
- Thermo Scientific Q Exactive HF-X mass spectrometer
- Thermo Scientific Q Exactive Plus mass spectrometer
- Thermo Scientific Q Exactive UHMR mass spectrometer

### System Requirements

The minimum hardware and software configurations required for Exactive Series 2.12 operation are as follows:

| System | Requirements |
|---|---|
| PC | 3 GHz Dual Core Processor<br>8 GB RAM<br>512 GB Hard Drive<br>DVD-ROM Drive<br>Display Monitor Resolution of 1680 × 1050<br>2$^{nd}$ Network Interface Card (NIC), 100 MBit/s |
| Software | Microsoft™ Windows™ 10 Enterprise 2016 LTSB or 2019 LTSC |

**Tip** The Exactive Series Instrument Control Software Kit 2.12 was only tested within the delivered composition.

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# Installation

This guidance addresses a standard installation of a computer suitable to act as a data system for Exactive Series based instruments. The current software version is 2.12. The guidance is valid at least up to this version. There are differences between nearly all computers, so even if you have a receipt of installation, be aware that the operating system or language settings are different. The current explanations have Windows 10 and English in focus.

Thermo Fisher Scientific does not accept any warranty claims about the completeness of this instruction list. Consulting a Thermo Fisher Scientific support team member of Exactive Series instruments is highly recommended for setting up a new PC.

## Technical Requirements

Choose a PC with Microsoft Windows 10 as operating system. The PC should have 8 GB or more RAM, a 3 GHz CPU, better more than two CPUs core and a dedicated, separate network interface card (NIC) for communication with the instrument and LC devices, if present.

Check the list of supported operating systems for a particular Exactive Series Instrument Control Software Kit.

## Operating System Language

English is the only tested language. It is required to have English as default language during the installation of Xcalibur.

## Network Setup

More than one NIC must be present in the system. The one connected to the instrument must not be connected to the regular Internet connection. Only the instrument to be driven by this particular PC may be connected to the PC using a 1 GBit switch or hub. LC or GC systems may be connected to that switch, too.

Configure the IPv4 interface as follows:
- address 172.16.0.101
- network mask 255.255.0.0
- manual DNS selection with empty fields

### Physical Links

Use at least a Cat 5e patch cable. Double-check the quality of the cable, if errors occur.

## Virus Scanner and Firewall

Disable virus scanner and firewall during installation. Virus scanning can happen in advance and may stay turned on, if it is guaranteed that the firewall is turned off. The installation program informs only the built-in firewall of Windows properly. Other firewalls have to be informed that the program ExactiveService.exe (file locations see below) needs access to incoming and outgoing network traffic. Remind that the dedicated NIC is usually considered to be a "public network." Firewall and virus scanner can be turned on after installation. Reboot the instrument to be sure that everything works.

## Software Installation

### File Locations

Depending on various conditions, the typical installation folders on the computer can be either
- C:\Xcalibur\system\Exactive
- C:\Program Files (x86)\Thermo\Exactive
- C:\Program Files\Thermo\Exactive

This instruction list uses C:\Xcalibur\system\Exactive for easy reading, but depending on the installation package like Exactive Series Instrument Software kit or Chromeleon, this may be different.

When the Exactive Series Instrument Control Software has been installed on a system, the folder of the first installation will be reused.

### Backup

Several files and folders require a backup for later installation, either for crash recovery or for replacing the computer. The backup can be performed during normal operation.

These files and folders (see "File Locations" on ) should be saved if present:

- C:\Xcalibur\system\Exactive\instrument\msx_instrument_files
- C:\Xcalibur\system\Exactive\instrument\ExactiveLicenses.txt and
  C:\Xcalibur\system\Exactive\instrument\Licenses.txt
- C:\Xcalibur\system\Exactive\instrument\reports
- Various Tune files at user-selected locations

Setup of a new computer without any backup requires assistance of the Exactive support team of Thermo Fisher Scientific. The computer may require licenses or some extra configuration files.

### Uninstalling

Previous versions of the Thermo Exactive Series Instrument Control Software should be removed using Control Panel operation. Present configuration settings will remain.

### Installation

Install using the DVD or a copy of it. The program Setup.exe in the root folder will guide you through the installation. Use the regular way of installation for best results. It detects several problems, if they exist at all.

### Restoring a Backup

This step is not needed, if the installation was just an upgrade of the Exactive Series Instrument Control Software. All present configuration settings remain on uninstalling.

For setting up a replacement computer or after a disk crash, the restore procedure needs to be performed. The procedure requires administrator privileges. The restore procedure should happen after installation of the new software.

The installation place may be different to that of the installation. Either use Instrument Configuration and look where files are located or check the folders appearing at .

> **Tip** It is important to stop the only program that interacts with the files coming from the backup. That is ExactiveService.

#### ❖ To stop ExactiveService

1. Press [Windows]-R, enter "services.msc" and click **OK**.
2. Select **Thermo Exactive Series**.
3. Right-click it and select **Stop**.

   Keep the dialog open.
4. Replace the **msx_instrument_files** folder, because it already exists. All other files of the backup should not exist on the new system. Copy them.
5. Use the open dialog to start the **Thermo Exactive Series** service again. Alternatively, reboot the computer. In doubt, contact the Exactive support team of Thermo Fisher Scientific.

## Operation

Set the power setting to maximal performance.

> **Tip** Automatic updates of any kind, those of the operating system in particular, are usually set to **automatic**, but this may disturb instrument data acquisition. We strongly recommend setting all updates to **manual** and checking for updates regularly.

## Software Compatibility Matrix

This table shows the supported instrument control software versions for various Exactive Series instrument models.

| | Q Exactive | Exactive Plus | Q Exactive Plus | Exactive Plus EMR | Q Exactive HF | Q Exactive Focus | Q Exactive GC | Exactive GC | Q Exactive HF-X | Q Exactive UHMR |
|---|---|---|---|---|---|---|---|---|---|---|
| 2.0 | ✓ | — | — | — | — | — | — | — | — | — |
| 2.0 SP1 | ✓ | — | — | — | — | — | — | — | — | — |
| 2.0 SP2 | ✓ | — | — | — | — | — | — | — | — | — |
| 2.1 | ✓ | ✓ | — | — | — | — | — | — | — | — |
| 2.2 SP1 | ✓ | ✓ | — | — | — | — | — | — | — | — |
| 2.3 | ✓ | ✓ | ✓ | ✓ | — | — | — | — | — | — |
| 2.3 SP1 | ✓ | ✓ | ✓ | ✓ | — | — | — | — | — | — |
| 2.4 | ✓ | ✓ | ✓ | ✓ | ✓ | — | — | — | — | — |
| 2.5 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | — | — | — | — |
| 2.6 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | — | — | — |
| 2.7 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | — | — | — |
| 2.7 SP1 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | — | — | — |
| 2.8 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | — | — |
| 2.8 SP1 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | — | — |
| 2.9 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | — |
| 2.9 SP1 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | — |
| 2.9 SP2 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | — |
| 2.9 SP3 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | — |
| 2.9 SP4 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | — |
| 2.10 | — | — | — | — | — | — | — | — | — | ✓ |
| 2.11 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 2.12 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

## New Features and Improvements

The following tables list new features, improvements and defect fixes in the different Exactive Series Instrument Control Software releases.

Table 1 lists new features, improvements and defect fixes in the Exactive Series 2.12 Instrument Control Software release that were implemented since the Exactive Series 2.11 Instrument Control Software release. For details, please refer to the Online Help or the Software manual.

**Table 1.** Changes from Exactive Series 2.11 Instrument Control Software to Exactive Series 2.12 Instrument Control Software

| Abstract | ID |
|---|---|
| Feature: Exactive Series must allow access to more parameter via 'Extended Software Parameters' license key | 88191 |
| Feature: GC Q Exactive, GC Exactive: The precision of retention times must be improved for 2d chromatography experiments | 85433 |
| Feature: Q Exactive HF-X, Improvement: TMT experiment type should have access to all resolution settings in MS2 scans to meet users expectation regarding usage of TMT-2, -4, or 6-plex samples | 80067 |
| Improvement: enable an installer to serve the workstation, i.e. Exactive Series instrument software can be installed in a Client / Server environment. such as Chromeleon. | 101289 |
| Improvement: User needs to work with Exactive Series ICSW under Chromeleon CDS Software | 120245 |
| Improvement: Ensure that the Windows service detects StandBy and Sleeps of the operating system | 115148 |
| Improvement: Source drain tube temperature is controlled, and overheating is prevented | 112587 |
| Improvement: must provide an additional entry in scan header to reflect resolution setting @ $m/z$ 400 for QE UHMR | 97348 |

**Table 1.** Changes from Exactive Series 2.11 Instrument Control Software to Exactive Series 2.12 Instrument Control Software, continued

| Abstract | ID |
|---|---|
| Improvement: QE UHMR: Noise Threshold must be a Tune Value | 113241 |
| Defect fix: QE UHMR:  Bentflatpole RF Calibration does not return amplitude to previous setting | 117692 |
| Defect fix: When analyzing complex samples, intensity drop- outs may occur due to overfilling of the ion trap. | 79982 |
| Defect fix: 7500 resolution not available in Exactive GC Full MS | 117111 |
| Defect fix: QE GC: Filament Blown logic does not work | 107520 |
| Defect fix: QE GC: CTCD default should be "off" | 99782 |
| Defect fix: QE UHMR: Mass, eFT Phase, and eFT Dispersion Calibrations report as "passed" even if one detector mode fails | 124063 |
| Defect fix: Raw file and Audit trail show wrong settings when Tune file was saved for different source | 124082 |
| Defect fix: eFT check on individual HFX instruments can fail | 121342 |
| Defect fix: API: Running procedure cannot be determined by API | 100461 |
| Defect fix: Ion transfer time test time needs to separate specs based on instrument model | 103079 |
| Defect fix: Full MS master scan with dd properties in RAW file scan header: The scan header does not include a data-dependent flag for Full Scans that follow a data-dependent MS2 scan. | 61263 |
| Defect fix: QE UHMR Tune: Customized evaluation does not use $m/z$ values from the list | 84103 |
| Defect fix: Fast polarity switching can induce erroneous HV overload errors | 40695 |
| Defect fix: tSIM: 'loop count' is not available | 114668 |
| Defect fix: eFT Time Dependency Check does not stop | 108450 |
| Defect fix: QE UHMR: UHMR Spectral Mass Accuracy test fails | 89901 |
| Defect fix: Isolation Transmission Endurance Check not available for customer | 99957 |
| Defect fix: QE UHMR: 'Isolation Evaluation (pos)' and 'Isolation Evaluation (neg)' runs procedures not applicable to QE UHMR | 89866 |
| Defect fix: QE UHMR: The Source DC Offset is 0 V although the IST desolvation voltage is not set at maximum permitted level | 110247 |
| Defect fix: QE UHMR: Target values lower than 5e5 cannot be saved in the method editor | 107595 |
| Defect fix: QE UHMR Tune: AGC mode must automatically switch to 'Prescan' if IST is switched off | 88090 |
| Defect fix: QE UHMR: The maximum value for Extended trapping shall not exceed 300 eV | 112702 |
| Defect fix: QE UHMR: eFT phase calibration for high $m/z$ detector is not using 500 Vp-p RF amp for the transfer MP and HCD cell | 131641 |
| Defect fix: QE UHMR: Unlike eFT phase calibration, the eFT dispersion calibration has the $m/z$ range limited to $m/z$ 8000 | 131643 |

Table 2 lists improvements and defect fixes in the Exactive Series 2.11 Instrument Control Software release that were implemented since the Exactive Series 2.9 SP4 Instrument Control Software release and the Exactive Series 2.10 Instrument Control Software release. For details, please refer to the Online Help or the Software manual.

**Table 2.** Changes from Exactive Series 2.9 SP4 Instrument Control Software and Exactive Series 2.10 Instrument Control Software to Exactive Series 2.11 Instrument Control Software

| Abstract | ID |
|---|---|
| Improvement: QE Plus, QE HF, QE HF-X: mass calibration for HMR in negative ion mode | 70284 |
| Improvement: QE Plus, QE HF, QE HF-X: eFT for HMR in negative ion mode | 70285 |
| Improvement: QE Plus, QE HF, QE HF-X: evaluation of given mass calibration for HMR in negative ion mode | 70287 |
| Improvement: QE Plus, QE HF, QE HF-X: ME: user must be able to apply negative ion mode/polarity when HMR Full MS template is applied | 70289 |
| Improvement: QE Plus, QE HF, QE HF-X: ME: user must be able to apply negative ion mode/polarity when HMR AIF template is applied | 70290 |
| Improvement: GMP Compliance eFT and Mass Calibration report | 78825 |
| Improvement: Advanced user must have a robust C-Trap Exit Lens–Purge Optimization | 80958 |

**Table 2.** Changes from Exactive Series 2.9 SP4 Instrument Control Software and Exactive Series 2.10 Instrument Control Software to Exactive Series 2.11 Instrument Control Software, continued

| Abstract | ID |
|---|---|
| Improvement: Exactive GC: acquisition at 7.5K resolution in full scan | 85386 |
| Improvement: Protect against cyber attacks, which try to login with the ExactiveUser account | 85387 |
| Improvement: GC Q Exactive, GC Exactive: HCD Collision Energy Limit | 93301 |
| Defect fix: C-Trap Entrance Lens Inject calibration is not shown in Advanced User mode | 38908 |
| Defect fix: Quad Transmission Evaluation runs with inject flat enabled and fails | 57438 |
| Defect fix: HV gauge protection triggered in EMR mode | 57946 |
| Defect fix: Source gases stuck at fully open | 71062 |
| Defect fix: Wrong lock masses injected when polarity switching and lock mass injection is used | 72906 |
| Defect fix: Q Exactive UHMR: Lock mass is not correctly utilized in mass calibration for UHMR | 78428 |
| Defect fix: Copy Optics Settings from positive ion mode does not copy CE-Inject | 78930 |
| Defect fix: FS-PRM (polarity switching): Sequence of scans not correct | 80047 |
| Defect fix: HMR negative mode eFT dispersion calibration is using a $m/z$ range up to 15,000 | 84002 |
| Defect fix: Q Exactive UHMR Tune: eFT and mass calibrations for low and high $m/z$ detector settings must be performed in one step by automatically switching between low and high $m/z$ detector settings | 84104 |
| Defect fix: C-Trap Exit Lens–Purge does not use correct filter strength | 85614 |
| Defect fix: Wrong AGC info in instrument status | 88046 |
| Defect fix: Q Exactive UHRM: Ultra High Vacuum: Underrange / No Ignition (1.9V, 680h) warning message at low trapping gas pressure settings | 88089 |
| Defect fix: Possible chance that Exactive doesn't run under Chromeleon | 90897 |
| Defect fix: QE GC PRM method Stepped collision energy wrong in scan header | 92048 |
| Defect fix: HMR negative eFT calibration reports incorrectly labeled | 92104 |
| Defect fix: Trapping gas calibration interrupts | 92478 |
| Defect fix: Update from 2.9 SP2 to 2.11 failed | 92729 |
| Defect fix: Software crash if instrument type 'QE Focus' is selected | 92895 |
| Defect fix: Temperature Logs start without or do not contain any header. | 93155 |
| Defect fix: Q Exactive GC: Cannot use $m/z$ 30 as first mass | 93302 |
| Defect fix: APD low-res crashes when processing spectra composed of background ions | 94854 |

Table 3 lists improvements in the Exactive Series 2.9 SP4 Instrument Control Software release that were implemented since the Exactive Series 2.9 SP3 Instrument Control Software release. For details, please refer to the Online Help or the Software manual.

**Table 3.** Changes from Exactive Series 2.9 SP3 Instrument Control Software to Exactive Series 2.9 SP4 Instrument Control Software

| Abstract | ID |
|---|---|
| Improvement: Support for part BRE0016997 (DATA ACQUISITION EXACTIVE) | 61769 |

Table 4 lists defect fixes in the Exactive Series 2.9 SP3 Instrument Control Software release that were implemented since the Exactive Series 2.9 SP2 Instrument Control Software release. For details, please refer to the Online Help or the Software manual.

**Table 4.** Changes from Exactive Series 2.9 SP2 Instrument Control Software to Exactive Series 2.9 SP3 Instrument Control Software

| Abstract | ID |
|---|---|
| Defect fix: FT DAQ Board not connected (USB) during customer runs via method | 86569 |
| Defect fix: FT Adapter Board / Unknown FT-Adapter token | 86573 |

Table 5 lists defect fixes in the Exactive Series 2.9 SP2 Instrument Control Software release that were implemented since the Exactive Series 2.9 SP1 Instrument Control Software release. For details, please refer to the Online Help or the Software manual.

**Table 5.** Changes from Exactive Series 2.9 SP1 Instrument Control Software to Exactive Series 2.9 SP2 Instrument Control Software

| Abstract | ID |
|---|---|
| Defect fix: Chromeleon: Fallback folder is not used when looking for Foundation. | 61631 |
| Defect fix: Crashes can occur when processing internal peak lists with duplicate entries. | 77927 |
| Defect fix: Embedded PC CPU core temperature read back incorrect. | 77951 |

Table 6 lists improvements and defect fixes in the Exactive Series 2.9 SP1 Instrument Control Software release that were implemented since the Exactive Series 2.9 Instrument Control Software release. For details, please refer to the Online Help or the Software manual.

**Table 6.** Changes from Exactive Series 2.9 Instrument Control Software to Exactive Series 2.9 SP1 Instrument Control Software

| Abstract | ID |
|---|---|
| Improvement: Support of Microsoft Windows 10 Enterprise 2016 LTSB | 61767 |
| Improvement: Supports a dedicated TMT workflow (Q Exactive HF-X) | 63899 |
| Improvement: Improved low mass calibration in Negative Chemical Ionization mode (Q Exactive GC) | 74587 |
| Defect fix: Method Editor: Crash when importing a picture to a global list. | 58454 |
| Defect fix: Q Exactive GC: empty readbacks from Quad Subsystem | 60257 |
| Defect fix: Potential instrument crash with acquisition of very narrow isolation scans | 62603 |
| Defect fix: After restarting Thermo Acquisition Service or PC reboot, Xcalibur may show instrument not connected | 62961 |

Table 7 lists new features, improvements and defect fixes in the Exactive Series 2.9 Instrument Control Software release that were implemented since the Exactive Series 2.8 SP1 Instrument Control Software release. For details, please refer to the Online Help or the Software manual.

**Table 7.** Changes from Exactive Series 2.8 SP1 Instrument Control Software to Exactive Series 2.9 Instrument Control Software

| Abstract | ID |
|---|---|
| New Feature: Q Exactive HF-X: Higher Productivity<br>• Resolving Power 7500<br>• Accelerated HCD performance allows for higher scan speed. | 40976 |
| New Feature: Q Exactive HF-X: Improved Data Dependent Decisions for TopN experiments<br>• Improved Data Dependent decisions for TopN experiments<br>• Normalized Collisional Energy: NCE range is extended up to charge state 100<br>• Method Editor: new dd Setting "Multiple charge states." | 41045 |
| New Feature for Q Exactive HF and HF-X: Provide resolution setting 45000 for unambiguously detecting TMT 11-plex reporter ions at an appropriate scan speed. | 41046 |
| New Feature for Q Exactive Plus, HF, HF-X: Method Editor: Support Dynamic Retention Time Correction capabilities for PRM experiments. | 41049 |
| New Features for Q Exactive GC, Exactive GC:<br>• Autotune supports ability to set user defined electron energy and ability to tune electron lens and emission current<br>• New Procedure to tune ion source with low energy electrons<br>• Add Methane PCI and NCI Tune Reports. | 42557 |
| Improvement: Tune: Calibration: Improved Isolation Mass/Resolution Calibration procedures for Inject Flatapole (Q Exactive Plus, HF, HF-X) and Quadrupole (all Q Exactive instruments). | 47958 |
| Improvement: Tune: Quad transfer tweak parameters are now removed from Instrument Status Tree. | 39050 |

**Table 7.** Changes from Exactive Series 2.8 SP1 Instrument Control Software to Exactive Series 2.9 Instrument Control Software, continued

| Abstract | ID |
|---|---|
| Improvement: Adjust peak intensity (linearity) for very low S/N values | 40808 |

Statistical processing of a big number of spectral data points has revealed a systematic underrepresentation of certain extremely low signal intensities (signals close to the spectral detection limit). This software change adjusts the intensities of these signals, in order to extend the overall range of linear response.

Compared to the previous software version
- This improves the theoretically possible LOQ of the analysis by extending the linear response range.
- Signal intensities well above the detection threshold are treated identically, with identical intensity, noise, and baseline annotations.
    - For all signals higher than about 2–3 times the spectral detection threshold
- Signal intensities near the detection threshold are adjusted by a factor between 1.0 and 1.49.
    - For certain signals lower than about 1–3 times the spectral detection threshold.
    - Other features like mass assignment and resolution of these signals stay identical.
- Intensity ratios might therefore calculate differently (smaller by a factor between 1.0 and 1.49) when comparing signals close to the spectral detection limit to abundant signals.
    - The difference is in the range of the spectral noise band, thus for single measurements it is superimposed by the statistical intensity variations.
- Notably, absolute intensities stay identical for all abundant signals.
- Notably, intensity ratios will calculate identically when comparing abundant signals.
- Signal detection limit stays identical, meaning all signals that would have been detected by the previous version of the software will also be detected by the new version.
- Number of detected peaks and size of data stays identical.

| | |
|---|---|
| Improvement: Method Editor: Extend Charge State value range to 1–100 in Inclusion/Exclusion lists. | 53856 |
| Improvement: Method Editor: Add an experiment to the experiment pane by double-clicking. | 49615 |
| Improvement for Q Exactive, Plus, HF, HF-X: Method Editor: Allow to turn off "MSX isochronous ITs" for PRM and DIA experiments. | 52190 |
| Improvement for Q Exactive Plus, HF, HF-X: Add Instrument Mode (Intact Protein Mode Setting and HMR Mode Setting) to rawfile's Tune Method. | 51337 |
| Improvement for Q Exactive GC and Exactive GC: Widen frequency range in spectral noise test on (Q)E GC (up to $m/z$ 30 equivalent). | 37328 |
| Improvement for Q Exactive GC: Move "Evacuate Vacuum Inlet" command in Tune. | 43161 |
| Improvement for Q Exactive GC: Improve calibration of injection flatapole so RF is not set too low. | 43163 |
| Defect fix: In rare cases, consecutive scans have same scan number under certain conditions. | 38166 |
| Defect fix: Fast polarity switching induces random HV overload errors. | 40695 |
| Defect fix: Thermo Foundation Instrument Configuration: Umlauts (ä, ö, ü) lead to crash when starting data acquisition. | 47410 |
| Defect fix: Cannot install Microsoft .NET Framework without Internet access. | 40525 |
| Defect fix: Tune: Calibration Report: Current Define Scan Settings are reported instead of Calibration Scan Settings. | 42289 |
| Defect fix: Tune: Calibration Report: Resolution settings are not displayed correctly. | 44125 |
| Defect fix: Tune crashes when try to view a report immediately after this report is generated. | 44447 |
| Defect fix: Tune: Customized Calibration: Resolution Setting is reported incorrectly. | 53858 |
| Defect fix: Tune: When switching between Calmix Calibration and Customized Calibration panes, start button stays grayed out under certain conditions. | 38901 |
| Defect fix: Tune: Analyzer Accuracy Calibration: CTCD Scaling Calibration passes unwantedly when signal is too low. | 49689 |
| Defect fix: Chromeleon: Name of last Mass Calibration Report is missing. | 38827 |
| Defect fix: Method Editor: PRM experiments cannot be updated from 2.3SP1 to 2.8SP1. | 48196 |

**Table 7.** Changes from Exactive Series 2.8 SP1 Instrument Control Software to Exactive Series 2.9 Instrument Control Software, continued

| Abstract | ID |
|---|---|
| Defect fix: Method Editor: Experiment pane does not update scroll bar, when adding high amount of scan groups. | 41447 |
| Defect fix: Method Editor: With some combination of stepped (N)CE values for one experiment having one value at the minimum, a stored method could not be validated / opened again and an error message reported: 'Missing hardware capability or feature: LabileCompounds.' | 52687 |
| Defect fix: Q Exactive Focus: Method Editor: Confirmation method in negative polarity does not work correctly. | 44483 |
| Defect fix: Q Exactive Focus: Method Editor: SIM inclusion list is restricted by factor 15 rule. | 40694 |
| Defect fix: Q Exactive GC: Method Editor: Inclusion list ignores masses between $m/z$ 30 and $m/z$ 50. | 56348 |

lists improvements and defect fixes in the Exactive Series 2.8 SP1 Instrument Control Software release that were implemented since the Exactive Series 2.8 Instrument Control Software release. For details, please refer to the Online Help or the Software manual.

**Table 8.** Changes from Exactive Series 2.8 Instrument Control Software to Exactive Series 2.8 SP1 Instrument Control Software

| Abstract | SCR |
|---|---|
| Improvement: Exactive GC is added as new instrument of the Exactive Series. | 36326 |
| Improvement: Improved cooling of turbomolecular pump - allow new high-speed fan to run on Exactive Series. | 36330 |
| Defect fix: normal mode eFT calibration and HMR eFT calibration as well as EMR eFT calibration interfere each other. | 37111 |
| Defect fix: manipulating a license key in the "Add license" window results in a crash of Tune. | 36549 |
| Defect fix: HMR eFT calibration makes normal mode mass calibration "void" (traffic light is yellow). | 37113 |
| Defect fix: Quadrupole Endurance Test saves Quad default values to master_cal | 38338 |

lists new features, improvements and defect fixes in the Exactive Series 2.8 Instrument Control Software release that were implemented since the Exactive Series 2.7 Instrument Control Software release. For details, please refer to the Online Help or the Software manual.

**Table 9.** Changes from Exactive Series 2.7 Instrument Control Software to Exactive Series 2.8 Instrument Control Software

| Abstract | SCR |
|---|---|
| New feature: Support of High Mass Range (HMR) mode for Q Exactive Plus and Q Exactive HF enabled by a license 'High Mass Range' for improved analysis of monoclonal antibodies:<br>• Increase the $m/z$ range to last mass 8000.<br>• Increase S-lens RF level to maximum value 200.<br>• Increase In-Source CID max value to 150 eV (HESI source) or 200 eV (NSI source).<br>• Access to 'Averaging' feature.<br>• Access to 'Trapping Gas Pressure' settings from 1.0 to 1.5.<br>• HMR mode Calibration and Evaluation procedures using ammonium hexafluorophosphate (AHFP) as calibration solution.<br>• HMR experiments in Method Editor: 'HMR - Full MS' and 'HMR - AIF.' | DEU-2501 |
| Improvement: Calibration Report: Plot history values of the Isolation Transmission Endurance Test. | DEU-1980 |
| Improvement: Make PDF Reports for Evaluations available. | DEU-2106 |
| Improvement: PDF Reports for Calibrations: Include Report of Failed Calibration results. | DEU-2580 |
| Improvement: Q Exactive, Q Exactive Plus and Q Exactive HF: Make Loop count user accessible in PRM experiment. | DEU-2519 |
| Improvement: Modified bakeout procedure. Maximum bakeout time set to 30 h. | DEU-2623 |
| Improvement: Q Exactive Plus and Q Exactive HF: Improve robustness of HCD gas supply when using Protein Mode. | DEU-2637 |

**Table 9.** Changes from Exactive Series 2.7 Instrument Control Software to Exactive Series 2.8 Instrument Control Software, continued

| Abstract | SCR |
|---|---|
| Improvement: Modified bakeout procedure. Switch off Trapping Gas during bakeout. | DEU-2676 |
| Improvement: Q Exactive GC: Reduce default lock mass tolerance in Tune to ±5 ppm. | HR-232 |
| Improvement: Q Exactive GC: Make C-Trap Energy Offset editable in instrument method. | HR-236 |
| Improvement: Q Exactive GC: Hide Lock mass filter in Tune Spectrum view and raw file scan headers. | HR-237 |
| Improvement: Q Exactive GC: Do not restore heater set values after changing in a method. | HR-239 |
| Defect fix: Q Exactive GC: Help File has wrong release history. | DEU-2486 |
| Defect fix: Q Exactive GC: Collection of manuals within Windows Start menu and corresponding links are not complete/correct. | DEU-2556 |
| Defect fix: TIC Variation is not calculated correctly for all Q Exactive instruments. | DEU-2518 |
| Defect fix: QE Focus: Method Editor help description box text shows wrong loop count. | DEU-2524 |
| Defect fix: Rephrase Method Editor help description box text for (N)CE. | DEU-2523 |
| Defect fix: Exactive Plus EMR: Method Editor: In-source CID values > 100 eV fall back to 100 eV after saving the method. | DEU-2562 |
| Defect fix: Instrument Configuration: Special Characters in the Public Name prevent Reports from being generated. | DEU-2613 |
| Defect fix: Q Exactive GC: AGC Issues when doing low mass scanning. | HR-233 |
| Defect fix: Q Exactive GC: Tuning issue with low mass scanning. | HR-234 |

Table 10 lists all improvements and defect fixes in the Exactive Series 2.7 Instrument Control Software release that were implemented since the Exactive Series 2.6 Instrument Control Software release. For details, please refer to the Online Help or the Software manual.

**Table 10.** Changes from Exactive Series 2.6 Instrument Control Software to Exactive Series 2.7 Instrument Control Software

| Abstract | SCR |
|---|---|
| Improvement for Q Exactive, Q Exactive Plus, Q Exactive HF, Q Exactive Focus, Q Exactive GC: new property (N)CE / stepped (N)CE is available to switch between absolute collision energy (CE) and normalized collision energy (NCE). | DEU-2376 |
| Improvement: Scan filters show precursor *m/z* as well as scan ranges with four decimal places. | DEU-2382 |
| Improvement Q Exactive Focus: new experiment AIF is available. | DEU-2387 |
| Improvement Q Exactive Focus: Full MS experiment can be combined with the experiments SIM, PRM or AIF. | DEU-2388 |
| Improvement Q Exactive Focus: loop count up to three available for<br>• Full MS - discovery<br>• Full MS - confirmation<br>• SIM<br>• SIM - confirmation. | DEU-2398 |
| Improvement Q Exactive Focus: MSX count up to 10 in SIM experiment. | DEU-2399 |
| Improvement Q Exactive Focus: scan range *m/z* 50-3000 for Full MS experiment and AIF experiment is supported. | DEU-2400 |
| Improvement Q Exactive GC: enable low mass scanning. | DEU-2410 |
| Defect fix Exactive Plus (EMR): intensity threshold now accepts all set values. | DEU-2370 |
| Defect fix Q Exactive GC: repaired link to Operating Manual in Windows Start Menu. | DEU-2390 |
| Defect fix: Carry-over of Full MS ions into subsequent fragmentation scan is prevented. | DEU-2403 |
| Defect fix: DAQ board throws error when switching to acquisition mode too early after instrument reset. | DEU-2405 |
| Defect fix Tune: When fragmentation CE is selected, field for charge state will be grayed out. | DEU-2421 |
| Defect fix Method Editor Global Lists: Fragmentation Energy values are now accepted when typing in combo box. | DEU-2425 |

**Table 10.** Changes from Exactive Series 2.6 Instrument Control Software to Exactive Series 2.7 Instrument Control Software, continued

| Abstract | SCR |
|---|---|
| Defect fix Method Editor: PreselectedTuneFileChooser does update renamed or deleted folders. | DEU-2433 |
| Defect fix Q Exactive GC: Method Editor summary shows correct ion source. | DEU-2450 |

Table 11 lists all improvements and defect fixes in the Exactive Series 2.6 Instrument Control Software release that were implemented since the Exactive Series 2.5 SP1 Instrument Control Software release. For details, please refer to the Online Help or the Software manual.

**Table 11.** Changes from Exactive Series 2.5 SP1 Instrument Control Software to Exactive Series 2.6 Instrument Control Software

| Abstract | SCR |
|---|---|
| Improvement: Method Editor: Help description boxes briefly explain each property setting. | DEU-0718 |
| Improvement: Tune: Better messages and help procedures are provided when Inject Flatapol calibration or Quadrupol Isolation Mass/Resolution Calibrations fail. | DEU-1069 |
| Improvement: Method Editor: Minimum AGC target value instead of Underfill ratio is shown in Data Dependent settings. | DEU-1103 |
| Improvement: Tune: UHV warn level is increased when a DART™ ion source is configured (Instrument \| System \| Configuration settings > DART Ion Source Compatibility). | DEU-1522 |
| Improvement: Spray current standard deviation is reported in status log. | DEU-1832 |
| Improvement: Online Help: Better description of Method Editor Experiments. | DEU-1871 |
| Improvement: Online Help: Experiment pane is directly linked with Online Help. In Online Help, experiment symbols show hyperlinks to parameter descriptions. | DEU-2041 |
| Improvement: Xinstaller: Newer IQ report template is available for IQ Report of the Installer. | DEU-2303 |
| Defect Fix: Monoisotopic Peak Determination Algorithm is setting the wrong monoisotopic *m/z* in Scan Header. | DEU-2204 |
| Defect Fix: Xcalibur Sequence Editor: Used file names that include special characters will create empty acquisitions raw files. | DEU-2213 |
| Defect Fix: Tune About Window text block scaling is unfavorable when no MS Office is installed. | DEU-2252 |
| Defect Fix: Method Editor TuneFileChooser: Show file time as local time. | DEU-2265 |
| Defect Fix: Tune: CTCD calibration is dependent on sheath gas flow. | DEU-2269 |
| Defect Fix: Exactive Plus EMR: For support of calibrating an instrument with Advion NanoMate™ ion source, the background noise check procedure was removed for the following calibration procedures: C-trap charge detection scaling and mass calibrations. | DEU-2284 |
| Defect Fix: Q Exactive instruments: MS1 ions carry over into MS2 after CTCD scan. | DEU-2294 |
| Defect Fix: Q Exactive Focus Method Editor: When 'min AGC Target' Trigger is switched off, the Intensity threshold is shown differently for dd-MS2 modes. | DEU-2330 |
| Defect Fix: Q Exactive Focus: Wrong Scan Ranges are acquired for Full MS with Segmented Master Scans and Polarity switching. | DEU-2345 |
| Defect Fix: Method Editor: Unfavorable Font is loaded when no MS Office is installed. | DEU-2350 |

Table 12 lists an improvement in the Exactive Series 2.5 SP1 Instrument Control Software release that was implemented since the Exactive Series 2.5 Instrument Control Software release. For details, please refer to the Online Help or the Software manual.

**Table 12.** Changes from Exactive Series 2.5 Instrument Control Software to Exactive Series 2.5 SP1 Instrument Control Software

| Abstract | SCR |
|---|---|
| Improvement: Transfer of messages from Exactive Series Tune and Method Editor is adjusted to the Chromeleon audit trails. | DEU-2059 |

Table 13 lists all improvements and defect fixes in the Exactive Series 2.5 Instrument Control Software release that were implemented since the Exactive Series 2.4 Instrument Control Software release. For details, please refer to the Online Help or the Software manual.

**Table 13.** Changes from Exactive Series 2.4 Instrument Control Software to Exactive Series 2.5 Instrument Control Software

| Abstract | SCR |
|---|---|
| Improvement: Calibration Report has to be generated for "Customized Mass Calibration." | DEU-1907 |
| Improvement: Q Exactive instruments: Optimize reporting of quadrupole and injection filter calibrations. | DEU-1958 |
| Improvement: Q Exactive, Q Exactive Plus, Q Exactive HF: Provide correct "Last Locking" information in scan header with regard to time. | DEU-2179 |
| Defect fix: Method Editor: the MS/MS data dependent first mass switches to '-' when $m/z$<50 is entered. | DEU-735 |
| Defect fix: Quad iso/res calibration (rough) plot: Coloring of primary and secondary axis should be different. | DEU-1929 |
| Defect fix: Q Exactive Plus/HF: During evaluation of the Injection flatapole, the message on the graph header shows Injection flatapole calibration. | DEU-1961 |
| Defect fix: Method Editor Global Lists: Empty fields are not supported for (N)CE when a value was set. | DEU-2042 |
| Defect fix: Method Editor Global Lists: Cannot delete field values in a table. | DEU-2043 |
| Defect fix: Electronics evaluations in Extra Evaluation procedures are not called when root node is selected. | DEU-2085 |
| Defect fix: CE/NCE: Tune Analysis Graph does not support plotting CE energies. | DEU-2087 |
| Defect fix: Tune Analysis graph / Scan HCD Energy: The Activation Energy Scan Range must be increased from (1-100) to (1-200). | DEU-2089 |
| Defect fix: Exactive Plus EMR: Tune Analysis graph / Scan In-Source-CID Energy: The Activation Energy Scan Range must be increased from (1-100) to (1-200). | DEU-2090 |
| Defect fix: Q Exactive Plus/HF: Mass Traces / Scan CE, NCE and in-source CID energy do not show real-time plot. | DEU-2097 |
| Defect fix: CE/NCE: Charge state info is displayed when CE is selected. | DEU-2101 |
| Defect fix: Q Exactive Plus: Full MS / PRM: PRM scan events are delayed with Full MS Enhanced Resolution. | DEU-2104 |
| Defect fix: Method Editor Properties: Minimum value in a range is not honored if entered in a property grid in the edit field "mass width". | DEU-2121 |
| Defect fix: Method Editor TopN: Avoid using Periodic Prescan (PPS) mass ranges other than the full scan range. | DEU-2137 |
| Defect fix: The use of Q Exactive Tune files must be forbidden on Q Exactive Plus and Q Exactive HF instruments in both Tune and Method Editor. | DEU-2145 |
| Defect fix: Exactive Plus without HCD shows CE fragmentation in Tune. | DEU-2182 |

Table 14 lists all new features, improvements and defect fixes in the Exactive Series 2.4 Instrument Control Software release that were implemented since the Exactive Series 2.3 SP1 Instrument Control Software release. For details, please refer to the Online Help or the Software manual.

**Table 14.** Changes from Exactive Series 2.3 SP1 Instrument Control Software to Exactive Series 2.4 Instrument Control Software

| Abstract | SCR |
|---|---|
| New feature: Q Exactive, Q Exactive Plus, Q Exactive HF: Grouping in MSX Scans<br>For spectrum multiplexed experiments, an inclusion list MSX ID defines the candidates to be multiplexed in one scan event. | DEU-1995 |
| New feature: Q Exactive, Q Exactive Plus, Q Exactive HF: Enable switching between NCE and CE.<br>Enable switching between normalized collision energy (NCE) and absolute collision energy (CE), which is supported in Tune Editor ("Instrument Control \| Fragmentation" and "Mass Traces \| Scan and Plot") and in the global "Inclusion" list of the Method Editor | DEU-2003 |

**Table 14.** Changes from Exactive Series 2.3 SP1 Instrument Control Software to Exactive Series 2.4 Instrument Control Software, continued

| Abstract | SCR |
|---|---|
| Improvement: TIC Intensity Compensation Factors are extended for target values higher than 2.25E6 | DEU-1479 |
| Improvement: Instrument Configuration: Audit trailing maximum text size is configurable | DEU-1956 |
| Improvement: Q Exactive, Q Exactive Plus, Q Exactive HF: Instrument method "Targeted-MS2" is renamed to "PRM" | DEU-1962 |
| Improvement: Tune: Save/open custom calibration lists | DEU-1978 |
| Improvement: Q Exactive Plus/HF: Workflow FS / AIF / NL-dd MS$^2$ workflow has to be supported for Protein Mode licensed systems if instrument is currently not in Protein Mode | DEU-1979 |
| Improvement: Q Exactive Plus/HF: Enable averaging functionality of scans for Protein Mode | DEU-1983 |
| Improvement: Q Exactive, Q Exactive Plus, Q Exactive HF: Stepped NCE values are displayed individually in the raw file scan header | DEU-2047 |
| Defect fix: Quad RF Frequency Fine Adjustment Procedure does not detect intermittent large dips in isolation profile | DEU-1785 |
| Defect fix: Exactive Plus without HCD shows AIF experiments | DEU-1954 |
| Defect fix: targeted-MS$^2$ (PRM): Acquisition of more than one experiment of this type in one method does not work properly | DEU-2058 |

Table 15 lists all improvements and defect fixes in the Exactive Series 2.3 SP1 Instrument Control Software release that were implemented since the Exactive Series 2.3 Instrument Control Software release. For details, please refer to the Online Help or the Software manual.

**Table 15.** Changes from Exactive Series 2.3 Instrument Control Software to Exactive Series 2.3 SP1 Instrument Control Software

| Abstract | SCR |
|---|---|
| Improvement: Support for Windows standard service accounts | DEU-1458 |
| Improvement: Outdated log files will be automatically deleted after 18 months | DEU-1780 |
| Improvement: Q Exactive Plus: Quadrupole isolation shape check procedure | DEU-1825 |
| Improvement: Q Exactive, Q Exactive Plus: Improvement for isolation calibration | DEU-1862 |
| Improvement: Automated inject time calculation for highly concentrated samples is improved | DEU-1863 |
| Improvement: Q Exactive Plus: Optimize HCD cell parameters in protein mode | DEU-1905 |
| Defect fix: Tune: In rare cases the spectrum view can freeze requiring a restart of the Tune | DEU-926 |
| Defect fix: Data system runs out of memory on unexpected stop of Windows Explorer | DEU-1809 |
| Defect fix: Acquisition freezes occasionally in methods with complex sample and big number of dependent scans | DEU-1830 |
| Defect fix: After running a method from the tune page, some tune settings are not restored | DEU-1841 |
| Defect fix: Exactive Plus EMR: Allow running HCD transfer tuning procedure | DEU-1846 |
| Defect fix: Method setup: Restrict lock mass input range | DEU-1851 |
| Defect fix: Exactive Plus EMR: Re-initialize the CTCD parameters when switching EMR mode on/off, reducing equilibration times | DEU-1856 |
| Defect fix: Q Exactive Plus: Run-time error at end of Quad Transmission Evaluation | DEU-1864 |
| Defect fix: Use custom max IT setting for customized mass calibration procedure | DEU-1865 |
| Defect fix: Method setup: Customized Tolerances Dialog Boxes: Typing separators does not work as expected | DEU-1867 |
| Defect fix: Internal rounding error for maximum ion time setting under certain conditions | DEU-1872 |
| Defect fix: False nitrogen gas warning may appear on 0 psi set point | DEU-1932 |
| Defect fix: Exactive Plus without HCD shows AIF experiments | DEU-1954 |

Table 16 lists all new features, improvements and defect fixes in the Exactive Series 2.3 Instrument Control Software release that were implemented since the Exactive Series 2.2 SP1 Instrument Control Software release. For details, please refer to the Online Help or the Software manual.

**Table 16.** Changes from Exactive Series 2.2 SP1 Instrument Control Software to Exactive Series 2.3 Instrument Control Software

| Abstract | SCR |
|---|---|
| New feature: Mass accuracy improvements by lock mass injection | DEU-1742 |
| New feature: User-adjustable mass tolerances for methods | DEU-1744 |
| New feature: More flexible stepped collision energy | DEU-1745 |
| New feature: Support of API programs | DEU-1750 |
| New feature: User-selectable isolation window offset | DEU-1752 |
| Improvement: For Q Exactive Plus, tuning of transfer optics voltages is not necessary; therefore, the "Tune" pane is removed from the Tune program for Q Exactive Plus | DEU-951 |
| Improvement: Improved quadrupole isolation/resolution narrow calibration | DEU-1370 |
| Improvement: Tune "Plot Mass Traces" mass tolerance changed to 10ppm | DEU-1555 |
| Improvement: Logic of inclusion list runtime-order changed | DEU-1556 |
| Improvement: Lock mass validity restricted to single run | DEU-1561 |
| Improvement: Broader isolation windows for MS/MS allowed | DEU-1579 |
| Improvement: Improved Isolation Transmission Endurance Test | DEU-1697 |
| Defect fix: Scan filter is doubly displayed by running MSX dd experiments | DEU-51 |
| Defect fix: There is no validation for entering Start time > End time | DEU-810 |
| Defect fix: The "Setup Complete" window hides behind another window | DEU-841 |
| Defect fix: "Vacuum not ready" failure may show up after instrument startup | DEU-853 |
| Defect fix: Method Editor: User role wrongly displayed after switching settings in properties | DEU-1431 |
| Defect fix: PDF reporting issues after CTCD calibration | DEU-1533 |
| Defect fix: Customized mass calibration is not saved in master cal file | DEU-1540 |
| Defect fix: Mass calculator does not store last used formula | DEU-1615 |
| Defect fix: Double-click on Method start brings up busy messages | DEU-1640 |
| Defect fix: Method Editor: TopN: dd-SIM is not available | DEU-1645 |
| Defect fix: Change record missing when pasting a table | DEU-1723 |

Table 17 lists all new features, improvements and defect fixes in the Exactive Series 2.2 SP1 Instrument Control Software release that were implemented since the Exactive Series 2.1 Instrument Control Software release. For details, please refer to the Online Help or the Software manual.

**Table 17.** Changes from Exactive Series 2.1 Instrument Control Software to Exactive Series 2.2 SP1 Instrument Control Software

| Abstract | SCR |
|---|---|
| New feature: Implement a Data Independent Acquisition (DIA) MS/MS experiment in the Method Editor. | DEU-904 |
| New feature: Widen the isolation window width limit to 50 Da. | DEU-1004 |
| AGC improvements are needed to support faster chromatography in targeted experiments | DEU-995 |
| New feature: Chromatographic peak width (FWHM) definable in method setup to automatically adapt instrument timings. By setting the full width half maximum (FWHM) of the persistent or expected elution profiles of your chromatographic setup, the instrument software can adapt the frequency in which AGC information will be delivered. Especially for quantification experiments at fast chromatography, the AGC information needs to be updated much faster to get the correct response areas. | DEU-1412 |
| New feature: Implement an Exact Mass Calculator. Based on the analytes chemical formula or sequence (e.g. peptides), species (e.g. +Na adduct) and charge state, the exact mono isotopic mass is calculated and used for a target definition in inclusion lists. Additionally it is available in Tune, so one can directly calculate the needed isolation center mass for SIM and MS/MS scan types and check the current spectral data for expected candidates and species. | DEU-1262 |

**Table 17.** Changes from Exactive Series 2.1 Instrument Control Software to Exactive Series 2.2 SP1 Instrument Control Software, continued

| Abstract | SCR |
|---|---|
| Improvement: Optimized quadrupole RF timing pattern | DEU-1316 |
| Improvement: Inclusion list entries are applied in the defined order (unsorted processing, valid for DIA) | DEU-1321 |
| New feature: Method setup shall allow selecting centroid mode for data acquisition. | DEU-956 |
| New feature: Implemented PDF-Reports for calibration | DEU-1265 |
| New feature: Provide a .NET based Instrument Application Programming Interface (API). | DEU-1266 |
| New feature: Improvement of Tune for Direct Control for LC systems (supported are: Accela Pump 1250, Accela autosampler Open AS, CTC PAL autosampler) | DEU-1383 |
| New feature: Implemented Quadrupole Transmission Evaluation | DEU-1085 |
| New feature: To improve robustness, the sweep gas can be turned on when in standby mode. | DEU-1260 |
| Defect fix: Exactive Series instruments overwrite Accela Pump pressure traces in RAW files with voltages if analog channel data is acquired by the instrument. | DEU-1094 |
| Defect fix: Under certain conditions invalid values for CTCD scaling can occur. | DEU-1258 |

Table 18 lists all new features and improvements in the Exactive Series 2.1 Instrument Control Software release that were implemented since the Exactive Series 2.0 SP2 Instrument Control Software release. For details, please refer to the Online Help or the Software manual.

**Table 18.** Changes from Exactive Series 2.0 SP2 Instrument Control Software to Exactive Series 2.1 Instrument Control Software

| Abstract | SCR |
|---|---|
| New feature: Extended mass range to 50–6000. | DEU-1046 |
| New feature: Increased speed of polarity switching; applies for Exactive Plus and for all Q Exactive instruments that are shipped after May 2012. | DEU-1088 |
| New feature: Additional AGC target value of 5e6 | DEU-989 |
| New feature: Added AIF method | DEU-1123 |
| New feature: Additional logic for "peptide match" trigger criteria: "preferred" | DEU-1031 |
| New feature: Automatic source identification for DART | DEU-1010 |
| New feature: Automatic source identification for AP-MALDI | DEU-1079 |
| New feature: Calibration report for printout | DEU-1080 |
| Improvement: Modified maximum inject time setting concept | DEU-1102 |

Table 19 lists all new features, improvements and defect fixes in the Exactive Series 2.0 SP2 Instrument Control Software release that were implemented since the Exactive Series 2.0 SP1 Instrument Control Software release. For details, please refer to the Online Help or the Software manual.

**Table 19.** Changes from Exactive Series 2.0 SP1 Instrument Control Software to Exactive Series 2.0 SP2 Instrument Control Software

| Abstract | SCR |
|---|---|
| Improved AGC performance via C-trap charge detection | DEU-631 |
| Improved quadrupole calibrations and evaluations | DEU-961 |
| Data Dependent experiment cycle improvements | DEU-632 |
| Improved HCD RF amplitude settings (depend now on frequency readback) | DEU-943 |
| Improvement: Separate quadrupole calibration for negative ion mode | DEU-879 |
| Improved fan error message: Added hint to check the air filters | DEU-894 |
| Improvement: Added voltage range checks for IOS HV supply | DEU-934 |
| Improved scan header: Inject time now shown as integer | DEU-916 |
| Improvement: Increased decimal places in "Neutral Loss" and "Tag Masses" lists from 3 to 5 | DEU-875 |
| Defect fix: The isolation window width can not be set to an odd number in one decimal place | DEU-938 |
| Defect fix: Error on removing the last line in the table editor | DEU-846 |
| Defect fix: Precursor $m/z$ value cannot be easily set in the Instrument Control window | DEU-895 |

Table 20 lists all new features, improvements and defect fixes in the Exactive Series 2.0 SP1 Instrument Control Software release that were implemented since the Exactive Series 2.0 Instrument Control Software release. For details, please refer to the Online Help or the Software manual.

**Table 20.** Changes from Exactive Series 2.0 Instrument Control Software to Exactive Series 2.0 SP1 Instrument Control Software

| Abstract | SCR |
|---|---|
| Online Help: Calibrate and Evaluate do not launch Online Help when pressed F1 if one of the sub-windows is active | DEU-844 |
| Orbitrap: In rare cases, the mass RF amplitude dependency calibration fails in negative ion mode | DEU-896 |
| Improvement of the Data Dependent "exclude isotopes" feature | DEU-428 |
| Improvement of the isolation overlap control for targeted workflows | DEU-859 |

## Known Issues

This table lists all known issues that exist in the Exactive Series 2.12 Instrument Control Software release.

| Abstract | SCR |
|---|---|
| The divert valve numbering in the instrument software is not consistent with the numbering on the valve itself. | DEU-264 |
| Tune Editor does not show correct scan types during ME data acquisition. | DEU-949 |
| Method Editor global lists changes in a saved method are not saved automatically. Remedy: Once a method including a global list was saved as Xcalibur *.meth file and this global list is edited again, save the *.meth file again. | DEU-1191 |
| System does sometimes not boot automatically when Tune version is updated. | DEU-1789 |
| Significant drop in signal every 2.5 sec using "Protein Mode." Remedy: Average several microscans or switch off C-Trap Charge Detector Support (Instrument Status \| Control \| Settings). | DEU-2075 |
| The Q Exactive Focus Method editor turns to Discovery mode for the "negative confirmation" scan if there are no entries in the Inclusion List for negative polarity and polarity switching is used. Full MS Confirmation for just positive or negative mode functions as designed. | 60630 |
| Exactive Series 2.9 SP1 is incompatible with some early Exactive GC Orbitrap and the Q Exactive GC Orbitrap Instruments. A warning is provided upon startup of the tune software if an incompatible system is detected. The warning states "An embedded PC with Core Duo CPU was detected on this system. Please consult the release notes for known issues and additional information." Instruments with this incompatibility will exhibit Peak Ringing and interruption of sample sequences. If the warning is seen, please revert to the previous version of the software. | 72531 |
| On occasion, communication to the instrument is lost generating an "FT Adapter - not connected (USB)" or "FT DAQ Board - not connected (USB)" error message. In most cases, the communication connection will re-establish itself. Best practice is to reset the instrument and then continue with the analysis. | 86192 |

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