DataApex
Clarity™
CHROMATOGRAPHY SOFTWARE

# 8.0 VS 7.4

Clarity (Lite) ENG

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Sections of the manual connected only to the **Clarity Full** version are marked with the Full version icon.



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# Contents

To facilitate the orientation in the **8.0 vs 7.4** manual and **Clarity** chromatography station, different fonts are used throughout the manual. Meanings of these fonts are:

Instrument (blue text) marks the name of the window to which the text refers.

*Open File* (italics) describes the commands and names of fields in **Clarity**, parameters that can be entered into them or a window or dialog name (when you already are in the topic describing the window).

WORK1 (capitals) indicates the name of the file and/or directory.

*ACTIVE* (capital italics) marks the state of the station or its part.

The bold text is sometimes also used for important parts of the text and the name of the **Clarity** station. Moreover, some sections are written in format other than normal text. These sections are formatted as follows:

| | |
|---|---|
| *Note:* | Notifies the reader of relevant information. |
| *Caution:* | Warns the user of possibly dangerous or very important information. |

**Marks the problem statement or trouble question.**

*Description:* Presents more detailed information on the problem, describes its causes, etc.

*Solution:* Marks the response to the question, presents a procedure how to remove it.

# 1 Preamble

This document will guide you through the news and improvements in the **Clarity** Chromatography Station version **8.0** compared to version **7.4**.

**The most interesting features of version 8.0 include:**

- Graphically enhanced user interface for:
  - Main window
  - Instrument window
  - Method Setup dialog
  - Single Analysis dialog
  - Device Monitor window
  - Icons
- Batch dialog - method related changes
- Improvements to GLP compliance - Global Audit Trail
- Improvements in MS Extension
- Increased number of ISTDs
- Calibration - Show details of Calibration point
- Chromatogram:
  - Improvements to error/warning notification in Result Table and All Signals Result Table
  - Option to choose method in the Import and Mathematical Operations dialogs
- Improvements to Print - Report Setup
- Clarity **8.0** can't be installed on Windows XP
- New and updated control modules

# 2 Clarity

## 2.1 Main window

Main window has undergone a major graphical change. From the functional point of view, it remains the same. Meaning it still serves for logging into configured Instruments.
However the window is now more understandable and better looking.

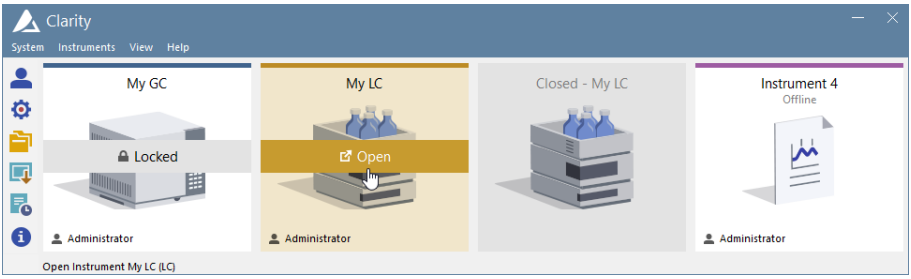



*Fig 1: Main window*

- Each Clarity Instrument is distinguished by its color.
  - In the image above, Instrument called "My GC" is blue and therefore all subsequent windows opened from this Instrument will have this color in the header. This analogy was kept from the previous version where the Instrument had different colors of the pipeline.
  - Opened/Locked Instruments will display a thin stripe in the color of the respective Instrument.
- Second Instrument ("My LC") is not red but dark yellow now.
  - For many users it caused confusion in the Audit Trail as operations logged in red (by the color of the Instrument) looked like an error.
- Instrument 4 is Offline meaning there is insufficient number of purchased licenses.
  - Such Instrument is possible to use for data processing such as evaluation of measured chromatograms, preparation of sequence, but cannot be used for data acquisition nor for instrument control.
- Icons on the left vertical toolbar are now bigger for easier accessibility.
- We have removed the option to switch Main Clarity window to so-called Clarity Switch (alternate and much smaller Main window).

## 2.2 Instrument window

Instrument window has undergone not only graphical change but a lot of functional changes. This section will walk you through the most important ones.

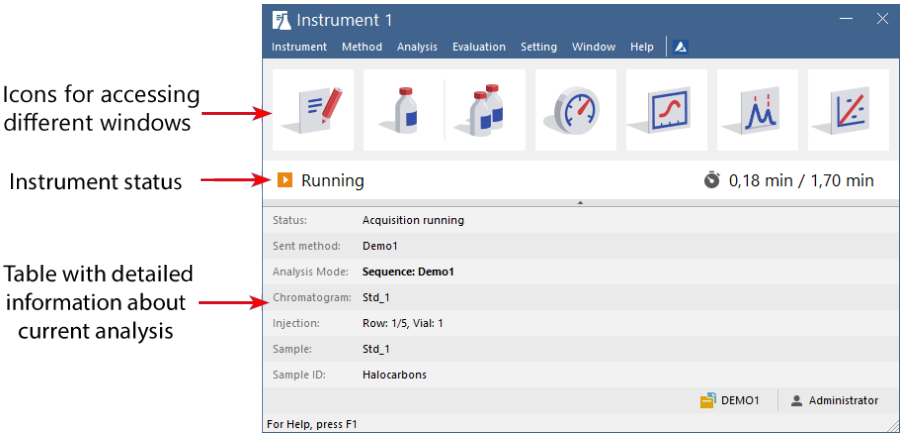



*Fig 2: Instrument window description*

### 2.2.1 The window is divided into 3 separate parts:

- Upper part with icons opening: Method Setup, Single Analysis, Sequence, Device Monitor, Data Acquisition, Chromatogram and Calibration.
- Middle part displaying status of the Instrument along with running analysis time.
- Lower part displaying a detailed information about running analysis.

- Major differences between Clarity 8.0 and previous versions:
  - The so-called "Instrument Method" or "Method opened on the Instrument" has been abandoned. For a significant number of users it caused confusion which method was used for analysis. Therefore method that will be used for measurement using the Single Analysis was moved to the Single Analysis dialog where it makes a better sense.
  - We have removed multiple icons leading to different tabs of the Method Setup. Users could not tell the difference between them so now we have one icon for the Method Setup dialog. It opens on the last closed tab of the Method Setup dialog. In the menu there is still the option to open a particular method tab.
  - Work with method such as creating a new one or saving was moved directly to the Method Setup dialog.
    - Method Setup icon from the Instrument window always opens with the last opened method.

  - Method that is opened (displayed) in the Method Setup dialog must not necessarily be the same as the one that is being measured by. Information table in the Instrument window displays *Sent Method* field which indicates according to which method the measurement is or will be carried out.
  - In order to measure by single analysis, choose the desired method in the Single Analysis dialog, click the *Send Method* button and then the *Run* button.
- *PostRun Settings* that were located in the Instrument window but served only for measurement using the Single Analysis were moved to the Single Analysis dialog.
- Instrument window now supports horizontal and vertical re-sizeability.
  - Horizontally it can be increased as much as it allows
  - Vertical: hiding or showing the bottom part (information table) of the Instrument window can be achieved by pressing the arrow separating the instrument status and the information table.

### 2.2.2 Revised Instrument states

Instrument states are indispensable as they provide information about the state of the Instrument. Quite often were users having troubles with the meaning of the Instrument states, therefore we have decided to provide a short (quick overview) and long (informative) description. Table bellow sums up the changes:

| Instrument state in 7.4.1 and older | Short Instrument state in 8.0 | Long Instrument state in 8.0 |
|---|---|---|
| Communication Error | Error | Error in communication with hardware |
| Disabled | Disabled | No configured detector |
| Disabled | Offline | Offline instrument |
| Control | Control | Performing remaining time program |
| Sequence Paused | Paused | Sequence paused |
| Waiting | Ready | Ready to start run |
| Ready | Ready | Ready for injection |
| Sending Method | Sending Method | Sending method to hardware |
| Not ready (Method has not been sent) | No method sent | Ready to send method or start sequence |
| Not ready to send method | Waiting | Hardware not ready to receive method |

| Instrument state in 7.4.1 and older | Short Instrument state in 8.0 | Long Instrument state in 8.0 |
|---|---|---|
| Not ready to run acquisition | Waiting | Hardware not ready to run |
| Waiting for external start | Waiting | Waiting for external start |
| Waiting for ready | Waiting | Waiting for hardware to be ready to run |
| Waiting for ready to receive method | Waiting | Waiting for hardware to be ready to receive method |
| Waiting for injection | Waiting | Waiting for injection |
| Idle | Waiting (Idle) | Waiting remaining idle time |
| Running | Running | Acquisition running |
| Stopping | Running (Finishing) | Waiting for remaining data from hardware |
| Running (Stopping) | Running (Stopping) | Acquisition running (stop sequence after current acquisition) |
| Pausing | Running (Pausing) | Acquisition running (pause sequence after current acquisition) |

## 2.2.3 System Configuration - Method Sending Options

Changes connected to the method handling have resulted in changes in the System Configuration - Method Sending Options. The option "Prompt for Confirmation" was removed from the dialog and the default option is "Do Not Send Method to Instrument".
There are two options now:

- *Send Method to Instrument* - automatically sends method (that is displayed in the Single Analysis dialog) to all connected hardware. This option is not recommended for HPLC systems and should be set only by experienced users.
- *Do Not Send Method to Instrument* - does not automatically send method to all connected hardware. Prior to starting acquisition, the method must be send manually.

*Note:* *Method Sending Options* is not accessible while only DataApex's HW (such as INT9, Colibrick, etc.) is configured on the respective instrument. In that case, the method is being sent automatically.

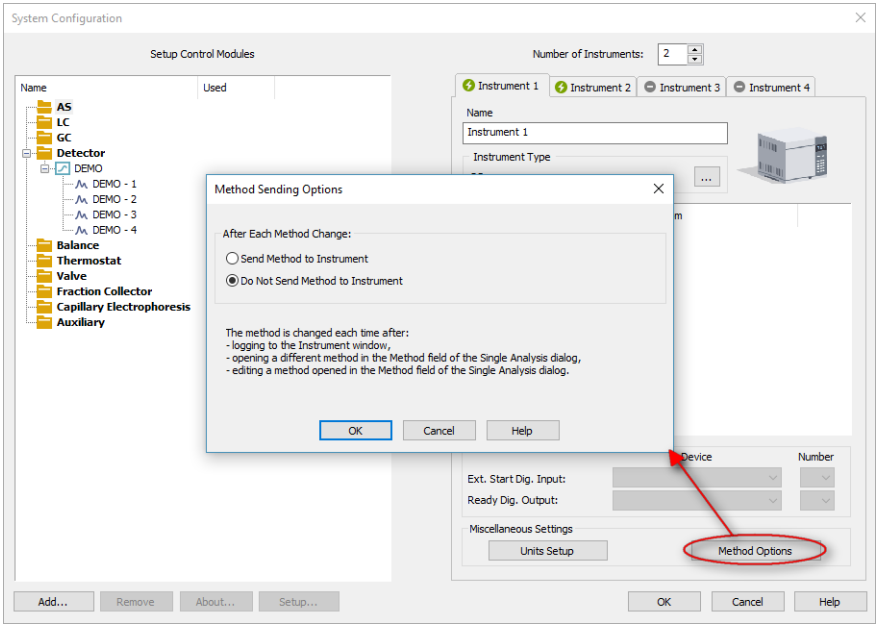



*Fig 3: System Configuration - Method Sending Options*

## 2.3 Method Setup

For easier understanding, the manipulation with method was moved from the Instrument window to the Method Setup dialog.

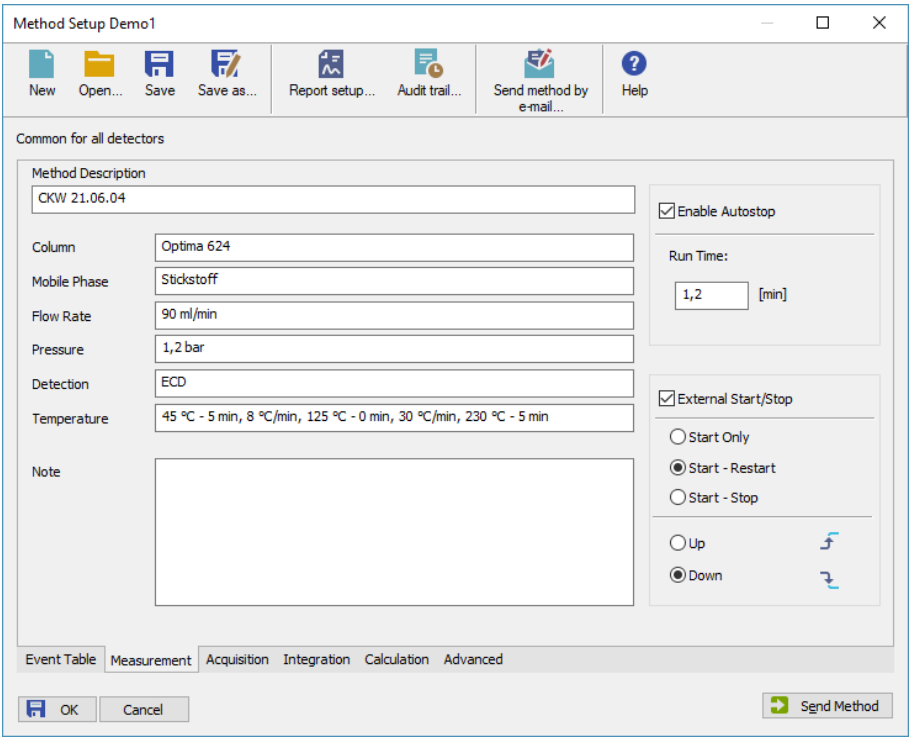



*Fig 4: Method Setup dialog*

The title of the Method Setup dialog displays a method that is currently opened. In the figure above, it's the DEMO1.
Individual tabs of the method have not changed so there is no compatibility issues when migrating from older versions of Clarity.

### Major differences between Clarity 8.0 and previous versions:

- Newly the upper part of the Method Setup dialog displays a set of icons with which it's possible to create a new method, open existing method, save method, save method as, open report setup, open method audit trail, send method by e-mail or open help.
- If you make any changes, the method becomes Modified, just as you were used to. Upon pressing the *OK* button it will be automatically saved and Method Setup dialog will close.

- Only a method that is saved can be sent, it's not possible to send a method that is Modified. In such case the user will be notified. Remedy is to *Save* the method and click on *Send Method* once again.
- Pressing the *Send Method* button will result in two actions:
  - Method will be sent to all connected hardware and thus displayed in the information table of the Instrument window - just as before.
  - Method will be set as *Method* for Single Analysis - a new feature.

## 2.4 Single Analysis

With the redesigned Instrument window some parts were moved into Single Analysis dialog where it is logical to place them.

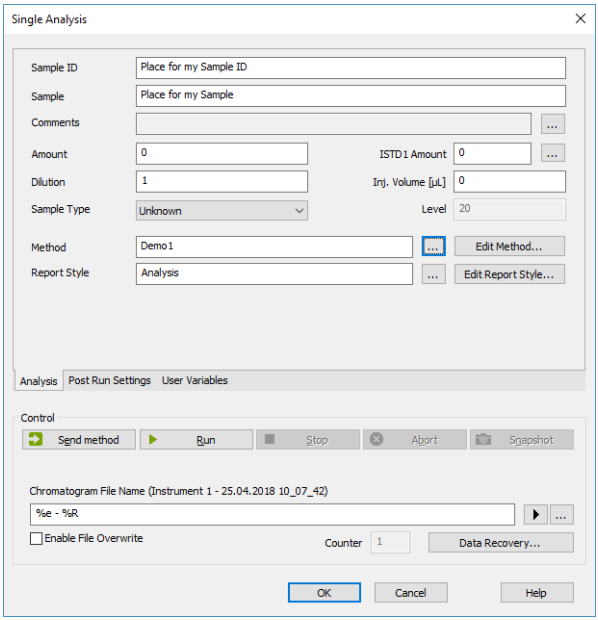



*Fig 5: Single Analysis dialog*

### Major differences between Clarity 8.0 and previous versions:

- Single Analysis tabs:
  - Previous main functionality of the Single Analysis dialog such as *Sample*, *Sample ID*, *Amount*, *Sample Type*, etc. was moved onto individual tab called *Analysis*.
  - *Post Run Settings* which were located in the Instrument window but the actions were applicable only during measurement of Single Analysis - for this reason it's more suitable to have the options here.
  - Instead of being in an expandable section, *User Variables* are now also on a separate tab.
- The biggest change is that user needs to select a method that will be used for the Single Analysis measurement. However it should be clear which method is being used for the acquisition - method that is displayed in the *Method* field.
  - Method can be either chosen using the three dot button or by directly typing the method name.

    - If you open Method Setup dialog, open method and then click *Send Method,* the chosen method will be send to all configured hardware and will be set to the *Method* field on the *Analysis* tab.
    - If you want to print results, simply choose the *Report Style* that will be used once *Print* is selected on the *Post Run Settings* tab.
- *Sample Type*, *Method* and *Report Style* fields will be disabled during running acquisition meaning that they cannot be changed. To change them you need to either *Stop*, *Abort* or let the analysis to finish.

## 2.5 Device Monitor

Device Monitor has changed only graphically to better suit the rest of Clarity.

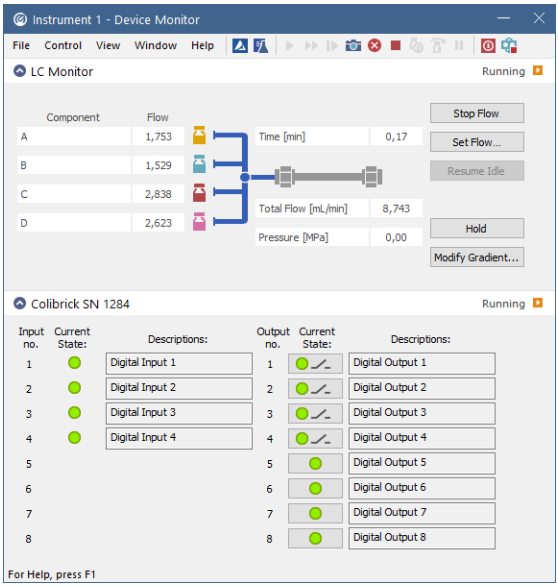



*Fig 6: Device Monitor window*

*Note:* Even though that we would like to have all the Device Monitor windows for all control modules the same, in the sense of unified graphical user interface, with externally developed control modules, it's not possible. It may happen that some sections of the Device Monitor window will have older (blue background) design which should not influence the functionality of the control module. This issue will be fixed in the coming versions.

## 2.6 Icons

Clarity **8.0** contains a whole new set of icons which are better looking, more intuitive and responsive (i.e. will increase in size based on the screen resolution).

If you have in any way customized (other than default) your toolbars it is necessary to perfom the customization once again. This is because we had to reset all toolbar settings for the changes to take place.

Below are pictures of Chromatogram and Calibration windows. Notice that the Chromatogram window has a dark yellow title bar, this is because it is opened from the second Instrument. On the other hand, title bar of the Calibration window is green because it is opened from the third Instrument. Windows opened from the fourth Instrument would have violet title bars.

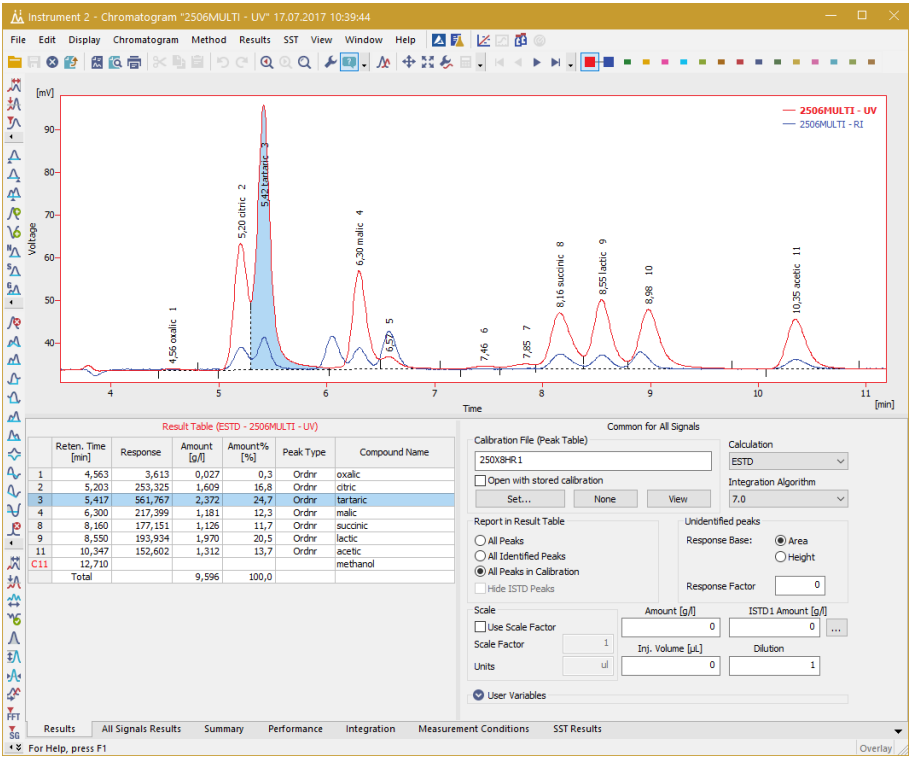



*Fig 7: Chromatogram window*

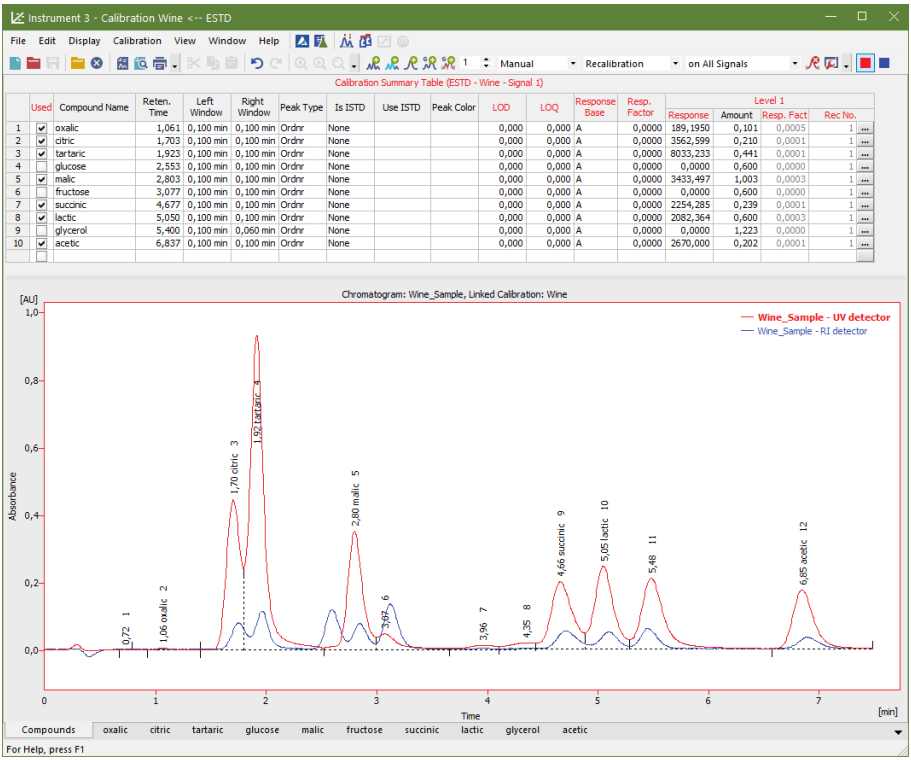



*Fig 8: Calibration window*

Even outside of Clarity the icons for different file types have changed.

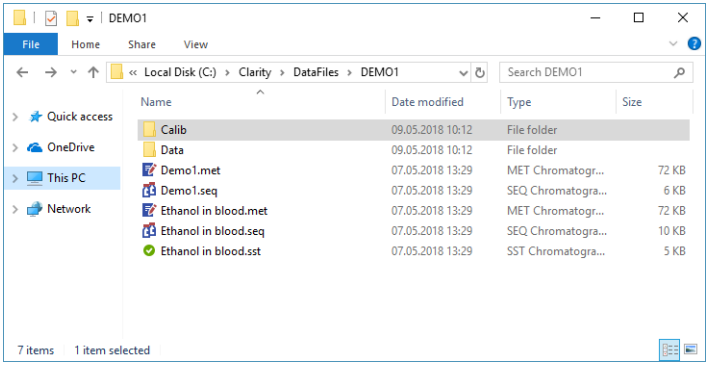



*Fig 9: Windows OS - File Explorer - filetype icons*

## 2.7 Batch Full version

- Batch dialog serves for reprocessing large number of chromatograms, calibration standards or measured sequence.
- We have added a field to select with which method you want to reprocess files - previous checkbox called *Reprocess by Instrument Method* was ambiguous as it was not clear which method was opened. In addition if you wanted to reprocess with a different method (than opened on the Instrument), you had to close Batch and open method on the Instrument. Now simply choose file type, select reprocess and using the three dot button select by which method it will be reprocessed.
- Similar behavior applies to print, where it requires to select which *Report Style* will be used for the print.

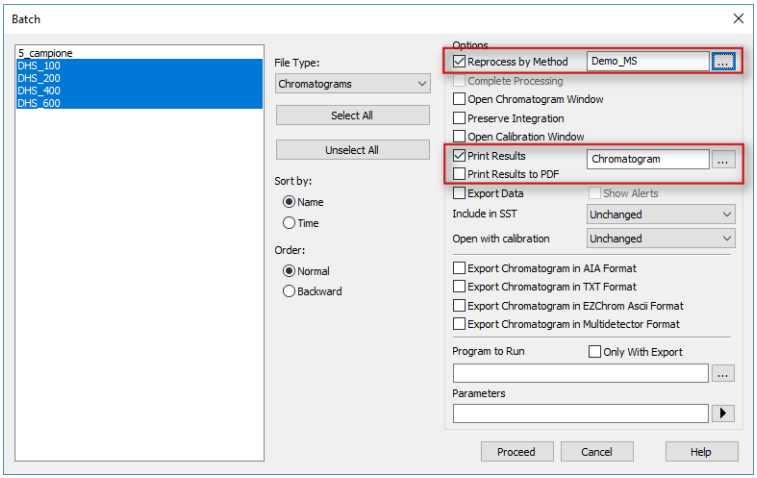



*Fig 10: Batch - Reprocess by Method and Print Results*

## 2.8 Good Laboratory Practice (GLP) Full version

GLP is for us the top priority and for this reason we are continually working on ways to ensure Clarity stays compliant ready. Based on experience from our customers and external auditors we have implemented the following features:

- Global Audit Trail
  - Located on a separate tab in the Station Audit Trail.
  - Logs critical stations operations: station starts/shut downs, creation of a new daily audit trail, changes in the configuration and user accounts, etc.
  - Logs are stored in one convenient file. Once it exceeds the allowed size, successive file is created.
- The option "*Disalow to Use Unsaved (Modified) Method*" has been removed from the GLP Options. The reason is that change of method handling will not allow to *Send* and thus measure with a modified method.
- Improved security of password (*.psw) file. This file is automatically created when setting up user accounts. Note that *.psw file is not backward compatible, meaning that if it was created under Clarity 8.0, it cannot be used in older versions of Clarity.

## 2.9 MS Extension - enhancements Full version

Upon suggestions from our users, we have redesigned the MS Search which is an important part of the MS Extension. Different workflows were taken into account while developing the redesigned functionality.

### 2.9.1 Unified features

Single Compound Search and Automatic Compound Search possessed the same functionality but with different labels and location on the respective tabs. Shared functionality is now located within the group *Search Options* and under the same labels which should not cause any confusion.

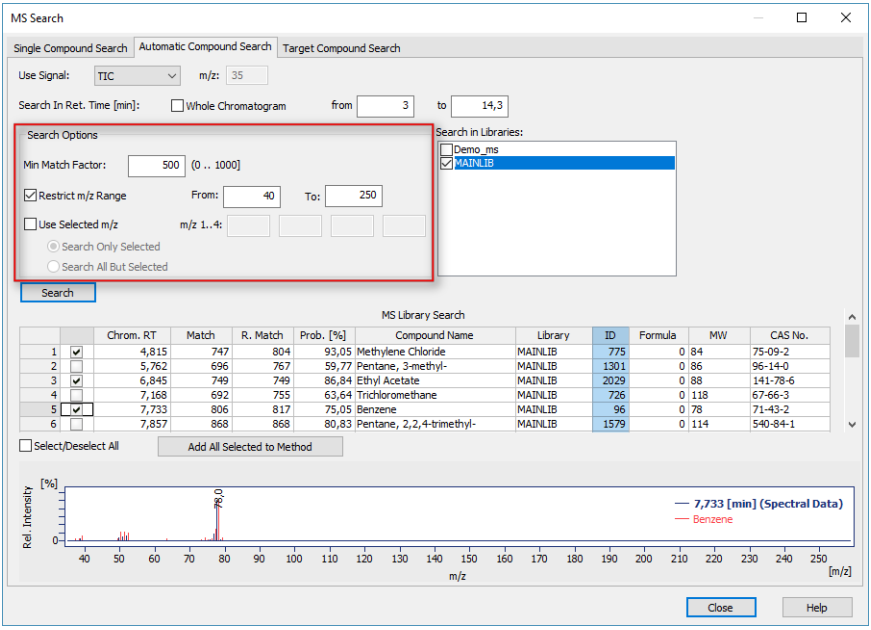



*Fig 11: MS Search - Search Options group*

### 2.9.2 Single Compound Search

*Single Compound Search* has undergone major enhancements. The *Match Spectrum at* label has been renamed to *Search In Ret. Time* ①. More importantly MS Search can now be performed over a range of retention times - simply check the *to* checkbox and fill the second retention time.

Now a specific m/z can be excluded from MS Search - check the *Use Selected m/z*, fill values which should be excluded from search and then select the *Search All But Selected* ②.

Support for subtraction background was implemented, in the *Background Subtraction* group ③, check one or two background checkboxes and fill the range. Note that if you fill a range that falls within the searched retention time you will be notified about it.
*Preview Spectrum in Library* ④ opens a NIST MS Search 2.0 external utility to overview the set parameters - actual search is performed by the *Search* button.
Compound to be added to the MS Method is now selected using the checkbox on the specific row ⑤. Note that only ONE compound can be selected.

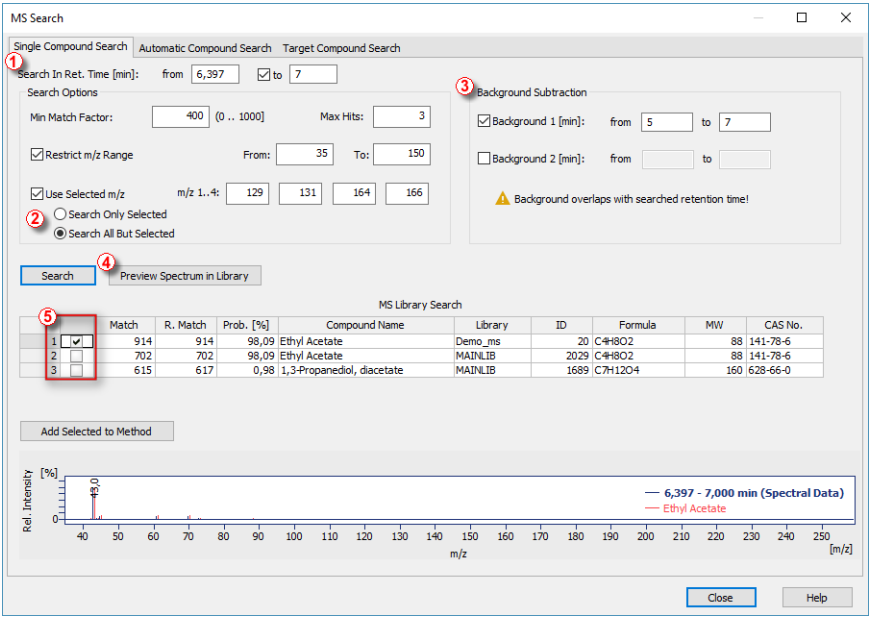



*Fig 12: MS Search - Single Compound Search*

## 2.9.3 Automatic Compound Search

Apart from the changes found in the *Search Options* group, several enhancements have been implemented. The *Restrict Chrom. Retention Time* label has been renamed to *Search In Ret. Time* ⑥ and placed at the top of the tab - as it is one of the first steps that must be performed.
Search results from the MS library are still displayed in a table. However it is much easier to select multiple compounds to be added to the MS Method. Simply check the checkbox ⑦ on the row of the compound(s) that you want to add.
Selecting or deselecting all compounds can be now easily performed using the chechbox ⑧ below the table.

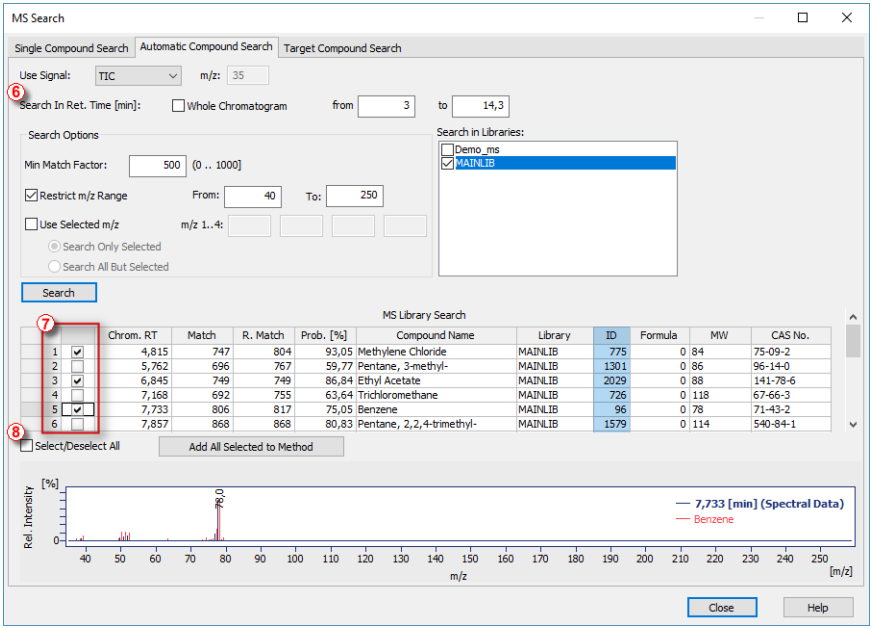



*Fig 13: MS Search - Automatic Compound Search*

## 2.9.4 Independent size of views

Chromatogram graph and spectrum graph can now be resized independently, therefore you can customize it to your needs - move mouse cursor over the separation line and drag the line up or down, whether you want to display larger chromatogram graph or spectrum graph.

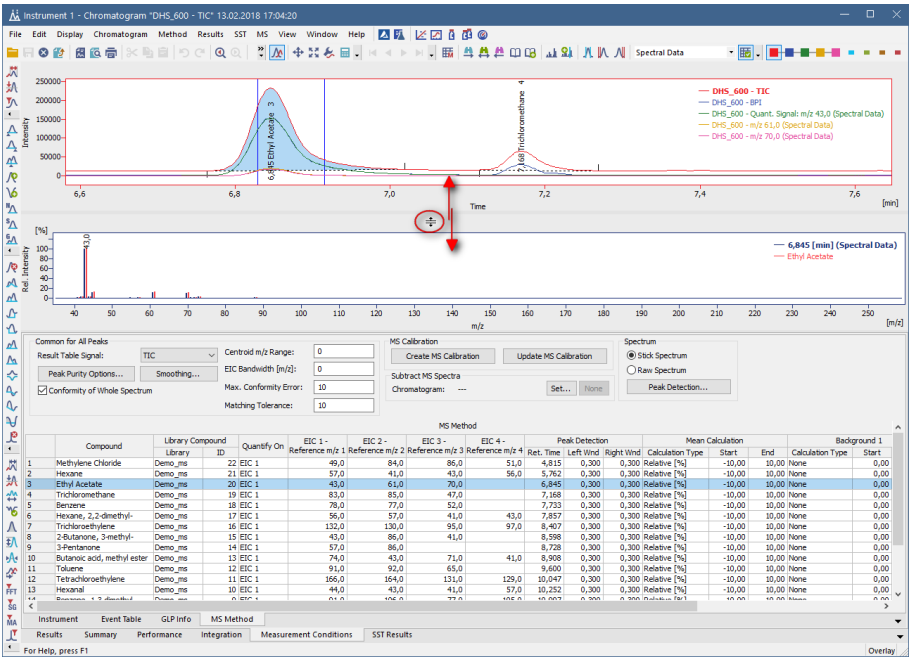



*Fig 14: Chromatogram - split views*

## 2.10 Internal Standards (ISTD) Full version

Upon suggestions, we have increased number of internal standards from 5 up to 10.
In order to make the most of the use of increased ISTD, it has been added to all relevant places:

- Single Analysis
- Sequence
- Chromatogram
- Calibration
- Prints and Exports

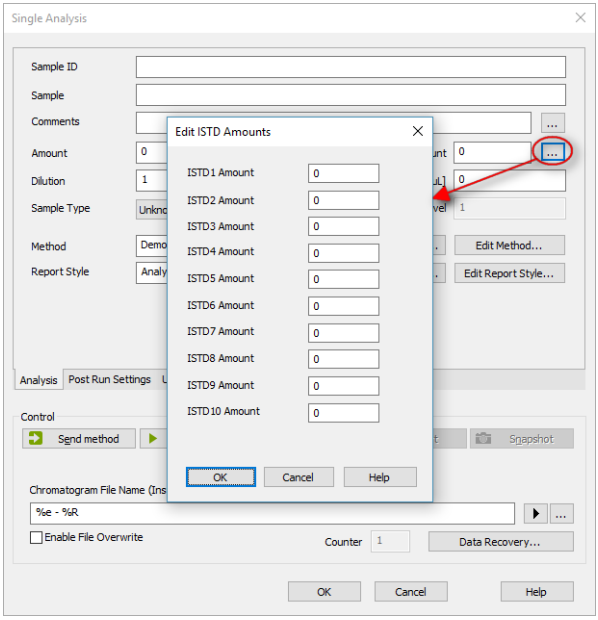



*Fig 15: Single Analysis - Edit ISTD Amounts*

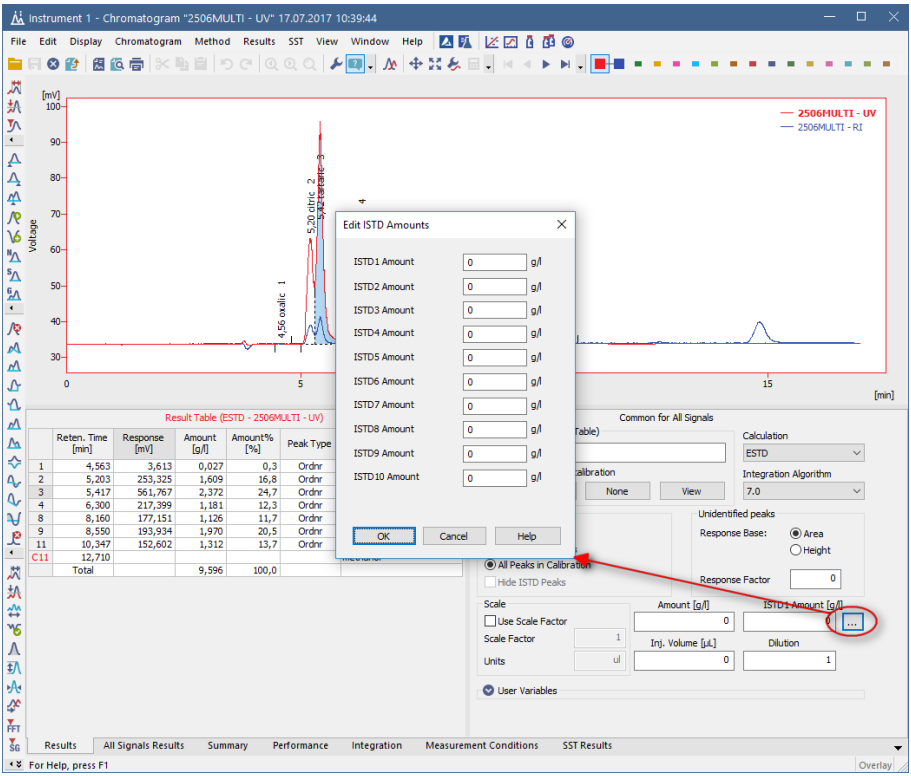



*Fig 16: Chromatogram - Edit ISTD Amounts*

# 2.11 Calibration

## 2.11.1 Details of Calibration point

Now it is much easier to review what calibration points are being used for constructing the calibration curve.

It is accessible directly from the *Calibration Summary Table* - upon pressing the three dots button (on the row of the desired compound) in the column *Rec No.*, dialog Details of Calibration for the respective compound on the given level pops up. It is not necessary to go on the tab of the respective compound to view this information.

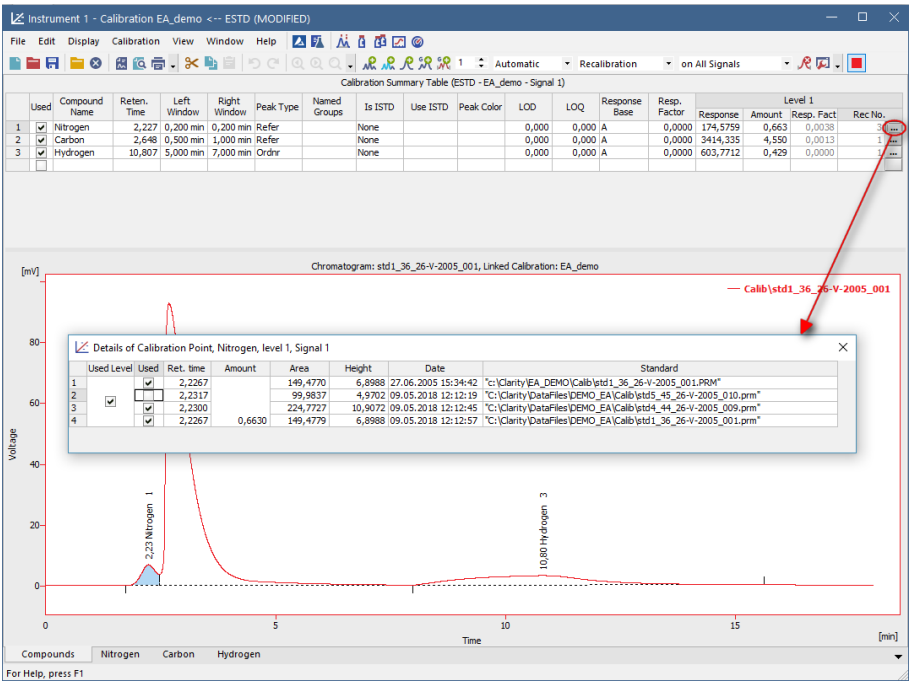



*Fig 17: Calibration - Details of Calibration Point*

# 2.12 Chromatogram

## 2.12.1 Enhanced error format

Enhanced error format for *Result Table* and *All Signals Result Table* mean that it is much easier to understand what is the problem and thus what must be repaired.

Each error/warning is located on a separate row, right above the tables.

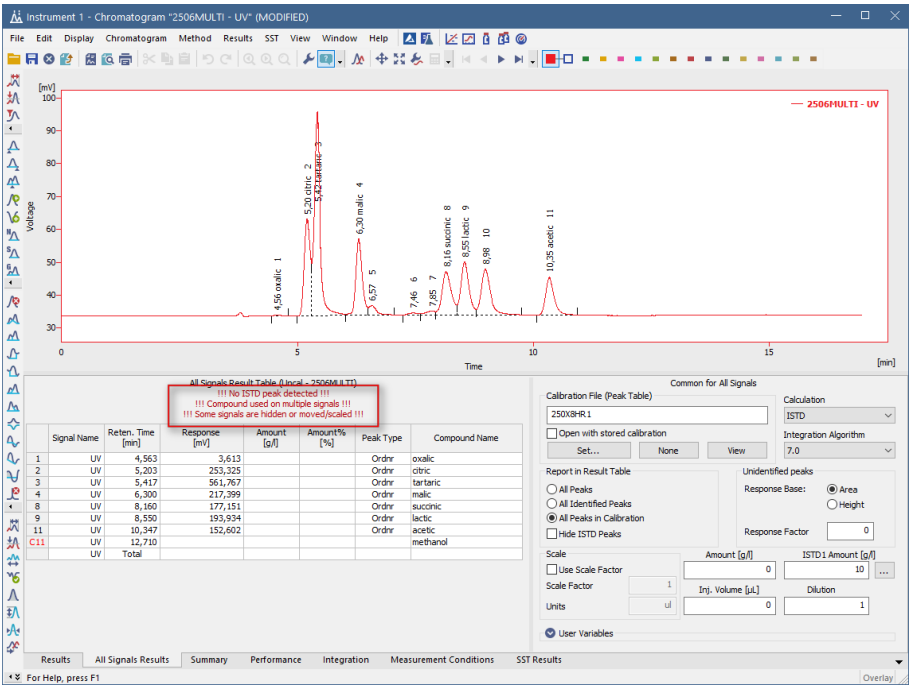



*Fig 18: Chromatogram window - error/warning above All Signals Result Table*

## 2.12.2 Import Chromatogram

Command *File - Import Chromatogram...* opens Import dialog which now contains *Apply Method* field for method. Since method is an integral part of any chromatogram, removal of the method opened on the Instrument meant that we had to provide some other way for imported chromatograms to "have" method. For this reason the Import dialog has a new field where the user can choose a method that will be applied to the resulting chromatogram.

Parameters that will be copied from the method are: integration table, parameters from the calculation and advanced tabs. By default the

method that is set here is the same as selected in the Single Analysis dialog.

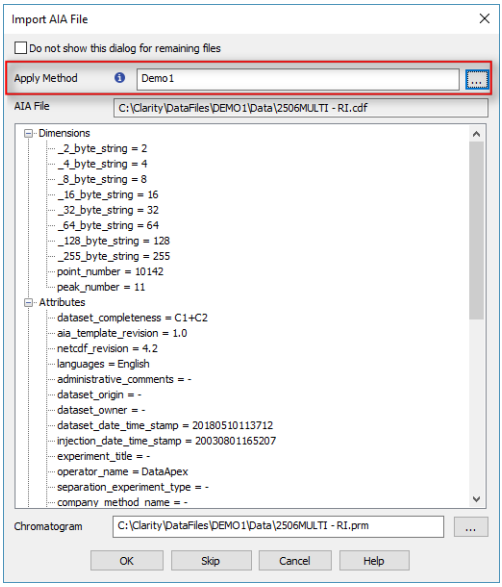



*Fig 19: Import dialog - Apply Method*

## 2.12.3 Mathematical Operations

Just as the *Import* dialog, so does the *Mathematical Operations* dialog contain a field for method. The functionality is the same as described above.

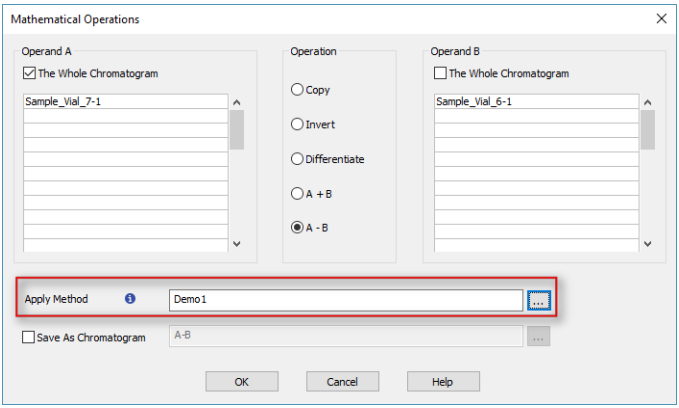



*Fig 20: Mathematical Operations dialog - Apply Method*

## 2.12.4 New icons for Set Model and Copy from Model

Functionality of *Set Model* and *Copy from Model* is commonly used and for this reason we have added icons which can be easily added (right mouse click - *Customize* - drag icon on the toolbar) on your toolbar, thus speeding up the work.

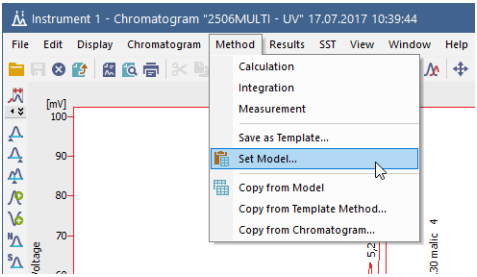



*Fig 21: Chromatogram window - Method menu*

# 2.13 Print

## 2.13.1 Report Setup - Word Wrap Long Texts

Compound names and other texts can be very long, therefore the option to *Word Wrap Long Texts* should be helpful in such situation. In the Report Setup on the *Results* tab, check the *Summary Table* checkbox and then check the *Word Wrap Long Texts*.

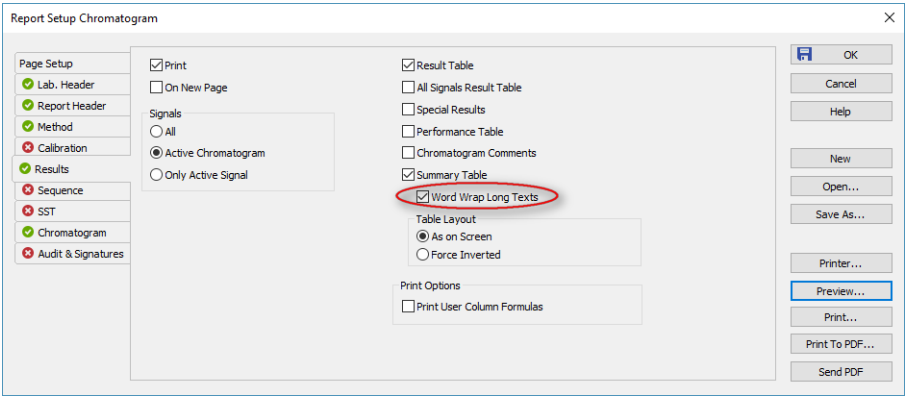
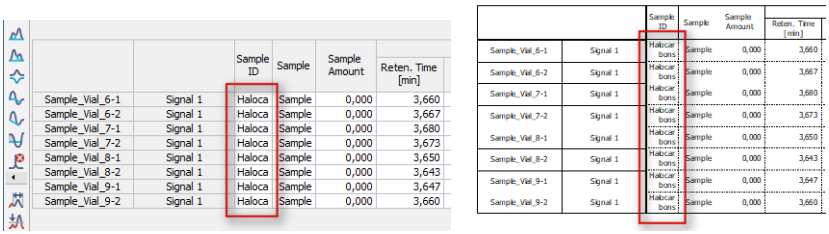



*Fig 22: Report Setup dialog - Word Wrap Long Texts*



| | | Sample ID | Sample | Sample Amount | Reten. Time [min] |
|---|---|---|---|---|---|
| Sample_Vial_6-1 | Signal 1 | Haloca | Sample | 0,000 | 3,660 |
| Sample_Vial_6-2 | Signal 1 | Haloca | Sample | 0,000 | 3,667 |
| Sample_Vial_7-1 | Signal 1 | Haloca | Sample | 0,000 | 3,680 |
| Sample_Vial_7-2 | Signal 1 | Haloca | Sample | 0,000 | 3,673 |
| Sample_Vial_8-1 | Signal 1 | Haloca | Sample | 0,000 | 3,650 |
| Sample_Vial_8-2 | Signal 1 | Haloca | Sample | 0,000 | 3,643 |
| Sample_Vial_9-1 | Signal 1 | Haloca | Sample | 0,000 | 3,647 |
| Sample_Vial_9-2 | Signal 1 | Haloca | Sample | 0,000 | 3,660 |

*Fig 23: Cut off text in Chromatogram vs. full text in Report*

## 2.13.2 Report Setup - Force Inverted

Sometimes printing of *Summary Table* is complicated as there can be more columns than rows. Clarity prints tables (for example from the *Results* tab) according to the columns as displayed on the screen. Option *Force Inverted* swaps columns for rows and vise versa. Thus enabling to view and print *Summary Table* with better readability.

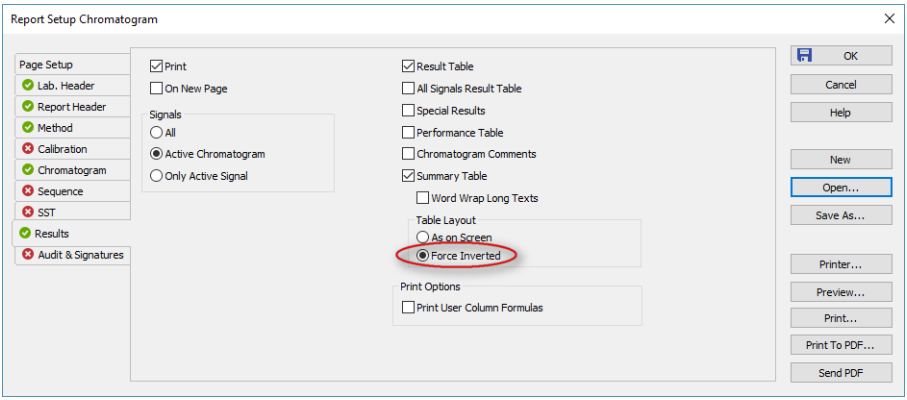



*Fig 24: Report Setup dialog - Force Inverted*

## 2.13.3 Report Setup - new Lab. Header variable

New header variable "*Instrument Name*" is now available on the *Lab. Header* tab of the Report Setup. Inserting "%e" into the Lab. Header row, inserts name of the Instrument (as named in the System Configuration) into the report.

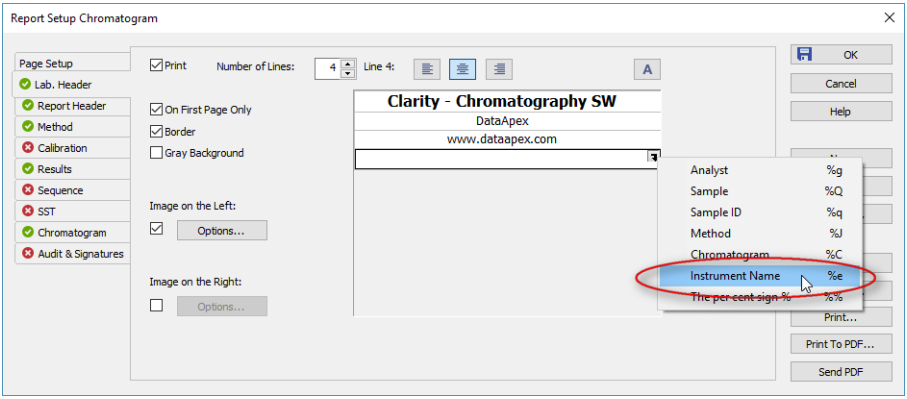



*Fig 25: Report Setup dialog - variable Instrument Name*

## 2.13.4 Renamed Report Style INSTRUMENT.STY

Instrument window used to have its own report style, as any other Clarity window. During the redesign we have removed the option to open Report Setup directly from the Instrument window. For this reason we have renamed the INSTRUMENT.STY to ANALYSIS.STY which is now the default print style for Single Analysis and Sequence.

# 2.14 Installation

## 2.14.1 Windows XP are no longer supported by Clarity 8.0

Microsoft has ended support for Window XP on April 8, 2014. For more than 4 years after the official end of support, we have allowed and supported Clarity on Windows XP. Now Clarity 8.0 can't be installed on any PC running Windows XP operating system.

## 2.14.2 Changes in the Typical installation

The **INT5**, **U-PAD**, **CB11** and **CB20** drivers (not supported on 64bit operating systems) were removed from the *Typical* Clarity Installation. In order to install them, select *Custom* and select required component(s) or alternatively select the *Full* installation.

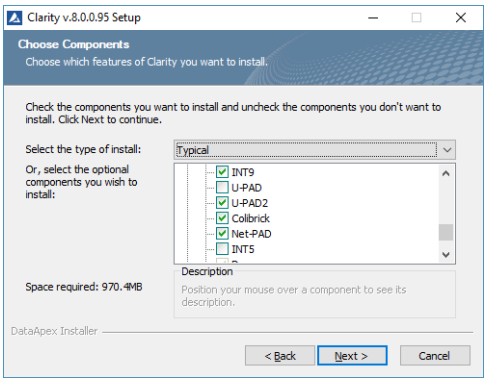



*Fig 26: Clarity Installation - Typical*

## 2.15 Other changes

- System Configuration - Available Control Modules dialog includes a new filter "*Only Installed*" to display only modules that are installed on the PC.
- LC Monitor - for better understanding the buttons *Purge* and *Manual Flow* were renamed to *Manual Flow* and *Modify Gradient*.
- Audit Trail - better readability of the information displayed in the *Info* column.
- Command Line - message about restarting instrument will be suppressed.
- Clarity2Go - please update your Clarity2Go application to get a proper new instrument states which are now more self-explanatory.
- Teamviewer QS - tool for online support has been updated to version 13.
- DHA Extension - minor improvements in the DHA.CSV table.
- SST Extension - new option to restore default columns.
- Various known bugs have been fixed. See *What's new* in the About dialog of your Clarity.

# 3 New and updated control modules Full version

This section contains new and updated control modules introduced in Clarity **8.0**.

## 3.1 Advion

**Updated:**

- Advion Expresion CMS - API updated to version 5.0.20.1.

## 3.2 CoruiTech

**New:**

- RainbowC HPLC - control module is now in the Testing state.
- Rainbow HPLC - control module is now in the Testing state.
- Rainbow detector - control module is now in the Testing state.

## 3.3 CTC

**Updated:**

- CTC PAL3 System driver updated to version 1.1.0.16.

## 3.4 Dani

**Updated:**

- Dani Master GC driver updated to version 1.6.9.0.

## 3.5 Ecom

**New:**

- Ecom ECF 2000 fraction collector - control module is now in the Testing state.

**Updated:**

- Flash12DAD and Flash06DAD - updated to version 2.4.0.0.
- ECD2000 - updated to version 3.3.0.0.
- ECDA2000 - updated to version 2.2.0.0.
- ECO2000 - updated to version 2.7.0.0.
- EcomECP2000 - updated to version 3.2.0.0.
- Panda30HID - updated to version 1.7.0.0.
- IOTA - updated to version 2.5.0.0.

## 3.6 HTA

**Updated:**

- HTA HT1500L autosampler driver updated to version 1.3.0.0.

## 3.7 KNAUER

**Updated:**

- Various KNAUER drivers updated to version 7.4.000.5067.

## 3.8 Shimadzu

**Updated:**

- Shimadzu AOC-20 sampler - added support for 0.5 and 5 µL syringe size.

## 3.9 Schambeck

**Updated:**

- Schambeck RI2000 detector - added support for models with firmware older than 4.86.

## 3.10 YL Instruments

**New:**

- ChroZen UHPLC ALS autosampler- control module is now in the Released state.
- ChroZen UHPLC CC thermostat - control module is now in the Released state.
- ChroZen UHPLC Pump pump - control module is now in the Testing state.
- ChroZen UHPLC UVD detector - control module is now in the Released state.

**Updated:**

- YL Instruments YL6500 GC driver updated to version 1.0.1.10.