

10.0 VS 9.0

Clarity (Lite)

ENG

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Phone: +420 251 013 400 clarity@dataapex.com www.dataapex.com DataApex Ltd. Petrzilkova 2583/13 158 00 Prague 5 The Czech Republic Sections of the manual connected only to the **Clarity Full** version are marked with the **Vell version** icon.

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Author: LD

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To facilitate the orientation in the **10.0 vs 9.0** manual and **Clarity** chromatography station, different fonts are used throughout the manual. Meanings of these fonts are:

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.

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 r | eader | of re | levant info | ormation. | | | |
|----------|------------------|--------------|-------|-------|-------------|-----------|----|------|-----------|
| Caution: | Warns informa | the tion. | user | of | possibly | dangerous | or | very | important |

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 **10.0** compared to version **9.1.1**, **9.1**, **9.0.1** and **9.0**.

Feature highlights include:

- Dual sampler support
- GLP Improvements for GLP mode
- Isoplot display in Data Acquisition
- Method adaptation message extended by reason of adaptation
- MS Improvements for MS extension
- NGA Support of calculations according to the Natural gas norm EN ISO 6976:2016
- External Control Module Installer
- · New and updated control modules

The list of all changes is available in the What's New document accessible from the software.

2 Clarity

2.1 Dual Chromatogram Mode

Since version **10.0** the **Dual Chromatogram Mode** is available in **Clarity**. It enables to create separate chromatograms instead of shared one when using chromatographs processing two samples simultaneously (GC with dual tower sampler or LC with dual loop sampler). It can also serve to split detector signals to two separate chromatograms if needed (for non-dual systems).

The **Dual Chromatogram Mode** can be enabled using the check box in Dual Chromatogram Mode section of *System Configuration* dialog. At least two detector signals should be assigned to the Instrument - one to Front and one to Back position. Positions are selected in the *Dual Chromatogram Mode - Assign Signals* dialog. All Instrument Types and Subtypes, except for MS Subtype, support the **Dual Chromatogram Mode**.

| System Configuration | | | | | | | | | × |
|--|--|-------------------|----------------|---|---|---|---|---------------|---|
| Setup Con | trol Modules | | | Nur | nber of Instrume | ents: 1 | | | |
| Name Solution Constraints of the serve of t | Used Instrument 1 Instrument 1 Instrument 1 | S/N CN2305A113 | ×> >> >> | Instrument 1 Name GC 1 Instrument Type GC Name AS GC: II GC GC A, GC: II GC A, GC A | Instrument | 2 C Instrument 3 2 From Aglent GC sys Aglent GC sys Aglent GC sys Aglent GC sys C Aglent GC system by Me Assign | Instrume In | Number 1 v | |
| Add Remove | About | Setup | | | C | ок с | ancel | Help | |

Fig 1: Dual Chromatogram Mode - System Configuration

| Detector Signal | Front position | Back position |
|--------------------|----------------|---------------|
| GCO - Front Signal | ۲ | 0 |
| GCO - Back Signal | 0 | ۲ |
| | | |

Fig 2: Dual Chromatogram Mode - Assign Signals

When **Dual Chromatogram Mode** is enabled, every signal in *Method Setup* is identified also with the position that was assigned to (Front- / Back -). Calculation and Advanced tabs are divided to 2 sub-tabs, one for each position. On Calculation tab, the calibration file has to be set for both position to a different file or not at all. On Advanced tab, as the subtraction chromatogram is set for each position separately, it is not possible to display it in the *Data Acquisition* window during the measurement.

In the *Sequence* window, columns meant for sample and chromatogram identification are duplicated so it is possible to input different values for the Front and Back position chromatograms. The positions of the samples cannot be defined independently. Back position is derived from the Front position. The sequence created in **Dual Chromatogram Mode** cannot be opened in standard mode and vice versa.

| đ | Instru | ment | 1 - Si | eque | nce D | ualChromat | ogram | | | | | | | | | | | | | | | | - | |
|-----|--|---------|--------|------|-------|----------------------|---------------------|-------------------|------------------|------------------|-----------------|------------------|-------------------|----------------------|---------------------|----------------|------|----------------|-----------------|------|---------------|-------|----------------------|---------------------|
| Fil | ile Edit Sequence View Window Help 🚺 🚺 📩 📩 🖄 🎯 | | | | | | | | | | | | | | | | | | | | | | | |
| | 2 ┣ 月 25 億 酉 「 9 2 3 9 월 6 5 5 5 1 → 1 ★ 1 0 0 = 5 6 7 + 10 ≠ 12 8 8 5 . | | | | | | | | | | | | | | | | | | | | | | | |
| | Status | Run | sv | EV | I/V | Sample ID - Front | Sample ID - Back | Sample - Front | Sample - Back | Sample Amount | ISTD1 Amount | Sample Dilut. | Inj.Vol. [ul.] | File Name - Front | File Name - Back | Sample Type | Lvi | Method Name | Report Style | Open | Open Calb. | Print | Line Info - Front | Line Info - Back |
| 1 | | | 1 | 1 | 1 | STD1 | STD1 | | | 0,000 | 0,000 | 1,000 | 100,000 | %q_%R_Front | %q_%R_Back | Stan | 1 | Demo 1 | | | | | | |
| 2 | | | 2 | 2 | 1 | STD2 | STD2 | | | 0,000 | 0,000 | 1,000 | 100,000 | %q_%R_Front | %q_%R_Back | Stan | 2 | Demo1 | | | | | | |
| 3 | | | 3 | 3 | 1 | Unk1 | Unk1 | | | 0,000 | 0,000 | 1,000 | 100,000 | %q_%R_Front | %q_%R_Back | Unkn | | Demo1 | | | | | | |
| 4 | | | | | | | | 3 | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| For | help pre | ess F1. | | | | | | | | Sir | ngle Anal | ysis: No m | ethod se | nt - Ready to send | I method or start | sequence | Vial | : 1 / Inj.: 1 | | File | Name: | | | Act |

Fig 3: Dual Chromatogram Mode - Sequence

In the *Instrument* window, the rows for the duplicated columns are divided in half to display both Front and Back position content.

| Running | 🗳 0.11 min / 0.30 min 🛛 📕 😣 |
|----------------|--|
| Status: | Acquisition running |
| Sent method: | Demo1 |
| Analysis Mode: | Sequence: DualChromatogram |
| Chromatogram: | Calib\STD1 - Front_16.08.2024 15_18_57_001 Calib\STD1 - Back_16.08.2024 15_18_57_002 |
| Injection: | Row: 1/3, Vial: 101 |
| Sample: | |
| Sample ID: | STD1 - Front STD1 - Back |
| | DEMO1 🚨 Administrator |

Fig 4: Dual Chromatogram Mode - Instrument window

For more detailed description of the **Dual Chromatogram Mode** and its usage please refer to **M251-Dual Chromatogram mode** manual available on our website in section Downloads.

2.2 Improvements for GLP mode

In **Clarity 10.0** several improvements for GLP mode have been done. It concerns changes in the *GLP Options, User Accounts* and *Station Audit Trail* dialogs.

2.2.1 GLP Options dialog

A new checkbox *Disallow user deletion and renaming* has been added to *GLP Options* dialog. When checked, it disables deletion or renaming of existing user, both options are grayed out. The renaming is possible only right after the creation of the user, before saving the *User Accounts*.

| GLP Options | × |
|--|------|
| Allow chromatogram GLP mode | |
| Disallow chromatogram files overwriting | |
| Generate chromatogram after manual abort | |
| Disallow calibration response change | |
| Disallow user list in login dialog | |
| Disallow user deletion and renaming | |
| Ask for reason of file change | |
| Disallow empty reason of file change | |
| Allow automated export of audit trail | |
| File Name: C:\Clarity10.0\Cfg\Audit_Trails\AuditTrailExport.csv | |
| Disallow spike filter and spike removal | |
| Disallow to overwrite existing files using save as and while exporting | |
| Allow chromatograms to be stored to current project only | |
| Disallow chromatogram merge operation | |
| | |
| OK Cancel | Help |
| | |
| User Accounts | |
| User List | |
| New Analyst | |
| User | |
| Duplicate | |
| Disable | |
| Delata | |
| Dejele | |
| | |
| | |
| User Details for: User | |
| User Name User | |
| Desktop File User | |
| Description | |
| beaupoin | |

Fig 5: Disallow user deletion and renaming

2.2.2 User Accounts dialog

New options to disable the user account manually or automatically have been added.

For automatic disabling of the account after reaching a maximum number of failed login attempts allowed, a new checkbox *Login Attempts* (a) is accessible in *Password Restrictions - Common for All* section. After reaching the set limit, the user account will be disabled permanently (until someone

enables them again). The exception is account with the right to access the *User Accounts* dialog, such account is locked only temporarily, for one hour.

| User Accounts | | | | | | | > | | |
|---|---|--|--|--|---|-----------------------------|--|--|--|
| User List New Duglicate Disable Delete | Penelope Terry Adam (disabled) (b) | , | | Password Res Min. Le Lifetim Expirat Passwo Login A | rictions - Common ngth tion Warning ord Reuse Attempts (2) ock | 1 1 5 1 3 10 | chars days days days days min | | |
| | | User De | tails for: Penelope | | | | | | |
| User Name Desktop File Description | Penelope Penelope | | | Password: Password Cha Last Login: | Password: Blank Password Changed: Last Login: | | | | |
| Access To | Instrument 2 | ✓ Instrument <u>3</u> | Instrument <u>4</u> | Certificate No certificate | Change Passv | word | Jser | | |
| Open Cuser Accord Open Configurat Edit Method Edit Method Edit Calibration Projects Import Chromate Take Control of I | unts ion am ogram Locked Instrument | Edit Sequence Edit Report Sty Select Method Open Audit Tra Open Audit Tra Archive / Restor Post Run Settin Start Acquisitio | le il d il Settings re gs n | Select Co | rtificate | Clear | Certificate | | |
| | | ОК | Cancel | Help | | | | | |

Fig 6: User Accounts dialog

The disabled user account (b) cannot be used to login anywhere in **Clarity**. The following warning message will appear when trying to login in with such account:



Fig 7: Disabled user accounts messages

For manual disabling of the account a new button *Disable* ⓒ can be used. To enable the account use the same button again.

In order to improve GLP mode, a new *Access Right* for opening the *Station Audit Trail* **(**) is added.

2.2.3 Station Audit Trail

There is a new header in *Station Audit Trail* displayed in a print report. The header contains basic information about the print. Listed items are: *Printed File(s), Printed Date and Printed By.* It has up to 8 rows. When there is no user account assigned to the station, item *By:* is not displayed.

| 6 | Audit Tra | | | | | | | | | | |
|------------|-------------------------------------|--|----------------------------------|--|----------------------------------|-----------|------------|-------------------|--|---|---|
| B | rint | <u>N</u> ext Page Pre <u>v</u> Page | ge | Two Page Z | oom <u>I</u> n | Zoom Out | Glose | | | | |
| Pri Pri | inted Date inted File: ((| :06.08.2024 15:49:52 :\Clarity10.238\Cfg\Au :\Clarity10.238\Cfg\Au :\Clarity10.238\Cfg\Au :\Clarity10.238\Cfg\Au :\Clarity10.238\Cfg\Au | udit_ idit_ idit_ idit_ | _Trails\2024_08_06. Trails\2024_07_24.a Trails\2024_08_01.a Trails\2024_07_31.a | audit audit audit audit | By: Joh | n | | | | |
| | | Time | | Group | Severity | User Name | Instrument | Area | Description | ٦ | Ш |
| | 1 | 31.07.2024 12:08:51 | ወ | Start/Close | | | System | System | End System | | |
| | 2 | 31.07.2024 12:08:50 | ٥ | System Configuration | | | System | Configur ation | System Configuration dialog has been closed. | | |
| | 3 | 31.07.2024 11:23:56 | ٥ | System Configuration | | | System | Configur ation | System Configuration dialog has been opened. | | |
| | 4 | 31.07.2024 10:38:21 | ٥ | System Configuration | | | System | Configur ation | System Configuration dialog has been closed. | | |

Fig 8: Station Audit Trail header

2.3 ISO plot in Data Acquisition

In *Data Acquisition* window of MS and PDA extension, the toggle *Show Spectra* was replaced by *Show Signal(s)* and *Show PDA/ MS Spectrum*. In PDA extension, the *Show Isoplot* command has been added newly. Commands are accessible from **View menu**. *Show PDA/ MS Spectrum* allows the user to display the real time spectrum acquired by the detector during a running analysis. *Show Isoplot* allows the user to display the real time isoplot made of the acquired PDA spectral data. These commands can be selected anytime, but **Clarity** displays any spectra or isoplot only during a running acquisition. It is always possible to return to the basic display mode by selecting the *Show Signal(s)* command.



Fig 9: A real time Isoplot view

2.4 Method adaptation message

The method adaptation message has been expanded to include information about the control module(s) and other reasons requiring method adaptation. Details are displayed after pressing *More* button. Methods from the previous version may therefore require a one-time adaptation of the method.



Fig 10: Method adaptation message including changes that require adaptation

2.5 Improvements for MS extension

In **Clarity 10.0** several improvements for MS extension have been done. It concerns changes in the *MS Search* dialog and on *MS Method* tab.

2.5.1 Single Compound Search

Newly user can select the libraries which should be used for the automatic search also on Single Compound Search tab. It is possible to select multiple libraries.

| gle Compound Search Automatic Compound Search Target Compound Search arch In Ret. Time [min]: From: 7.294 To: 7.294 Search Options Background 1 [min]: From: To: Restrict m/z Range From: 40 To: 500 Use Selected m/z m/z 1.4: Background 2 [min]: From: To: Select From Graph Use Selected m/z m/z 1.4: Beckground 2 [min]: From: To: Select From Graph Use Selected m/z m/z 1.4: Beckground 2 [min]: From: To: Select From Graph Use Selected m/z m/z 1.4: Beckground 2 [min]: From: To: Select From Graph Use Selected m/z m/z 1.4: Beckground 2 [min]: From: To: Select From Graph Search Only Selected Beckground 2 [min]: From: To: Select From Graph Search All But Selected Beckground 2 [min]: From: To: Select From Graph Search All But Selected Beckground 2 [min]: MW CAS No. CAS No. 1 G 64 From: Search All But Selected Dift | Search | | | | | | | | | — D | |
|---|-------------------------------|---------------------------|---------------------|-----------|--------------------------------------|--------------|----------|---------|-----------------|--|------------|
| arch In Ret. Time [min]: From: 7.294 To: 7.294 Bedcground Jumpi: From: To: Select From Graph Bedcground 2 [min]: From: To: Select From Graph Bedcground 2 [min]: From: To: Select From Graph Bedcground 2 [min]: From: To: Select From Graph Use Selected m/z m/z 14: Search Only Selected Search Only Selected Beach All But Selected Search All But Selected Beach All But Selected Beach All But | gle Compound Search Automatic | Compound Search Ta | rget Compound Seard | h | | | | | | | |
| Search Options Badground Subtraction Min Match Factor: 0 (01000) Max Hts: 3 Bedground 1 [min]: From: To: Select From Graph Badground 2 [min]: From: To: Select From Graph Use Selected m/z m/z 14: Search in Ukraries: Search only Selected Search All But Selected Search Search only Selected Search only Selected Search All But Selected Search only Selected Search only Selected Search only Selected Search All But Selected Search only Selected Search only Selected MW Add Selected to Method Match R. Match [Prob. [%] Compound Name Abhnul B 729 (40+56) 558 7235-40-7 3 627 714 14.51 (Searbrokalin MAINLB 2010 (22+13405) 402 (465-11-2) Add Selected to Method - 7.294 min (Spectrum) | arch In Ret. Time [min]: From | n: 7.294 | To: 7.294 | Selec | t From Graph | | | | | | |
| Min Match Factor: 0 (01000) Max Hits: 3 Badground 1 [min]: From: To: Select From Graph @ Restrict m/z Range From: 40 To: 500 Badground 2 [min]: From: To: Select From Graph Use Selected m/z m/z m/z To: Select From Graph Use Selected m/z m/z To: Select From Graph Search All But Selected Demograp Search Nukrais: Demograp @ Search All But Selected Demograp Min Max Bis 1060 (C23H3206 404 50:03:3 1 644 743 25:22 Hydrocortisone Actate MAINLIB 1060 (C23H3206 404 50:03:3 2 628 840 15:10 B Carotene MAINLIB 2010 (C2H3405 402 (465:11:2) Add Selected to Method To: September Actable (%) 10 10 10 10 10 10 10 10 2 63 80 10 10 10 10 10 10 10 10 40 50 <td>Search Options</td> <td></td> <td></td> <td></td> <td>Background Su</td> <td>btraction</td> <td></td> <td></td> <td></td> <td></td> <td></td> | Search Options | | | | Background Su | btraction | | | | | |
| Restrict m/z Range From: 40 To: 500 Baddground 2 [min]: From: To: Select From Graph Use Selected m/z m/z 1.4: Search In Libraries: Search In Libraries: Search In Libraries: Search All But Selected Search All But Selected Match R. Match Prob. [%] Compound Name Search MW CAS No. 1 644 743 26.22 Hydrocortsone Acetate MAINLIB 1060 (22H3206 404 50-03-3 2 628 640 15.10 D Compound Name MAINLIB 2010 (22H3205 402 (465-11-2) Add Selected to Method | Min Match Factor: | 0 (01000] | Max Hits: | 3 | Background | 1 [min]: | From: | To: | | Select From Graph | |
| Use Selected m/z m/z 1.4: Search All But Selected m/z Search All But Selected m/z Search All But Selected m/z Match R. Match (Prob. [%]) Monoration (Mare Kather) Match R. Match (Prob. [%]) Monoration (Mare Kather) 1 Match R. Match (Prob. [%]) Monoration (Mare Kather) 2 523 940 15.10 (Compound Name MAINLB) 729 (540):56 2 523 940 15.10 (Compound Name MAINLB) 729 (540):56 558 (723):40:7 3 627 714 14.51 (Gamabufotalin MAINLB 2010 (24):3405 402 (45):11:2 Add Selected to Method | Restrict m/z Range | From: | 40 To: | 500 | Background | 2 [min]: | From: | To: | | Select From Graph | |
| O Search Only Selected Demo _r/s Search All But Selected MANUIS Demo _r/s Maximum Beach Preview Spectrum in Library Discourse for the second se | Use Selected m/z m | n/z 14: | | | Search in Librari | es: | | | | | |
| Search Al But Selected Match But Selected Search Al But Selected Match R. Match Prob. % Milling Search Match R. Match Prob. % Match Compound Name Jorn y ID Formula MW CAS No. 1 644 743 26.22 hydrocortisone Acetate MAINLB 1056 C2313206 404 55-03-3 627 53.10 62 Control 15.10 62 Contro | Search Only Selected | | | (| Demo_ms | | | | | | |
| Beach Preview Spectrum in Library Match R. Match Proview Spectrum in Library Image: Compound Name Library Seach Match R. Match Proview Spectrum in Library ID Formula MW CAS No. 1 Compound Name Library ID Formula MW CAS No. 2 644 743 26.22 Phydrocritisone Acetate MAINLIB 2006 C23H206 404 59-03-3 2 658 640 15.10 /b Cerotime MAINLIB 2010 C24H306 536 7235-40-7 3 627 714 14.51 (Samabufotalin MAINLIB 2010 C2H305 402 (465-11-2) Add Selected to Method | O Search All But Selected | | | | MAINLIB | | | | | | |
| Search Preview Spectrum in Library Match R. Match Problem (%) Match R. Match Problem (%) Match Match R. Match Problem (%) Match Match R. Match Problem (%) Match Match Problem (%) Match Match Problem (%) Match Match R. Match Problem (%) Match | | | | | | | | | | | |
| Midth R. Midth Prob. (%) Compound Name Library ID Formula MW CAS No. 1 0 64 743 26.21 1/10 6/0 2343206 4/04 50-03-3 2 6.28 640 15.10 B.Carotene MAINLIB 729 C40H56 556 7235-40-7 3 6.27 714 14.51 Gamabufotaln MAINLIB 2010 C24H3405 402 465-11-2 Add Selected to Method | Search Preview S | Spectrum in Library | | | | | | | | | |
| Match R. Match Prob. Yild Compound Name Library ID Formula MW C&S No. 1 C 644 743 26.22 Ydroortsone Acetate MAINLIB 729 CA9156 535 723-40-7 2 C 638 640 15.10 B Carotene MAINLIB 729 CA9156 535 723-40-7 3 C C Compound Name MAINLIB 729 CA9156 536 723-40-7 4dd Selected to Method MAINLIB 2010 C24H3405 402 465-11-2 Add Selected to Method MAINLIB 2010 C24H3405 402 465-11-2 4dd Selected to Method MAINLIB 2010 C24H3405 402 465-11-2 4dd Selected to Method MAINLIB 2010 C24H3405 402 465-11-2 4dd Selected to Method MAINLIB 2010 C24H3405 402 465-51-2 4dd Selected to Method MAINLIB 200 200 | | | MS Libra | ry Search | | | | | | | |
| 1 0 644 743 26.22 Hydrocortisone Acclate MAINLIB 1060 (221320.6) 404 50.90.35 3 0 6.27 714 14.51 (Samabufotaln MAINLIB 2010 (2413405) 402 465-11-2 Add Selected to Method | Match R. Mat | tch Prob. [%] | Compound Name | | Library | ID | Formula | MW | CAS No. | | |
| 2 6.28 840 15.10 β Carotene MADULIB 729 (40456 536 7235-40-7 3 6.27 714 14.51 Gamabufotalin MADULIB 2010 C2413405 402 (465-11-2) Add Selected to Method | 1 644 | 743 26.22 Hydroco | rtisone Acetate | | MAINLIB | 1060 | C23H32O6 | 404 | 50-03-3 | | |
| 3 627 714 14.51 (Samabutotalin MAINUB 2010 (224/3405 402 (465-11-2) Add Selected to Method | 2 628 8 | 340 15.10 β Carote | ene | | MAINLIB | 729 | C40H56 | 536 | 7235-40-7 | | |
| Add Selected to Method | 3 627 7 | 714 14.51 Gamabu | fotalin | | MAINLIB | 2010 | C24H34O5 | 402 | 465-11-2 | | |
| HT \$76 (25 25 28 80 10 11 120 140 120 120 140 150 150 20 220 240 260 230 30 320 340 360 400 420 440 460 480 500 520 5 +0 60 80 100 120 140 150 180 200 220 240 260 230 30 30 320 340 360 400 420 440 460 480 500 520 5 m/z | Add Selected to Method | | | | | | | | — 7.29 — Hyd | 94 min (Spectrum) rocortisone Acetate | |
| -ήο 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460 460 500 520 51 m/z | | | | Jan | | بر المربعا م | | | | | |
| | | محافقين عاقب عاقر معاليهم | 6 | | hunders and the second second second | _ | | | | | _ |
| | 40 60 80 100 | 120 140 160 | 180 200 220 2 | 240 260 | 280 300 m/z | 320 340 | 360 380 | 400 420 | 440 460 | 480 500 520 | 540 [m/ |

Fig 11: Single Compound Search

2.5.2 MS Search

In **Clarity 9.1**, new configurable parameters for *MS Search* mechanism type have been added. Search performed in the *MS Search program* may follow dozens of different settings. **Clarity** does not directly offer all of these settings, but some may be forced to **Clarity** searches using configuration file. Search parameters are available through *Options - Library Search Options* command. Using the configuration file, only two settings can be changed from **Clarity** - *Spectrum Search Type* and *Presearch*. Default values are:

- Spectrum Search Type Identity, Quick @
- Presearch Off (b)

| Library Search Options | | × |
|--|--|---|
| Search MS/MS Libraries Automativ Spectrum Search Type © Identity © Similarity Quick @ | on Limits Constraints | s |
| Spectrum Search Options | Other Options ✓ Automation Auto Bepot Apply Limits Use Constraints | |
| ОК | Cancel Help | , |

Fig 12: Library Search Options

The values can be changed in others.ini file located in /CFG/ subdirectory of **Clarity** installation directory. A new section should be created (see example below).

[MS] SearchMode=Q Presearch=Default

2.5.3 MS Method tab

Since **Clarity 10.0**, even a chromatogram that does not contain MS spectra has a MS Method tab available. If the substance is to be searched for on an external signal and we have it, results are always calculated. If the substance is to be searched for in the spectral data and we do not have it, a quantification signal for it is not created either when calculating the results or for the graph when selecting a substance in the *MS Method table*. Temporary signals are added only if spectral data are available.

| A instrument 1 - Chromatogram "C:\Clarity10.238\DataFiles\DEMO1\DataEXAMPLE - Signal 1" (MODIFIED) | | | | | | | | | | | |
|--|--------|---|--------------|---------------|---------------------|------------------|----------|------------------------------------|----------------------------------|----------------------------|-----------|
| File Edit Display Chromatogram Method Results SST | MS | View Window Help 🔼 🎼 | 2 🗷 🖞 | <u>6</u> @ | | | | | | | |
| <mark>- R © 12 (2 (2 (2 (2 (2 (2 (2 (2 (2 (2 (2 (2 (2</mark> | | MS Integration MS Method Set NIST Libraries Directory | Þ ÞI | . 155 | 4 A A 0 03 | <u>11</u> 24 . | M. IV. | NI | | • 🛃 • 📕 | |
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| | 108 | Add Spectrum to Library | Time | | | | | | | | 5mm 0 |
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| ~ <u>^</u> | | Add Reference m/z | | | | | | | | | |
| 5A | | Add Compound w/o Library Spectrum | | | | | | | | | |
| 4 | | Add Selected m/z Signal as Temporary | | | | | | | | | |
| 12 | | Add Temporary m/z Signal Manually | | | | | | | | | |
| A | 1 | Remove All Temporary m/z Signals | | | | | | | | | |
| Common for All Peaks | | Mean and Backgrounds | ⊳ n | | | | Sp | ectrum | | | |
| Result Table Signal: Signal 1 Cen | 1 | Create Spectrum Label | MS Ca | ibration | Update MS Cali | ibration | 0 (| Stick Spe | ctrum | | |
| Peak Purity Options Smoothing EIC | 3 | Switch MS Warnings Off | Spectr | a | | | |) Raw Spe | ctrum | | |
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| Compound Library Compound | | Quantify On Defenses m/s 1 Defense | IC 2 - | EIC 3 - | EIC 4 - | Peak | Detectio | n | Mean | Calculation | |
| 1 test 0 | EIC : | 96.0 | ence nyz z k | ererence ing | 2 3 Kelelence m/2 4 | 0.000 | 0.300 | Right Whd | Calculation Type Relative [%] | -10.00 | 10.00 No |
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| Results Summary Performance Integration | M | S Integration MS Method Measur | rement Con | ditions | SST Results | | | | | | • |
| 45 | | | | | | | | | | | Overlay / |

Fig 13: MS Method tab without spectral data

2.6 External Control Module Installer

We release up to three updates of the **Clarity Chromatography Software** each year. In some environments, updating or adding new control modules more frequently or simply out of this schedule might be necessary. Therefore, since **Clarity 9.1** we offer the developers a control module package installer.

The installer is custom-made. All control modules within the installer must be first approved by DataApex. The installer is then distributed by the developer and may be also available on the DataApex website (section Downloads – Software – Others). Currently available external packages are CoruiTech and Wayeal.

The Installation Qualification (IQ) of control modules added via package installers is treated separately from the integral **Clarity IQ**. The developer is fully responsible for the IQ of such drivers.

3 New and updated control modules

This section contains new and updated control modules introduced in Clarity $9.0.1,\,9.1,\,9.1.1$ and 10.0 .

3.1 Clarity 9.0.1

3.1.1 Agilent

Update:

• Agilent ICF control module has been updated to version A.03.02.U2.

3.1.2 Ecom

Update:

- Ecom ECDA2000 control module has been updated to version 3.1.0.0.
- Ecom ECP2000 control module has been updated to version 4.3.0.0.

3.1.3 Haosi Bio

First Release:

• Haosi Bio ARIES LC 2400 control module is now available in version 1.0.0.8.

3.1.4 HTA

First Release:

• HTA 2800T control module is now available.

Update:

- HT1500L autosampler support for firmware 1.08 and additional tray configurations were added.
- HT1500L autosampler support for firmware 1.09, new options for Wash parameters and Initial Empty line were added.

3.1.5 Labio

Update:

• Labio GC-11 UV control module has been updated to version 2.0.1.23.

3.1.6 Netel

First Release:

• Netel Chrom Plus 6000 control module is now available in version 1.0.2.38.

3.1.7 Shanghai Sunny Hengping

Update:

• Shanghai Sunny Hengping Scientific Instrument GC-MS control module has been updated to version 2.1.5.0.

3.1.8 Teledyne

First Release:

• Teledyne ReaXus pumps by RUBY script are now available.

3.1.9 Welch

Update:

• Welch 5430 control module has been updated to version 3.1.0.0.

3.1.10 Young In Chromass

Update:

• Young In Chromass YCChroZenGC control module has been updated to version 1.0.2.38.

3.2 Clarity 9.1

3.2.1 Advion

First release:

• Advion CMS API control module has been updated to version 6.9.44.1.

3.2.2 Chromsystems

First release:

• Chromsystems HPLC system modules CLC 200, CLC 320, CLC 330, CLC 340, CLC 420 are now available.

3.2.3 CoruiTech

First release:

- CoruiTech Rainbow control module is now available.
- CoruiTech Rainbow Detector control module is now available.
- CoruiTech RainbowC LC system control module is now available.

The control modules for Rainbow, Rainbow Detector, RainbowC LC systems are since **Clarity 9.1** part of the external control module package only. To install it you should download CoruiTech Control Module Installer from our webpage (section Downloads-Software Other). CoruiTech Rainbow, Rainbow Detector and RainbowC LC systems were therefore removed from standard **Clarity** installation.

3.2.4 Ecom

First Release:

• Ecom ECVA2000 control module is now available in version 1.4.0.0.

Update:

• Ecom ECF2000 control module has been updated to version 2.1.0.0.

3.2.5 Labio

Update:

• Labio GC-11 UV control module has been updated to version 2.0.1.23.

3.2.6 Netel

Update:

• Netel Chrom Plus 6000 control module is now available in version 1.0.2.40.

3.2.7 Sykam

Update:

• Sykam S6510 control module has been updated to version 1.0.5.2.

3.2.8 Welch

First release:

- Welch WelNova 6110 Isocratic pump control module is now available.
- Welch WelNova 6120 High Pressure Gradient pump control module is now available.
- Welch WelNova 6140 Low Pressure Gradient pump control module is now available.
- Welch WelNova 6210 Autosampler control module is now available.

3.2.9 Young In Chromass

Update:

- Young In Chromass YL9130 control module has been updated to version 4.0.2.25.
- Young In Chromass ChroZenGC control module has been updated to version 1.0.2.40.
- Young In Chromass ChroZenAS control module has been updated to version 1.0.0.17.
- Young In Chromass ChroZenPump control module has been updated to version 1.0.1.19.

3.3 Clarity 9.1.01

3.3.1 Agilent

First release:

• Agilent 8697 XL control module is now available.

3.3.2 Ecom

First Release:

• Ecom ECA Amino 500 control module is now available.

Update:

• Ecom ECP2000 control module has been updated to version 4.5.0.0.

3.3.3 Netel

Update:

• Netel Chrom Plus 6000 control module is now available in version 1.0.2.43.

3.3.4 Sykam

First release:

• Sykam S6410 control module is now available.

Update:

• Sykam S150 control module has been updated to version 3.0.1.5.

3.3.5 Young In Chromass

Update:

- Young In Chromass ChroZenGC control module has been updated to version 1.0.2.41.
- Young In Chromass ChroZenPump control module has been updated to version 1.0.1.20.

3.4 Clarity 10.0

Note: Please notice that due to changes in version **10.0**, configuration files of the following control modules now support only a new format. Removing and adding these control modules in *System Configuration* is necessary, if the configuration was last saved in **Clarity** version in brackets or older: Bischoff 2250 (version 2.5), CB20 (version 2.5), Gilson 30X (version 9.1), Spark Alias (version 3.0), Spark Optimas (version 3.0) and Spark Symbiosis (version 5.0.02).

3.4.1 CoruiTech

First release:

- Corui Module samplerC control module is now available.
- Corui Module BSM control module is now available.
- Corui Module QSM control module is now available.
- Corui Module CHManager control module is now available.
- Corui Module UV Detector control module is now available.
- Corui Module PDA detector control module is now available.

The control modules for Corui Modules - samplerC, BSM (binary pump), QSM (quaternary pump), CHManager (column oven), UV detector and PDA detector are part of the external control module package. To install it you should download CoruiTech Control Module Installer from our webpage (section Downloads-Software Other).

3.4.2 CXTH

First release:

- CXTH P3000 control module is now available.
- CXTH P6000 control module is now available.
- CXTH UV1000 control module is now available.
- CXTH UV3000 control module is now available.
- CXTH UV6000 control module is now available.

3.4.3 Ecom

First Release:

- Ecom AS96 control module is now available.
- Ecom ECDM2000 control module is now available in version 1.0.0.0.

3.4.4 Knauer

First release:

- Knauer FC6.1 and P4.2S control modules are now available
- Knauer UAD 6.1L and UAD 6.1L Prep control modules are now available.

Update:

- Knauer LH8.1 and FLD2.1 control modules have been updated.
- Knauer HPLC control module has been updated to version 9.1.0.6149.

3.4.5 Konik

First release:

- KONIK 6000A control module is now available.
- MSQ1 control module is now available.

3.4.6 Netel

Update:

• Netel Chrom Plus 6000 control module is now available in version 1.0.2.43.

3.4.7 Sykam

Update:

- Sykam S1130 control module has been updated to version 2.0.1.35.
- Sykam S150 control module has been updated to version 3.0.1.8.
- Sykam S3250 control module has been updated to version 1.0.12.0.
- Sykam S3350 control module has been updated to version 2.0.0.29.

3.4.8 Vici Valco

Update:

• Vici Valco TCD3 control module has been updated to version 1.0.0.14.

3.4.9 VWR

First release:

• VWR ELSD control module is now available.

3.4.10 Wayeal

First release:

• Wayeal FLD 3200 control module is now available.

The control module for Wayeal FLD 3200 is since **Clarity10.0** part of the external control module package. To install it you should download Wayeal Control Module Installer from our webpage (section Downloads-Software Other).

3.4.11 Young In Chromass

Update:

- Young In Chromass ChroZenAS control module has been updated to version 1.0.0.19.
- Young In Chromass ChroZenGC control module has been updated to version 1.0.2.43.

- Young In Chromass ChroZenPDA control module has been updated to version 1.0.0.10.
- Young In Chromass YL6500 GC control module has been updated to version 1.0.1.27.
- Young In Chromass YL9150 Plus control module has been updated to version 1.0.1.15.