Clarity (Lite)

4.0 vs 3.0

ENG

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Phone: +420 251 013 400
Fax: +420 251 013 401
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 Full version icon.

Author: zte

Contents

To facilitate the orientation in the **4.0 vs 3.0** 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, there are text sections written in format other than normal text. These sections are formatted as follows:

Note:	Notifies the reader of possibly interesting information.
Caution:	Warns the user of possibly dangerous or very important information.

Marks the problem statement or trouble question.

Description: Presents any closer 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 **4.0**. Main news includes:

- **DHA extension** for detailed hydrocarbon analysis according to **ASTM D6730**.
- USB A/D converter **Colibrick**.
- **Agilent ICF** for controlling the **Agilent HPLC** instruments.
- **Grace Alltech 3300 ELSD** detector.
- **UNI Ruby** for controlling your instruments using the customized scripts.

2 Clarity

2.1 System configuration Full version

- New instrument type **CE-PDA** is available.

2.1.1 Available Control Modules Full version

- Indication of available, but not installed modules was added. By double-clicking on the dialog you can display additional information, for example prerequisites or how to install the module.

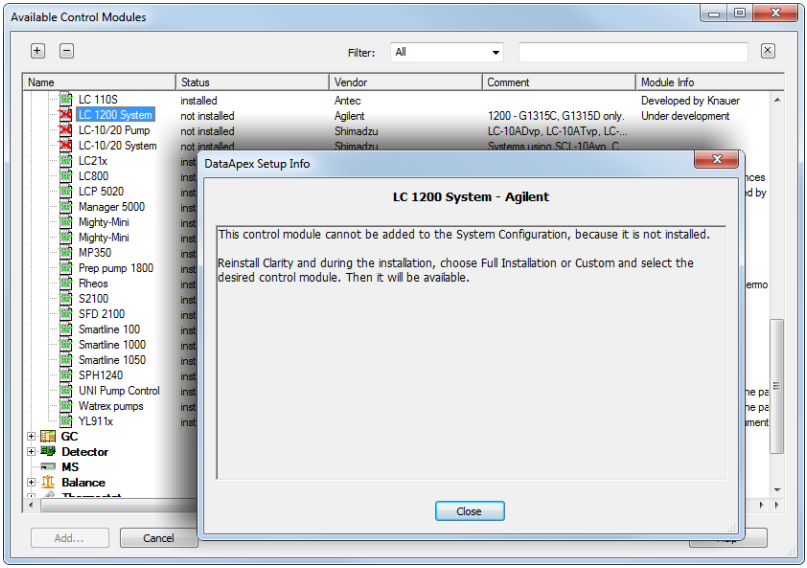

Fig 1: Information dialog when a module is not installed.

2.2 Instrument window

- New project could be created from the Login dialog by selecting the *<New project>* command Full version.

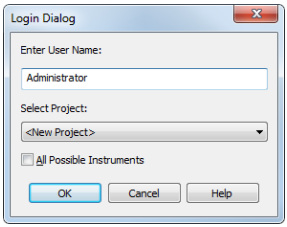

Fig 2: Login dialog and the option to create a new project

- Increased width of the Instrument window to fit the width of the menu in **Clarity** localized versions.
- User Options dialog, option *Warn before running already measured sequence* is now active in the default desktop.

2.2.1 Single Analysis

- It is possible to enter a subdirectory in the chromatogram file name.

  If the directory path is relative, the chromatogram will be created in the subdirectory of the DATA folder (or CALIB in case it is a standard) of the respective project.

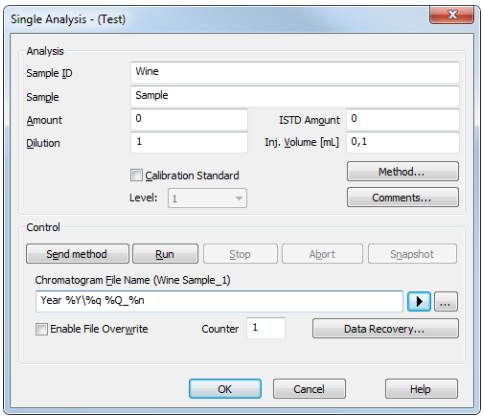

Fig 3: Single Analysis dialog and an example of subdirectory in the chromatogram file name

2.2.2 Method Setup

- New button *Load Method* Full version. Implemented for **Agilent ICF** control, should read the method from all connected devices. Note, many of them do not support this feature, thus no effect in such cases.
- **LC Gradient tab** Full version

  Graph is displayed including the region before start.
- **Event table**

  New event *READY* invoked after sending method when all HW reports *READY*.

2.3 Chromatogram window

- **Perform PostRun…**

  New command in the lower part of the *File* menu allows you to display the PostRun Setting dialog also from the Chromatogram window. Compared to the PostRun Setting dialog displayed from the Instrument window, it enables you to perform the postrun actions for example after adjusting some parameters in the chromatogram and also *Sign* the chromatogram file.

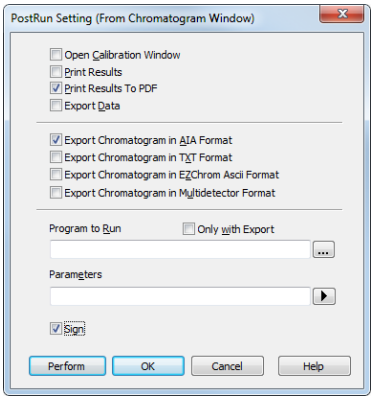

Fig 4: Perform PostRun dialog

- **Grey Out Inactive Signals**

  New option in the *Signals* tab in the Graph Properties dialog enables you to gray out inactive signals in *OVERLAY*.

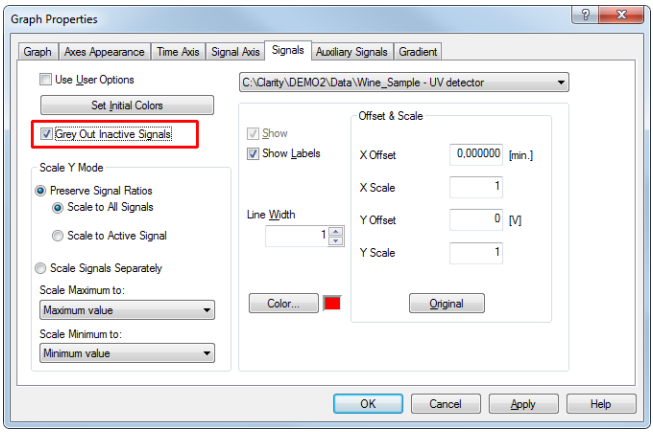

Fig 5: Gray Out Inactive Signals in the Graph Properties dialog

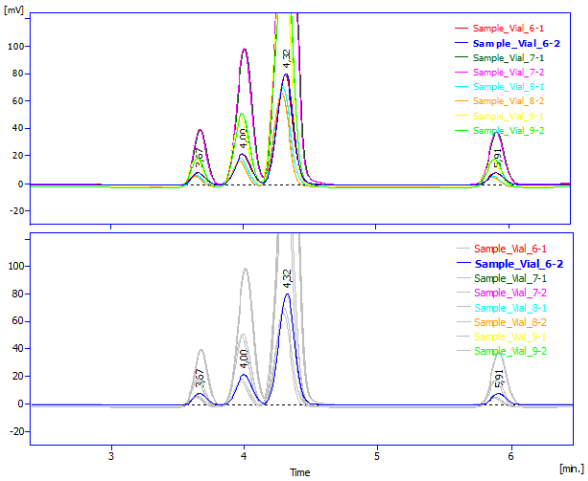

Fig 6: Example of applying the Gray Out Inactive Signals function

- **Retention indices in the Chromatogram Result table**

  Retention indices are now calculated based on the data from calibration, previously all the peaks had to be identified in the chromatogram.

2.3.1 Improvements in the Integration Algorithm

- We improved the **Integration Algorithm**. It supports new features like filters, baseline crossing, etc.

  Chromatograms measured in the **Clarity 4.0** are automatically integrated using this new version. If you open a chromatogram measured in **Clarity 3.0** and **older**, it will be automatically reintegrated by the new version and the chromatogram will be saved automatically.
  It is possible to open the chromatogram using the older integration algorithm, if you select an older Method in the Open Chromatogram dialog:

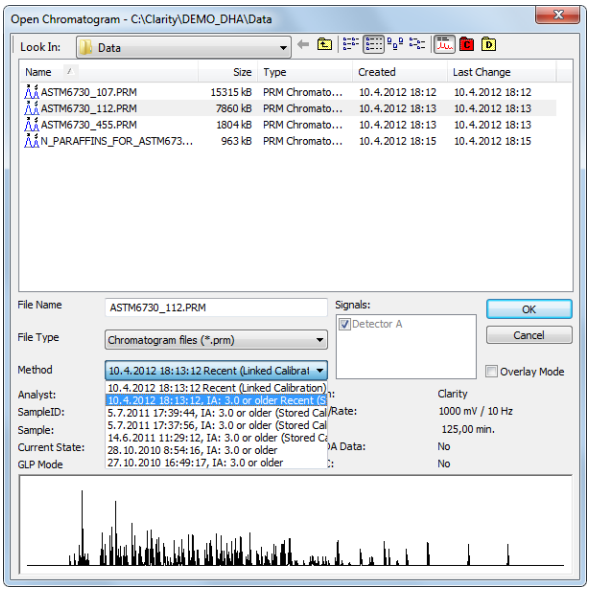

Fig 7: Open chromatogram using the integration algorithm from Clarity 3.0 and older

Major features of the improved Integration Algorithm

- **New filters available**

Moving Average and Savitzky-Golay

Value *n* corresponds to the number of points used by *(2n+1)*. Valid range *1-500*.

Note artefacts are created on extremely narrow, high peaks. **Moving Average** tends to skew them and **Savitzky-Golay** tends to create oscillations at base. Use the menu commands *Chromatogram - Integration - Moving Average Filter* or *Savitzky-Golay Filter*.

Spike Filter

New function will remove narrow (electronic) spikes, parameter corresponds to number of points within the spike, range *1-100*. Accessible using the menu *Chromatogram - Integration - Spike Filter*. This function could be blocked in *GLP Options* dialog.

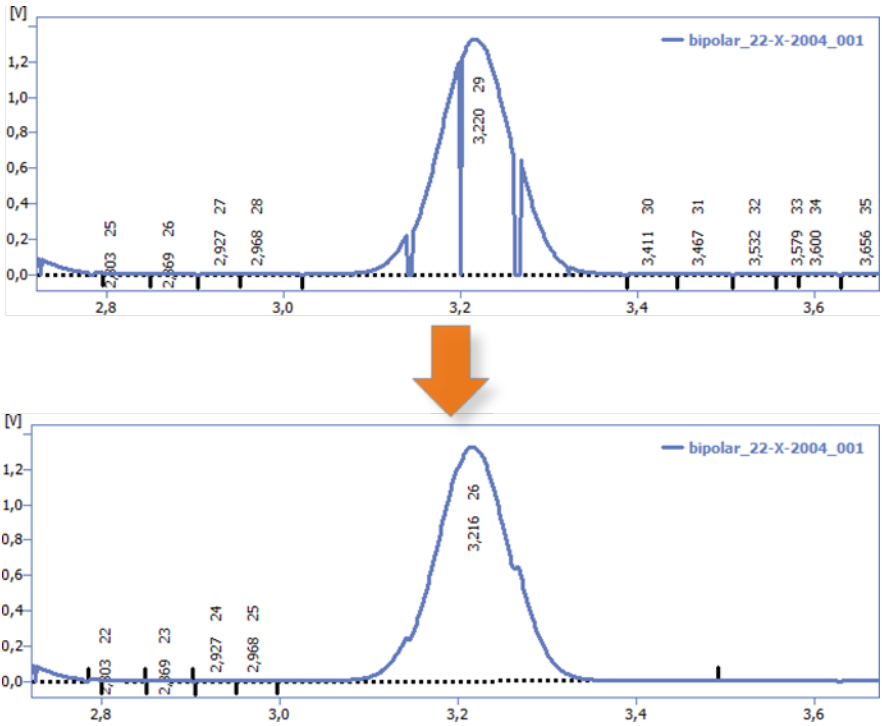

Fig 8: Example of applying the Spike Filter.

- **Filters are now applied by time interval**

The last entry in the integration table overrides previous filter operations on the set interval.

- **Baseline operations are applied on peaks with peak apex within the interval**

  Previously the entire peak had to be included.

- **Allow crossing of baseline with chromatogram**

  New function allows positioning of peak start/end to position, where the baseline crosses the chromatogram. Baseline is drawn till the actual *Start/End*, but only the area around peak apex to the first intersection of baseline with chromatogram is counted. Use the menu command *Chromatogram - Baseline - Allow Crossing*.

- **Spike Removal**

  New function which will replace spike (peak) in selected interval by estimated baseline curve. Could be blocked in *GLP* options. Use the menu command *Chromatogram - Baseline - Allow Spike Removal*. This function could be blocked in *GLP Options* dialog.

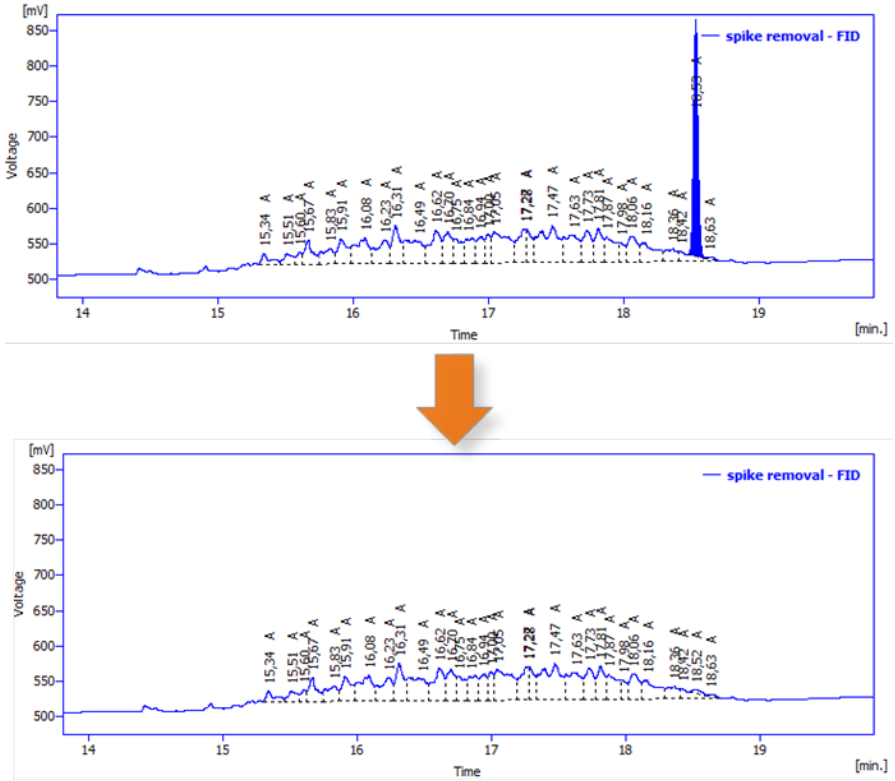

Fig 9: Example of removing of a spike

- **The option Filter (Chromatogram window, Edit menu) has been omitted**

  It intended to hide redundant lines in the integration table.

- **FFT filter OFF**

  This option was omitted.

2.4 Calibration

- Calibration file size has been reduced by compression.

  As a side effect it leads to incompatibility of calibration files stored/created in this version with previous **Clarity** versions.

2.5 Data Acquisition

- New option *Set Axes Ranges* in the Data Acquisition window (*View* menu) to set ranges for detector and auxiliary signals.

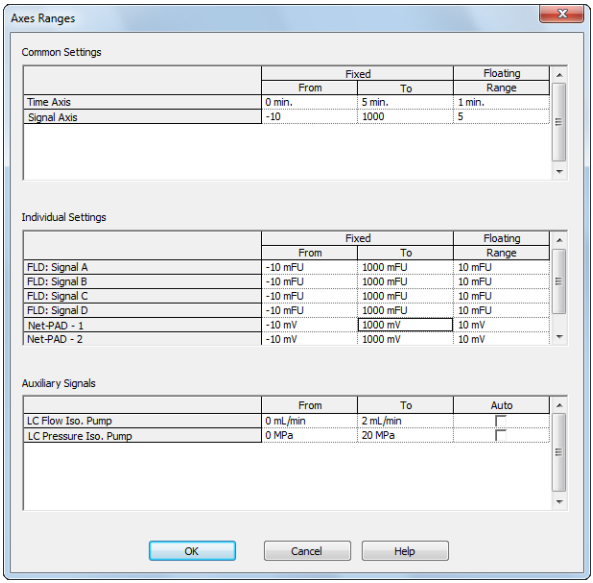

Fig 10: Se Axes Ranges dialog

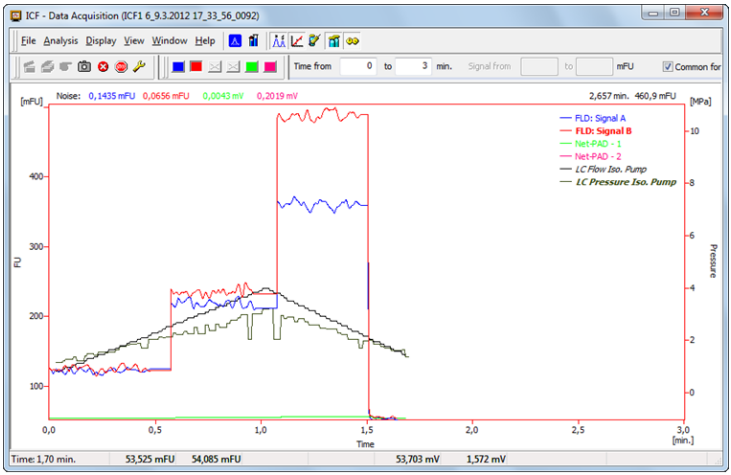

Fig 11: Example of the Acquisition window after setting some axes ranges

2.6 Sequence window

- **Interactive Vial Entry** Full version

  Supported samplers allow user to enter the vial position interactively. Available for example in the **Agilent ICF** or **Spark Alias** control modules.

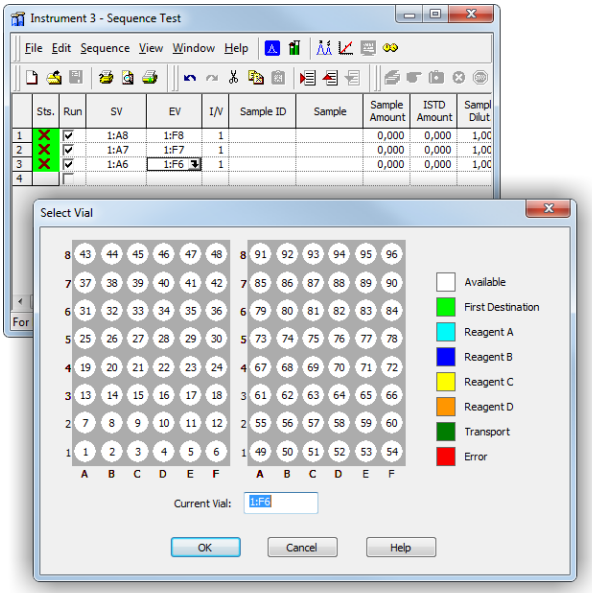

Fig 12: Selecting a vial interactively in the Sequence window

- When a path is specified within a file name (in **Sequence**, it must be relative to default project directories), nonexistent directory will be created. The path was ignored previously in such case.

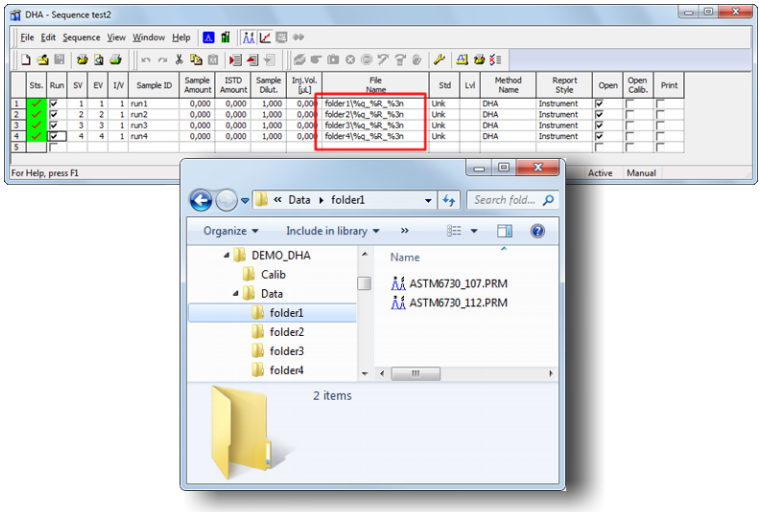

Fig 13: Example of creating subfolders in the Sequence

2.7 Report Setup and printing

- **Chromatogram - Print range - Both**

  New option *Both* in the Report Setup dialog, *Chromatogram* tab and *Print Range* box will print the entire chromatogram and the selected detail as two graphs (sharing the same settings).

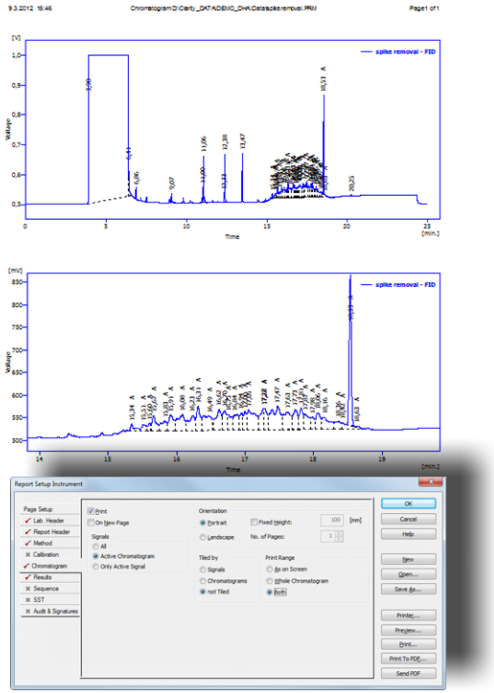

Fig 14: Example of printing both detail and the whole chromatogram

- **Print Icon on toolbars now prints directly**

  The printer selection dialog is no longer displayed. Not implemented in the Audit Trail window.

2.8 Various improvements in Clarity

- The **Clarity** station look now follows the **Windows 7/Vista/XP**.
- Improved functionality in tables - right click on a row or column header selects the corresponding row. Right click on the left upper corner cell selects the entire table.
- **Clarity** can be run with a new *resume_seq* parameter for resuming running sequence and the *run_seq* command line parameter was corrected.
- Support for **Bar Code readers**: new variable *%f* in the filename and other fields that will be replaced with the reader input.
- Option to prolong/renew expired **Trial mode** in **RkNDUSB HW keys**.
- **Windows 2000** are no longer supported in **Clarity** version **4.0** and higher. Older versions are still available for downloads.
- **Spanish** and **German localizations** of the chromatography station.

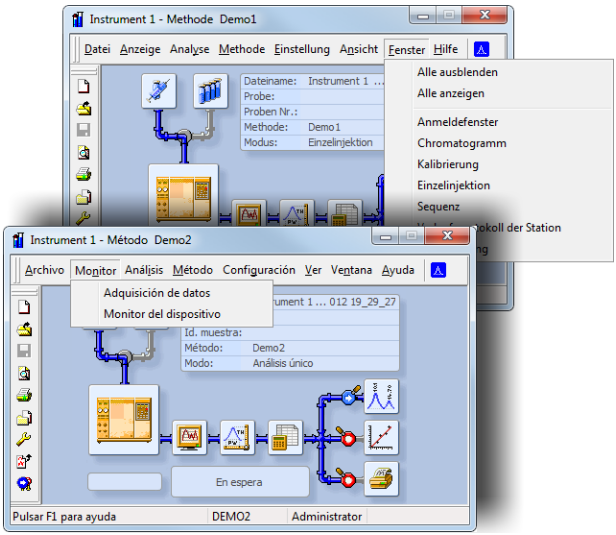

Fig 15: Clarity Instrument in Spanish and German

3 DHA Extension Full version

- New DHA extension (**Detailed Hydrocarbon Analysis**) for PIONA analyses - p/n A33.

  Prepared according to **ASTM6730** norm for determination of individual components in spark ignition engine fuels. Detailed manual is accessible in the **Clarity Main Help** - **Extensions** or online at www.dataapex.com.

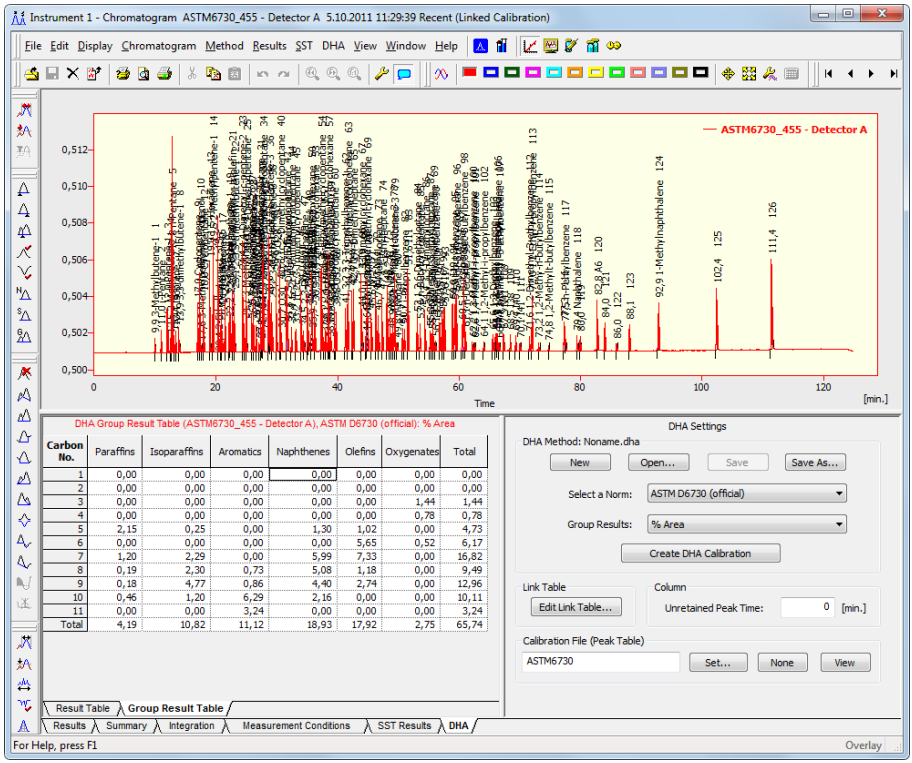

Fig 16: DHA Extension in the Chromatogram window

4 Colibrick

- The new **USB A/D converter** with parameters corresponding to the successful PCI **INT9** product line.

  It is available with 1, 2 or 4 channels. For more information, download the manual at www.dataapex.com or see the **Clarity Main Help**.

Fig 17: Colibrick

5 Control Modules Full version

5.1 Agilent ICF Full version

- ICF (Instrument Control Framework) for **Agilent 1100/1200/1290/1260** and **1120/1220 HPLC** systems, ready for testing.

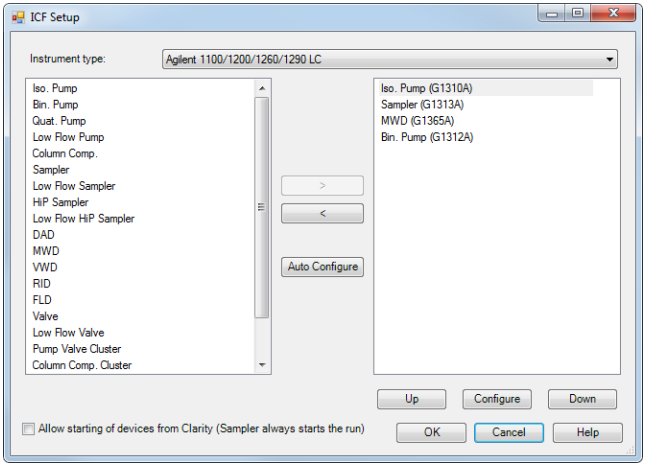

Fig 18: Setup dialog of the Agilent ICF

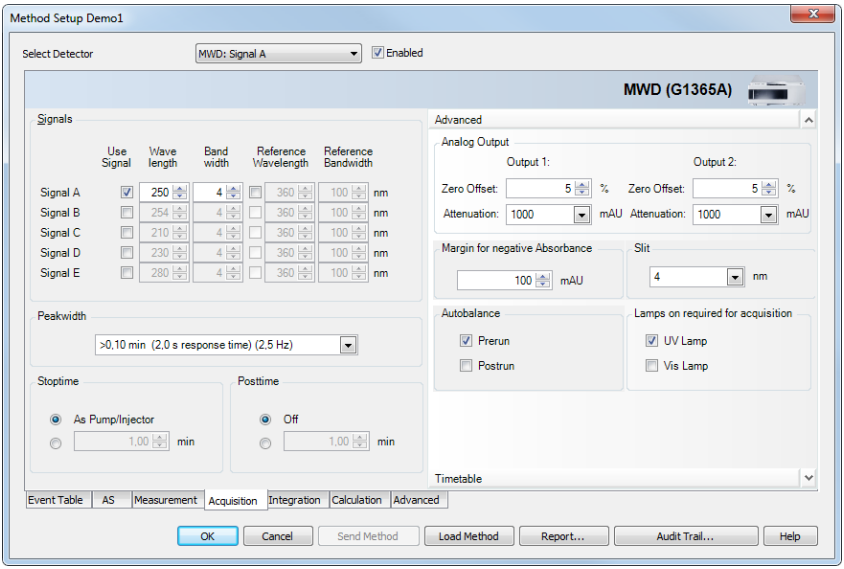

Fig 19: Configuration of the Agilent detector using ICF in the Method Setup dialog

Clarity use the **ICF** libraries developed by **Agilent**. This allows users to control large variety of instruments from this company in standardized user environment which is slightly different than the rest of the **Clarity** Chromatography Station. Pressing the F1 key in each of the module's window displays the **Agilent Help** which will help you with controlling the instrument from **Clarity**.

5.2 Uni Ruby Full version

- **UNI RUBY** control module could be used to create simplified drivers for pumps, detectors, valves, column ovens, fraction collectors and autosamplers. It is helpful in cases when developing a **SDK** driver is difficult or time-consuming, because writing an UNI RUBY script doesn't requires so high skills in programming. Examples, programmers documentation and support are available for external developers on request.

  UNI RUBY scripts replaces the **LC-UNI** pump control for selected pump models. Additionally, this control enables features not supported by the LC-UNI pump like auxiliary signals and use the pump as auxiliary.
  Most of the scripts are supported directly from Available Control Modules dialog. For some additional examples you have to add them as **UNI Ruby** module located in *Thermostats* section, and load the respective **RUBY** script from the UTILS\UNI_DRIVERS folder.

For testing are available scripts controlling intruments:

- **Laballiance**, **Flom** and **Omniseparo M350** pumps.
- **Vici Valco**, **Rheodyne** and **Upchurch** valves.

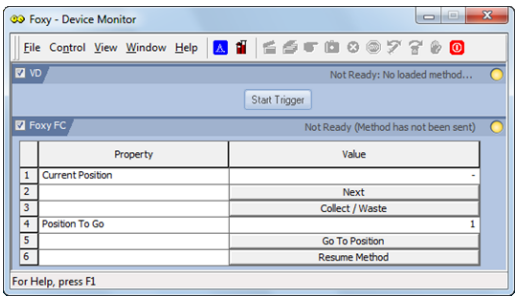

Fig 20: Device Monitor with the fraction collector

- **General Purpose Fraction Collector** replacing the LC UNI.
- **Gilson FC 203B** (**204**) and **Teledyne ISCO Foxy R1/R2** fraction collectors.

- **Bar Code Reader**: Enables **Clarity** to read the barcode from vials and automatically paste it to the *Sample ID* or *Chromatogram Name* using a variable.

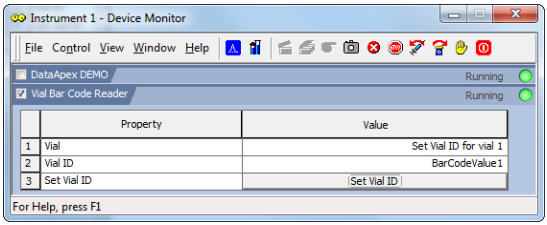

Fig 21: Barcode reader in the Device Monitor

- Support for **Gilson pump interface** (GSIOC).
- **Kontron 360/560** autosampler.

5.3 New and improved control modules Full version

Agilent 68x0
Agilent **G2880A** and **6850 ALS** supported within the 68x0 GC control driver. A new option to set up carrier gas from configuration.

Cetac AS 800 autosampler
Testing stage.

CTC PAL
New version of control libraries (ICC-CE) 1.6.0.5. Support for *5µl* and *1.2µl* syringes.

DANI
Updated drivers for **DANI Master GC** (version 1.4.4.0) and **Master DHS** (version 1.0.1.0).

Ecom
Added **Flash12 DAD** detector and updated other drivers.

Gilson pump control no more uses GSIOC the server
Thus is functioning on Windows 7 and Vista. Development stage.

Grace Alltech 3300 ELSD detector
Testing stage.

HTA HT3x0A autosampler
Testing stage.

Knauer
Optimas released as Ready. New detectors **10D** / **UVD2.1** and **Conductivity Monitor 2900**.
Driver for all Knauer Instruments updated to version **3.0.7.3055**.

Konik Laevitas 800 HPLC pump
Released.

Mettler-Toledo Excellence ballances
Control module for **EA Extension** has been released.

PG Instruments HPLC module
Testing stage.

Sedere ELSD model 90LT
Testing stage.

Shimadzu AOC20i
Support for three solvents for wash.

Spark SPH 1240 pumps
Testing stage.

Vici Valco
New **Universal Actuator** now supported. For testing - actuator has to be configured by commands *LG2* and *IFM0* before connection.

Virtual digital input output loop

Option to specify number of devices. When more devices are specified, they could be used on multiple instruments to synchronize them, but the *Delay* command in the Method Setup will not be supported.

YL Instruments

New driver for **YL6500 GC** and **YL6100 GC** updated to version **4.0.0.1**.

6 Clarity2Go Full version

- **Clarity** Chromatography Station allows you to watch the status of the Instruments over the Internet on your **iPhone** or **Android** phones.

  In the **Clarity** window - *System* menu you can click the *Clarity2Go* command to display the Clarity2Go Configuration dialog and securely connect the chromatography station and its Instruments to the **clarity2go.dataapex.com** server.
  In the **Apple Store** or **Android Play** the **Clarity2Go** application is available which enables you to watch the current state of **Clarity** Instruments after entering the security password.

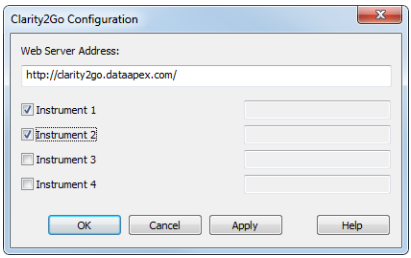

Fig 22: Clarity2Go Configuration dialog