Clarity (Lite)

2.6 vs 2.4.4

ENG

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1 General

The main new features of **Clarity** 2.5/2.6 include:

- support for preparative chromatography (enhancements in Event table, Virtual Fraction collector, support for valve control)
- compatibility with **Windows Vista** (updated drivers for A/D converters and HW keys)
- support for signal units
- many other minor enhancements

1.1 System Configuration Full version

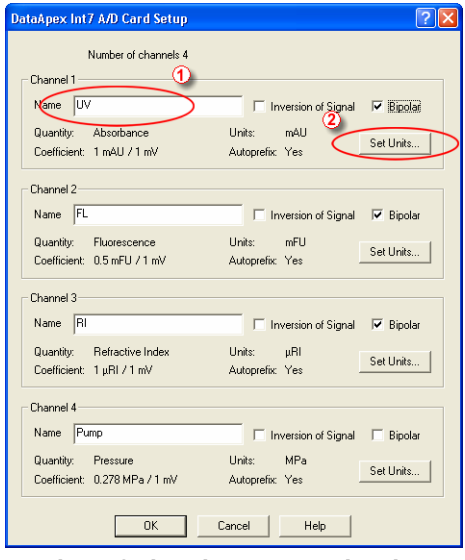


Fig. 1. Setting of Signal Names and Units

- Signal Names and Units are stored for individual signals according to the configuration of the detector. For DataApex A/D boards the signal units can be configured in the **Setup** dialog accessible from **System Configuration** dialog. To do so, name ① the signal directly in the **Setup** dialog and press the

Set Units... ② button to change other signal parametres.

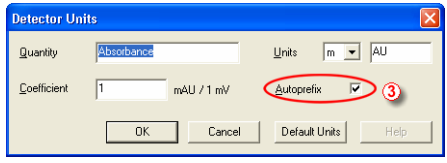


Fig. 2. Set Units dialog

When the unit prefix in graph window should be adjusted automatically, enter the units and prefix separately and check the **Autoprefix** ③ box. In tables, the entered units will be used.

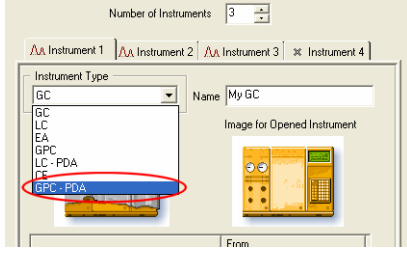


Fig. 3. GPC-PDA Instrument type

- New option GPC+PDA was added to the Instrument Type selection box in the System Configuration dialog to enable spectral detectors in GPC mode.

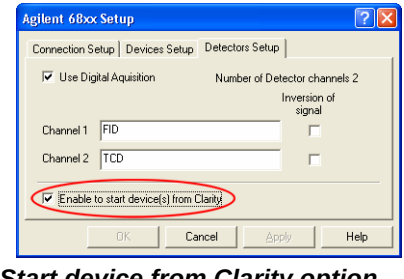


Fig. 4. Start device from Clarity option

- The option **Start device from Clarity** was implemented for selected detectors and GCs, which could be previously started only by external contact. The devices include **Agilent**

1100 modules, **Agilent GC 68xx** and **5890**, **Duratec DDT3200 USB**. This option should be checked only in case when the external start is not used, otherwise conflicts can occur.

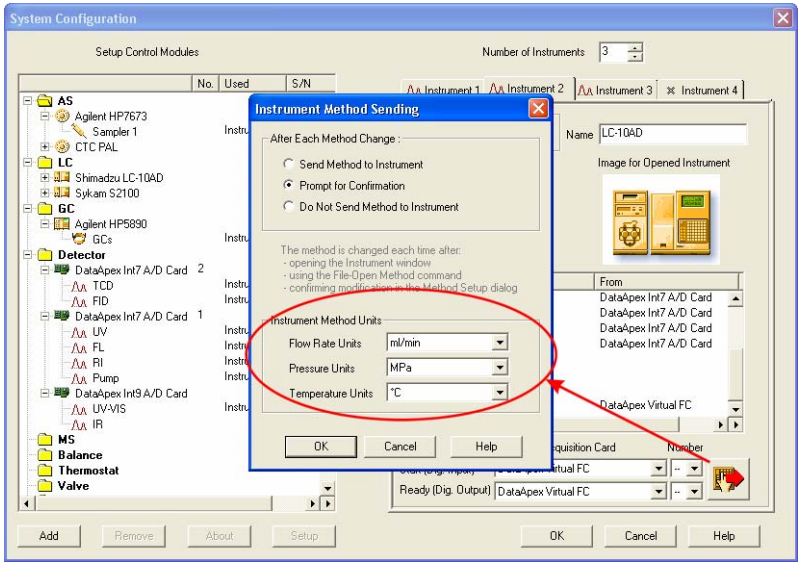


Fig. 5. Selection of Units for LC Flow and LC Pressure

- The selection of units for LC Flow and LC pressure was moved from the **Method Setup** - **LC Gradient** dialog to the **Instrument Method Sending** dialog section **Instrument Method Units** (accessible from **System Configuration** dialog). Option to select **Temperature Units** was added. Those settings affect gradient table, property pages of auxiliary pumps, LC monitor, monitors of auxiliary pumps and property pages of other controlled devices.
- Clarity 2.6: New device type AUX (Auxiliary) was added to the list of **Available Control Modules** (reserved for future use)

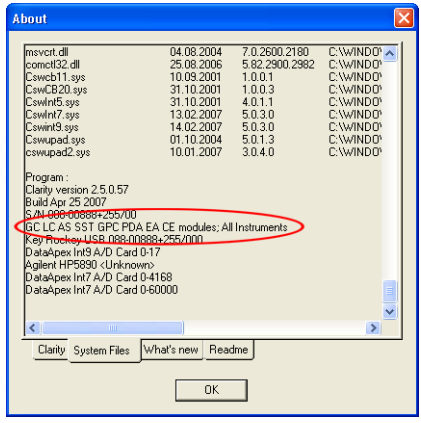


Fig. 6. The configuration of the Clarity Station

- The number of instruments and list of configured control modules is displayed in legible form in the SYSTEMINFO.TXT file and in the bottom of **About - System files** dialog under the S/N line.

1.2 User Accounts Full version

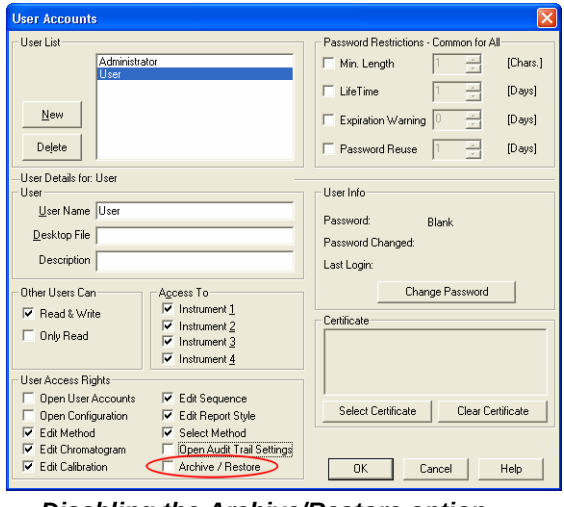


Fig. 7. Disabling the Archive/Restore option in the User Accounts dialog

- The access to **Archive/Restore** command for selected users can be restricted in the **User Access Rights** section of **User Accounts** dialog.

1.3 Digital Outputs Full version

- The names for digital outputs on new A/D card (U-PAD2 and Net-PAD) and some other devices are settable in their respective **Setup** configuration windows - they could not be edited from **Digital Outputs** window.

1.4 Single Analysis

- Clarity 2.6: Time variables in the chromatogram filename templates (%T, %R etc.) reflect the start of analysis instead of end in Single run mode to unify the behaviour with a Sequence mode.

1.5 Sequence

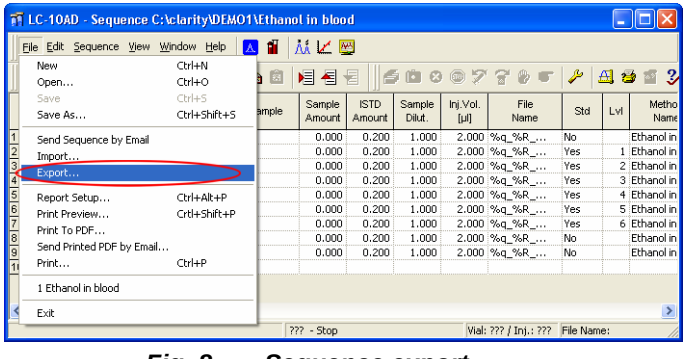


Fig. 8. Sequence export

- New command **File – Export** in the **Sequence** window enables the export of the sequence table to a text file (tab delimited format, first row contains column headers, hidden columns are not exported).
- For a first row in new Sequence the initial setting of **Method and Report Setup** the actually opened ones on the Instrument window are taken. The **Post Run** columns will

be taken from the actual setting in the **PostRun Setting** dialog. For additional rows those settings are copied from previous line.

- Clarity 2.6: Chromatograms can be now stored in a subfolder of the default DATA or CALIB folders, the subfolder must exist before use.

1.6 Method Setup Full version

- New A/D Converters INT9 and U-PAD2 now support higher sample rates 200 and 400 Hz.
- The signal units in the **Integration table** (in the **Integration** tab of **Chromatogram** and **Method Setup** windows) are displayed in the **Value** column.

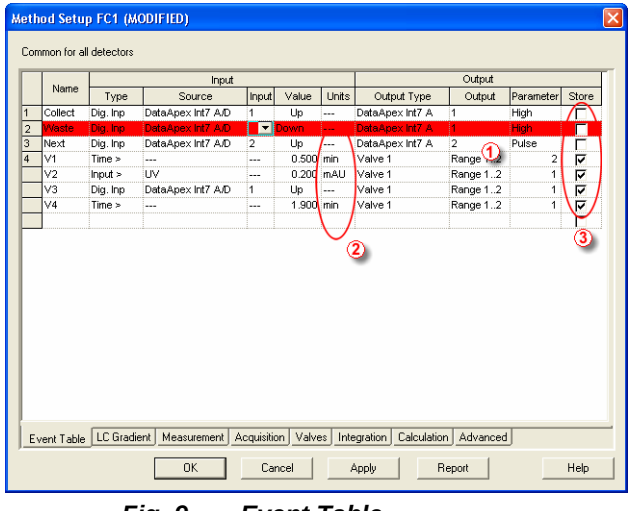


Fig. 9. Event Table

- Invalid **Event table** entries (lines marked in red) ① can be edited and must be corrected before saving the method.
- The units ② displayed in the **Event table** are the units selected in the **System Configuration** dialog while configuring detectors (A/D Cards).
- New column **Store** ③ was added to the **Event table**, enabling the selected events to be stored in the chromatogram and displayed in the **Data Acquisition** and **Chromatogram** windows.

- The selection of units for LC Flow and LC pressure was moved from the **Method Setup - LC Gradient** dialog to the **Instrument Method Sending** dialog section **Instrument Method Units** (accessible from **System Configuration** dialog).

1.7 Data Acquisition

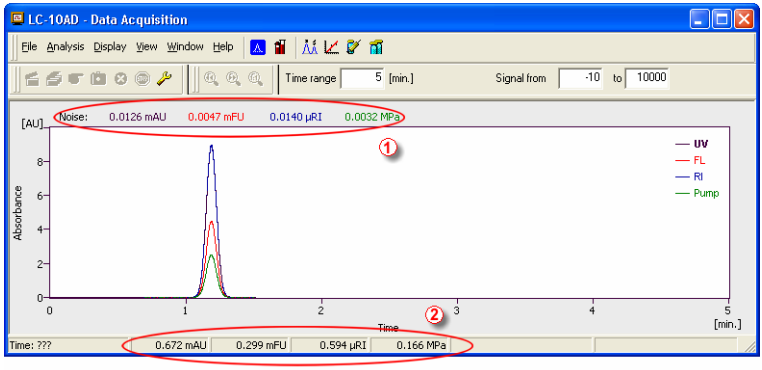


Fig. 10. Data Acquisition window organization

- Noise ① and drift are displayed in signal units.
- The Status Bar in **Data Acquisition** window was reorganized to display the configured signals with units ②.

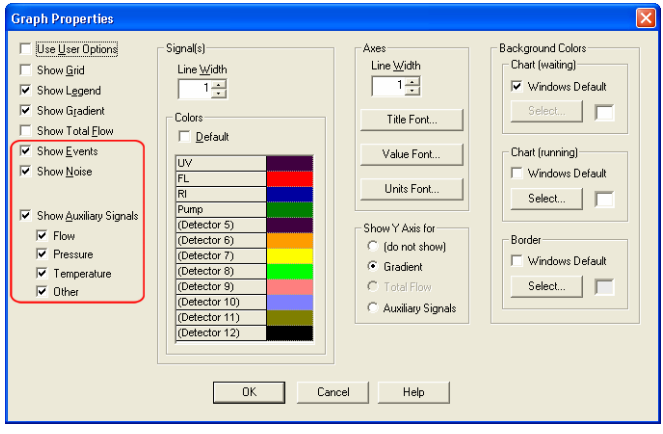
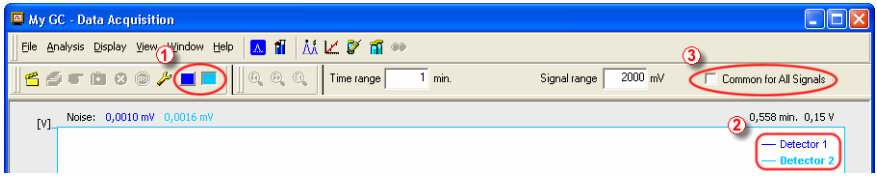


Fig. 11. Graph properties for Data Acquisition

- In **Graph properties** for **Data Acqusition** window new options were added to display events and auxiliary signals.

Note: *The display of Axuiliary Signals in the **Data Acquisition** window is not yet implemented in version 2.5. However, the Auxiliary Signals do display in the chromatogram window.*

- Clarity 2.6: In the **Data Acqusition** window new toolbar ① and graph ② controls were added to switch active signals.



Note: *When updating from previous versions of Clarity the **View - Reset All** command has to be performed to display it.*

- Clarity 2.6: The In the **Data Acquisition** window is a new option enabling to set display ranges individually for signals when the **Common for All Signals** checkbox ③ is unchecked.

1.8 Chromatogram

- The Y axis (signal) displays the **Signal Name and Units** individually for each signal according to the detector used for acquisition.

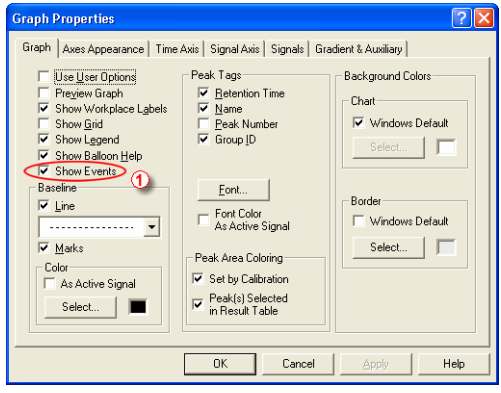


Fig. 12. Graph properties – Show Events

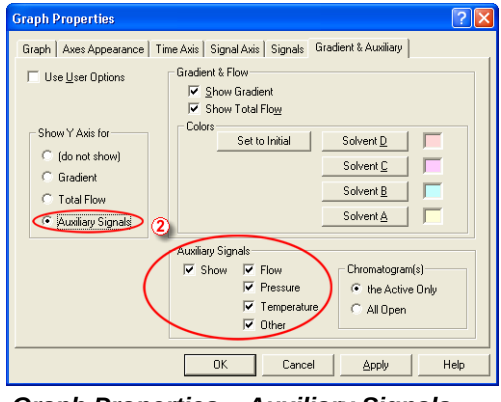


Fig. 13. Graph Properties – Auxiliary Signals

- Options for displaying the **Events** ① and **Auxiliary Signals** ② in the chromatogram were added to the **Graph Properties** dialog (accessed from **Chromatogram** window).
- The units in the **Offset** and **Scale** fields for Y axis were removed in the **Graph Properties** dialog.

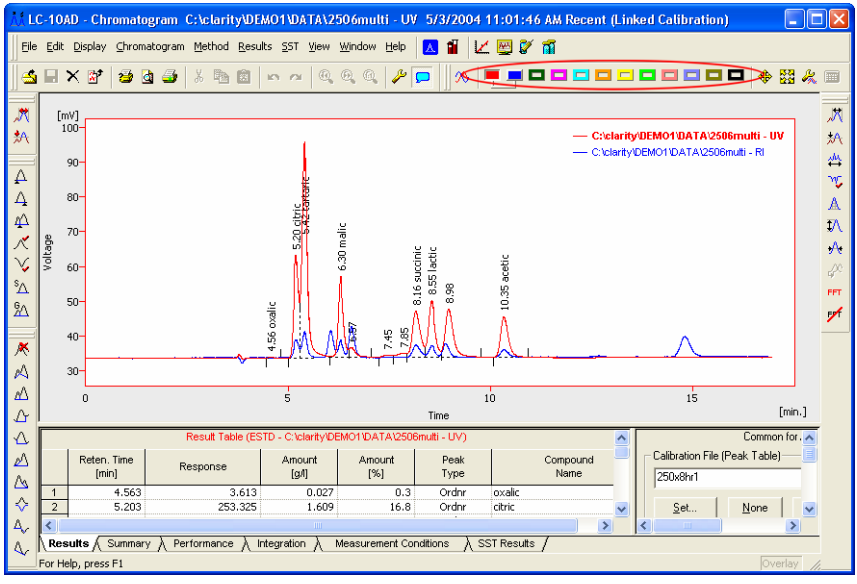


Fig. 14. Chromatogram Toggle Buttons

- In **Chromatogram** window, the number of **Toggle buttons** on the toolbar for active signal selection was increased to 12.
- The maximum zoom level was increased, the time axis can now display intervals down to *0.0001 MIN*.
- New **Symmetry/Tailing** column was added to the **Column Performance Table** that is in the **Chromatogram - Performance** dialog. The column is hidden by default.
- Clarity 2.6: All columns from the **Column Performance Table** are now also available in the **Result table**. These columns are hidden by default, but can be displayed using the **Setup Columns** dialog.
- Clarity 2.6: New **Chromatogram Comments** field in the **Chromatogram - Measurement** window serves for chromatogram related notes; its content is stored within the chromatogram file. In the printout, the notes are displayed after the result tables.

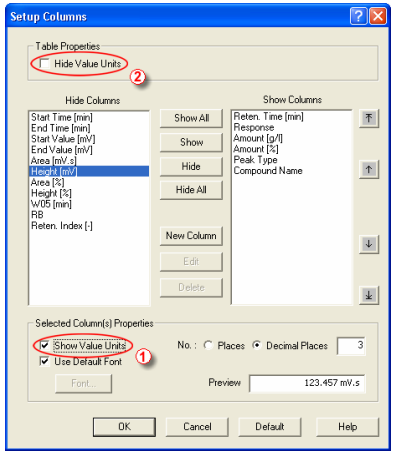


Fig. 15. Setting the visibility of Value Units

- The Value Units in the **Chromatogram - Result** and **Summary** dialogs in the table columns can be displayed by setting the **Show Value Units** ① checkbox manually for each column in the **Setup Columns** dialog. The display of units in all columns (for example for export) can be disabled using the **Hide Value Units** ② command.

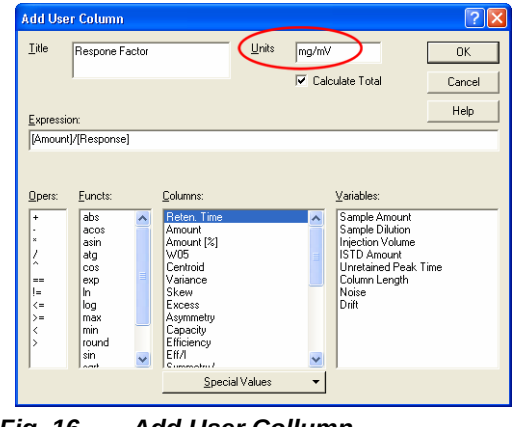


Fig. 16. Add User Collumn

- Carity 2.6: The new **Units** field in **Add User Column** dialog enables to define units for user

defined columns in the **Result** and **Summary** tables.

1.9 Calibration

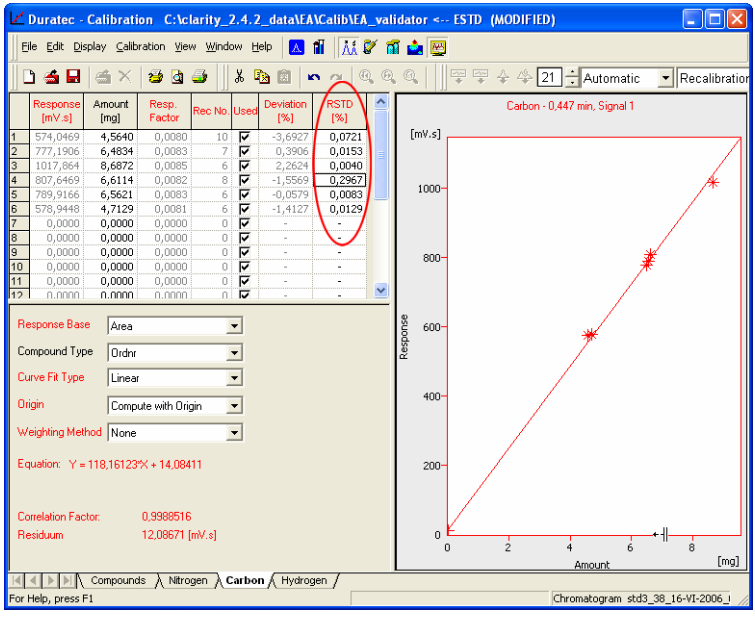


Fig. 17. RSTD% column in the Calibration window

- New **RSTD%** column was added to the **Calibration - <Compound name>** tab. It displays the relative standard deviation of averaged points used during recalibration of the respective concentration level. It is hidden by default.
- Clarity 2.6: The new **Show Recalibration Points** checkbox in the **Graph Properties** dialog enables to display recalibration points in a calibration curve graph in the **Calibration** window.

Note: *Click the right mouse button on the calibration curve graph and select **Properties** to access this option.*

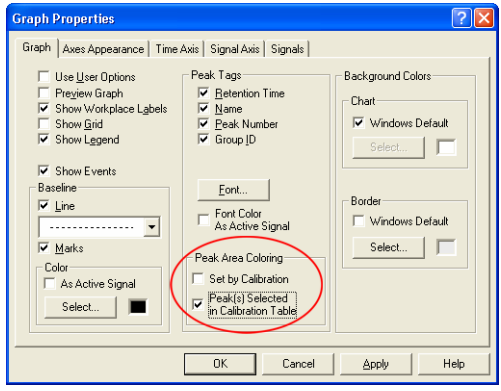


Fig. 18. Peak Area Coloring in the Calibration

- The checkboxes for setting of **Peak Area Coloring** in the **Graph Properties** dialogs were renamed.

Note: *To see the colored peaks in the **Calibration** window the calibration standard must have the current calibration linked to it (this can be done in the **Chromatogram - Results** dialog).*

- The signal units in the Calibration are set according to the last chromatogram (calibration standard) used for calibration or recalibration.
- New calibration level 21 (Blank) was added to the **Calibration** table. The amount is fixed to zero on this level and the respective response is used for calculation of the calibration curve.

Note: *On the other levels, zero in response or amount columns excludes the level from calculation.*

Note: *The **Ignore Origin** option is recommended for the **Origin** when the blank response is to be included in calibration curve calculation.*

1.10 Report Setup

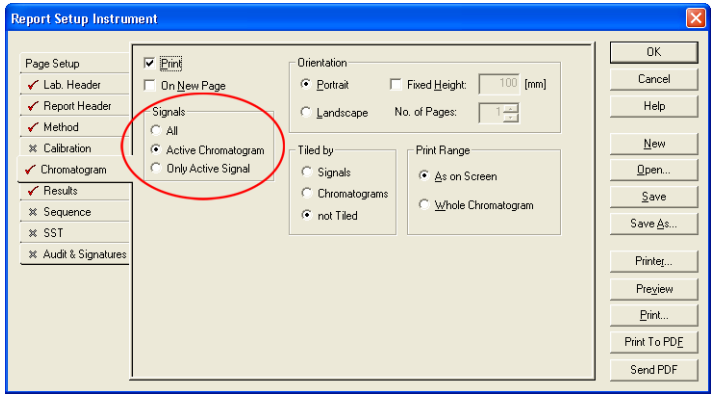


Fig. 19. Report Setup – Chromatogram

- New option for printing **All / Active Chromatogram / Only Active Signal** was added to the **Report Setup - Chromatogram** dialog.

Full version

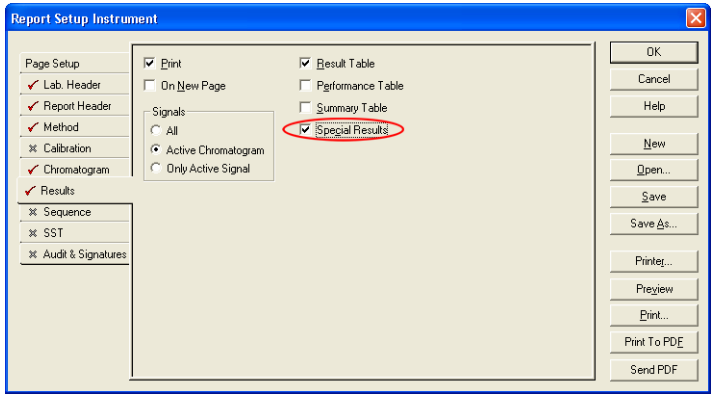


Fig. 20. Report Setup – Results

- New **Special Results** checkbox for printing of result tables generated by Control modules, such as Fraction Collectors etc., was added to the **Report Setup – Results** tab.
- Clarity 2.6: New **Chromatogram Comments** checkbox in the **Report Setup – Results** dialog enables printing of the comments.

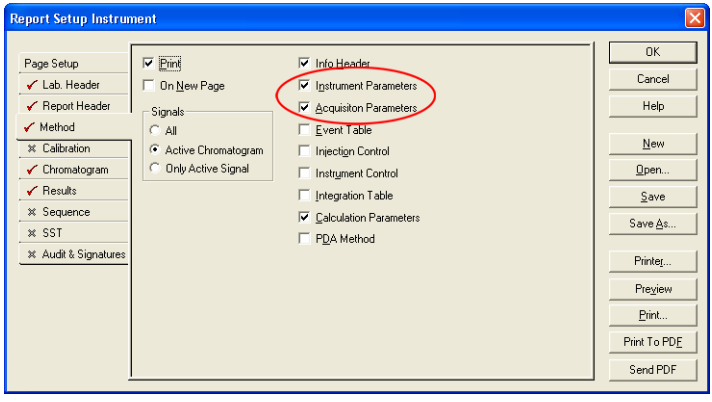


Fig. 21. Report Setup – Method

- The **Parameters** checkbox in the **Report Setup - Method** dialog was divided to **Instrument Parameters** and **Acquisition Parameters**, thus these sections can be selected for printing separately.

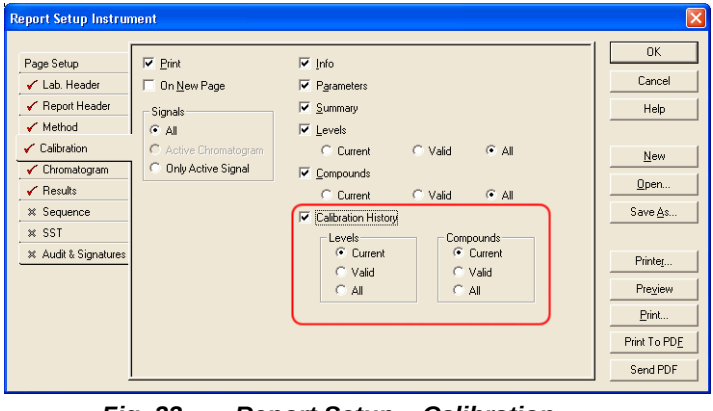


Fig. 22. Report Setup – Calibration

- Clarity 2.6: New **Calibration History** checkbox (in the **Report Setup - Calibration** dialog) with related options enables printing of the content of the **History of Calibration Point** tables in Calibration (acessible by the **Show History** local context menu in the Calibration table). The report can include **Compounds** and **Levels** both either **Current**, **Valid** or **All**.

1.11 Import and Export

- Data are exported in selected units, scaling of units is not used (mV, V, ...).
- Imported Data will not be parsed to recognize scaled units (mV, V, ...).

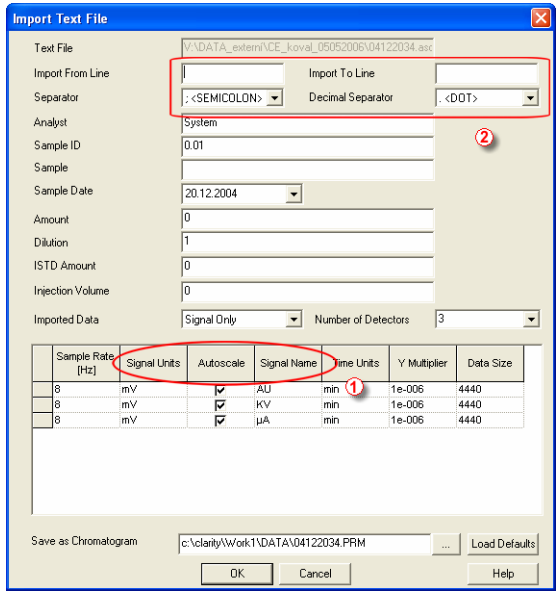


Fig. 23. Import Text File window

- The **Import Chromatogram** dialog (for *.ASC, *.TXT and *.CHR files) was modified to enable import of chromatograms with up to 12 signals and to define **Signal Units**, **Autoscale** and **Signal Name** ① parametres during import.
- The user set parameters **Input from line**, **Input to line**, **Separator** and **Decimal Separator** ② will be applied to all simultaneously imported chromatograms.
- The autodetection of data format was improved.
- New commad line parameter prm_import_ex creates the name of the imported chromatogram from the name of the source file.

1.12 Audit Trail Full version

- The **Chromatogram Audit Trail** now records the **Start Acquisition** event. The sending of a method to selected devices and events from Event table will also be recorded.
- Clarity 2.6: Changes to the chromatogram header entries (**Sample ID**, **Sample**, **Amount**, **Inj. Volume**, **ISTD Amount**, **Dilution**) are recorded in the **Station** or **Chromatogram Audit trails** (when the corresponding **Integration Table** checkbox in the **Audit Trail Settings - Chromatogram** dialog is checked).
- The **Stop Flow** command from the **Device Monitor** window is now recorded in the **Audit Trail**.

1.13 Directories

- When a new directory is created, files from the default COMMON folder will be copied to the COMMON folder in the new structure.

1.14 System – Options

- New **Options** dialog (accessed from **Clarity** window using the **System - Options** command) contains **Enable chromatogram files overwriting** checkbox. When unchecked, the **Save** and **Save As** commands will not allow to overwrite existing chromatogram file. Automatic saving will in such case modify the filename to make it unique.

2 Control modules Full version

2.1 Instrument

- When a not communicating device is detected during instrument opening, any attempts to communicate with other devices are skipped to speed up the process.

2.2 Auxiliary signals

- The **Event Table** events can now also react to Auxiliary Signal level changes. Auxiliary signals from controled modules (pressure, flow, temperature, etc.) can be displayed in chromatograms.

2.3 Device Monitor window

- The **Device Monitor** menu item and icon was added to **Data Acquisition**, **Chromatogram**, **Calibration** and **Sequence** windows.

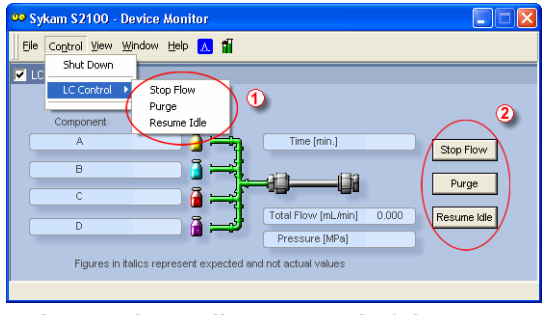


Fig. 24. Device Monitor – direct control of the pump

- In the **Control** menu of the **Device Monitor** window, the commands for direct control of pump were renamed to **Stop Flow**, **Purge** and **Resume Idle** ①. They were moved to the **LC Control** submenu and added to the **LC Monitor** pane ② as buttons.

2.4 Upgrades to current Control modules

- LC Control: **Agilent 1100 binary pump** now supports optional solvent selection valves – valve A and B with possible states 1 and 2.
- GC Control: **Shimadzu GC-14/GC17** - the auxiliary zones can be named in the **Setup** dialog acessible from the **System Configuration** dialog.
- Hardware: New driver for **DataApex Net-PAD**. For correct operation, it is necessary to remove

the **Net-PAD** from **System Configuration** and then add it back again.

- New drivers for **INT7** and **INT9** are compatible with 32bit Windows Vista systems.

Clarity 2.6

- LC Control: **Agilent 1100 pump** now supports optional piston seal wash pump
- LC Control: **Agilent 1100 pump** now displays a current status in the device monitor
- Selected pump control modules can be configured as auxiliary pumps. Those pumps can be added to **Clarity** Instrument and controled using the **Event Table** (in addition to the quarternary gradient controled by the **LC Gradient** table). For auxiliary pumps, the flow is changed stepwise (not interpolated between time points). Currently supported pumps are all pumps controlled by the **CB20** control board, **Bischoff 2250** pump, selected **Knauer** pumps and pumps in **Shimadzu LC-10/20** system.
- LC Control: Bischoff 2250 pump control module was replaced with a new version.
- AS Control: Spark Holland Endurance control module was updated.
- AS Control: Spark Holland Midas, Endurance and Triathlon samplers now have new option **Sequence Mode** in the **Spark Autosampler Setup** dialog. It enables correct performing of the washes set for injection/vial/step. When not checked, each injection is sent to sampler as individual step.
- AS Control: HTA, Spark Holland Midas and Marathon samplers - their Status is now displayed in the **Device Monitor**.
- AS control CTC-PAL: new version of the driver **CTC PAL** driver substitutes the former **CTC GC PAL** and allows to control other types of the **CTC PAL** line of autosamplers. New option **Prep. Ahead** in the **CTC PAL Setup** dialog enables to prepare next sample during a previous run.

- LC Systems: The Knauer control modules were updated to support the new options in Clarity version 2.5/2.6 and extended by the previous instrument lines (WellChrom series) drivers.

2.5 New control modules added

- **Sykam S2100** pump control module
- **Sykam S5200** autosampler control module
- **Sykam S3400** post column reaction module (available only from Sykam company).
- **VICI-Valco** and **Upchurch valves** control modules
- **DataApex Virtual FC** control module enables the control of any fraction collector using the **Colect/waste** and **Next fraction** digital inputs.

Clarity 2.6

- **Shimadzu LC-10/20** system control modules were added and are available for testing. A controler (SCL-10Avp or CBM-20A or CBM-20A lite) is necessary.
- **Antec-Leyden Decade II** detector control module is available for testing
- **Spark Holland Triathlon** AS control module was added.

2.5.1 Fraction Collector module

- Fraction Collector, a new type of control module, is supported. The Fraction Collector module is available for **LC**, **GPC**, **LC-PDA**, **CE** and **GPC-PDA** Instrument types.
- **DataApex Virtual FC** control module is also supplied, enabling the control of most fraction collectors using their digital intputs for **Next Fraction** and **Collect/Waste** events.

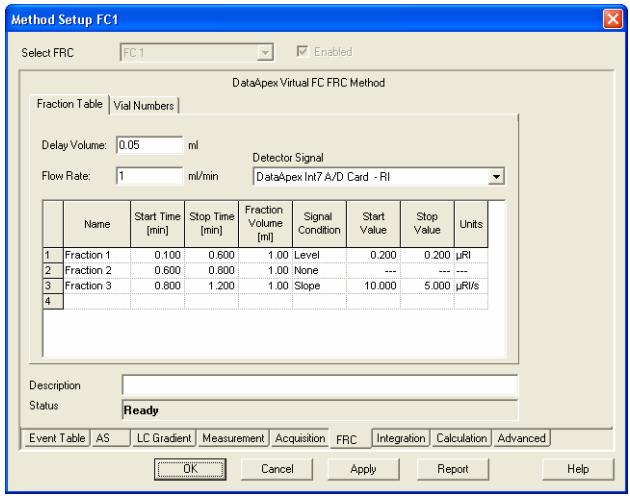


Fig. 25. Method Setup – Fraction Collector Fraction Table

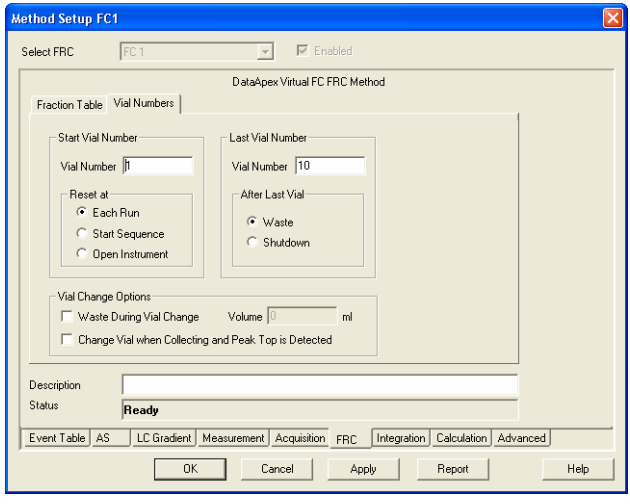


Fig. 26. Method Setup – Fraction Collector Vial Numbers

- When configured, a new **FRC** tab in the **Method Setup** window will appear, enabling the setting of the FC conditions – the delay between detector and the collector, selection of the

detector signal, number of available fractions, mode of collection and other options.

Fig. 27. Direct control from device monitor

- In the **Device Monitor** dialog the status and direct control buttons are available – they are functional only during a run (contrary to most other control modules).

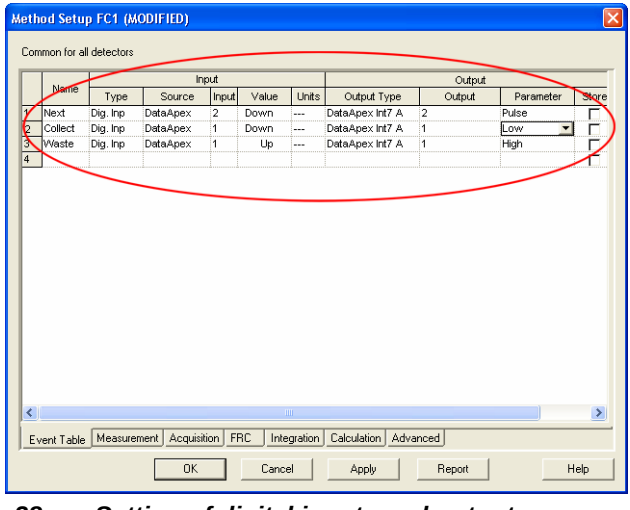


Fig. 28. Setting of digital inputs and outputs

- The **Virtual FC** module digital outputs and inputs must be mapped to physical digital outputs and inputs available on the A/D boards or other devices configured on the Instrument using the **Event table** in the **Method Setup** dialog. The event contacts of the controlled fraction collector should be connected to those outputs/inputs.

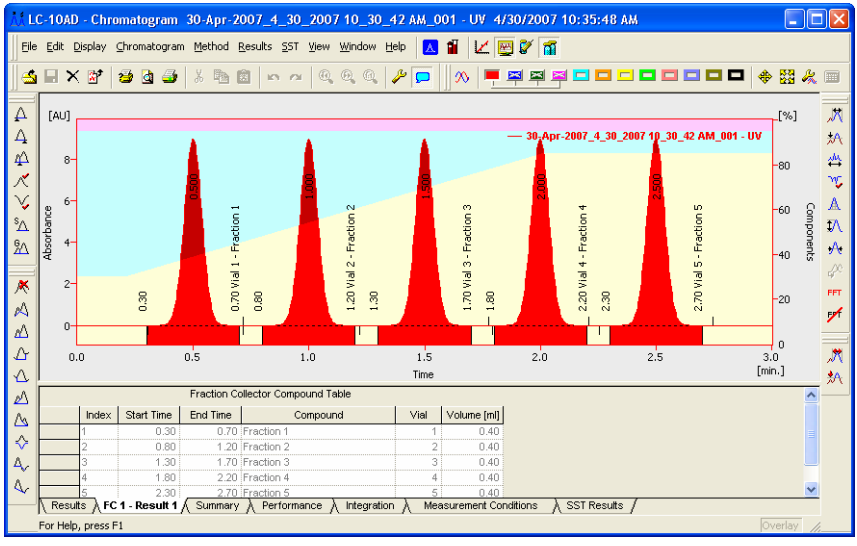


Fig. 29. Fraction Collector events

- The events produced by Fraction Collector can be displayed in the chromatogram. These events are also stored in the **Chromatogram Audit Trail**.
- Clarity 2.6: In the **Data Acquisition** window the actual Fraction delay is displayed by vertical line for FC GP control module.

2.5.2 Valve control module

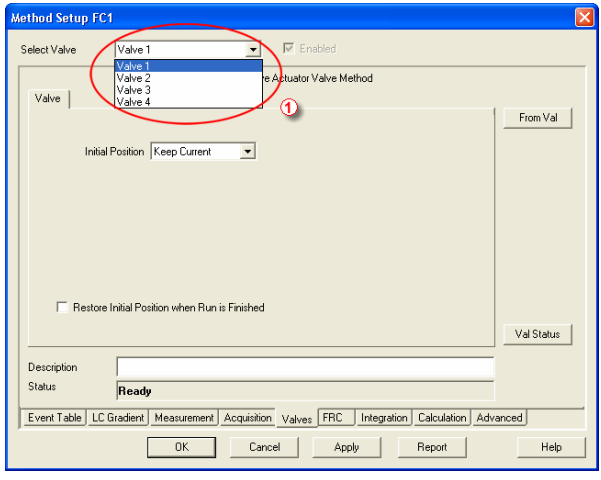


Fig. 30. Method Setup - Valve

- New type of control module - Valves – is now supported. The control module is available for all Clarity Instrument types. After configuration, a new **Valves** tab will appear in the **Method Setup** dialog for each configured module. In case the module supports the simultaneous control of several valves on common communication line, you can select between them using the listbox ① in the tab header area (as shown on **Fig. 30**). The tab allows for the initial valve settings, when the instrument method is sent to devices.

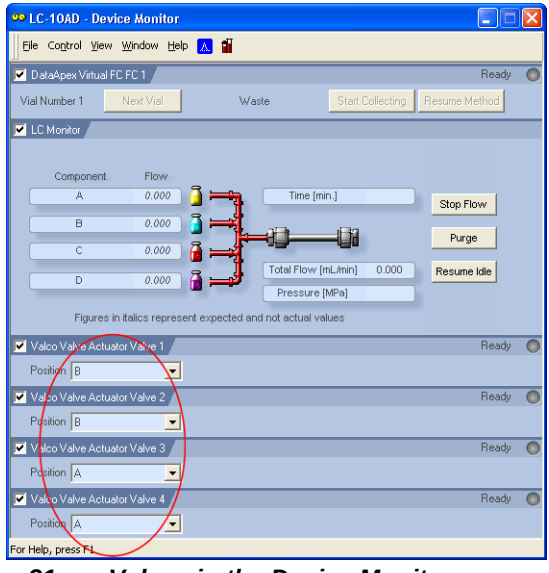


Fig. 31. Valves in the Device Monitor

- Each configured valve displays its current state in the **Device Monitor** and allows the user to set the desired position (this opton is disabled during run).

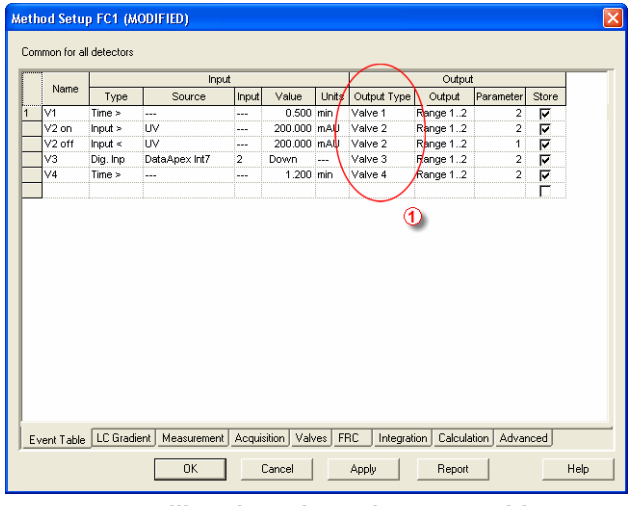


Fig. 32. Controlling the valves via Event Table

- The control of the valves is set in the **Event table**, the configured valves are offered as **Output devices** ①.

3 Extensions Full version

3.1 PDA

- All PDA graphs now enable to constrain the displayed values by setting fixed ranges on any of the axes. Constraining the Z axis will change the color mapping in 3D graph and ISO plot (e.g. to prevent spikes from depreciating the color mapping).
- The 3D graph now contains guiding lines to help you with the orientation in the graph.

Note: *If there is **Zoom** applied to the graph, no change will be visible after the modification of the fixed range on any axis. It is necessary to **Unzoom** for any effects to show up.*

4 Help

The format of HELP files was changed from *.hlp to *.chm for compatibility with Windows Vista.

5 Clarity DEMO

New demo data were prepared, the demo now illustrates better the suggested workflow and available features.

6 Known problems

6.1 Sentinel HW key installation

- The **Sentinel HW key** drivers are not installed automatically. They need to be installed manually, using the SENTINEL PROTECTION INSTALLER 7.3.2.EXE installation program. It is located in the HW_DRIVERS\SENTINEL subfolder on the installation CD. Alternatively, it can be downloaded from the producer web pages http://www.safenet-inc.com/support/tech/sentinel.asp, key type is **Sentinel SuperPro**.
  - For new installation, use the **Custom** option during installation and disable the installation of **Sentinel Protection Server** and **Sentinel Keys Server**.
  - For already installed keys, run the **Installer** with the **Remove option** first (the requested computer restart is not necessary) and than again with the custom options as above.

6.2 Knauer modules

- The control modules for **Knauer HPLC components** do not support some of the the new properties of **Clarity** 2.5 (especially the signal units). Thus, no units will be displayed for chromatogram signals measured by **Knauer** detectors. New version of the **Knauer** control modules, which supports them, is included in version Clarity 2.6.

6.3 Windows Vista

- **Clarity** is not supported on 64 bit PC's (both Windows XP and Vista).
- When installed to C:/PROGRAM FILES with **User Account Control** (UAC) active, the access to data and system files may be restricted and the **Clarity** migt fail to operate correctly.

- Excessive number of warning messages needs to be confirmed during installation in case the UAC control is active.
- The CTC-PAL control module is not functional under Windows Vista.

6.4 U-PAD2 under Windows 2000

- Due to the driver problem the computer crash (restart) may occur, when the **U-PAD2** is disconnected during analysis. This bug is not yet fixed in the last driver version. This problem is not occuring under **Windows XP** or **Vista**.

6.5 AS control Skip missing vial

- The option to skip missing vial during sequence run available in selected **AS Control** modules may not work correctly in combination with the **Sequence Mode** option (Sample prep ahead).

7 Fixed bugs

7.1 Version 2.5

- **Calibration**: When the **Calibration** mode was set at certrain calibration level which wasn't created in the used calibration file, the first free level was calibrated instead of the specified one during the calibration from **Sequence** or **Single Analysis** windows.
- **Chromatogram**: While saving the modified chromatogram in the **Mathematical Operations** dialog, the **Differentiate** command performing the derivation caused the raw data to be stored, thus any reintegration led to the loss of the derivation.
- **Chromatogram**: **Global Peak Width** and **Global Threshold** parameters were not properly imported when opening **CSW32** chromatograms.

- **Report**: The print of audit trail table formerly ignored the formating on screen.
- **Chromatogram**: The actualization of file list in **File - Open** dialog after manually setting a path.
- **LC**: **Agilent 1100** - the run time in detectors is controled by the Autostop time set in the **Method Setup - Measurement** dialog.
- **Sequence** and **Single Analysis**: Tooltips on **Run Sequence** and **Run Single** icons provide additional information, such as "why it is inactive".
- **Audit Trail**: The message “Password has been cleared” was incorrectly recorded in **Audit Trail** upon password change in **User Accounts** dialog.
- **Measurement**: The Ctrl + Enter shortcut now enables to create new line in the **Note** field of **Method Setup** dialog.

7.2 Version 2.6

- **Report Setup - Page Setup**: the **Header Font - Color** seting was ignored.
- **Report Setup - Calibration** – **Level:** ignored the Logarithmic axes setting, when called from the **Sequence** window.
- **Report Setup - Method** – **Integration Table:** the Global Peak Width and Threshold were incorrectly formated.
- LC Control: it was not possible to configure more than 2 Agilent 1100 systems on Clarity Station using LAN control.
- **Report Setup – Results**: the vaules for **Noise** and **Drift** in **Result Table** were not printed in Clarity version 2.5.6
- GC Control – DANI 1000: updating of values in the **Device Monitor** in version 2.5.6.
- Report Setup, the **Save** button was removed. When the report was modified and user hits **Cancel**, Clarity will prompt for saving the changes. Changes are saved automaticaly after pressing **OK**.

- **Calibration**, the **Add Existing** command in Calibration mode did not increment the current level in version 2.5.6.
- AS Control – Spark Midas, Triathlon and Endurance: the injection volume check in sequence was not working correctly.
- AS Control - CTC A200S: incorrect sending of certain injection parameters was amended.
- **Print Report - Method**: integration table parameters incorrect formating in the report was repaired.
- **LC Control** - gradient table: Gradient table authomatically sorts itself by time after time value change was performed on any row.
- **Chromatogram - Export**: the export from the Result table now correctly exports User defined columns when not in the "In Fixed Format" mode.
- **Chromatogram - Overlay**: the signal range for mathematical operations (move) was increased from 10000 to 100000 mV (or default units respectively).
- **GPC Extension**: the units displayed for K (dL/g *10^3) were corrected to dL/g*10^5