# 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 Veul version

Number of channels 4	
Channel 1	
Name UV	🗌 Inversion of Signal 🔽 Bipolar
Quantity: Absorbance	Units: mAU
Coefficient: 1 mAU / 1 mV	Autoprefix: Yes
Channel 2	
Name FL	□ Inversion of Signal ▼ Bipolar
Ourselberg Elementation	University of the
Coefficient: 0.5 mELL / 1 mV	Autoprefix: Yes Set Units
Channel 3	Inversion of Signal V Bindlar
Quantity: Refractive Index Coefficient: 1 µRI / 1 mV	Autoprefix: Yes Set Units
Channel 4	
unannei 4	
Name Pump	🔲 Inversion of Signal 🔲 Bipolar
Quantity: Pressure	Units: MPa
Coefficient: 0.278 MPa / 1 mV	Autoprefix: Yes

Fig. 1. Setting of Signal Names and Units

Units Signal Names and 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.

Number of Instruments 3
A Instrument 1 A Instrument 2 A Instrument 3 × Instrument 4
Instrument Type GC C LC EA GPC LC EA GPC GC Image for Opened Instrument GPC GC Image for Opened Instrument GPC GC Image for Opened Instrument GPC Image for Opened Instrument Image for Opened Image for Opened Image for Opened Image for Opened Image fo
From

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.

Agilent 68xx S	etup		? 🛛
Connection Setu	p Devices Setup	Detectors Setup	]
🔽 Use Digital	Aquisition	Number of Del	tector channels 2
			Inversion of signal
Channel 1	ID		Г
Channel 2 T	CD		
Enable to s	itart device(s) from (	Darity Incel	oly Help

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 aded to the list of Available Control Modules (reserved for future use)

#### General

About			
msvert.dll comet/32.dll Cswcb11.sys CswCB20.sys Cswint5.sys Cswint5.sys	04.08.2004 25.08.2006 10.09.2001 31.10.2001 31.10.2001 13.02.2007	7.0.2600.2180 5.82.2900.2982 1.0.0.1 1.0.0.3 4.0.1.1 5.0.3.0	C:WINDO' C:WINDO' C:WINDO' C:WINDO' C:WINDO' C:WINDO'
Cswint9.sys Cswupad.sys cswupad2.sys _	14.02.2007 01.10.2004 10.01.2007	5.0.3.0 5.0.1.3 3.0.4.0	C:\WINDO' C:\WINDO' C:\WINDO'
Program : Clarity version 2.5.0.57 Build Apr 25 2007 S/M-998-60888+255/00			
GC LC AS SST GPC PDA EA Key Rockey USB 088-00888	CE modules; All +255/000	Instruments	
DataApex Int9 A/D Card 0-1 Agilent HP5890 (Unknown) DataApex Int7 A/D Card 0-4	7		
DataApex Int7 A/D Card 0-60	0000		
( )			2
Clarity System Files Wi	nat's new Read	lme	
	OK		

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 VFull version

User Accounts	X
- User List Administrator User	Password Restrictions - Common for All
New	Expiration Warning [Days]
Dejete	Password Reuse 1 📑 [Days]
User Details for: User User Name  User Desktop File   Description	User Info Password: Blank Password Changed: Last Login:
Other Users Can     ✓ Access To     ✓ Instrument 1     ✓ Instrument 2     ✓ Instrument 3     ✓ Instrument 4	Centificate
User Access Rights     Image: Constraint of the sequence       Image: Dep User Account     Image: Constraint of the sequence       Image: Dep Configuration     Image: Dep Configuration       Image: Dep Configuration     Image: Dep Configuration	Select Certificate Clear Certificate

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 VFull 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

កា	LC-10AD - Sequence C:	\clarity\DEMO1	\Ethan	ol in bloo	d						
E	ile <u>E</u> dit <u>S</u> equence <u>V</u> iew <u>W</u>	/indow <u>H</u> elp	1	👬 🗹 🖉	<u>م</u>						
Ĩ	New Open	Ctrl+N Ctrl+O				i 🛍 🛛	07	2 0 T	P   :	<u>A</u> ] 8	s 🖬 🏅
	Save Save As	Ctrl+S Ctrl+Shift+S	ample	Sample Amount	ISTD Amount	Sample Dilut.	lnj.∀ol. [µl]	File Name	Std	Lvi	Metho Name
1	Send Sequence by Email			0.000	0.200	1.000	2.000	%q_%R	No		Ethanol in
2	Import			0.000	0.200	1.000	2.000	%q_%R	Yes	1	Ethanol in
3	Export			0.000	0.200	1.000	2.000	%q_%R	Yes	2	Ethanol in
4			-	0.000	0.200	1.000	2.000	%q_%R	Yes	3	Ethanol in
5	Report Setup	Ctrl+Alt+P		0.000	0.200	1.000	2.000	%q_%R	Yes	4	Ethanol in
6	Print Preview	Crtl+Shift+P		0.000	0.200	1.000	2.000	%q_%R	Yes	5	Ethanol in
7	Print To PDF			0.000	0.200	1.000	2.000	%q_%R	Yes	6	Ethanol in
8	Sand Brinted RDE by Email			0.000	0.200	1.000	2.000	%q_%R	No		Ethanol in
9	bend Philiced PDF by Eniality			0.000	0.200	1.000	2.000	%q_%R	No		Ethanol in
11	Print	Ctri+P	_								
	1 Ethanol in blood										
<	Exit										>
			?	?? - Stop			Vial:	??? / Inj.: ???	File Nam	e:	//

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 VFull 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.

			Input				Output			
I NR	ame	Type	Source	Input	Value	Units	Output Type	Output	Parameter	Store
Coll	ect	Dig. Inp	DataApex Int7 A/D	1	Up		DataApex Int7 A	1	High	
2 Was	ste	Dig. Inp	DataApex Int7 A/D	-	Down		DataApex Int7 A	1	High	
8 Nex	đ	Dig. Inp	DataApex Int7 A/D	2	Up	\	DataApex Int7 A	2	Pulse	Г
4 V1		Time >			0.500	min	Valve 1	Range 🛄	2	J
V2		Input >	UV		0.200	mAU	Valve 1	Range 12	1	1
V3		Dig. Inp	DataApex Int7 A/D	1	Up		Valve 1	Range 12	1	N I
∨4		Time >			1.900	min	Valve 1	Range 12	1	\⊽/
			1			V	2	.1		3

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 <sup>2</sup> 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  $\bigcirc$  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 Acquisition window new options were added to display events and auxiliary signals.
Note:	The display of Axuiliary Signals in the <b>Data Acquisition</b> window is not yet implemented in version 2.5. However, the Auxiliary Signals do display in the chromatogram window.
	• Clarity 2.6: In the <b>Data Acqusition</b> window new toolbar ① and graph ② controls were added to switch active signals.

ĺ	🖴 My GC - Data Acquisition	
	Eile Analysis Display Yew Window Help 🔼 🖬 👫 🕊 🌮 🖬 🚥	3
	1 🖆 🖆 🗊 😰 💿 🔑 💶 🗍 🔍 🔍 🔍 Time range 🔢 min. Signal range 2000 mV	Common for All Signals
	[V] Noise: 0,0010 mV 0,0016 mV	2 0,558 min. 0,15 V — Detector 1 — Detector 2

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

Graph       Aves Appearance       Time Axis       Signal Axis       Signal Signals       Gradient & Auxiliary         Use User Options       Gradent & Flow       Image: Signal Solvent D       Image: Signal Sig	Graph Properties
Auxiliary Signals I Show I Flow I Presure I Temperature I All Open I All Open	Graph Properties  Graph Properties  Graph Axes Appearance   Time Axis   Signal Axis   Signals. Gradent & Auxiliary    Use User Options  Gradent & Flow  Colors Show Y Axis for  ( do not show)  Gradent Solvent D Solvent D Solvent D Solvent B Solvent A Solvent A
	Auxiliary Signals Image: Show     Image: Flow       Image: Show     Image: Flow

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.

Setup Columns			? 🗙
Table Properties Hide Value Unit Bide Columns Start Trine (min) Start Trine (min) Start Trine (min) Area (mi) Area (mi) Area (3) Height (2) W05 (min) Reten: Index [-]	Show All Show Hide Hide All New Column Edit	Show Columns Retern. Time (min) Response (f) Amount [2] Peak Type Compound Name	↑
	Delete	]	Ŧ
Show Value Units V Show Value Units V Use Default Font	No.: C Pla Previ	aces 🕐 Decimal Places 🗌	3 V.s
OK	Cancel	Default He	alp

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 () 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.

Add Use	r Column						? 🛛
∐itle	Respone Fa	ctor		Units	mg/mV	$\geq$	ОК
	1				🔽 Calo	ulate Total	Cancel
<u>E</u> xpressio	on:						Help
[Amount	]/[Response]						
<u> <u> </u> <u></u></u>	Euncts: abs acos asin atg cos exp lo log max min round sin	()	Columns: Reten, Time Amount Amount [&] W05 Centroid Variance Skew Excess Asymmetry Capacity Efficiency Efficiency			Variables: Sample Ditution Injection Volume ISTD Amount Unretained Peak T Column Length Noise Drift	lime
	1.000		Spec	ial Values	•		

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

Ľ	Duratec -	Calibrati	on C:\c	larity_2.4	.2_data\EA	\Calib\EA	_va	idator <	ESTD (MODIFIED)	
E	ile <u>E</u> dit <u>D</u> is	play <u>⊂</u> alib	ation <u>V</u> ie	w <u>W</u> indow	Help		/ 1	ĩ 🛓 🕎		
Ĩ	🖬 📥 د	$ $ $\Rightarrow$ $\times$	🎯 🖄	& 🛛 🕹	🔁 🖄 🔺		<b>(</b> )	0	🕆 🕆 🔶 🔁 🕂 Automatic	<ul> <li>Recalibration</li> </ul>
	Response [mV.s]	Amount [mg]	Resp. Factor	Rec No. Us	ed Deviation [%]	RSTD [%]	^		Carbon - 0,447 min, Signal 1	
1	574,0469	4,5640	0.0080	10 🔽	-3.6927	0.0721		[mV.s]		
2	777,1906	6,4834	0,0083	7 🔽	0,3906	0,0153	=			/
3	1017,864	8,6872	0,0085	6 🗸	2,2624	0,0040	-			/
4	807,6469	6,6114	0,0082	8 🔽	-1,5569	0,2967				<u>*</u>
5	789,9166	6,5621	0,0083	6 🔽	-0,0579	0,0083		1000-		/`
6	578,9448	4,7129	0,0081	6 🔽	-1,4127	0,0129				
7	0,0000	0,0000	0,0000	0 🔽		$  ( \cdot ) $				
8	0,0000	0,0000	0,0000	0 🔽	·	$\mathbf{\nabla}$				
9	0,0000	0,0000	0,0000	0 🔽	-	-		800-	ž.	¥ I
10	0,0000	0,0000	0,0000	0	<u>.</u>	-			*	6
11	0,0000	0,0000	0,0000	0		-	~			
B	esponse Rasi	Area	11.111111	-			_	8 (00		
Co	ompound Typ	e Ordnr						Sespor	*	
C	irve Fit Type	Linear		•				- I		
0	igin	Compu	ute with Orig	gin 💌				400-		
w	eighting Metl	hod None		•						
E	juation: Y =	118,16123°	× + 14,084	11				200-		
C	prelation Fac	tor:	0.9988516							
R	esiduum		12,08671	[mV.s]				0	4	~
									J ∠ 4 5 Amount	o [mg]
		Compound	s 👌 Nitro	gen 👌 Carl	bon Hydrog	jen /				
For	Help, press F	1							Chromatogram std3	_38_16-VI-2006_0 //

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.

General



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

Report Setup Instrument		X
Page Setup     ✓ Pinit       ✓ Lab. Header     ✓ On New Page       ✓ Method     ⊂ All       ✓ Chromatogram     ⊂ Only Active Chromatogram       ✓ Results     ⊂ Only Active Signal       × Sequence     × SST       × Audit & Signatures	Orientation       Fixed Height:       100 [mm]         © Portrait       Fixed Height:       100 [mm]         C Landscape       No. of Pages:       12         Tiled by       Print Range       G signals       © As on Screen         C Thromatograms       © not Tiled       Whole Chromatogram	OK Cancel Help <u>New</u> <u>Open</u> Save <u>As</u> Printeg Printeg Printeg Print To PDE Send PDF

Fig. 19. Report Setup – Chromatogram

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



eport Setup Instru	nent		
Page Setup  ✓ Lab. Header  ✓ Report Header  ✓ Method  × Calibration  ✓ Chromatogram	Image: Print           Image: On New Page           Signals           Image: On Active Chromatogram           Image: Only Active Signal	Gesult Table     Pgrformance Table     Symmany Table     Special Results	OK Cancel Help New Qpen
<ul> <li>Hesuits</li> <li>Sequence</li> <li>SST</li> <li>Audit &amp; Signatures</li> </ul>			Save Save <u>A</u> s Printeg
			Pre <u>v</u> iew <u>P</u> rint Print To PD <u>E</u>
			Send PDF

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.

#### General

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.

Report Setup Instru	ment		$\mathbf{X}$
Report Setup Instrum Page Setup ✓ Lab. Header ✓ Report Header ✓ Chromatogram ✓ Results X Sequence X SST X Audit & Signatures	nent Pint On New Page Signals C All C Active Chromatogram C Only Active Signal	Info       Image: Second	Cancel Cancel Help <u>New</u> <u>Open</u> Save <u>A</u> s Printeg Print To PDE
			Print Print To PDE Send PDF

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, ...).

Import Text File						X
Text File	[	V:\DATA_exte	rmí\CE_koval_I	05052006\041	22034.asc	
Import From Line	Γ		Im	port To Line		
Separator	Í	; <semicolo< td=""><td>N&gt; 💌 De</td><td>ecimal Separat</td><td>ж . &lt;</td><td>DOT&gt; 💌</td></semicolo<>	N> 💌 De	ecimal Separat	ж . <	DOT> 💌
Analyst	Ļ	System				~
Sample ID	ĺ	0.01				(2)
Sample	Sample					
Sample Date	ĺ	20.12.2004	-			
Amount	ĺ	0				
Dilution	ĺ	1				
ISTD Amount	ĺ	0				
Injection Volume	Ì	0				
Imported Data	, [	Signal Only	-	Jumber of Dete	ctors 3	•
	I	orginal only				
Sample Rate [Hz]	Signal Units	Autoscale	Signal Name	Jime Units	Y Multiplier	Data Size
8	mV	<b>N</b>	AU	min 🕧	1e-006	4440
8	mV ≖V	<u> </u>	KV V	min	1e-006	4440
Save as Obremating	ram [		14047440412			
Jave as childinatoy		::\ciarity\Work		2034.PHM		Load Defaults
		OK	Can	cel		Help

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 VFull 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 System -Options command) using the 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 Vell 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

- <u>LC Control:</u> **Agilent 1100 binary pump** now supports optional solvent selection valves valve A and B with possible states 1 and 2.
- <u>GC Control:</u> **Shimadzu GC-14/GC17** the auxiliary zones can be named in the Setup dialog acessible from the System Configuration dialog.
- <u>Hardware:</u> 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

- <u>LC Control:</u> **Agilent 1100 pump** now supports optional piston seal wash pump
- <u>LC Control:</u> **Agilent 1100 pump** now displays a current status in the device monitor
- Selected control modules can be pump 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.
- <u>LC Control:</u> Bischoff 2250 pump control module was replaced with a new version.
- <u>AS Control:</u> Spark Holland Endurance control module was updated.
- <u>AS Control:</u> 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.
- <u>AS Control:</u> HTA, Spark Holland Midas and Marathon samplers - their Status is now displayed in the **Device Monitor**.
- <u>AS control CTC-PAL</u>: 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.

• <u>LC Systems:</u> 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.

#### Control modules

rac	tion Table   <sub>Vie</sub>	al Numbers	C	) ataApex Vi	rtual FC FRC	Method			-	
Del	ay Volume: 0.	05	ml	Detector	r Signal					
Flo	v Rate: 1		ml/min	DataAp	ex Int7 A/D I	Card - RI			-	
	Name	Start Time [min]	Stop Time [min]	Fraction Volume [ml]	Signal Condition	Start ∀alue	Stop Value	Units		
1	Fraction 1	0.100	0.600	1.00	Level	0.200	0.200	μRI		
2	Fraction 2	0.600	0.800	1.00	None					
3	Fraction 3	0.800	1.200	1.00	Slope	10.000	5.000	µRI/s		
scri	ption									

Fig. 25. Method Setup – Fraction Collector Fraction Table

Fraction Ta	, Data Ne Vial Numbers	aApex Virtual FC FRC Method
Start V	al Number Last mber [1 Vial	Vial Number
Res C C	t at Africa Afri	terLast Vial ♥ Waste © Shutdown
Vial Ch W C Ch	inge Options iste During Vial Change Volur ange Vial when Collecting and Peal	me 0 ml k Top is Detected

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.

ᅇ LC-10AD - Device Monitor		
Eile Control View Window He	lp 🔼 🖬	
🗹 DataApex Virtual FC FC 1		Running 🔿
Vial Number 1 Next Vial	Waste	Start Collecting Resume Method
For Help, press F1		

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).

	1 ··· /		In	put				Out	out
	Name	Type	Source	Input	Value	Units	Output Type	Output	Parameter 3
7	Next	Dig. Inp	DataApex	2	Down		DataApex Int7 A	2	Pulse
2	Collect	Dig. Inp	DataApex	1	Down		DataApex Int7 A	1	Low
	Waste	Dig. Inp	DataApex	1	Up		DataApex Int7 A	1	High

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.

#### Control modules



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

Method Setup FC1
Select Valve Valve Valve Valve Valve Valve From Val Initial Position Keep Current
Restore Initial Position when Run is Finished Val Status
Description
Status Ready
Event Table LC Gradient Measurement Acquisition Valves FRC Integration Calculation Advanced
OK Cancel Apply Report Help

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  $\bigcirc$  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.

ᅇ LC-10AD - Dev	vice Monitor				X
Eile Control View	/ <u>W</u> indow <u>H</u> elp <mark>,</mark>	<u>s</u> 🖬			
🗾 DataApex Virtual	FC FC 1			Ready	0
Vial Number 1	Next Vial	Waste	Start Collectin	ng Resume Method	
🗹 LC Monitor					
Component A B C D Figures	Flow 0.000 3 0.000 3 0.000 3 0.000 3 in italics represent of	Total Flov Pressu	(min.) w (mL/min) 0.000 re (MPa) values	Stop Flow Purge 0 Resume Idle	
🔽 Valco Valve Actu	ator Valve 1			Ready	0
Position B	F				
🗹 Valco Valve Actu	ator Valve 2			Ready	0
Position B					
Valco Valve Actu	ator Valve 3			Ready	0
Position A	<u> </u>				
Valto Valve Actu	ator Valve 4			Ready	0
Position A	-				
or Help, press N					

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).

1			Inp	ut			$\checkmark$	Outpu	t	
	Name	Type	Source	Input	Value	Unit	Output Typ	e Output	Parameter	Store
1	V1	Time >			0.500	min	Valve 1	Range 12	2	<b>v</b>
	V2 on	Input >	UV		200.000	mAU	Valve 2	Range 12	2	2
	V2 off	Input <	UV		200.000	mAU	Valve 2	Range 12	1	₽
	V3	Dig. Inp	DataApex Int7	2	Down		Valve 3	Fange 12	2	
Г	∀4	Time >			1.200	min	Valve 4	Range 12	2	V
Г							$\setminus$			Γ
								Ð		
							(	D		
E	vent Table	LC Gradi	ient Measuremeri	t Acqui	sition Vak	res F	RC Integr	1) ation Calcula	ation Adva	nced

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

## 3 Extensions VFull 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 <u>http://www.safenet-inc.com/support/tech/</u> <u>sentinel.asp</u>, 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