Clarity (Lite)

7.0 vs 6.0

ENG

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To facilitate the orientation in the **7.0 vs 6.0** 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, some sections are written in format other than normal text. These sections are formatted as follows:

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

Marks the problem statement or trouble question.

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

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

1 Preamble

This document will guide you through the news and improvements in the **Clarity** Chromatography Station version **7.0**. The most interesting features implemented between version **6.0** and **7.0** include:

- Changed installation structure for easier orientation and backup management.
- Clarity updates available from the main window.
- Windows 10 compatibility.
- New features in the **Chromatogram** window, such as *All Signals Results* tab.
- New 7.0 Experimental Integration Algorithm.
- New global units setup.
- Indication of control modules in development state.
- Enhancements in fraction collectors.
- Various Clarity improvements and bug fixes.
- New and updated control modules.

2 Clarity

2.1 Updating Clarity

Clarity stations updated to version 6.2 or higher, that are connected to the Internet will automatically (unless the function is turned off) check for software updates. If a newer version is available to download, it will be offered in the main Clarity window - see **Fig 1** on pg **2**.



Fig 1: Update available in the main Clarity window

In case of Clarity Lite, it will be displayed in the main window - see Fig 2 on pg 2.



Fig 2: Update available in the Clarity Lite window

Clicking on the *Update available* command triggers the Check for Updates dialog for direct download of the new version.

2.2 Changed installation structure

Clarity version **7.0** underwent major changes regarding installation structure. The default Clarity installation now contains 3 separate directories.

Reason for this change was to offer you a more clear and understandable structure.

Computer	Local Disk (C:) ► Clarity ►	✓ 4 ₂ S	Search Clarity	٩
File Edit View Tools	Help			
Organize 🔻 Include in I	ibrary 🔹 Share with 👻 Burn	New folder	8==	• 🔟 🔞
☆ Favorites	Name	Date modified	Туре	Size
	퉬 Bin	1.3.2016 13:38	File folder	
🥞 Libraries	퉬 Cfg	1.3.2016 13:37	File folder	
Documents	🌗 DataFiles	1.3.2016 13:37	File folder	
J Music	📋 uninstal	1.3.2016 13:39	Text Document	49 KB
Pictures	🔤 Uninstall	1.3.2016 13:39	Application	233 KB
Videos 😽				
🖳 Computer				
🗣 Network				
5 items				

Fig 3: Default Installation structure

- **Bin** contains binary files such as *.DLL libraries and *.CHM files necessary for correct functionality. You should never need to access it and change anything manually. During an update files in this directory will be replaced.
- Cfg contains configuration files such as *.DSK, *.PSW, *.SNO and other configuration and debug files. Once contacted by our support, they will ask for files which are located here. Unless specified, files located here are preserved during an update.
- **DataFiles** contains your projects with methods, calibrations and measured chromatograms. Files in this directory are preserved during an update (apart from the Demo files which will be erased).

As you can see, everything is now sorted and conveniently stored in corresponding directories. Backup of your chromatograms and configuration files is much easier since they are stored in just 2 directories.

New installation wizard will take care of everything.

2.3 Software Compatibility

Since version **6.2** Clarity had been thoroughly tested with official release of **Windows 10** and there were no issues regarding incompatibility found.

2.4 Units Setup Vellversion

Units setup had been unified and the only place regarding units setup is newly in the *System Configuration*.

System Configuration			×
Setup Control Modules	Numbe	r of Instruments: 2	
No. Used S/N Image: Sampler 1 Instrument 1 DemoSN Image: Sampler 1 Instrument 1 Instrument 1 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2 Image: Sampler 2	An Instrument 1 A	A Instrument 2 X Instrument 3 X In Instrument Image for Ope	trument 4
A Collind - A Instrument 1 Balance Valve Capillary Capillary Auxiliary	Sampler 1 LC Detector A, Collorid- A, Collorid- A, Collorid- A, Collorid- A, Collorid- A, Collorid- A, Collorid- A, Collorid- Thermostal Data Inputs & Output Ext. Start Dg. Input: Ready Dg. Output: Miscelaneous Setting Units Sets	Integrity Coloridk Coloridk Coloridk Coloridk Coloridk Its Device Integrity Coloridk P P Metho	Number V 1 V d Options
Add Remove About Setup		OK Cano	el Help

Fig 4: System Configuration - Miscellaneous Settings

The right side has been slightly changed in order to be more clear and understandable. *Miscellaneous Settings* groups units setup and method sending options that used to be under one button.

Units as well as method options are set for each instrument individually just as before. Set units affect primarily Chromatogram window - both graph and *Result table* are presented in the same units.

In general places that display or calculate with units will have units set according to the corresponding instrument.

strument 1 - Units		×
Basic Units		
	Units	
Flow Rate Units	mL/min 🔻	
Pressure Units	MPa 🔻	
Temperature Units	•C ▼	
Injection Volume Units	μL 🔻	
Auxiliary Signal Units		
Voltage Units	V -	
Power Units	W	
Current Units	mA 🔻	
X-Axis Units		
Title	Units	Custom Units
Time	Time - minutes 🔹	
Replace Retention Time	with:	Retention Time
Replace Start Time with:		Start Time
Replace End Time with:		End Time
Display Area in:		Time - seconds 🔹
Display W05 in:		Time - minutes 🔹
Display Drift in:		Time - hours 🔹
ОК	Cancel	Default Help

Fig 5: Units Setup dialog - Instrument 1

Several new units have been implemented:

- Injection Volume Units
- Voltage units for auxiliary signals
- Power units for auxiliary signals
- Current units for auxiliary signals

Possibility to change the default *X*-Axis units (Time) to custom units. This options enables to replace *Retention Time*, *Start Time* and *End Time* with user defined value. The possibility to change *X*-Axis units has been allowed only to some extensions - for the rest it has been disabled and default units are used.

2.5 User Accounts

Option *Start Acquisition* has been implemented in the User Accounts. This option allows to set the right for users to start acquisition.

User Accounts			×
User List		Password Restrictions - Co	mmon for All
Admin		Min. Length	1 [Chars.]
John		LifeTime	1 [Days]
		Expiration Warning	0 [Days]
New		Password Reuse	1 [Days]
Delete		Auto Lock	10 _ [min.]
User Details for:	John		
User		User Info	
<u>U</u> ser Name	John	Password:	Submitted
Desktop File	John	Password Changed:	15. květen 2015
Description		Last Login:	15. květen 2015
Other Users Can	Access To	Chang	e Password
Read & Write	Instrument 1		
C Read	Instrument 2	Certificate	
	Instrument 3		
IN ACCESS	Instrument 4		
User Access Rights	_		
Open User Accounts	Edit Sequence		
Open Configuration	Edit Report Style	Select Certificate	Clear Certificate
Edit Method	Select Method	Certificate For Exportin	g To PDF
Edit Chromatogram	Open Audit Trail Settings		
Edit Calibration	Archive / Restore		
Projects	V Post Run Settings		
Import Chromatogram	Start Acquisition	OK Cance	el Help

Fig 6: User Accounts - new option Start Acquisition.

2.6 Development version of control module

In case Clarity detects a control module that is under development and is being used on an Instrument, it will display a yellow stripe in the Instrument window with the following text: *Development version of control modules:* + name.

Development version of control module means that it is still under development and have not yet passed DataApex quality assessment tests. Once it will be tested and approved, it will be released and the yellow stripe will disappear. This serves as a protection for Clarity, since the possible malfunction may not me caused by Clarity itself but the control module which could be developed by a third party.



Fig 7: Instrument window - Development version of control modules

2.6.1 Unauthorized control module

All control modules used for controlling devices such as LC's, GC's and so on, must be tested and approved by DataApex because they are integral part of Clarity installation and cannot be installed in any other way. In case Clarity detects an unauthorized control module, it will display a

yellow stripe in the Instrument window with the following text: Unauthorized control modules: + name. In this case DataApex is not liable for a correct functionality of the control module.

2.7 Starting autosampler in Single Analysis

New function enabling injection using an autosampler has been implemented in the Single Analysis window. Easily perform single injection using an automsampler without the need of setting a new row in the sequence table.

Analysis				
Sample <u>I</u> D				
Sample				
<u>A</u> mount	0	I	STD1 Amount	0
Dilution	1	Inj	j. <u>V</u> olume [µL]	0,05
	Calibration S	tandard		Method
	Level: 1	-		Comments
 Analysis Use Control Send method 	r Variables od Inject & <u>R</u> un	Stop) Abort	Snapshot
🔽 Use Autosa	ampler V	ial 1:A3		
Chromatogran	n <u>Fi</u> le Name (Instrumen	t 1 - 29.2.2016	11_45_00)	
%e - %R				
Enable File	Over <u>w</u> rite (Counter 1		Data Recovery

Fig 8: Single Analysis - Use Autosampler

Use Autosampler option is visible only when the autosampler is configured on the given instrument.

Upon pressing the *Inject & Run* button, a single injection will be carried out and data acquisition started.

2.8 Chromatogram

2.8.1 Baseline - Allow Crossing

Newly implemented option *Baseline - Allow Crossing - To Start/End* allows for easier modification of baseline. As a peak area will be considered all parts of signal line above baseline inside the selected time interval. See **Fig 9** on pg **10**.



Fig 9: Result of Baseline Allow Crossing with value To Start/End

Compared to the command *Baseline - To First Cross*, which is covered in **Fig 10** on pg **11**., as peak area will be considered only the part of the highest peak, bordered by first intersection of the signal line and the baseline to the right and left next to the highest peak apex.



Fig 10: Result of Baseline Allow Crossing with value To First Cross

2.8.2 Result Table

- Column Amount [%] had been renamed to Amount% [%] to distinguish between Amount (Units) and Amount (%) columns in user column calculations.
- Support for other *ISTD*'s had been added to list of *Variables* available for user calculations.

d User Co	lumn					
Title	Custom	Colun	n Units			ОК
Everagies			Calculate	e Total		Cancel Help
Expression	n: mountl⊥[ISTD	3 4 mo	untl			
Opers:	Functs:		Columns: Reten. Time	•	Variables: Sample Amount	
* /	acos asin atg cos exp	ш	Amount% Centroid Variance Skew	н	Injection Volume ISTD1 Amount ISTD2 Amount ISTD3 Amount	
!= <= >= < >	In log max min round		Excess Asymmetry Capacity Efficiency Eff/		ISTD4 Amount ISTD5 Amount Chromatogram Amount Unretained Peak Time Column Length	
	sin	Ŧ	Symmetry/Tailing	-	Noise	
			Special Values	•		

Fig 11: Add User Column dialog - ISTD1...ISTD5

2.9 All Signals Results tab

<mark>⋏</mark> ≰ G	C - Chr	romatograr	m "2506MULTI	- RI" 13.2.201	17:52:52	Recent (Lir	nked Calibrati	ion)				
File	Edit	Display	Chromatogran	n Method	Results	SST View	Window	Help 🛛 🔼 👔	V 🖂 🖉 🎁 🚥			
4	I X	12 3	👌 🚙 L X 🛛		😁 Resu	ult Table		83 🖉				
					All S	ionals Resu	It Table					
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*	100	ő-			Sum	mary rable						
<u>M</u>					Perfo	ormance Tab	ole					- 2506MULTI - RI
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Δ	_				Jun		15					
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		Signal	All : Reten. Time	Signals Result	Table (ESTI Amount	D - 2506MUL Amount%	TI)	Compound	Calibration File (Peak	Commor Table)	n for All Signals	Calculation
		Signal Name	All : Reten. Time [min]	Signals Result Response	Table (ESTI Amount [g/l]	D - 2506MUL Amount% [%]	TI) Peak Type	Compound Name	Calibration File (Peak 1 250x8hr 1	Commor Table)	n for All Signals	Calculation ESTD •
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	C1 1	Signal Name RI UV	All : Reten. Time [min] 4,561 4,563	Response 3,613	Table (ESTI Amount [g/] 0,027	0 - 2506MUL Amount% [%] 0,3	TI) Peak Type Ordnr	Compound Name oxalic oxalic	Calibration File (Peak 250x8hr1 Open with stored o	Common Table)	n for All Signals	Calculation ESTD
	C1 1 2	Signal Name RI UV RI UV	All Reten. Time [min] 4,561 4,563 5,203 5,203	Signals Result Response 3,613 45,304 253.325	Table (ESTI Amount [g/] 0,027 0,242 1,609	D - 2506MUL Amount% [%] 0,3 1,5 16,8	TI) Peak Type Ordnr Ordnr Ordnr	Compound Name oxalic oxalic dtric dtric	Calibration File (Peak 1 250x8hr 1 Open with stored o Set	Common Table) calibration	n for All Signals	Calculation ESTD •
	C1 1 2 3	Signal Name RI UV RI UV UV	All : Reten. Time [min] 4,561 4,563 5,203 5,203 5,203 5,217	Signals Result Response 3,613 45,304 253,325 561,767	Table (ESTI Amount [g/l] 0,027 0,242 1,609 2,372	D - 2506MUL Amount% [%] 0,3 1,5 16,8 24,7	TI) Peak Type Ordnr Ordnr Ordnr Ordnr	Compound Name oxalic oxalic citric citric citric tartaric	Calibration File (Peak 1 250x8hr 1 Open with stored of Set Report in Result Table	Common Table) calibration	n for All Signals View Unidentified	Calculation ESTD •
	C1 1 2 3 2	Signal Name RI UV RI UV UV RI	All : Reten. Time [min] 4,561 4,563 5,203 5,203 5,203 5,217 5,420	Signals Result Response 3,613 45,304 253,325 561,767 64,967	Table (ESTI Amount [g/l] 0,027 0,242 1,609 2,372 0,424	D - 2506MUL Amount% [%] 0,3 1,5 16,8 24,7 2,6	TI) Peak Type Ordnr Ordnr Ordnr Ordnr Ordnr	Compound Name oxalic oxalic citric citric citric tartaric tartaric	Calbration File (Peak 1 250x8hr 1 Open with stored o Set Report in Result Table	Common Table) calibration	n for All Signals	Calculation ESTD peaks ase Area
	C1 1 2 3 2 3	Signal Name RI UV RI UV UV RI RI	All : Reten. Time [min] 4,561 4,563 5,203 5,203 5,417 5,420 6,053 6,053 6,200	Signals Result Response 3,613 45,304 253,325 561,767 64,967 69,369 217,209	Table (ESTI Amount [g/l] 0,027 0,242 1,609 2,372 0,424 0,581	D - 2506MUL Amount% [%] 0,3 1,5 16,8 24,7 2,6 3,5 12,3	TI) Peak Type Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr	Compound Name oxalic oxalic citric citric tartaric tartaric tartaric glucose	Calibration File (Peak 1 250x8hr 1 Open with stored o Set Report in Result Table All Peaks All Jdentified Peaks	Common Table)	n for All Signals	Calculation ESTD peaks se Area Height
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△◇ → → → → → → → → → → → → → → → → → → →	C1 1 2 3 2 3 4 4 4 5 6 8 8 7	Signal Name RI UV RI UV RI RI RI RI RI RI RI VV V V V V V V V	All : Reten. Time [min] 4,561 4,563 5,203 5,203 5,420 6,053 6,300 6,303 6,580 8,157 8,160 8,157	Signals Result Response 3,613 45,304 253,325 561,767 69,369 217,399 44,241 83,122 44,988 177,151	Table (ESTI Amount [g/] 0,027 0,242 1,609 2,372 0,424 0,581 1,181 1,042 0,610 0,239 1,126	D - 2506MUL Amount% [%] 0,3 1,5 16,8 24,7 2,6 3,5 12,3 6,3 3,7 1,5 11,7 11,7	TI) Peak Type Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr	Compound Name oxalic othic othic othic tartaric tartaric tartaric tartaric mailc mailc mailc fructose succinic succinic	Calbration File (Peak 1 250x8hr 1 0 Open with stored o 5et Report in Result Table Al Peaks Al Jdentified Peaks Al Jdentified Peaks Al Jdentified Peaks Al Jdentified Peaks Al Jdentified Peaks Scale	Common Table) calibration None	n for All Signals	Calculation ESTD peaks see Area Height stor ISTD 1 Amount
△◇ → → → → → → → → → → → → → → → → → → →	C1 1 2 3 2 3 4 4 4 5 5 6 8 7 9	Signal Name RI UV RI UV UV RI RI RI RI UV RI RI RI UV RI UV	All : Reten. Time [min] 4,561 5,203 5,203 5,203 5,203 5,417 5,420 6,053 6,300 6,303 6,580 8,157 8,160 8,550 8,550	Signals Result Response 3,613 45,004 253,325 561,767 69,369 217,399 217,399 44,241 83,122 44,988 177,151 37,328 193,934	Table (ESTI Amount [g/] 0,027 0,242 1,609 2,372 0,424 0,581 1,181 1,042 0,610 0,239 1,126 0,726 1,970	D - 2506MULL Amount% [%] 0,3 1,5 16,8 24,7 2,6 3,5 12,3 6,3 3,7 1,5 11,7 4,4 20,5 21,7 20,6 21,7	TI) Peak Type Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr	Compound Name oxalic oxalic otric otric tartaric	Calibration File (Peak 250x8hr 1 Open with stored (Set Report In Result Table Al Jeaks In Califor Hidde ISTD Peaks Scale	Common Table) calibration None	n for Al Signals	Calculation ESTD peaks Base Area Height actor 0 ISTD I Amount 0 xxx
	C1 1 2 3 2 3 4 4 4 5 6 8 7 9 8	Signal Name RI UV RI UV RI RI UV RI RI UV RI RI UV RI RI UV RI UV RI	All : Reten. Time [min] 4,561 4,563 5,203 5,203 5,203 5,203 6,503 6,503 6,500 8,157 8,160 8,550 8,550 8,550 8,550	Signats Result Response 3,613 45,304 253,325 561,767 69,369 217,399 44,241 83,122 44,988 177,151 37,328 193,334 46,461	Table (ESTI Amount [g/] 0,027 0,242 1,609 2,372 0,424 0,581 1,042 0,610 0,239 1,126 0,726 1,972 1,123	D - 2506MUL Amount% [%] 0,3 1,5 16,8 24,7 2,6 3,5 12,3 6,3 3,7 1,5 11,7 4,4 20,5 6,8	TI) Peak Type Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr	Compound Name oxalic oxalic citric citric citric tartaric tartaric tartaric tartaric tartaric fuctose succinic succinic succinic lactic actic actic glycerol	Calibration File (Peak 1 250x8hr 1 Open with stored co Set Report in Result Table Al J Genthifel Peaks Al Peaks Al Peaks Al Peaks Al Peaks Scale Use Scale Factor Scale Factor	Common Table) None	n for All Signals	Calculation ESTD peaks see Area Height actor ISTD 1 Amount Diution Diution
A A A A A A A A A A A A A A A A A A A	C1 1 2 3 2 3 4 4 5 6 8 7 9 8 8 9	Signal Name RI UV RI UV RI UV RI RI RI RI RI UV RI RI RI RI UV RI UV RI UV RI UV RI UV RI RI RI	All : Reten. Time [min] 4,561 4,563 5,203 5,417 5,420 6,053 6,300 6,303 6,580 8,550 8,550 8,950 10,337	Signals Result Response 3,613 45,304 253,325 561,767 69,369 217,399 44,241 83,122 44,988 197,151 37,328 193,934 46,461 35,378	Table (ESTI Amount [g/] 0,027 0,242 1,609 2,372 0,424 0,581 1,181 1,042 0,610 0,239 1,126 0,726 1,972 0,726 1,972 0,242 0,027 1,123 0,202 0,242 1,009 1,009 1,009 1,126 1,009 1,126 1,1	D - 2506MUL Amount% [%] 0,3 1,5 16,8 24,7 2,6 3,5 12,3 6,3 3,7 11,7 11,7 4,4 20,5 6,8 1,2	TI) Peak Type Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr	Compound Name oxalic oxalic citric citric tartaric tartaric tartaric tartaric glucose malic malic malic malic fructose succhic lactic lactic lactic actec	Calibration File (Peak 250x8hr 1 Open with stored c Set Report in Result Table Al Peak Al Identified Peak Al Identified Peak Al Identified Peak Scale Use Scale Factor Scale Factor	Common Table)	n for All Signals	Calculation ESTD peaks Pe
	C1 1 1 2 3 2 3 4 4 4 5 5 6 8 7 9 9 8 8 9 9 11	Signal Name RI UV RI UV RI UV RI UV RI RI UV RI RI RI RI UV RI UV RI RI RI RI VU	All Reter. Time [mn] 4.563 5,203 5,203 5,203 6,503 6,300 6,303 6,580 8,150 8,160 8,150 8,160 8,550 8,500 8,500 8,150 10,347	Signals Result Response 3,613 45,304 253,325 561,767 64,967 64,967 64,967 64,967 44,241 83,122 44,988 197,151 37,328 193,934 46,461 35,378 152,602	Table (ESTI Amount [g/l] 0,027 0,242 1,609 2,372 0,424 0,581 1,042 0,610 0,239 1,126 0,726 1,970 1,123 0,202	D - 2506MUL Amount% [%] 0,3 1,5 16,8 24,7 2,6 3,5 12,3 6,3 3,7 1,5 11,7 4,4 20,5 6,8 1,2 13,7	TI) Peak Type Ordnr	Compound Name oxalic oxalic othic othic othic tartaric tartaric tartaric tartaric tartaric tartaric tartaric tartaric fuctose succhic succhic succhic lactic glycerol acetic acetic acetic acetic	Calibration File (Peak 250x8hr i Open with stored Set Report in Result Table All Jdentified Peaks All Jdentified Peaks All Peaks in Calibra Hide ISTD Peaks Scale Use Scale Factor Scale Factor Units	Common Table)	n for Al Signals	Calculation ESTD • peaks see
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	C1 1 2 3 2 3 4 4 5 6 8 7 9 9 11 10 11 11 10 11	Signal Name RI UV UV UV RI RI RI RI UV RI RI RI UV UV RI RI RI RI UV UV UV UV UV UV UV UV UV UV UV	All: Reter, Time [min] 4,561 4,563 5,203 5,420 6,053 6,300 6,303 6,300 8,500 8,500 8,500 8,500 8,500 8,500 10,347 10	Signals Result Response 3,613 45,304 253,325 561,767 64,967 69,369 217,399 44,241 83,122 44,988 193,934 46,461 35,378 152,602 4,079 118,374	Table (ESTI [a/l] 0,027 0,242 1,609 2,372 0,424 0,831 1,181 1,042 0,610 0,239 1,126 0,726 1,970 1,121 0,0206 1,312 0,099 11,125 9,596	D - 2506MUL2 Amount% [%] 0,3 1,5 16,8 24,7 2,6 3,5 12,3 6,3 3,77 1,5 11,77 4,4 4 20,5 6,8 1,2 13,77 0,6 6,7,9 10,6	TI) Peak Type Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr	Compound Name oxalic oxalic drivic drivic tartaric tartaric glucose malic fructore succinic lactic lactic lactic lactic lactic acetic acetic methanol ethanol ethanol	Calibration File (Peak 250x8hr 1 Open with stored of Set Report in Result Table Al J Genthifel Peaks Al Peaks in Calibra Hide ISTD Peaks Scale Use Scale Factor Scale Factor Units	Common Table)	view Unidentified Response Fic Amount [g/] 0 Ing. Vokume [mt] 0	Calculation ESTD • peaks see • Area • Height sctor • 0 ISTD1 Amount • O · · · · Difution 1
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	C1 1 2 3 2 3 4 4 5 6 8 7 9 8 9 111 C111 10 11 11 12 1 2 3 1 4 4 5 6 8 9 11 11 1 1 1 2 3 1 1 1 1 2 3 1 1 1 1 1 1 1 1 1 1 1 1 1	Signal Name RI UV UV UV UV UV RI RI RI UV V RI RI UV UV RI RI UV UV RI RI UV V RI RI RI RI RI RI RI RI UV RI RI RI RI RI RI RI RI RI RI RI RI RI	Al : Reten. Time (m) 4.561 4.563 5.203 5.203 5.203 5.203 5.203 6.300 6.303 7.107 8.167 8.157 7.1777 7.1777 7.1777 7.1777 7.1777 7.1777 7.1777 7.1777 7.177	Signals Result Response 3,613 45,304 253,325 561,767 69,369 217,397 217,399 217,399 217,399 217,399 217,397 217,399 217,399 217,397 217,399 217,397 217,497	Table (ESTI Amount [g/] 0,027 0,242 1,609 2,372 0,424 0,581 1,042 0,581 1,042 0,581 1,042 0,610 0,239 1,126 0,726 0,726 1,970 0,217 1,970 0,027 1,970 0,027 1,970 0,027 1,970 0,027 1,970 0,027 1,009 1,123 0,026 1,970 0,027 1,972 0,027 1,009 1,123 0,026 1,970 0,027 1,972 0,027 1,009 1,123 0,026 1,972 0,027 1,009 1,123 0,026 1,972 0,027 1,972 0,027 1,005 1,005 1,005 1,970 0,027 1,123 0,026 1,970 0,026 1,123 0,026 1,970 0,026 1,123 0,026 1,123 0,026 1,123 0,026 1,123 0,026 1,123 0,026 1,123 0,026 1,123 0,026 1,125 1,972 0,099 1,125 0,000 1,125 0,000 1,1	D - 2506MUL Amount% [%] 0,3 1,5 16,8 24,7 2,6 3,5 12,23 6,3 3,5 11,7 1,5 11,7 4,4 4 20,5 6,8 1,2 13,7 0,6 6,7,9 10,00 0,9 10,00 10	TI) Peak Type Ordm Or	Compound Name oxalic oxalic ditic ditic ditic ditic ditic ditic ditic ditic functione solicic	Calibration File (Peak 250x8hr 1 Open with stored Set Report in Result Table Al Jeavis Al Jeavis in Califor Hide ISTD Peaks Scale Use Scale Factor Scale Factor Units	Common Table)	n for Al Signals	Calculation ESTD • peaks Bee
	C1 1 2 3 2 3 4 4 5 6 8 7 9 8 9 111 C111 10 11 11 12 1 2 3 4 4 4 5 6 8 9 11 11 1 2 3 1 1 2 1 1 2 3 1 1 2 1 1 1 2 1 1 1 2 1 1 1 2 1 1 1 2 1 1 1 2 1 1 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1	Signal Name RI UV RI UV UV RI RI RI RI UV VV RI RI RI RI UV UV RI RI RI RI RI RI RI RI RI RI RI RI RI	A I : Reter. Time [mai] 4, 561 4, 563 5, 203 5, 203 5, 420 6, 053 6, 500 6, 303 6, 500 8, 150 8, 160 8, 150 8, 160 8, 550 8, 550 8, 550 10, 337 10, 347 12, 710 14, 833 Total Total All Signals Ret	Signals Result Response 3,613 45,304 253,325 561,767 69,369 217,399 44,241 33,122 44,988 177,151 193,934 46,461 35,378 152,602 4,079 118,374 Uts Sumu	Table (ESTI Amount [g/l] 0,027 0,242 1,609 2,372 0,424 0,581 1,042 0,610 0,239 1,126 0,261 0,239 1,126 0,207 1,970 1,233 0,206 1,970 1,233 0,206 1,549 1,970 1,549 1,549 1,649 1,970 1,549 1,	D - 2506MUL Amount% [%] 0,3 1,5 16,8 24,7 2,6 3,5 12,3 6,3 3,7 1,5 12,3 6,3 3,7 1,5 13,7 0,6 67,9 100,0 100,0 erformace	TI) Peak Type Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr Ordnr	Compound Name oralic colic colic colic tartaric tartaric tartaric tartaric tartaric tartaric tartaric tartaric tartaric succinic	Calibration File (Peak 250x8hr 1 Qoen with stored of Set Report in Result Table Al Peaks Al Identified Peaks Al Identified Peaks Scale Use Scale Factor Scale Factor Units ent Conditions SST References	Common rable)	n for Al Signals	Calculation ESTD peaks Peaks Peight actor 0 ISTD 1 Amount 0 cm Diution 1

New tab All Signals Results had been implemented.

Fig 12: Chromatogram - All Signals Results tab

The tab displays *All Signals Result Table* with results for all signals in chromatogram in one convenient table.

In the menu *Results*, there is a new option - *Compound Unique on One Signal*. The purpose of this option is to limit compound to be specific for one signal. In such case the *Total* row will be calculated from all signals. In case the same compound is on more than one signal, the *Total* rows will be displayed for the individual signals. When a compound is calibrated on more signals and the option is selected, header of the *All Signals Result Table* will display a warning.

User Columns are not supported in All Signals Result Table.

2.10 Integration Algorithm

Clarity version 7.0 introduces one updated and one brand new integration algorithm (IA):

- 7.0
- 7.0 Experimental

IA noted by 7.0 is still the primary one used by default but it has been updated by new *Tangent Area Ratio* and *Tangent Slope Ratio* functions.

IA noted by 7.0 Experimental is released for the first time and has been developed as a future successor of the 7.0. Please note that the new integration algorithm is *experimental and still under development* therefore issues may still arise. Main enhancements and efforts have been put into:

- detecting baseline
- detecting so-called "stumps" which are caused when the top of the peak is cut off
- new way of detecting peaks with the help of normalization of the signal
 peaks that are askew are now detected much better
- once a peak does not fulfill integration criteria it is automatically hidden in order not to alter course of the baseline
- searching of buffer zones (area at the foot of a peak) and clusters (area of consecutive peaks with the same polarity)

IA 7.0 Experimental automatically hides peaks that are found but do not meet criteria in the integration table. Image below shows a chromatogram with a multiple number of hidden peaks. Hidden peak (b) is not connected by baseline at the bottom of the peak. If you decide that specific peak should not be a hidden, go to menu *Chromatogram - Peak* option - click *Show* (a) and mark the start and end of the interval in which the peak should be revealed.



Fig 13: Chromatogram - IA 7.0 Experimental

IA is accessible from the Method Setup - Calculation tab where it can be chosen which IA will be used during processing of the chromatogram. In the Chromatogram window on the *Results* tab in the section *Common for All Signals* you can choose which IA ⓒ to use and is the best place to fiddle around it and see what is detected better in the new 7.0 *Experimental* IA.

Try it out and tell us what you think.

2.11 Show Slope/Level function

New function *Show Slope/Level* accessible from the menu *Chromatogram* displays values of the signal and signal derivation (slope) for purposes of filling the *Fraction Table*. Upon invoking the command, slide with the cursor to the point of interest - bubble displays values for *Time*, *Slope* and *Level* for the active signal.



Fig 14: Chromatogram window - Show Slope/Level

2.12 User Variables

User variables allow to set custom variables which can be then used in the *User Columns* calculations. It's the best way to introduce a new variable for specific calculations.

There are three places where user variables can be found:

• Single Analysis

Analysis			
Sample ID			
Sample			
Amount	0	ISTD1 Amount	0
Dilution	1	Inj. <u>V</u> olume [µL]	0,05
	Calibration Standard		Method
	Level: 1	~	Comments
Analysis User Va	riables		
	Name	Value	
Variable 1	my variable 1		10
Variable 2	my variable 2		20
Variable 3	my variable 3		30
Control			
Send method	Inject & <u>R</u> un	op A <u>b</u> ort	Snapshot
🔽 Use Autosamp	ler Vial	1:A3	
Chromatogram Ei	e Name (Instrument 1 - 29.	2.2016 15_12_21)	
%e - %R			•
Enable File Ov	er <u>w</u> rite Counter	1	Data Recovery

Fig 15: Single Analysis - Analysis User Variables

• Method Setup - Advanced tab

Subtraction Chromatogram Matching	[None] No Change	t	▼ None	User Variables Variable 1 Name Value	MethodUserVar1
Column Calculation Unre Colun	is tained Time on Length Statis @ From Auxiliary S	0 50 tical Moments Width at 50%	[min] [mm] Store	Variable 2 Name Value Variable 3 Name Value	MethodJserVar2 0 MethodJserVar3 0
nt Table Measur	ement Acquisiti	on Integration	Calculation Advanced		

Fig 16: Method Setup - Advanced tab

• Sequence - use Setup Columns to reveal

🚮 🛛	Instrume	nt 1 -	Sequ	ence	Den	no1																×
Fil	e Edit	Seq	uence	Vi	iew	Window H	lelp 🛛 🔼	I 🖬 I 👬	12 🖾	09												
Ľ	🛃 🔛	1 🔁	<u>a</u> (3	'n	- ~ X 🗈	😫 🝋	륌뒴,	65	(1) O	•7'	2 🖗 .	🔑 ا 🕰	🈂 🕉 🗄	-							
	Status	Run	sv	EV	I/V	Sample ID	Sample	Sample Amount	ISTD1 Amount	Sample Dilut.	Inj.Vol. (µL)	Analysis UserVar1	Analysis UserVar2	Analysis UserVar3	File Name	Std	Lvl	Method Name	Report Style	Open	Open Calib.	Print
1		~	1	1	1	Halocar	Std_1	0,400	2,000	1,000	5,000	0,000	0,000	0,000	%Q	Sta	1	Demo1	Calibration			
2		-	2	2	1	Halocar	Std_2	1,000	2,000	1,000	5,000	0,000	0,000	0,000	%Q	Sta	2	Demo1	Calibration			
3		-	3	3	1	Halocar	Std_3	3,000	2,000	1,000	5,000	0,000	0,000	0,000	%Q	Sta	3	Demo1	Calbration			
4		-	4	4	1	Halocar	Std_4	5,000	2,000	1,000	5,000	0,000	0,000	0,000	%Q	Sta	4	Demo1	Calibration		-	
5		-	5	8	2	Halocar	Sam	5,000	2,000	1,000	5,000	0,000	0,000	0,000	%Q Vial	Unk		Demo1	Instrument	-		
6																						
For	Help, pre	ss F1									S	ingle Run	: Waiting		Vial: 1 / I	inj.: 1	F	ile Name:			Acti	ive .::

Fig 17: Sequence

User variables are then copied to the measured chromatogram and can be used for further calculations.



Fig 18: Chromatogram - Results tab

2.13 Enhancements in Fraction Collectors

Fraction collectors had undergone a major update. First of all each row of the *Fraction Table* can be set for a different signal thus allowing a large number of different conditions based on different detector signals.

Second of all there had been added support for collecting fractions based on new signal conditions - combinations of *Level* and *Slope* may now be set in order to collect fractions (indicated by blue rectangle in the **Fig 19** on pg **20**.).

Fraction Table now displays *Signal Condition* command with expanded support for following signal conditions (indicated by red rectangle in the **Fig 19** on pg **20**.):

- Start L+S End L+S
- Start L+S End L or S
- Start L or S End L+S
- Start L or S End L or S

thod Setup	Demo1										٤
elect FC			Foxy	Jr.		- CEnabled					
			1	Foxy	Jr. FC Method						
Fraction 1 Flow Ra	rable Vial I ite mL	Numbers /min	Delay Volu Detector - 0	me Valve mL	Delay Volum Valve - Vial 0	e mL					
	Fraction Volume [mL]	Detec	tor Signal	Signal	Condition	Level Start	Level Stop	Slope Start	Slope Stop	Filter	-
1	1,00	DEMO -	DEMO -	Level	•	0,000	0,000	0,000	0,000	1	
•				Level Slope Start L+S Er Start L+S Er Start L or S I Start L or S I	nd L +S nd L or S End L +S End L or S		m			•	•
Status Event Table	D	emo Ma nent Ad	de:Notl	Ready (Meth	hod has not gration Calcu	been sent) lation Advanc	ed	FRC Stat	us		

Fig 19: Fraction Table - Signal conditions

For more information about fraction collection, see respective manual of the fraction collector or invoke *Help* using the *F1* key.

Newly the collected fractions indicated in the chromatogram are not red but had been changed to orange. A check for overlapping intervals has been implemented.

Bear in mind that the improved behavior and fixed bugs may result in the necessity of making amendments in existing scripts and methods. If you are unsure, consult it with our support team at support@dataapex.com.

2.14 User Guide in main Clarity help

User Guide which could have previously be found only on the internet is now also located in the **Clarity** main help.

This is to bring our users a more convenient way to search for standard operation procedures and steps of how to achieve most common goals.



Fig 20: Help - User Guide

2.15 Various changes in Clarity

- *Event Table Hold/Resume* options are now available in the *Event Table* as *Outputs*. Therefore based on the settings, *Event Table* may now trigger *Hold/Resume* commands for selected pump models.
- Batch dialog now supports reprocess of chromatograms in subfolders.
- Reports:
 - Report setup now supports printing of formulas used in the User columns.
 - Fixed page header for override printer settings regarding page orientation which was not functional.
 - Print to PDF now supports landscape printing.
- Due to compatibility issues Clarity does not allow to create folders starting or ending with a space anymore.
- PDA window isoplot view at opening the window, the cursor is automatically centered in the view (regardless of previous position at closing).
- GPC window printing of calibration curve graph is now independent of the settings in the Chromatogram window.
- In the Device Monitor, LC Gradient, Purge dialogue new field *Max Pressure* to limit the current maximum pressure was implemented. It is pre-filled with value of 1 [*MPa*].
- Method Setup for new methods, the *External Start* option default setting was changed from "*Start/Restart*" to "*Start Only*".
- "Enable start from Clarity" checkbox has been changed in some control modules to a more self-explanatory radio buttons with tooltips.
- Checkbox in Sequence Options has been changed to a list-box where it is much clearer what option, either Active or Passive, is selected.
- Improved error messages for invalid file names.
- IQ report and systeminfo.txt now reports all devices in configuration (in previous versions only detectors).
- OQ_Validation and LaunchManager utilities have been localized. Switch Clarity to desired language and aforementioned utilities will be automatically localized.
- Various known bugs have been fixed. See *What's new* in the About dialog of your **Clarity**.

3 New and updated control modules

This section contains new and updated control modules introduced to Clarity.

3.1 Advion

Updated:

• Advion Expresion CMS - API updated to version 3.0.35.1.

3.2 Agilent

Updated:

- Control of the GC 7890 as well as AS is now implemented using the ICF libraries.
- *Note:* Please note that control of the GC 7890 using ICF libraries is still under development and issues may arise.
 - Agilent ICF libraries updated to version A.02.03 DU2.

3.3 Antec

Updated:

- Antec Decade Elite detector control module is now in the Released state.
- New command *Cell Off/On* in Device Monitor for Antec Decade II and Decade Elite. Detector is not providing any data when cell is off.

3.4 Dani

Updated:

• Dani Master updated drivers: GC to 1.5.12.0 version, DHS to 1.0.9.0 version and SHS to 1.0.11.0 version.

3.5 DataApex

New:

• New control module Zebrick D/A, D/F converter for LC pump control is now in Development state.

Updated:

• GCxGC modulator is now in the Released state.

3.6 Ecom

New:

 New control module ECDA2000 version 0.8.0.0 is now in Development state.

Updated:

• Ecom updated drivers: ECD2000 to version 2.2.0.0, ECO2000 to version 2.0.0.0, ECP2000 to version 2.1.0.0, Flash06DAD to version 1.6.0.0 and Flash12DAD to version 2.1.0.0.

3.7 Ellutia

Updated:

• Ellutia series 200 GC driver updated to version 1.0.2.4.

3.8 Elysia

New:

- Elysia POMO Radiodetector control module is now in the Testing state.
- Elysia GabiStar control module is now in the Testing state.

3.9 Hitachi

Updated:

- Hitachi LaChrom Elite autosampler new wash dialog button in the Device Monitor.
- Hitachi LaChrom Elite drivers are now working also on 64 bit systems.

Note: However, please note that the drivers were successfully tested only on Windows XP SP3 - on higher operating systems the *Autodetect* and opening of the instrument may take excessive time making the control module unusable.

3.10 HTA

Updated:

- HT2x00H autosampler support for two injectors and DIN synchronization option implemented.
- HT4000L autosampler control module is now in the Released state

• HT2000H and HT2100H autosamplers support higher oven and syringe temperatures (firmware at least 1.12 or higher).

3.11 Knauer

New:

• New control module Kanuer Azura RID 2.1L refractive index detector.

Updated:

- PLATINblue Autosampler AS-1, UV Detector MW-1, Azura PDA Detector DAD2.1L, Azura UV Detector MWD2.1L control modules are now in the Released state.
- Knauer control modules updated to version 6.0.0.5021.

3.12 Microsaic

New:

 Microsaic 4000 MiD mass spectrometric detector - control module is now in the Testing state.

3.13 Rigol

New:

• Rigol L-3250 PDA detector control module is now in the Testing state.

3.14 Sedere

Updated:

 Sedere Sedex LC and FP detectors - new commands for standby mode implemented.

3.15 Shimadzu

Updated:

- Shimadzu SIL-20ACHT autosampler control module has been released.
- Shimadzu GC 2010/2014 support for flow setting for dual inlet in dual mode.

3.16 Spark

New:

• Spark Integrity autosampler - control module is in Testing state.

Updated:

- Spark Alias LAN communication changed from UDP to TCP. Note the used mode, communication mode needs to be changed by the Alias Service Manager.
- Spark Alias default Scale factor for syringe speed changed from 1 (slowest) to 10 (fastest).

3.17 Other control modules

New:

• Column Usage Monitor - an auxiliary utility in UNI-RUBY script to monitor column's lifespan.

Updated:

- Alltesta Analyzer is now in the Testing state.
- Almsco BenchTOF MS detector is now in the Relased State.
- ERC RefractoMax 520 control module by UNI-RUBY script is now in Released state.
- FTDI USB driver updated to version 2.10.0.
- GL Sciences LC 800 HPLC system 64 bit drivers added.
- Gow Mac Series 816 GC control module is now in the Released state.
- Ingos AAA50 driver updated to version 1.0.3.0.
- Kontron 525 pump control module is now in the Testing state.
- Recipe HT4000 thermostat control module is now in the Released state.
- Rheodyne MXII and Titan series valves support new operation modes.
- SSI Next Generation Pumps control module by UNI-RUBY script is now in the Testing state.
- Schambeck S 6300 autosampler control module is now in the Released state.
- Sykam S1130 pump driver updated to version 1.0.12.0.