

INTERLAB OMEGA DETECTORS

Clarity Control Module

ENG

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To facilitate the orientation in the **Interlab Omega Detectors** manual and **Clarity** chromatography station, different fonts are used throughout the manual. Meanings of these fonts are:

Open File (italics) describes the commands and names of fields in **Clarity**, parameters that can be entered into them or a window or dialog name.

WORK1 (capitals) indicates the name of the file and/or directory.

ACTIVE (capital italics) marks the state of the station or its part.

Chromatogram (blue underlined) marks clickable links referring to related chapters.

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 Interlab Omega Detectors

This manual describes the setting of the Interlab Omega detectors.



Fig. 1: Interlab Omega detector

Direct control means that the detector can be completely controlled from the **Clarity** environment, including the digital data acquisition. That way, no A/D converter is needed. Instrument method controlling the analysis conditions will be saved in the measured chromatograms.

2 Requirements

- Clarity Installation with LC Control module (p/n A24).
- Free serial USB port in the PC.
- USB A-B cable (p/n SK06) in case of the USB connection. After connecting the instrument to the PC a virtual COM port is created in Windows.

Note: Cables are not part of **Clarity** Control Module. It is strongly recommended to order required cables together with the Control Module.

3 Installation Procedure

3.1 Hardware - Wiring

Interlab Omega detectors are controlled via USB communication, it uses standard USB A-B cable.

3.2 Clarity Configuration - Interlab Omega UV-Vis Detector

📧 System Con	figuration						
	Setup Co	ntrol Modules			Number of Instrumen	nts: 1	
Name		Used	S/N		Instrument 1 🖨 Instrument 2	2 O Instrument 3 O Instrum	nent 4
					Name		
GC					Instrument 1		17Y
Detect	Omena v72		DemoShi (4)		Instrument Type		
	UV245	Instrument 1	Demosiv		LC (5)a		
M	UV255	Instrument 1					
Balanc	UV280	Instrument 1			Name	From	
	ostat						
Valve					Detector	6	
Fractio	on Collector				- A UV245	PM Omega x72	
Auxilia	iry				- A UV255	PM Omega x72 PM Omega x72	
	1				Thermostat		
				<<<	Valve		
					Data Jopute & Outpute		
						Device	Number
	1				Ext. Start Dig. Input: PM	Omega x72 V	୍ଦ୍ର
					Ready Dig. Output:	~	\sim
					Miscellaneous Settings		
					Units Setup	Method Optio	ns
	~						
Add	Remove	About	Setup			OK Cancel	Help
Available	Control Modulor						*
Available	e Control Modules					- 0	^
			Installed Only	Filter: All	v omega 2		0
Name		Status	Vendor		Comment	Module Into	
	12						
	GC						
	Detector	install	ad Interlah		Eluprescence detector	Testing	
	M Omega x72	install	ed Interlab		UV/Vis detector.	Testing.	
010	Balance						
	Valve						
5	Fraction Collector						
	Capillary Electroph	oresis					
1451	Auxiliary						
	3						
	dd 💙 🛛 Can	cel				Help	
							.11

Fig. 2: System Configuration - UV-Vis Detector

- Connect the Interlab Omega UV-VIS detector to the USB port of the computer and wait until Windows installs all required drivers. New COM port should manifest on the computer.
- Start the **Clarity** station by clicking on the A icon on the desktop.
- Invoke the *System Configuration* dialog accessible from the *Clarity* window using the *System Configuration...* command.
- Press the Add button ① (see Fig. 2 on pg. 4.) to invoke the Available

Control Modules dialog.

- You can specify the searching filter ② to simplify the finding of the driver.
- Select the **PM Omega x72** and press the *Add* ③ button.

The Interlab Omega UV-Vis dialog will appear (see Fig. 3 on pg. 6.).

Port	COM1 ~	
Network address	1	
AutoDetect	Press AutoDetect to Test Connection	
Serial Number	45	
Model	UVD ~	
Mode	Multiscan	
Signals		
Signal 1	UV245	
Signal 2	UV255	
Signal 3	UV280	
Signal 4	UV310	
Signal 5	UV340	
Signal 6	UV360	
Signal 7	UV405	

Fig. 3: Interlab Omega UV-Vis Setup

- Select the correct *Port* and press the *Autodetect* button. If the detector is connected correctly, the serial number will be displayed.
- Choose the mode and fill in the signal names.
- Press the OK button.

The **PM Omega x72** will appear in the *Setup Control Modules* list ④ of the *System Configuration* dialog.

- Set the *Instrument Type* () (a) on the desired *Instrument* tab () (b) as necessary according to your instrument.
- Drag and drop the **PM Omega x72** item from the *Setup Control Modules* list on the left ④ to the *Instrument* tab on the right ⑥ , or use the → button ⑦ .
- Set the *Ext. Start Dig. Input* to *PM Omega x72 Device* and appropriate *Number* ⁽⁸⁾ for external start of acquisition.
- *Note:* The configuration dialog of the **Interlab Omega UV-VIS** detector (<u>Interlab Omega</u> <u>UV-Vis</u>) can be displayed any time by double-clicking on its icon or using the *Setup* button.

3.3 Clarity Configuration - Interlab Omega FLD Detector

System Configuration						
Setup	o Control Modules			Number of Instruments:	1 •	
Name	Used	s/N		3 Instrument 1 C Instrument 2	Instrument 3 Instrument 3	ment 4
				Name		
GC				Instrument 1		100
E FL Omega x31		DemoSN (4)		Instrument Type		
	Instrument	t1				
A, FL280	Instrument	1		Name	From	
Balance Thermostat	†)	AS		
Valve				Detector	6	
Capillary Electrophore	sis			M FL245	FL Omega x31	
Auxiliary			<	Thermostat	FL Omega x31	
			<<<	Valve		
				Auxiliary		
				Data Inputs & Outputs	Denter	
				Ext. Start Dig. Toput: FL.Om	ega x31 V	
				Ready Dig. Output:	~	\sim
				Miscellaneous Settings		
				Units Setup	Method Optic	ns
1						
Add Remove	About	Setup			OK Cancel	Help
Available Control Modul	es				- 0	×
		Installed Only	Filter: All	v omega 2		0
Name 🔺	Sta	tus Vendor		Comment	Module Info	
👰 AS						
FL Omega x3	1 in:	stalled Interlab		Fluorescence detector.	Testing.	
PM Omega x	72 in:	stalled Interlab		UV/Vis detector.	Testing.	
Thermostat						
Valve	tor					
Capillary Elect	rophoresis					
(3)	Cancel				Hala	
Add	Cancer				nep	

Fig. 4: System Configuration - FLD Detector

- Connect the Interlab Omega FLD detector to the USB port of the computer and wait until Windows installs all required drivers. New COM port should manifest on the computer.
- Start the **Clarity** station by clicking on the A icon on the desktop.
- Invoke the *System Configuration* dialog accessible from the *Clarity* window using the *System Configuration...* command.
- Press the Add button ① (see Fig. 4 on pg. 7.) to invoke the Available

Control Modules dialog.

- You can specify the searching filter ② to simplify the finding of the driver.
- Select the **FL Omega x31** and press the *Add* ③ button.

The Interlab Omega FLD dialog will appear (see Fig. 5 on pg. 9.).

Port	COM1 ~
Network address	1
AutoDetect	Press AutoDetect to Test Connection
Serial Number	45
Model	FLD V
Mode	Multiscan
Signals	
	51.045
Signal 1	rt295
Signal 2	FL255
Signal 3	FL280

Fig. 5: Interlab Omega FLD Setup

- Select the correct *Port* and press the *Autodetect* button. If the detector is connected correctly, the serial number will be displayed.
- Choose the mode and fill in the signal names.
- Press the OK button.

The **FL Omega x31** will appear in the *Setup Control Modules* list ④ of the *System Configuration* dialog.

- Set the *Instrument Type* () (a) on the desired *Instrument* tab () (b) as necessary according to your instrument.
- Drag and drop the FL Omega x31 item from the Setup Control Modules list on the left 4 to the Instrument tab on the right 6, or use the -> button 0.
- Set the *Ext. Start Dig. Input* to *FL Omega x31 Device* and appropriate *Number* ⁽⁸⁾ for external start of acquisition.
- *Note:* The configuration dialog of the **Omega Interlab FLD** detector (<u>Interlab Omega</u> <u>FLD</u>) can be displayed any time by double-clicking on its icon or using the *Setup* button.

4 Using the control module - UV-Vis Detector

New <u>Acquisition</u> tab is created in the *Method Setup* dialog. If there are any other detectors configured on the instrument, then the **Interlab Omega UV-Vis** detector can be accessed by switching to the desired signal in the *Select Detector* section on the top of the dialog.

4.1 Interlab Omega UV-Vis Detector Setup

The *Interlab Omega UV-Vis Setup* dialog serves for the correct setting of the communication between **Clarity** and the detector.

Interlab Omega S	Setup	\times
Port	COM1 ~	
Network address	1	
AutoDetect	Press AutoDetect to Test Connection	
Serial Number	45	
Model	UVD V	
Mode	Multiscan ~	
Signals		
Signal 1	UV245	
Signal 2	UV255	
Signal 3	UV280	
Signal 4	UV310	
Signal 5	UV340	
Signal 6	UV360	
Signal 7	UV405	
(OK Cancel Help	

Fig. 6: Interlab Omega UV-Vis Setup

Port

Selection of the communication port. Only COM ports with number in range 1 to 99 can be used.

Network address

Sets the network address of particular detector.

Autodetect

This button is used to test the connection to the **Interlab Omega** detector using the previously set *COM Port*. Obtained data about the detector are then displayed in the dialog. Be aware that clicking *Autodetect* results in resetting signal names to default values.

Serial Number

Displays the serial number of the detector. In case that autodetection was successful it is not necessary to set it manually.

Model

Sets the type of the detector.

Mode

Sets the scanning mode of the detector.

Signals

Enables to set the detector signals names. In *Multiscan* mode the names are prefilled automatically with wavelengths, in *Monoscan* mode it is suggested to fill in some neutral name (e.g. UV-Vis Signal), as the actual wavelength can be changed during the analysis.

4.2 Method Setup - Acquisition - UV-Vis detector

The *Method Setup - Acquisition* tab is dedicated to setting and viewing parameters of the method. All parameters set on those sub-tabs are automatically sent to the **Interlab Omega UV-Vis** detector prior to each injection in the *ACTIVE* sequence and may be sent there manually by using the *Send Method* button in the lower part of this tab or in the *Single Analysis* dialog.

Method S	etup Defaul	it1 - #7;	25.05.2023 7:5	54:44						×
New	Open	Save	Save as	Report setup	Audit trail	Send method by e-mail	? Help			
Select Det	ector		UV		Enabled					
Omega Wavel Time C	ength Constant	255 nm	PM	Omega x72 Dete	ctor Method					
Time T	able									
	Time [Min.]		Change to WL							
		1,00	245 nm							
Det Stat	us	Demo Mo	ode: Not Ready (M	lethod has not be	en sent)					
Event Ta	ble Measu	rement	Acquisition Integ	gration Calculat	ion Advanced					
Г ОК	Cano	el						D s	iend Meth	od

Fig. 7: Method Setup - Acquisition - UV Vis detector

Wavelength

Sets or displays the wavelength used for acquisition of this signal. In *Multiscan* mode this value cannot be changed.

Time Constant

Sets the time constant used for filtering this signal.

Time Table

Time Table serves for programming the changes of wavelength during the analysis. It is available only in *Monoscan* mode of the detector (see *Interlab Omega UV-Vis Setup*).

When a time event occurs, it is indicated in the chromatogram

Time [Min.]

Enter the time in which the wavelength changes. Time is entered in minutes and tenths of minute.

Change to WL

Select the wavelength to which it will switch at the specified time.

4.3 Device Monitor - UV-Vis Detector

The window with the detector status can be invoked by the *Monitor - Device Monitor* command from the *Instrument* window or using the *IC Monitor* icon. It displays the actual signal values for all used wavelengths.

© 1	nstrument 1 - De	evice Monitor			-)	×
<u>F</u> ile	Co <u>n</u> trol <u>V</u> iew	<u>W</u> indow <u>H</u> elp	X 🚺 🕨 🕨 🕨	80 - 6 7	0			
O P	M Omega x72 L	JV245 (SN DemoSN)	Demo Mode: No	t Ready (Method has n	ot been	sent)	C	
	Mode Multiscan			Det Status				
	Wavelength [nm]	Abs Data [mAU]	Sample Energy [counts]	Ref Energy [counts]				
	245	???	???	???				
	255	???	???	???				
	280	???	???	???				
For he	elp press F1.							

Fig. 8: Device Monitor UV-Vis Detector

Note: Sample and Reference Energy values out of correct working limits are highlighted in red.

Det Status...

Opens the *Hardware Configuration* dialogue, displaying detail information about the connected device.

Hardware Configura	tion ×
Type of Machine:	UV + VIS V
Connection:	Demo
Model:	
Serial Number:	
Controller Version:	
Protocol Version:	
C	OK <u>C</u> ancel

Fig. 9: Hardware Configuration UV-Vis detector

5 Using the control module - FLD Detector

New <u>Acquisition</u> tab is created in the *Method Setup* dialog. If there are any other detectors configured on the instrument, then the **Interlab Omega FLD** detector can be accessed by switching to the desired signal in the *Select Detector* section on the top of the dialog.

5.1 Interlab Omega FLD Detector Setup

The *Interlab Omega FLD Setup* dialog serves for the correct setting of the communication between **Clarity** and the detector.

Interlab Omega S	etup	×
Port	COM1 ~	
- Network address	1	
AutoDetect	Press AutoDetect to Test Connection	
Serial Number	45	
Model	FLD V	
Mode	Multiscan	
Signals		
Signal 1	FL245	
Signal 2	FL255	
Signal 3	FL280	
(OK Cancel Help	

Fig. 10: Interlab Omega FLD Setup

Port

Selection of the communication port. Only COM ports with number in range 1 to 99 can be used.

Network address

Sets the network address of particular detector.

Autodetect

This button is used to test the connection to the **Interlab Omega** detector using the previously set *COM Port*. Obtained data about the detector are then displayed in the dialog. Be aware that clicking *Autodetect* results in resetting signal names to default values.

Serial Number

Displays the serial number of the detector. In case that autodetection was successful it is not necessary to set it manually.

Model

Sets the type of the detector.

Mode

Sets the scanning mode of the detector.

Signals

Enables to set the detector signals names. In *Multiscan* mode the names are prefilled automatically with wavelengths, in *Monoscan* mode it is suggested to fill in some neutral name (e.g. FL Signal), as the actual wavelength can be changed during the analysis.

5.2 Method Setup - Acquisition - FLD detector

The *Method Setup - Acquisition* tab is dedicated to setting and viewing parameters of the method. All parameters set on those sub-tabs are automatically sent to the **Interlab Omega FLD** detector prior to each injection in the *ACTIVE* sequence and may be sent there manually by using the *Send Method* button in the lower part of this tab or in the *Single Analysis* dialog.

Method	Vlethod Setup Default1 - #6; 25.05.2023 7:51:16 — 🗆 🗙									
New	Open	R Save	Save as	Report setup Audit tr	ail Send method b	y Help				
Select D	Select Detector FL V C Enabled									
Ome	ga		FL	Omega x31 Detector Met	nod					
Way	/elength	255 nm	\sim	Range	0.001 ~					
Time	e Constant Table	0.2 sec	. ~	Rate	Fast 35 Hz 🗸					
	Time [Min.]	I	Change to WL	Ranges						
		1,00	245 nm	0.001 -						
		Dama M								
Det st	atus	Denio Pi	ode. Not Ready (P	rection has not been sent.						
Event	Table Meas	urement	Acquisition Inte	gration Calculation Ad	vanced					
E C	DK Car	ncel					2 9	Send Meth	od	

Fig. 11: Method Setup - Acquisition - FLD detector - Monoscan Mode

Method Setup Default1 (MODIFIED) — 🗆 🗙							
New Open	Report setup Audt trail Send method by e-mail Image: Constraint of the setup Image: Constrainton of the setup Image: Consetup						
Select Detector FL245 V C Enabled							
	FL Omega x31 Detector Method						
Omega							
Wavelength	245 nm V Range 0.001 V						
Time Constant	0.2 sec. V Common for all signals						
Det Status Demo Mode: Not Ready (Method has not been sent)							
Event Table Measurement Acquisition Integration Calculation Advanced							
R OK Cancel							

Fig. 12: Method Setup - Acquisition - FLD detector - Multiscan Mode

Wavelength

Sets or displays the wavelength used for excitation of the selected detector signal. In *Multiscan* mode this value cannot be changed.

Time Constant

Sets the time constant used for filtering this signal.

Range

Sets the range for the selected detector signal.

Rate

Sets the acquisition rate of detector signal. This option is available only in *Monoscan* mode of the FLD detector.

Time Table

Time Table serves for programming the changes of excitation wavelengths during the analysis. It is available only in *Monoscan*mode of the FLD detector.

When a time event occurs, it is indicated in the chromatogram

Time [Min.]

Enter the time in which the wavelength changes. Time is entered in minutes and tenths of minute.

Change to WL

Select the wavelength to which it will switch at the specified time.

Ranges

Select the range to which it will switch at the specified time.

5.3 Device Monitor - FLD Detector

The window with the detector status can be invoked by the *Monitor - Device Monitor* command from the *Instrument* window or using the *IC Monitor* icon. It displays the actual signal values for all used wavelengths.

© 1	nstrument 1 - D	evice Monitor			—			×
<u>F</u> ile	Co <u>n</u> trol <u>V</u> iew	<u>W</u> indow <u>H</u> elp		• • • • • • • • • •	0			
🛇 F	L Omega x31 FL	.245 (SN DemoSN)	Demo Mode: N	ot Ready (Method ha	s not been	sent)	0	
	Mode Multiscan			Det Sta	tus			
	Wavelength [nm]	Abs Data [mFU]	Sample Energy [counts]	Range common for all				
	245	???	???	???				1
	255	???	???	???				
	280	???	???	???				
For he	Ip press F1.							

Fig. 13: Device Monitor FLD Detector

Note: Sample and Reference Energy values out of correct working limits are highlighted in red.

Det Status...

Opens the *Hardware Configuration* dialogue, displaying detail information about the connected device.

Hardware Configura	tion ×
Type of Machine:	Unknown
Connection:	Demo
Model:	
Serial Number:	
Controller Version:	
Protocol Version:	
C	OK <u>C</u> ancel

Fig. 14: Hardware Configuration FLD detector

6 Report Setup - Interlab Omega Detectors

All of the detector settings accessible on the <u>Method Setup - Acquisition</u> tab for the given signal are reported. To do so, the *Instrument Control* parameter on the *Method* tab of the *Report Setup* dialog must be checked.

6.1 Report Setup - UV-Vis Detector

C Print Preview -				×
Print	📸 Print to PDF 🛛 🔷 Send PDF 🔄	▶ 35 ⊕ Q <u>C</u> lose		
	25.05.2023 8:27	Method d:\Test\drivery\DataFiles\WORK1\Default1.met	Page 1 of 1	
		Omega Method		
	Mode : Multiscan Wavelength : 245 nm	Time Constant : 0.2 sec.		ľ
	Wavelength : 255 nm	Time Constant : 0.2 sec.		
	Wavelength : 280 nm	Time Constant : 0.2 sec.		
Page 1				1

Fig. 15: Print Preview of the Report Setup - UV Vis Detector

6.2 Report Setup - FLD Detector



Fig. 16: Print Preview of the Report Setup - FLD Detector

7 Troubleshooting

When the remedy for some problem cannot be discovered easily, the recording of communication between **Clarity** and the detector can significantly help the **DataApex** support to discover the cause of the problem.

The recording can be enabled by adding or amending the COMMDRV.INI file in the **Clarity** installation directory (C:\CLARITY\CFG by default). The file can be edited in any text editor (e.g. Notepad). Following section should be edited or added:

[COM1] echo=on textmode=on filename=Omega_Comm_%D.txt reset=off

- *Note:* Instead of COM1 type the correct serial port used to communicate with the **Interlab Omega** detector. This port number is displayed when the *Det Status* button in the <u>Device Monitor</u> is invoked.
- *Note:* %*D* (or %*d*) in the filename parameter means that the log will be created separately for each day. The *reset=off* parameter disables deleting the content of the log each time the station is started during the same day.

The created *.TXT files will greatly help in diagnosis of unrecognized errors and problems in communication.