



SPARK SPH1240

Clarity Control Module

ENG

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To facilitate the orientation in the **Spark SPH1240** 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 Spark SPH1240 control module

This manual describes the setting of the **Spark SPH1240** pump. The control module enables direct control of the instrument over serial line.



Fig. 1: Spark SPH1240

Direct control means that the pump can be completely controlled from the **Clarity** environment. Instrument method controlling the gradient program will be saved in the measured chromatograms.

Note: It is recommended to check the user manual of the pump for its operating principles and restrictions.

2 Requirements

- **Clarity** Installation with LC Control module (p/n A24).

Caution: Minimal pump firmware version required is **1.10**.

- Communication cable according to the type of communication used - serial straight DB9F-DB9M cable (p/n SK02) in case of serial communication, LAN cross cable (p/n SK08) in case of LAN communication or USB A-B cable (p/n SK06) in case of USB communication.

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

- Possible additional communication cable for interconnecting more than one pump.
- Free communication port in the PC, based on the type of communication used - free serial COM port in case of serial communication, free ethernet port in case of LAN communication or free USB port in case of the USB communication.

Note: Modern computers usually have only 1 (if any) serial (COM) port installed. To use more devices requiring the port, the **MultiCOM** adapter (p/n MC01) is available.

3 Installation Procedure

3.1 Spark SPH1240 setup - communication

The **Spark SPH1240** pump can be controlled from **Clarity** via three different communication ways - serial, LAN or USB. It uses straight serial DB9F-DB9M wiring described in the picture. The cable can be ordered as p/n SK02.

In addition, the *ID* of the **Spark SPH1240** pump must be the same that will be later set in **Clarity**. To find out or change the pump ID, look at the back panel of the pump where a rotary switch is available. The ID is constructed as 70 + the position of the rotary switch. Use the screwdriver to change the last digit of pump's ID for the particular pump. The default *ID* is 70.

Note: The pumps may be chain-connected on the same communication port. In such case, each pump connected in the chain must have a unique ID.

3.1.1 Digital Inputs and outputs

The digital inputs and outputs of the **Spark SPH1240** pump are present on the back panel of the instrument and can be connected using one of the two connectors that serve this purpose. The pump start output is also simulated and sent to **Clarity** digitally. The mapping of pins on both connectors is as follows:

Tab. 1: External Control connector - pins mapping

Pin	Function	Comment
1	Relay output AUX 1 C	Auxiliary output controlled from the <i>Method Setup</i> dialog.
2	Relay output AUX 1 NO	Auxiliary output controlled from the <i>Method Setup</i> dialog.
3	Not Used	
4	Not Used	
5	PUMP ON input	Starts the pump
6	PUMP OFF input	Stops the pump
7	PRG. Start Input	The start program signal is used to start the time program of the pump.
8	Not Used	
9	GND (Common for input signals)	

Tab. 2: External I/O connector - pins mapping

Pin	Function	Comment
1	Relay output AUX 3 NO	When all initial definitions start conditions are met, an output relay contact is closed.
2	Relay output AUX 3 C	When all initial definitions start conditions are met, an output relay contact is closed.

Pin	Function	Comment
3	Relay output AUX 2 NC	
4	GND	
5	Not Used	
6	Relay output AUX 3 NC	
7	Relay output AUX 2 NO	When the pump is ready, an output relay contact is closed.
8	Relay output AUX 2 C	When the pump is ready, an output relay contact is closed.
9	Not Used	

3.2 Clarity Configuration

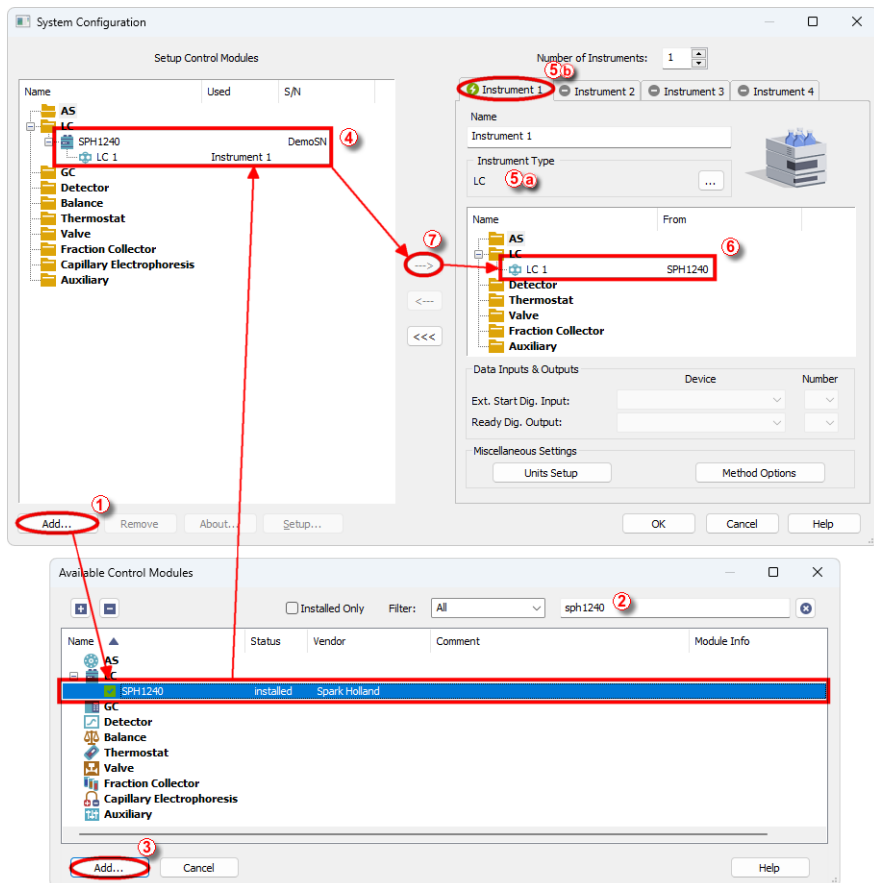



Fig. 2: System Configuration

- Start the **Clarity** station by clicking on the  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. 5.) to invoke the *Available Control Modules* dialog.
- You can specify the searching filter ② to simplify the finding of the driver.
- Select the **SPH1240** pump and press the *Add* ③ button.

The [Spark SPH1240 Setup](#) dialog will appear.

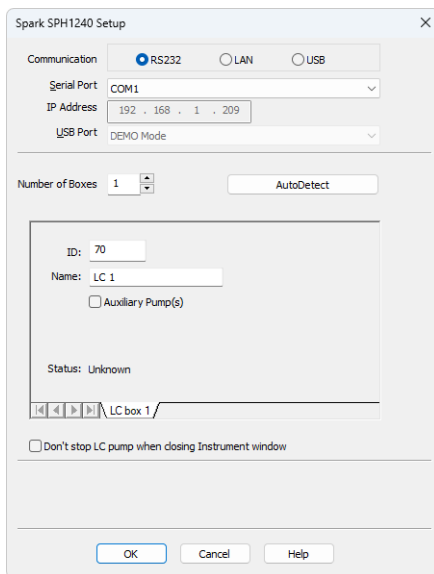


Fig. 3: Spark SPH1240 Setup

- Select the type of the communication to be used.
- Fill in the appropriate communication parameters for the selected type of communication and fill in the correct *ID*, then press the *AutoDetect* button. If the communication is correct, the *Connected* inscription along with the firmware version and serial number of the **SPH1240** pump will be shown in the *Status* row. The *ID* must match the device identifier set on the back of the pump, as described in the chapter "Installation Procedure". If you have more than one pump chain-connected via the same communication port, it is advisable to try to autodetect one pump at a time.

Note: The [Spark SPH1240 Setup](#) dialog is more closely described in the chapter "**Spark SPH1240 Setup**" on pg. 23.

The **Spark SPH1240** pump item will appear in the *Setup Control Modules* list of the *System Configuration* dialog.

- Change the *Instrument Type* (5) (a) on the desired *Instrument* tab (5) (b) to LC.
- Drag the **SPH1240** item from the *Setup Control Module* list on the left (4) to the *Instrument* tab on the right (6) , or use the (--->) button (7) .

4 Using the control module

New [Method Setup - LC](#) and possibly a [Method Setup - LC Gradient](#) tabs appear in the *Method Setup* dialog, enabling the setting of the **Spark SPH1240** pump control method.

4.1 Method Setup - LC

The *Method Setup - LC* dialog consists of three sub-tabs assigned for the various parts of the **Spark SPH1240** pump method - [Pump Method, Time Table](#) (if the pump is gradient pump) or [Auxiliary Pump](#) (if the pump is set as Auxiliary) and [SSV Method](#) (if the SSV is installed).

The configuration of the installed **Spark SPH1240** pumps may be found out using the *LC Status* button located on the right of all three sub-tabs of the *Method Setup - LC* dialog. Performing such action will open the [Hardware Configuration](#) dialog.

The method is sent to the pump every time the *Send Method* or *OK* button is pressed. Other actions in different windows may also cause the sending of the instrument method to the controlled devices including the **Spark SPH1240** pump - most notable cases being pressing the *Send Method* button in the *Single Run* dialog or starting a new injection from the *Sequence* window (each injection is preceded with sending the instrument method).

To read the **Spark SPH1240** method from the pump it is necessary to use the *From LC* button available from all sub-tabs of the *Method Setup - LC* dialog. If the injection method is already established in the pump, it is advisable to download it to **Clarity** using the *From LC* button and save it as a **Clarity** method.

4.1.1 Pump Method

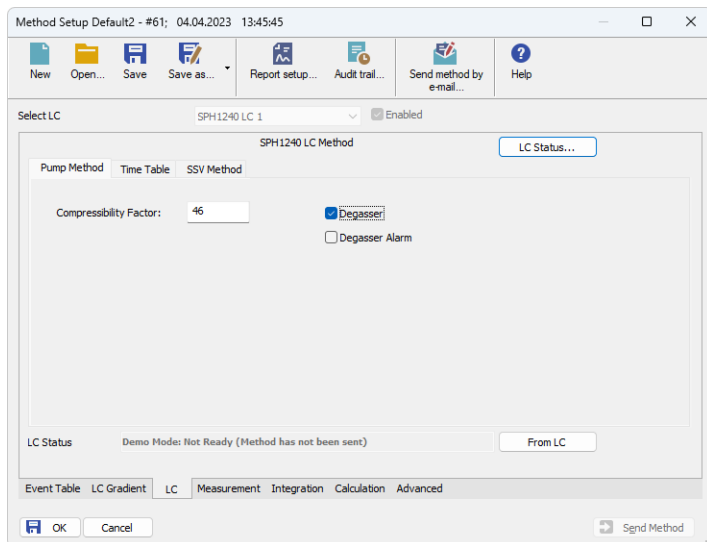


Fig. 4: Method Setup - LC - Pump Method

This is the main tab of the **Spark SPH1240** control that is common to gradient and auxiliary pumps.

Compressibility Factor

Sets the compressibility factor of the solvent delivered by the pump. The default value is *46* (stands for water), only whole numbers are allowed in the field.

Degasser

Switches the degasser functioning on and off. This checkbox only appear on the tab when the degasser is physically present in the pump.

Degasser Alarm

Turns the degasser alarm on and off. This checkbox only appear on the tab when the degasser is physically present in the pump.

4.1.2 Time Table

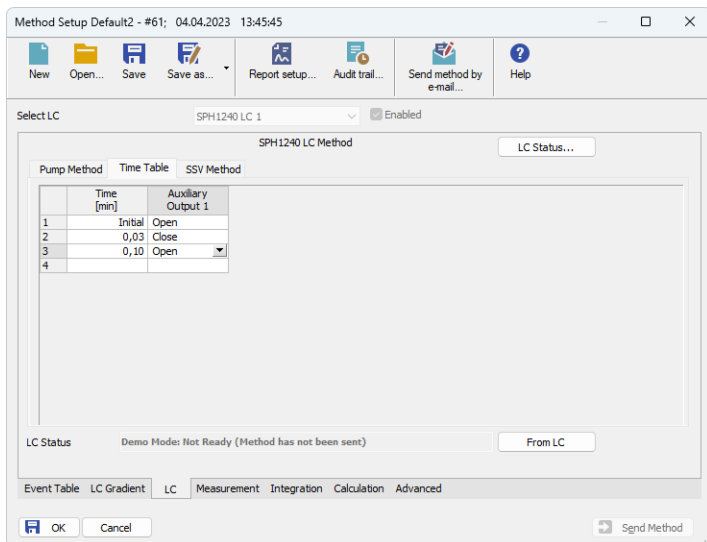


Fig. 5: Method Setup - LC - Time Table

This tab defines the behavior of the physical digital output placed on the pump set as a part of the gradient. For such pump, the output may only be switched during a run based on the pre-set time table, unlike the Auxiliary pump, whose auxiliary output can only be switched by the means of the [Event Table](#).

4.1.3 SSV Method

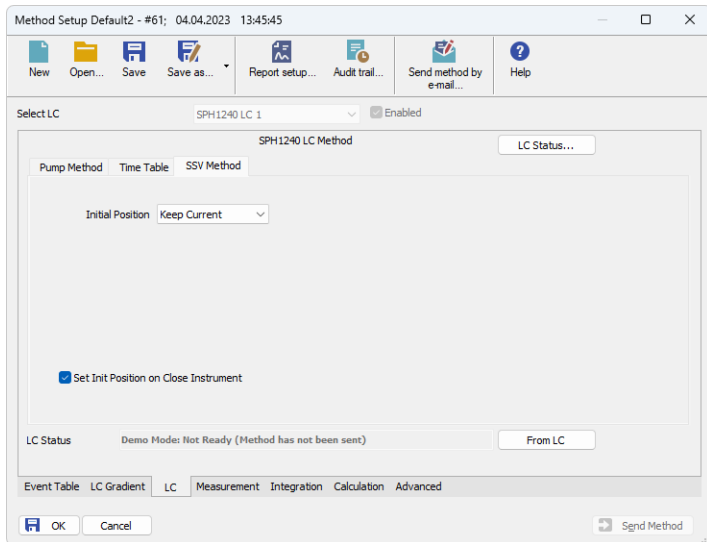


Fig. 6: Method Setup - LC - SSV Method

Initial Position

Specifies the initial position to which the valve is switched at the sending of the method. Possible values for the valve are: *Keep Current*, 1 and 2. *Keep Current* option does not change the valve position at the sending of the method.

Set Init Position on Close Instrument

This checkbox specifies what will happen after the Instrument is closed. When checked, the valve will return to the state specified in the *Initial Position* field. When unchecked, the valve will stay in current position or move to position set in the [Event Table](#). Default state is "checked".

4.1.4 Auxiliary Pump

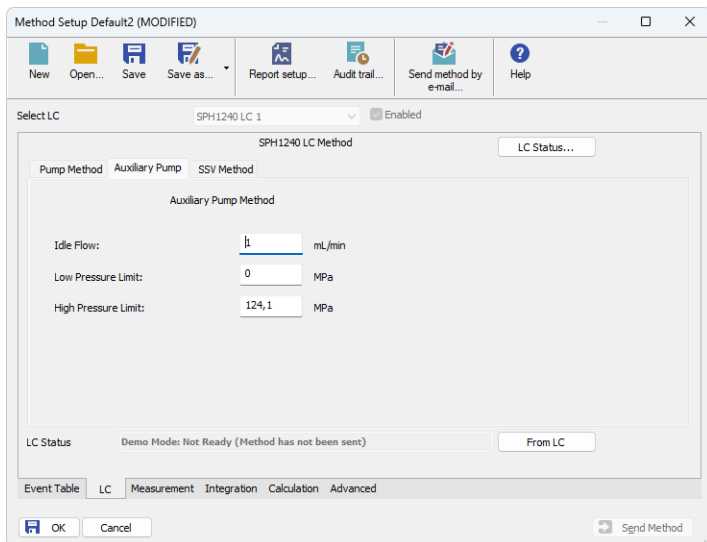


Fig. 7: Method Setup - LC - Auxiliary Pump

This tab defines the properties of **Spark SPH1240** pump set as auxiliary.

Idle Flow

Sets the flow of the pump used outside of the run. The flow of the pump that should be used during the run can be defined in the [Event Table](#).

Low Pressure Limit

Sets the minimum pressure for the given auxiliary pump. When pressure reaches the set value, the pump will shut down. This prevents the solvent leakage.

High Pressure Limit

Sets the maximum pressure for the given auxiliary pump. When pressure reaches the set value, the pump will shut down. This serves to prevent the damage to the pump when the column is blocked.

4.2 Method Setup - LC Gradient

The *Method Setup - LC Gradient* dialog serves for setting up the LC instrument method.

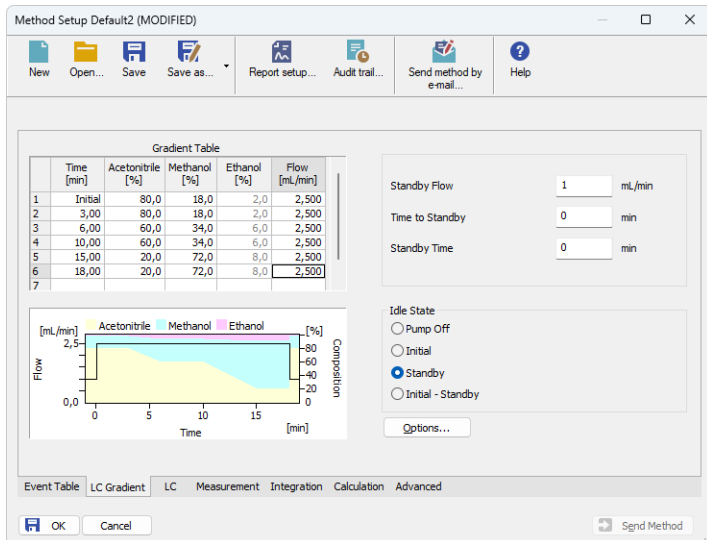


Fig. 8: Method Setup - LC Gradient

Gradient Table

A table for setting the composition of the mobile phase and the overall flow rate as a function of time. Operation is analogous to that of spreadsheets (Excel, Quatro Pro, etc.). To prepare the cell to receive values, click it by the left mouse button; the cell will highlight by dots. A cell that fails to highlight is not available for editing.

Time [min.]

Sets the time at which the ratio of flow rates and the overall flow rate correspond to the values entered in the corresponding row. (These values vary continuously from one time to the next in a manner ensuring that the conditions specified in the next row are satisfied).

XXX1 (..4) [%]

Represents the percentage of a component. The designation **XXX1-4** is in fact replaced by the name of the component (items *Solvent 1 - 4* in the [Gradient Options](#) dialog). Should you enter a component value such that the sum of all values exceeds 100 %, the percentage in the last column is automatically adjusted; if the percentage of the last compound is already zero, the value of the currently entered component is adjusted instead. The flow rate of a compound is calculated by multiplying the overall flow rate (indicated in the *Flow* column) by the corresponding percentage divided by 100.

Flow [ml/min]

Indicates the overall flow rate through the column. The entered value applies to the time specified in the corresponding row. The range for *Flow* values is 0 - 5 ml/min.

Graph

The graph depicts the percentage of components as a function of time together with the overall flow rate. Data are taken over from the **Gradient Table**. Changes effected in this table are immediately reflected in the graph. Legend in the header of the graph indicates the assignment of colors to individual components. The assignment is fixed and individual components are displayed in the graph from bottom to top. The flow rate is displayed as a black line.

The graph has two vertical axes: the axis on the left refers to the overall flow rate, the one on the right to the mixing ratio.

Parameters**Standby Flow**

Sets the overall flow rate through the column in the *STANDBY* state reached after the last row of the table has been performed and the time period defined in the *Time to Standby* field has passed. The duration of this state is defined by the *Standby Time* item. The ratio of individual components in the respective *STANDBY* and *IDLE* states is given by the first row of the **Gradient Table** (the *Initial* row).

Time to Standby [min]

Indicates the time during which the flow rate and mobile phase composition changes continuously between the last values entered in the table and the values defined by *Standby Flow* field and the *Initial* row mobile phase composition.

This time is included in the analysis time (the Instrument is in the *CONTROL* state). In case when the *Time to Standby* is zero, there is step change from flow and components percentage specified on the last row of gradient table to that specified for *STANDBY* state.

Standby Time [min]

The time during which the flow rate is maintained at *Standby Flow*. This time is included in the analysis time (the Instrument is in the *CONTROL* state).

Idle State

An item specifying the overall flow rate through the column outside the instrument method. The following options are possible:

Pump Off

The flow rates of all components are zero.

Caution: Be careful as this setting may damage the column in some cases.

Initial

The flow rate is defined by the first row of the gradient table (the *Initial* row).

Standby

The flow rate is the same as in the *STANDBY* mode and, accordingly, corresponds to the value entered in *Standby Flow* field.

Initial - Standby

The flow is defined by the first row of the gradient table (the *Initial* row) after the method is sent, or by the value entered in the *Standby Flow* field after the method finishes.

The *IDLE* state comes into effect each time an Instrument is opened, at the end or after abortion of an analysis by the *Abort* command, and is also maintained after the **Clarity** program is shut down.

The mixing ratio of individual components in both the *IDLE* and *STANDBY* states is given by the first row of the **Gradient Table** (the *Initial* row).

Note: There is a step change in the flow and components percentage from the values specified for the *STANDBY* state to those specified for the *IDLE* state if the *Idle State* field is not set to *Standby*.

4.2.1 Gradient Options

Invoke the *Options...* button in the [Method Setup - LC Gradient](#) dialog to open the *Gradient Options* dialog. This dialog allows to set the custom name for particular solvents, to switch whether they are used or not in the gradient and to set the warning levels for pressure to prevent the damage to hardware.

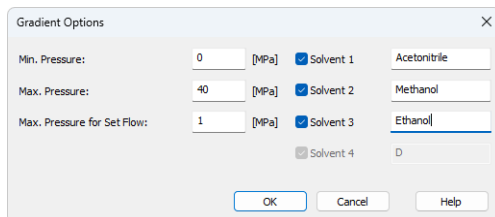


Fig. 9: Gradient Options

Min. Pressure

Sets the minimum pressure for the given pump. When pressure drops to the set value, the pump will shut down. This prevents the solvent leakage. The range for *Min. Pressure* values is 0 - 123.1 MPa.

Max. Pressure

Sets the maximum pressure for the given pump. When pressure reaches the set value, the pump will shut down. This serves to prevent the damage to the pump when the column is blocked. The range for *Max. Pressure* values is 1 - 124.1 MPa, where the *Max. Pressure* must also be at least 1 MPa higher than the *Min. Pressure*.

Note: Pressure limits are checked in the pump hardware. Pressure checking doesn't start immediately after the pump is started, but with a few minutes delay. During this delay the pressure in chromatographic system can stabilize.

Max. Pressure for Set Flow

Sets the maximum pressure to be used in the *Set Flow* dialog in the [Device Monitor](#). Initial value is 1 MPa.

Solvent 1 (..4)

It is possible to enable/disable particular solvent, as well as to set custom name to it.

4.3 Method Setup - Advanced

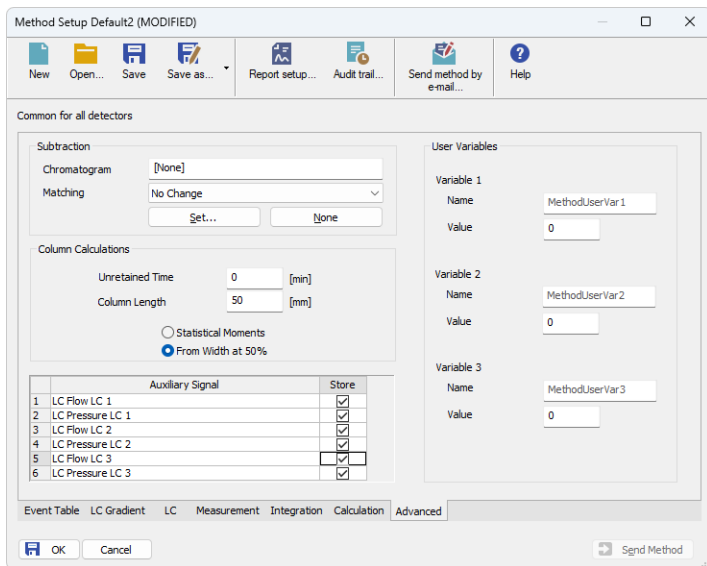


Fig. 10: Method Setup - Advanced

Spark SPH1240 provides the pump flow and pressure auxiliary signals for use in **Clarity**. To save the auxiliary signals into each chromatogram measured according to the given method, check the particular checkbox in the lower section of the Method Setup - Advanced dialog.

4.4 Method Setup - Event Table

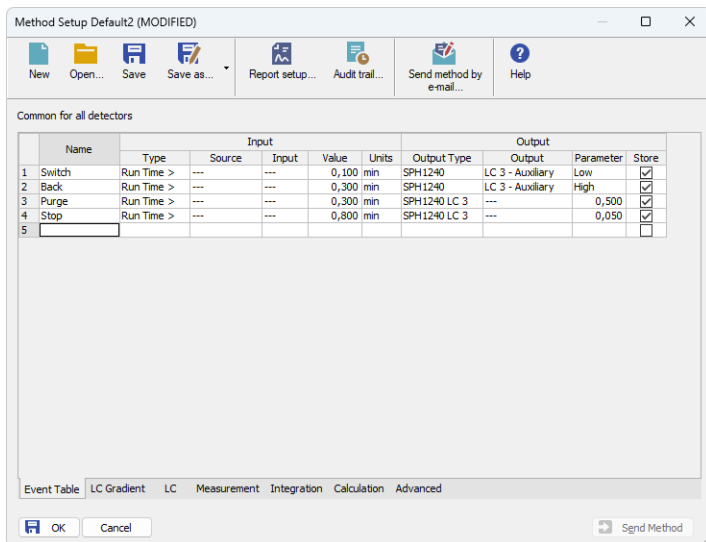


Fig. 11: Method Setup - Event Table

The *Method Setup - Event Table* tab can be, outside of other things, also used for switching the flow of the **Spark SPH1240** auxiliary pump and switching the auxiliary output on the auxiliary pump.

Note: It is not possible to switch auxiliary output or change flow on a pump that is part of the gradient from the **Event Table**.

4.5 Hardware Configuration

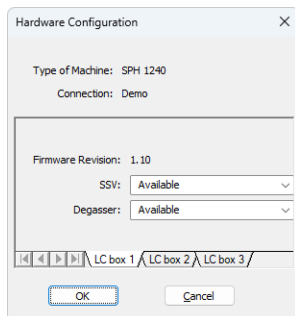


Fig. 12: Hardware Configuration

The **LC Status** button in the [Method Setup - LC](#) dialog displays the *Hardware Configuration* dialog. The dialog is consisted of tabs that display the settings of pumps chained on the same communication port.

In the full version, this dialog displays pump model, data on the communication used, firmware revision and the presence of optional parts of the **Spark SPH1240** pump.

In the demo version the presence of the particular options can be set to demonstrate the possibilities of the pump with selected configuration.

Type of Machine

Shows the **Spark SPH1240** pump type as automatically detected by the control module.

Connection

Shows the communication port as detected from the thermostat.

Firmware Revision

Shows the firmware revision loaded into the **Spark SPH1240** pump.


SSV

Shows whether the **Spark SPH1240** pump is equipped with the solvent selection valve option.

Degasser

Shows whether the **Spark SPH1240** pump is equipped with the degasser option.

4.6 Device Monitor

The pump status dialog can be invoked by the *Monitor - Device Monitor* command from the *Instrument* window or using the LC Monitor  icon.

Device Monitor - LC Monitor

For gradient pumps, the monitor consists of the section common to all pumps present in the gradient (this section displays the actual flows of particular solvents, as well as the total flow, the total pressure and the analysis time), and of parts belonging to particular pumps.

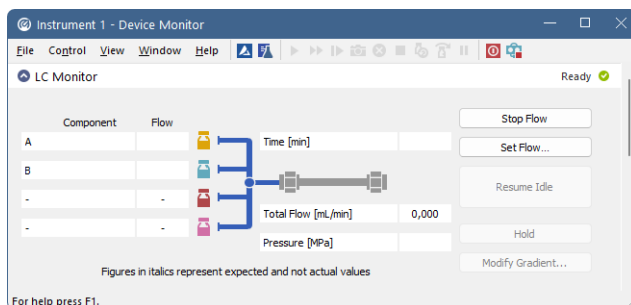


Fig. 13: Spark SPH1240 Device Monitor

Stop Flow

The pumps can be stopped from this window using the *Stop Flow* button. This action will stop the pump only, the analysis run will continue and must be stopped or aborted from the *Data Acquisition* window or *Single Analysis* dialog.

Set Flow...

Sets the desired total flow and solvent ratios in the opened *Set Flow* dialog. *Max. Pressure* allows to set a different pressure than set in the "Gradient Options" on page 15 of a given method.

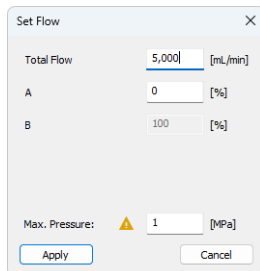


Fig. 14: Set Flow

Resume Idle

Returns the pumps to *IDLE* state as defined in the appropriate field on the [LC Gradient](#) tab of the *Method Setup* dialog.

Hold/Resume

Clicking on the *Hold* button will keep the current gradient conditions until *Resume* is clicked.

Modify Gradient...

Opens the [LC Control Manual Flow](#) dialog allowing to set custom flow and mobile phase composition, disregarding the **Gradient Table** set in the method. The command is only available during the analysis run.

Device Monitor - Auxiliary Pump

Each Auxiliary pump has its own device monitor displaying the actual flow and pressure on the device. This separate monitor mimics the operations of *Stop Flow*, *Purge*, *Resume Idle*, *SSV* and *LC Status* from the gradient *Device Monitor*, but can also be used during the analysis run.

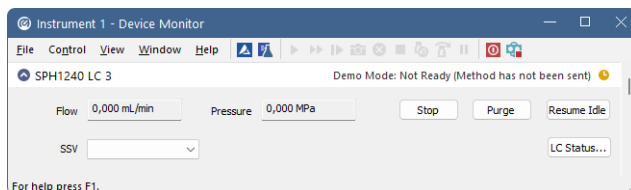


Fig. 15: Device Monitor - Auxiliary pump

SSV

Allows to switch the SSV valve in the pump (if present) to the desired position. This action can only be performed outside of the analysis run.

LC Status

Displays the [Hardware Configuration](#) dialog for the **Spark SPH1240** pump.

Note: Please note that the separate *Purge* dialog is present for each auxiliary pump. Auxiliary pumps must thus be purged manually one at a time.

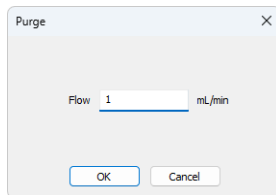


Fig. 16: Purge - SPH1240 Auxiliary pump

4.6.1 LC Control Manual Flow

The *LC Control Manual Flow* dialog accessible through using the *Modify Gradient ...* button from [Device Monitor](#) window allows the user to set a custom mobile phase composition and flow while the analysis is running. It resembles the [Method Setup - LC Gradient](#) tab in functionality.

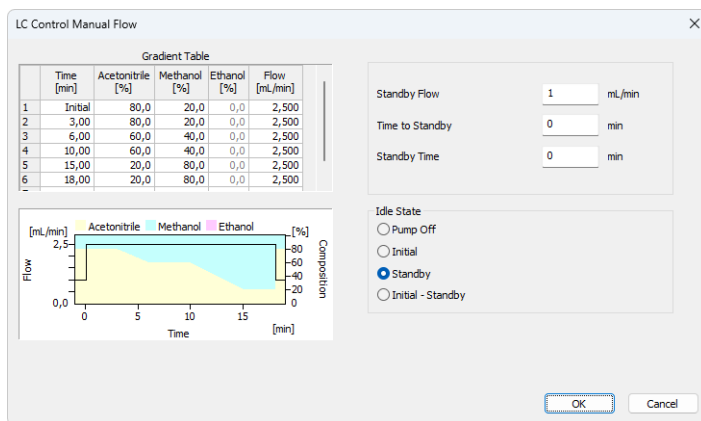


Fig. 17: LC Control Manual Flow dialog

The *LC Control Manual Flow* dialog is only available during the analysis run. When it is invoked and the **OK** button is pressed, the original **Gradient Table** from the acquisition method is discarded and replaced by the **Gradient Table** from the *LC Control Manual Flow* dialog. Any such operation is recorded in the audit trail of the measured chromatogram.

Caution: After the analysis run which used manual flow changes ends, the original method is automatically sent to all controlled devices to make sure **Clarity** station returns to the original method.

4.7 Spark SPH1240 Setup

Spark SPH1240 Setup dialog (accessible through the *System Configuration* dialog) allows to manually set the parameters needed for the communication with the **Spark SPH1240** pump.

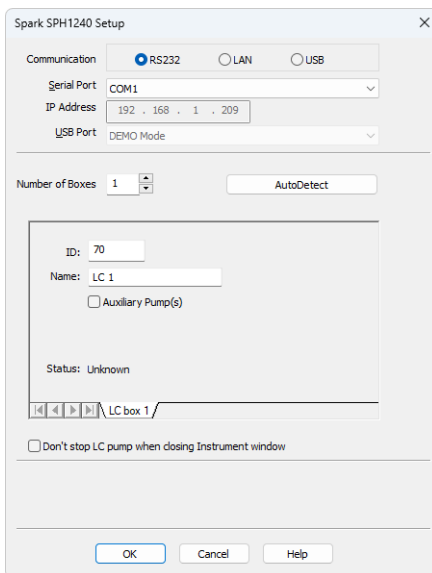


Fig. 18: *Spark SPH1240 Setup*

Communication

Sets the type of the communication for the **Spark SPH1240** pump. The possible options are *RS232*, *LAN* or *USB*. The selection influences the fields available in the *Spark SPH1240 Setup* dialog.

Serial Port

In case of serial (*RS232*) communication sets the COM Port used for the communication between the **Spark SPH1240** pump and **Clarity**.

IP Address

In case of LAN communication sets the IP address of the **Spark SPH1240** pump connected to the computer via network.

USB Port

In case of the USB communication sets the particular USB port used to communicate with the **Spark SPH1240** pump.

Number of Boxes

Sets the number of pump modules connected via the same communication port. In case there is more than one pump connected to the same communication port and

interconnected with other pumps, it is recommended to add pumps one by one and autodetect before the *Number of Boxes* value is raised.

Autodetect

When pressed, checks whether there is the **Spark SPH1240** pump present using the selected *Communication* option, with the given *Serial Port*, *IP Address* or *USB Port*. The *ID* is also checked for the successful communication attempt. The result of the autodetection is then displayed in the *Status* row.

ID

Sets the device identifier of the **Spark SPH1240** pump. The number listed here must be the same as the one set on the back panel of the pump and can be in the range 70 - 79. For more details see the chapter **Installation Procedure** on pg. 3.

Name

Sets the name of the **Spark SPH1240** pump.

Auxiliary Pump(s)

Denotes the pump as an auxiliary one, which means the fact whether the pump is a part of the gradient or not. Maximum of four solvents may be used in the same gradient table, other solvents may be further used via the auxiliary pumps. Pump that is set as auxiliary will have its auxiliary digital output available for operation in the **Clarity** [Event Table](#) and usable as a *Ready Digital Output* in the **System Configuration** dialog.

Status

Shows the status of the communication with the **Spark SPH1240** pump after the *AutoDetect* button has been used. The displayed information, in case of the successful communication attempt, includes the version of the firmware in the pump and the pump's serial number.

Don't stop LC pump when closing Instrument window

When checked, causes the pump not being stopped when the *Instrument* window is closed. Default behavior in **Clarity** causes all devices to be stopped when the *Instrument* window is closed.

Digital Output Names

Pressing the *Change* button will open the *Digital Output Names* dialog used for setting the custom names of the auxiliary digital output of the **Spark SPH1240** pump.

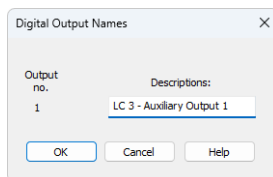


Fig. 19: Digital Output Names

Note: The option to change the digital output name is only displayed when at least one pump is set as Auxiliary pump. The initial state of the output may then be changed in the [Digital Outputs of SPH1240](#) dialog accessible from the main **Clarity** window via the *System - Digital Outputs...* menu command.

4.7.1 Digital Outputs of SPH1240

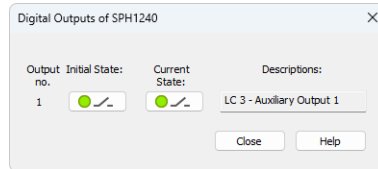


Fig. 20: Digital Outputs of SPH1240

Serves for setting the initial and actual state of the **Spark SPH1240** pump's auxiliary output. The output is only available when the pump is set to the Auxiliary mode.

5 Report Setup

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Standby Flow : 1.00 mL/min Idle State : Standby
 Time to Standby : 0.00 min Standby Time : 0.00 min
 Min. Pressure : 0.00 MPa Max. Pressure : 40.00 MPa

Gradient Table

Time [min]	Acetonitrile [%]	Methanol [%]	Flow [mL/min]
Initial	80	20	2,500
3.00	80	20	2,500
6.00	60	40	2,500
10.00	60	40	2,500
15.00	20	80	2,500
18.00	20	80	2,500

Auxiliary Signals

Signal Name	Stored
LC Flow LC 1	<input type="checkbox"/>
LC Pressure LC 1	<input type="checkbox"/>
LC Flow LC 2	<input type="checkbox"/>
LC Pressure LC 2	<input type="checkbox"/>
LC Flow LC 3	<input type="checkbox"/>
LC Pressure LC 3	<input type="checkbox"/>

SPH1240 Method LC 1

Degasser : not available
 Compressibility Factor : 46

SSV : available

Time Table

Time [min]	Auxiliary Output 1
Initial	Open

Init Position : Keep Current Set on Close : ON

SPH1240 Method LC 2

Degasser : not available
 Compressibility Factor : 46

SSV : available

Time Table

Time [min]	Auxiliary Output 1
Initial	Open

Init Position : Keep Current Set on Close : ON

SPH1240 Method LC 3

Degasser : not available
 Compressibility Factor : 46

Init Flow : 1.0 mL/min Low Limit : 0.0 MPa High Limit : 124.1 MPa
 SSV : available Init Position : Keep Current Set on Close : ON

Fig. 21: Spark SPH1240 report preview

All pump-specific settings (that means the data from both sub-tabs of the [Method Setup - LC](#) tab) and gradient-specific settings (from the [Method Setup - LC Gradient](#) tab) are reported as a part of the data displayed by the use of *Instrument Control* checkbox of the *Report Setup - Method* dialog.

6 Troubleshooting

When the remedy for some problem cannot be discovered easily, the recording of communication between **Clarity** and the pump 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=Spark_SPH1240_%D.txt
reset=off
```

Note: Instead of COM1 type the correct port used to communicate with the **Spark SPH1240** pump. This information is displayed when the *LC Status* button in the [Method Setup - LC](#) dialog is invoked or in the [Spark SPH1240 Setup](#) dialog.

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. Note that the file size may be quite significant, so in case the error occurs on a regular basis, it might be better to set the *Reset=on*, start **Clarity**, invoke the error, close **Clarity** and send the diagnostics file (the file will be once more reset during the next start of **Clarity**).

6.1 Specific Problems

An error message “Cannot establish communication with ...” appears when opening Clarity Instrument.

Solution: Check the power cable (**Spark SPH1240** pump must be switched on), communication cable and communication settings in the [Spark SPH1240 Setup](#) dialog.