

RHEODYNE VALVES

Clarity Control Module

ENG

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To facilitate the orientation in the **Rheodyne Valves** 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 Rheodyne valves Control Module

This manual describes the setting of the **MX II** series and **Titan** series valves. The control module enables direct control of the instrument over USB (**MX II** series) or serial (**Titan** series) line.



Fig 1: Rheodyne MX II valve

Direct control means that the valves can be completely controlled from the **Clarity** environment. Instrument method controlling the analysis conditions will be saved in the measured chromatograms.

2 Requirements

- **Clarity** Installation CD ROM with LC Control (p/n A24) or GC Control module (p/n A23).

Caution: Minimal firmware version required is **Revision A**.

- Free USB port in the PC in case of the **MX II** series valves, or free COM port in case of the **Titan** series valves.

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.

- USB A-B cable (p/n SK06) in case of the **MX II** series valves, or serial cable in case of the **Titan** series valves. This cable should be supplied by manufacturer as a part of the valve.

Caution: The **Titan** series valves are not equipped with RS-232 interface natively, and the UART to RS-232 board has to be added to them. The cable used depends on the particular UART to RS-232 board used.

3 Installation Procedure

3.1 Rheodyne valves communication

MX II Series valves

The **MX II Series** valves are controlled by USB communication. They use standard USB A-B cable provided by the valves manufacturer, which can be also, if it is necessary, ordered from **DataApex** company (p/n SK06). It is not necessary to set anything in the valves configuration, but for the successful communication, the valve must be set to the remote control mode by pressing the *Remote* button on the front panel of the valve (diode next to the *Remote* button must be glowing).

Note: To connect the valve to the PC, follow the instruction in the valve's manual from the **Rheodyne** company.

Titan Series valves

The **Titan** series valves are not equipped with RS-232 interface natively, and the UART to RS-232 board has to be added to them. The cable used depends on the particular UART to RS-232 board used.

3.2 Clarity Configuration

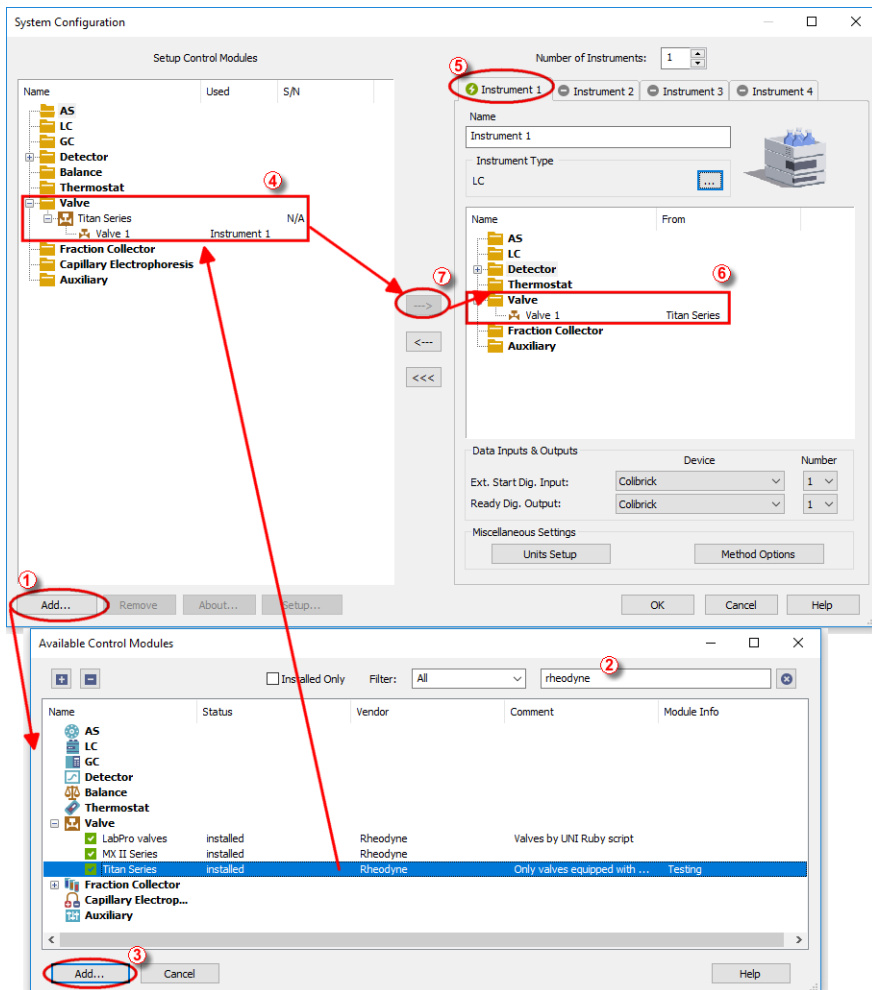



Fig 2: How to add Rheodyne valves

- 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 4.) to invoke the **Available Control Modules** dialog.
- You can specify the searching filter ② to simplify the finding of the driver.

- Select the **MX II Series** or **Titan Series** valves and press the *Add*  button.

The **Rheodyne Valve Setup** dialog will appear.

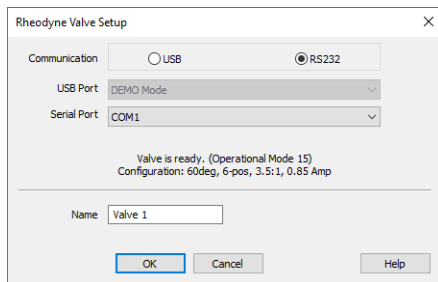



Fig 3: Redness Valve Setup

- Select the correct type of the *Communication* and fill in the appropriate *USB Port* or *Serial Port* field, the information on the connected valve will show in the status line.

Note: The **Rheodyne Valve Setup** dialog is more closely described in the chapter "**Rheodyne Valve Setup**" on pg 11.

The **Rheodyne Valves** item will appear in the *Setup Control Modules* list of the **System Configuration** dialog.

- Drag and drop the **Rheodyne Valves** icon from the *Setup Control Modules* ④ list on the left side of the **System Configuration** dialog to the desired *Instrument* ⑤ tab on the right side ⑥ (or use the  button ⑦ to do so).

4 Using the control module

New **Valves** tabs (one for each valve assigned to the Instrument) are created in the **Method Setup** dialog. They can be accessed by switching to the desired valve in the **Select Valve** section on the top of the dialog.

4.1 Method Setup - Valves

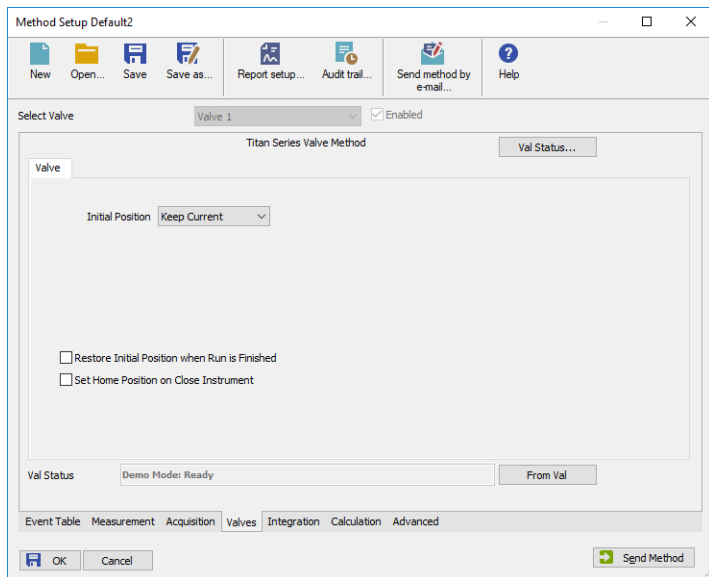


Fig 4: Method Setup - Valves

Initial Position

Specifies the initial position to which the valve is switched at the sending of the method. Possible values are: *Keep Current*, 1, 2, ..., X, where X is the number of positions set for the valve.

Keep Current option does not change the valve position at the sending of the method.

Restore Initial Position when Run is Finished

This checkbox specifies what will happen after the acquisition is finished. If checked, the valve will return to the state specified in the *Initial Position* field.

Set Home Position on Close Instrument

This checkbox specifies what will happen after the Instrument is closed. When checked, the valve will return to the home position. When unchecked, the valve will stay in current position or move to position set in Event Table. Default state is "unchecked".

From Val

Acquires the status of the active valve from the device and sets the values obtained to the active valve's **Valves** tab of the **Method Setup** dialog.

Val Status

Invokes the **Hardware Configuration** dialog showing the connection used for communication, the number of positions the given valve has and the firmware revision the valve uses. The dialog is specific to the valve it is invoked from, e.g. the result shown will depend on the particular valve when invoked from the Instrument with two actuators configured on it.

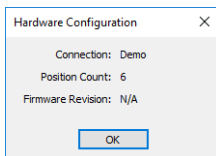


Fig 5: Hardware Configuration

4.2 Method Setup - Event Table

Event Table tab of the **Method Setup** dialog is the place from where the switching of valve positions is governed.

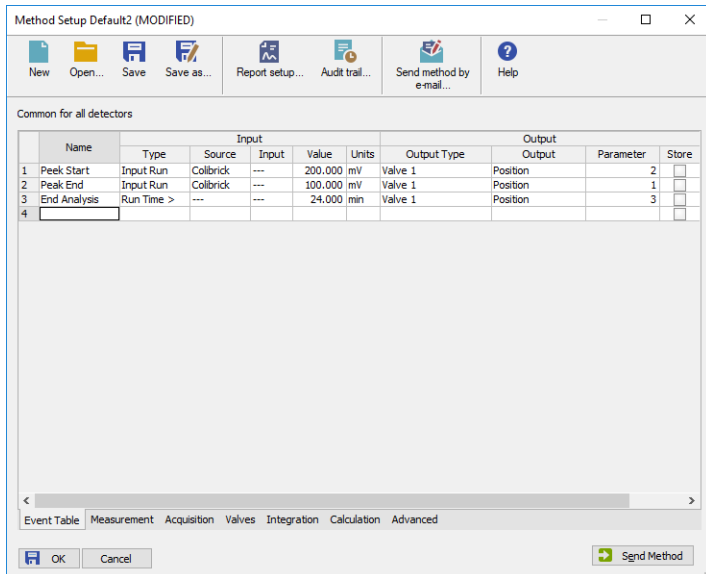



Fig 6: Method Setup - Event Table

The change of the valve position can be triggered by any kind of *Input* (analog signal absolute or relative value getting over or under the specified value, the analysis time passed, digital input, ...) and switched to any possible position. The valve to be switched is set in the *Output Type* field, while the *Output* field allows to select whether the valve should be switched to the next position (*Next*) or to any position defined by its number (*Position*). In that case, the *Parameter* field tooltip shows the possible range interval and the field itself allows to fill in the actual position number to switch into. Check the checkbox of the particular row in the *Store* column to log the event of switching the valve to the **Audit trail**.

4.3 Device Monitor

The window with the detector status can be invoked by the *Monitor - Device Monitor* command from the **Instrument** window or using the  *LC Monitor* icon. It displays the actual valve position for each valve and allows the user to change it if the analysis is not running.

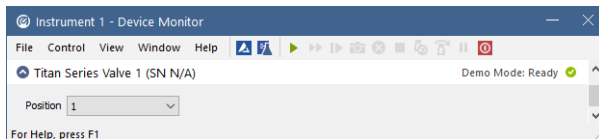


Fig 7: Device Monitor

Position

Shows the position of the valve and allows the user to set the desired valve position. During the run, this field is inactive (shaded).

4.4 Rheodyne Valve Setup

The [Rheodyne Valve Setup](#) dialog serves only for selecting the particular valve (if more than one valve is connected) and setting the valve name. If the valve's configuration has to be changed, it is necessary to use the **Rheodyne TitanMX** software provided by the valve's manufacturer.

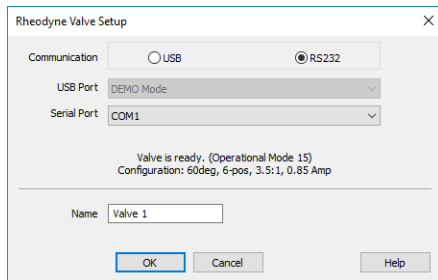


Fig 8: Rheodyne Valve Setup

Communication

Serves for selecting the means of communication of the valve. **MX II Series** valves use the *USB* communication, while **Titan Series** valves use the *RS232* communication.

USB Port

Serves for selecting the particular valve to configure in case more than one is connected via the USB. The list of available (and still not-configured) valves is automatically updated on opening the [Rheodyne Valve Setup](#) dialog and shows the status and type of the valve selected in the *Status* row.

Serial Port

Serves for selecting the COM port to which a **Titan Series** valve is connected. When correct port is selected, the status and type of the valve selected in the *Status* row.

Status

This row shows the information on the valve connected to the selected USB or Serial port.

Name

Sets the name of the valve. This name will be used throughout the **Clarity** station.

5 Report Setup

The report of the valve part of the method can be enabled by checking the *Instrument Control* checkbox on the [Method](#) tab of the [Report Setup](#) dialog. Each valve configured on the Instrument has its own report section.

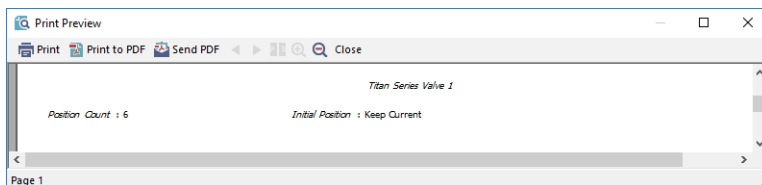


Fig 9: Report Setup

The number of positions and the initial valve position are reported for each valve.

To report the actual events of the valve switches, it is necessary to check the checkboxes on the rows of the **Event Table** connected to the valves (so that these events are stored to the **Audit Trail**) and then check the *Chromatogram Audit Trail* option on the [Audit Trail](#) tab of the [Report Setup](#) dialog.