DataApex
Clarity™
CHROMATOGRAPHY SOFTWARE

RECIPE EC6000

Clarity Control Module ENG

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To facilitate the orientation in the **Recipe EC6000** 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 Recipe EC6000 Control Module

This manual describes the setting of the **Recipe EC6000** amperometric detector. The control module enables direct control of the instrument over serial line.

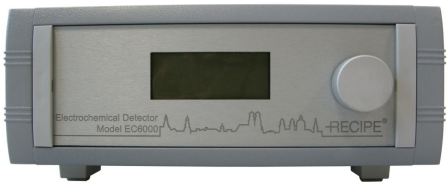

Fig. 1: ***Recipe EC6000*** *detector*

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

The control is performed via the **UNI Ruby** control module and the **Recipe EC6000** script.

2 Requirements

- **Clarity** Installation with LC Control (p/n A24) or GC Control module (p/n A23).
- Free serial COM port in the PC.

Note: Modern computers usually have only one (if any) serial (COM) port installed. To use more devices requiring the RS232 port, the **MultiCOM** adapter (p/n MC01) is available.

- Serial straight cable DB9F-DB9M (p/n SK02) + DB9F-DB9F gender changer (p/n SK07).

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

3 Installation Procedure

3.1 Recipe EC6000 detector communication

The **Recipe EC6000** is controlled by serial (RS232) communication. It uses a serial straight cable wiring DB9F-DB9M (p/n SK02) + DB9F-DB9F gender changer (p/n SK07) described in the picture below.

Fig. 2: Serial straight DB9F-DB9M cable

3.2 Clarity Configuration

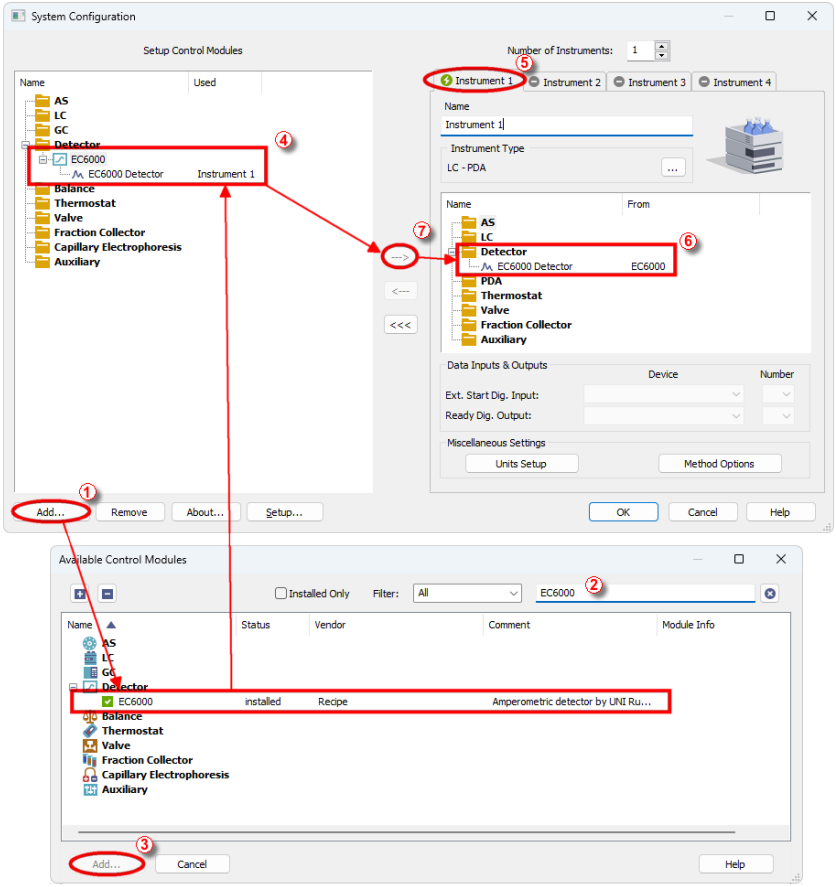

Fig. 3: How to Add Recipe EC6000 module

- 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 on **Fig. 3** on pg. **4**.) to invoke the *Available Control Modules* dialog.
- You can specify the search filter ② to simplify the finding of the driver.
- Select the correct item and press the *Add* (③ on **Fig. 3** on pg. **4**.) button. Each device with already created UNI profile should have its own item

named accordingly in the *Available Control Modules* dialog.

- The *DataApex UNI Setup* dialog will appear.

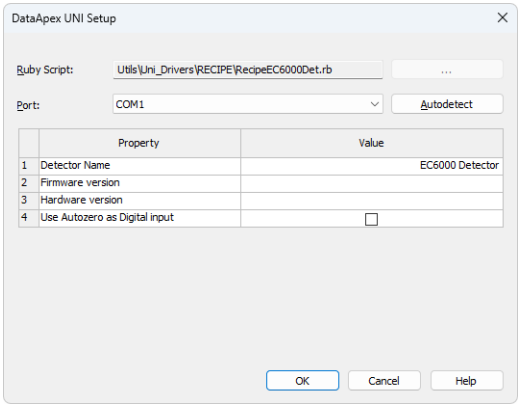

Fig. 4: DataApex UNI Setup

- Set the correct communication *Port* and click on the *AutoDetect* button to establish communication with the device.
- You may fill in the custom *Detector Name*.
- You may check the*Use Autozero as Digital input* to activate Digital input by Autozero contact.

Note: The *DataApex UNI Setup* dialog is described in detail in the chapter **"DataApex UNI Setup"** on pg. **9**.

- The **Recipe EC6000** item ④ will appear in the *Setup Control Modules* list of the *System Configuration* dialog.
- Drag the appropriate item from the *Setup Control Modules* list on the left side to the desired *Instrument* tab ⑤ on the right side ⑥, or click on the ---> button ⑦ .
- When *Use Autozero as Digital input* option is checked, change Ext. Start Dig. Input ⑧ to **Recipe EC6000** and set Pin ⑨ to "1".

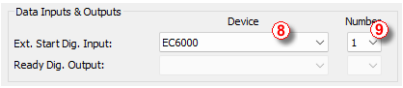

Fig. 5: How to use Autozero as Digital input

4 Using the control module

After adding and setting up the detector a new Acquisition tab will appear in the *Method Setup* dialog. A new **Recipe EC6000** detector section enabling the monitoring of the current detector state will be also created in the *Device Monitor* window.

4.1 Method Setup - Acquisition

The *Method Setup - Acquisition* tab serves for setting the common parameters of the **Recipe EC6000** detector. If more than one detector is available, it is possible to select between them by using the *Select Detector* combobox on the top of the dialog.

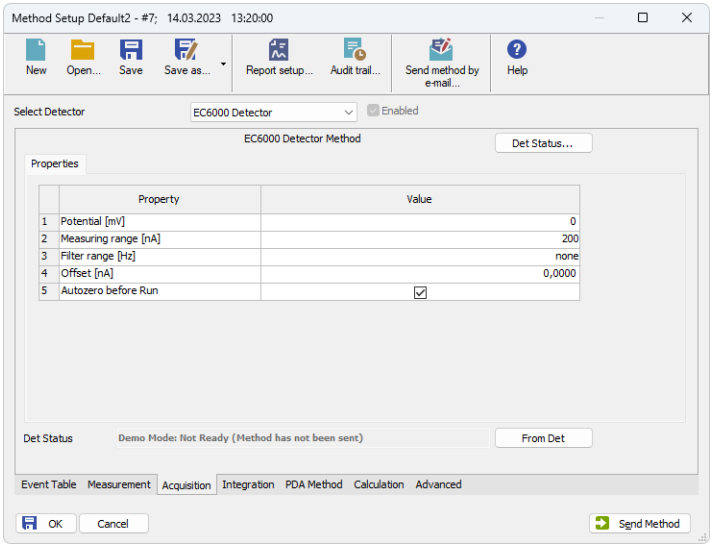

Fig. 6: Method Setup - Acquisition

Potencial [mV]

Defines the working potencial. It is free selectable 0 ± max. 2000mV.

Measuring range [nA]

Sets the detector measuring range. Available ranges are 10pA, 20pA, 50pA, 100pA, 200pA, 500pA,1nA, 2nA, 5nA, 10nA, 20nA, 50nA, 100nA, 200nA.

Filter range [Hz]

Sets the filter range. Available ranges are none, 5Hz, 2Hz, 1Hz, 0.5Hz, 0.2Hz, 0.1Hz, 0.05Hz, 0.01Hz.

Offset [nA]

Increases the given data signal to the selected value. The offset value is related to the measurement range. It can be set according to the bellow table:

Tab. 1: Offset selectable values

Measuring Range	Offset
200nA, 100nA	max. ± 200nA
50nA, 20nA, 10nA	max. ± 99.9nA
5nA, 2nA, 1nA	max. ± 9.99nA
500pA, 200pA, 100pA	max. ± 999pA
50pA, 20pA, 10pA	max. ± 99.9pA

Autozero before Run

Zeroes the detector. A control beep will be provided and the "Autozero=dd:hh:mm:ss" (dd=days, hh=hours, mm=minutes,ss=seconds) counter starts to run.

Note: This option is available only when the *Use Autozero as Digital input* checkbox remains unchecked in the *DataApex UNI Setup* dialog.

4.2 Hardware Configuration

The *Hardware Configuration* dialog (invoked by using the *Det Status* button from the Method Setup - Acquisition dialog) displays the configuration of the **Recipe EC6000**, namely the communication type and its parameters.

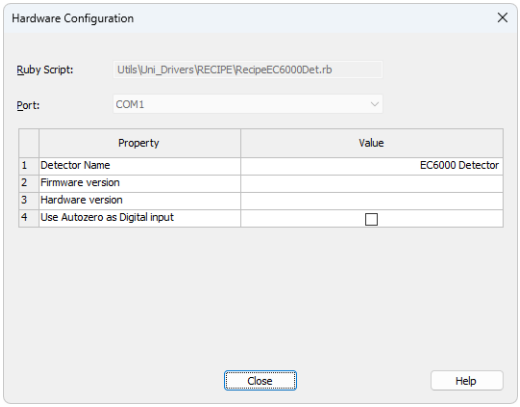

Fig. 7: Hardware Configuration

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 *Device Monitor* icon.

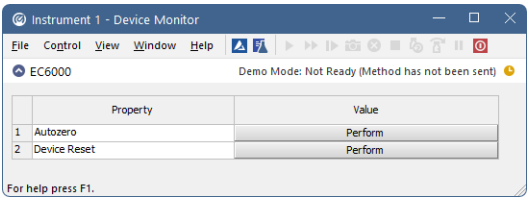

Fig. 8: Device Monitor - Detector

Autozero

Zeroes the connected detector.

Note: This option is available only when the *Use Autozero as Digital input* checkbox remains unchecked in the *DataApex UNI Setup* dialog.

Device Reset

Resets the connected detector.

4.4 DataApex UNI Setup

The appearance of the *DataApex UNI Setup* dialog depends on the presence of the selected Ruby Script - if the script is not present, only the *Ruby Script* field is visible.

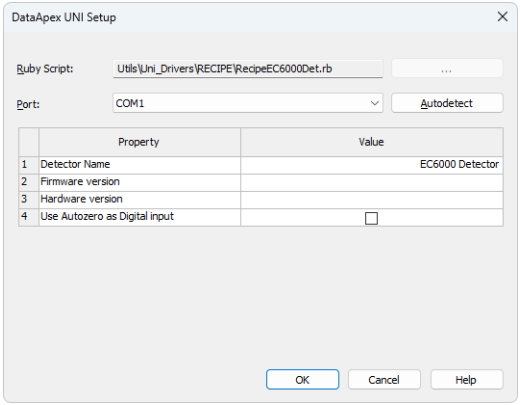

Fig. 9: DataApex UNI Setup

Ruby Script

Displays the selected Ruby Script. The correct RECIPEEC6000DET.RB script for the **Recipe EC6000** detector can be found in the UTILS/UNI_DRIVERS/RECIPE subdirectory (accessible through the ... button) of the **Clarity** installation folder (C:\CLARITY\BIN by default).

Port

Defines the communication port used, possible values dependent on the type of communication of the device and/or available ports in the PC.

AutoDetect

It is used for verifying the device communication over the serial port selected above.

Detector Name

Allows you to set the custom name of the detector. This name (entered into the *Value* column) will be used throughout the **Clarity** station.

Firmware version

Defines detector's firmware version.

Hardware version

Defines detector's hardware version.

Use Autozero as Digital input

Enables to use Autozero contact as Digital input. In such case, it is necessary to send method again before the next analysis.

5 Report Setup

The detector section on the method report can be enabled by checking the *Instrument Control* checkbox on the ***Method*** tab of the ***Report Setup*** dialog.

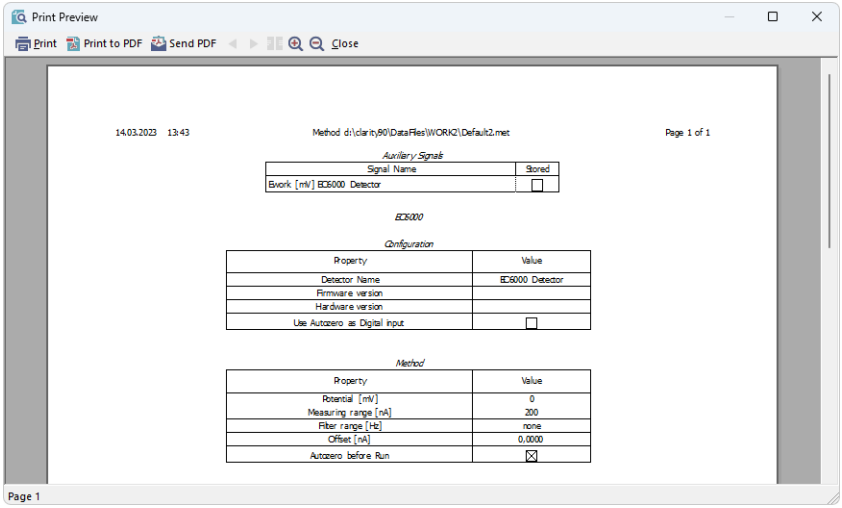

Fig. 10: Report Setup

All of the parameters set in the ***Method Setup - Acquisition*** dialog are reported, as well as the custom *Detector Name* and other parameters set in the ***DataApex UNI Setup*** dialog.

Note: When the *Use Autozero as Digital input* checkbox is checked in the *DataApex UNI Setup* dialog, *Autozero before Run* row is missing.

6 Troubleshooting

When the solution to a problem cannot be found easily, a recording of the communication between **Clarity** and the detector will significantly help **DataApex** support.

The data 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). The following section should be edited or added:

```
[COM1]
echo=on
textmode=on
filename=CommDrvCOM1_%D.txt
reset=off
```

Note: Instead of COM1, type the communication port used to communicate with the **Recipe EC6000** detector. This port number is displayed when the *Det Status* button in the *Method Setup - Acquisition* dialog 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 be of great help in the diagnosis of not documented errors and communication issues.