DataApex
Clarity™
CHROMATOGRAPHY SOFTWARE

HTA HT1500L

Clarity Control Module ENG

Code/Rev.: M231/90C
Date: 2024-02-14

DataApex Ltd.
Petrzilkova 2583/13
158 00 Prague 5
Czech Republic

Phone: +420 251 013 400
clarity@dataapex.com
www.dataapex.com

Author: KK

Contents

To facilitate the orientation in the **HTA HT1500L** 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 HT1500L Control module

This manual describes the setting of **HT1500L** autosampler. The control module enables direct control of the instrument over USB. Direct control means that the autosampler can be completely controlled from the **Clarity** environment. Instrument method, controlling for example the vials and further device specific functions (e.g. washing), will be saved to the measured chromatograms.

Fig. 1: HT1500L autosampler

2 Requirements

- **Clarity** Installation with AS Control module (p/n A26).
- Free USB port Type "A" - female in the PC.
- USB cable for direct connection of the autosampler to the PC.

Note: Cables are not part of **Clarity** Control Module. If you don't have tha USB cable you can order it as p/n SK06.

3 Installation Procedure

3.1 HT1500L setup - communication

The **HT1500L** autosampler communicates with PC via USB using the USB cable.

3.1.1 Additional connections

The **HT1500L** control module can send and receive synchronization signals via standard communication line, however, some of the non-controlled instruments must be synchronized separately using the synchronization wiring. For that occasion, **HT1500L** sampler has a 15 pins I/O connector on the rear panel.

See the **HT1500L User Manual** provided by **HTA** to see more details on connections.

3.2 Clarity Configuration

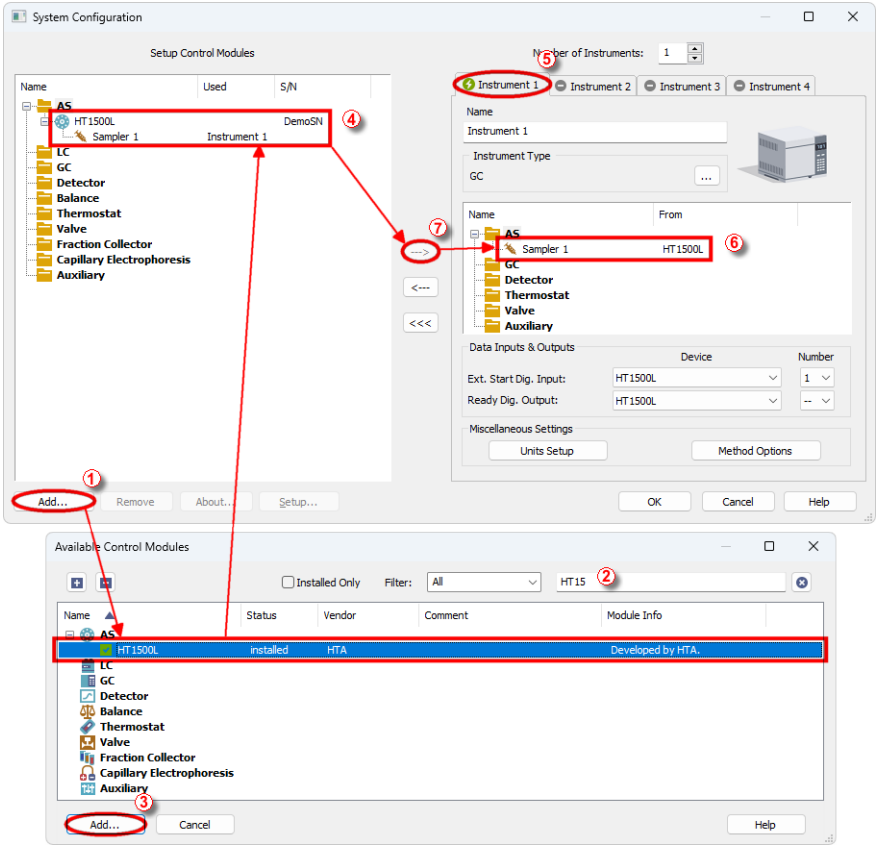

Fig. 2: System Configuration

- 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. **4**.) to invoke the *Available Control Modules* dialog.
- You can specify the searching filter ② to simplify the finding of the driver.
- Select the **HT1500L** sampler and press the *Add* ③ button.

The Setup dialog for **HTA HT1500L** will appear.

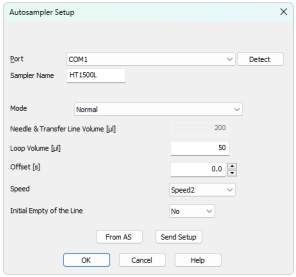

Fig. 3: Autosampler Setup

- Fill in the appropriate *Port*.

Note: The Autosampler Setup dialog for HTA HT1500L is more closely described in the chapter **"Autosampler Setup"** on pg. **13**.

Caution: Since FW 1.07, HT1500L offers two COM ports in Windows – the second one is intended for connection with HTA autosampler manager for service purposes. Make sure to select the correct COM port (i.e. the one not used by HTA manager) in Clarity. Note using the HTA manager while the sampler is under Clarity control may have unpredictable effects.

The **HT1500L** autosampler item will appear in the *Setup Control Modules* list of the *System Configuration* dialog.

- Drag and drop the **HT1500L** 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).
- Set the *Ext. Start Dig. Input* and *Ready Dig. Output* numbers ⑧ for your acquisition card according to the wires being used for synchronization. If you wish to synchronize the **Clarity** start with the autosampler via digital communication, you can set the **HT1500L** in the *Ext. Start Dig. Input* drop-down menu, using *1* as the input *Number*. In such case, it is necessary to change the behavior on the *Method Setup - Measurement* tab later from *Down* to *Up*, else the start signal will be delayed by pulse length (approximately 2 seconds).

4 Using the control module

New Method Setup - AS tab appears in the *Method Setup* dialog, enabling the setting of the **HT1500L** autosampler control method. It consists of three sub-tabs with content varying according to the autosampler model and installed options.

4.1 Method Setup - AS

The *Method Setup - AS* dialog consists of multiple sub-tabs assigned for the various parts of the **HT1500L** autosampler method. Additional buttons allow to display the Hardware Configuration dialog of the **HT1500L** autosampler or to read the instrument method from the **HT1500L** autosampler. The method is sent to the autosampler 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 **HT1500L** autosampler - the 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).

It is possible to read some parameters of the **HT1500L** method from the autosampler. It is necessary to use the *From AS* button available from all sub-tabs of the *Method Setup - AS* dialog. If the injection method is already established in the sampler, it is advisable to download it to **Clarity** using the *From AS* button and save it as a new method.

To set up other parameters of the autosampler it is necessary to use the HTA Autosampler Manager utility.

Note: After the change of the parameters using HTA Autosampler Manager it is necessary to autodetect the autosampler in Clarity configuration setup again.

4.1.1 Sample

The main tab defining the basics of the AS control method.

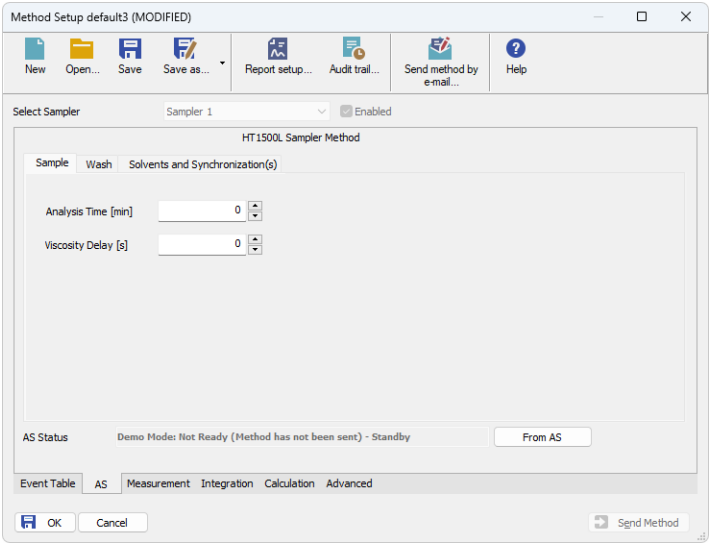

Fig. 4: Method Setup - AS - General

Analysis Time [min]

Time of the sample analysis (time from the injection to the moment in which the analyzer will be ready again). For more details see the chapter **Autosampler Setup** on pg. **13**.

Viscosity Delay [s]

This determines the amount of time the syringe remains in the sample vial after drawing the sample, providing adequate time for viscous samples to fill the needle.

4.1.2 Wash

The *Method Setup - AS - Wash* tab allows to set the parameters for washing of the solvent.

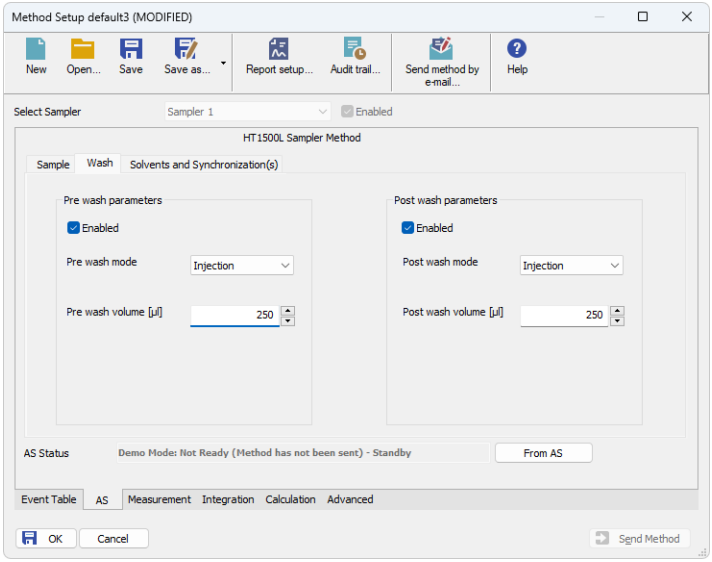

Fig. 5: Method Setup - AS - Solvent Wash

Pre wash mode

Defines the wash procedure prior to the analysis. This function enables to set the options under which the autosampler will perform the wash - it may be either before each *Injection*, before each *Sample* vial or before each *Step*.

Pre wash volume

Defines the volume of the solvent (in µL) used for the Prewash. Available value range is between *250* µL and *11 000* µL.

Post wash mode

Defines the wash procedure after the analysis. This function enables to set the options under which the autosampler will perform the wash - it may be either after each *Injection*, after each *Sample* vial or after each *Step*.

Post wash volume

Defines the volume of the solvent (in µL) used for the Postwash. Available value range is between *250* µL and *11 000* µL.

For more details on the setting of the Solvent Wash please see the **User Manual** of the autosampler provided by **HTA**.

4.1.3 Solvents and Synchronization(s)

The *Method Setup - AS - Solvents and Synchronization (s)* tab allows to set particular position of solvents and injection synchronization setup.

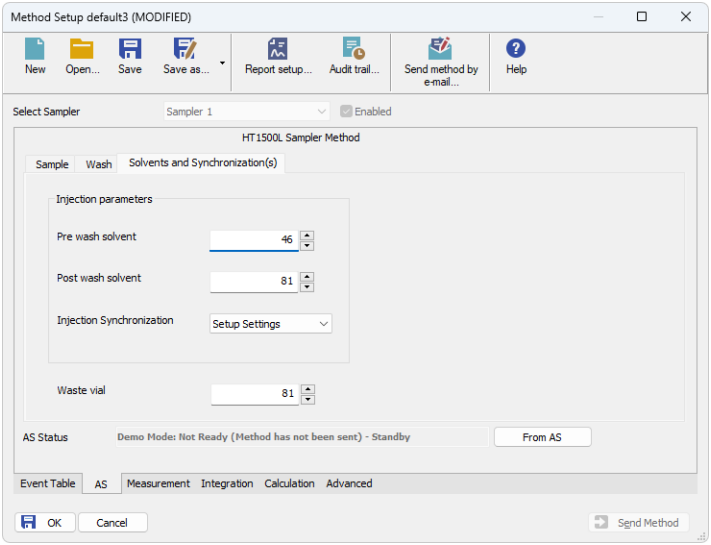

Fig. 6: Method Setup - AS - Solvents

Pre wash solvent

Valid range is 46-47 (46-50 with FW 1.5 and higher).

Post wash solvent

Valid range is 46-50.

Injection Synchronisation

Setup settings (as set in the Clarity configuration) - Normal (waits for ready input on remote connector) or Normal w/o Ready (injects immediately).

Waste vial

Used only with Pump option Empty Line with Reversed Flow active, supported in FW version 1.6 or higher. The option has to be set using HTA Autosampler Manager utility.

For more details on the setting of the *Solvents* please see the **User Manual** of the autosampler provided by **HTA**.

4.2 Device Monitor

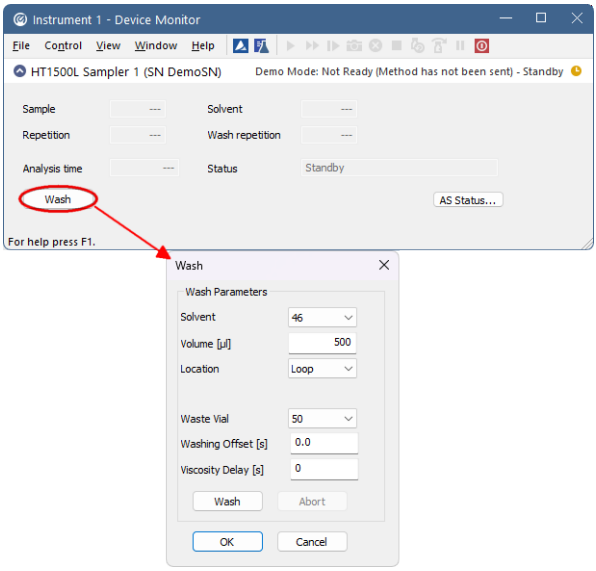

Fig. 7: Device Monitor

The Device Monitor window for the **HT1500L** autosampler enables to monitor the status of the **HT1500L** autosampler and display its configuration.

AS Status…
Opens the Hardware Configuration dialog described in the chapter **"Hardware Configuration"** on pg. **12**.

Wash
Opens the Wash dialog, the present options are described below.

Solvent
Defines position of solvent vial.

Volume
Defines the volume of the solvent (in µL) used for the wash. Available value range is between *250* µL and *11 000* µL.

Location
Defines the location where the wash will be performed - Loop or Sample.

Waste Vial
Used only with Pump option Empty Line with Reversed Flow active, supported in FW version 1.6 or higher. The option has to be set using HTA Autosampler Manager utility.

Washing Offset
Sets the time delay (in s) before washing.

Viscosity Delay

Sets the time (in s) the syringe remains in the sample vial after drawing the sample.

4.2.1 Hardware Configuration

The *AS Status* button in the Device Monitor dialog displays the *Hardware Configuration* dialog. It displays specifications of the autosampler and of the used port, firmware version and others.

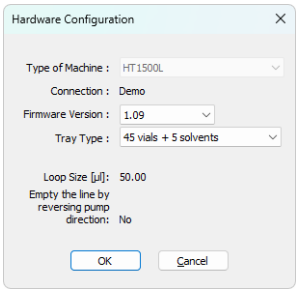

Fig. 8: Hardware Configuration

Type of Machine
Model of the autosampler.

Connection
USB port used to communicate with the autosampler.

Firmware version
Version of firmware used.

Tray Type
Tray type configurations. For FW versions 1.08 and higher, 25 or 45 vials + 5 solvents may be configured. Additionally, for FW version 1.09, 25 or 45 vials + 2 washes/solvents are available.

4.3 Autosampler Setup

Autosampler Setup dialog (accessible through the ***System Configuration*** dialog) allows to manually set the parameters needed for the communication with the **HT1500L** autosampler.

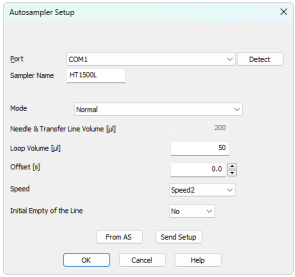

Fig. 9: Autosampler Setup

Port
Sets the USB port used to communicate with the **HT1500L** autosampler.

Sampler Name
Sets the autosampler name.

Mode
Allows to set the synchronization of the injection.

Option	AS starts the sample preparation (pre wash, pull up strokes...)	AS injects the sample in the injector	AS gives the *Start* signal to the analyzer
Normal	At the reception of the *Ready* signal from the analyzer	After ending the sample preparation the AS again checks the presence of the *Ready* signal from the analyzer and then starts the injection	At the beginning of the syringe plunger movement
Normal w/o Ready	At the end of the analysis time set in AS method	After ending the sample preparation	At the beginning of the syringe plunger movement

4 Report Setup

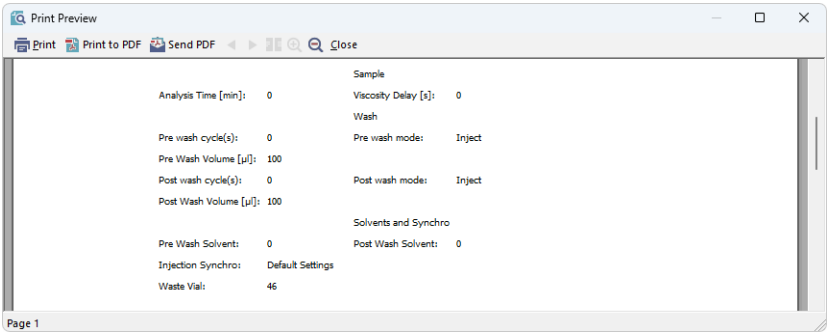

Fig. 10: Print Preview

All autosampler-specific settings (that means the data from all sub-tabs of the Method Setup - AS tab) are reported as a part of the data displayed by the use of *Injection Control* checkbox of the ***Report Setup - Method*** dialog.

5 Troubleshooting

When the remedy for some problem cannot be discovered easily, the recording of communication between **Clarity** and the autosampler 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:

```
[COM2]
echo=on
textmode=on
filename=HT1500L_%D.txt
reset=off
```

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**).