DataApex
Clarity™
CHROMATOGRAPHY SOFTWARE

MARKES BENCHTOF

Clarity Control Module ENG

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

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

Author: MP

Contents

To facilitate the orientation in the **Markes BenchTOF** 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 Markes BenchTOF Control Module

This manual describes the setting of the **Markes BenchTOF** detector. The control module enables direct control of the instrument over LAN.

Fig. 1: Markes BenchTOF detector

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

2 Requirements

2.1 Software requirements

- **Clarity** Installation with GC Control module (p/n A23) and MS- TOF Extension (p/n A37).

Markes BenchTOF requires **Microsoft .NET version 4** for operation. This version (or later) is already installed on majority of PCs. Nonetheless you will be notified during installation if your PC is missing **Microsoft .NET**.

For complete list of .NET requirements, see the .NET Framework System Requirements on Microsoft web page.

Caution: Before installing **Clarity**, make sure that your **Windows** are updated to the latest version.

2.2 Hardware requirements

- LAN cable (p/n SK08).

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

The **Markes BenchTOF** detector is controlled by LAN communication. It uses standard LAN cable.

3.2 Clarity Configuration

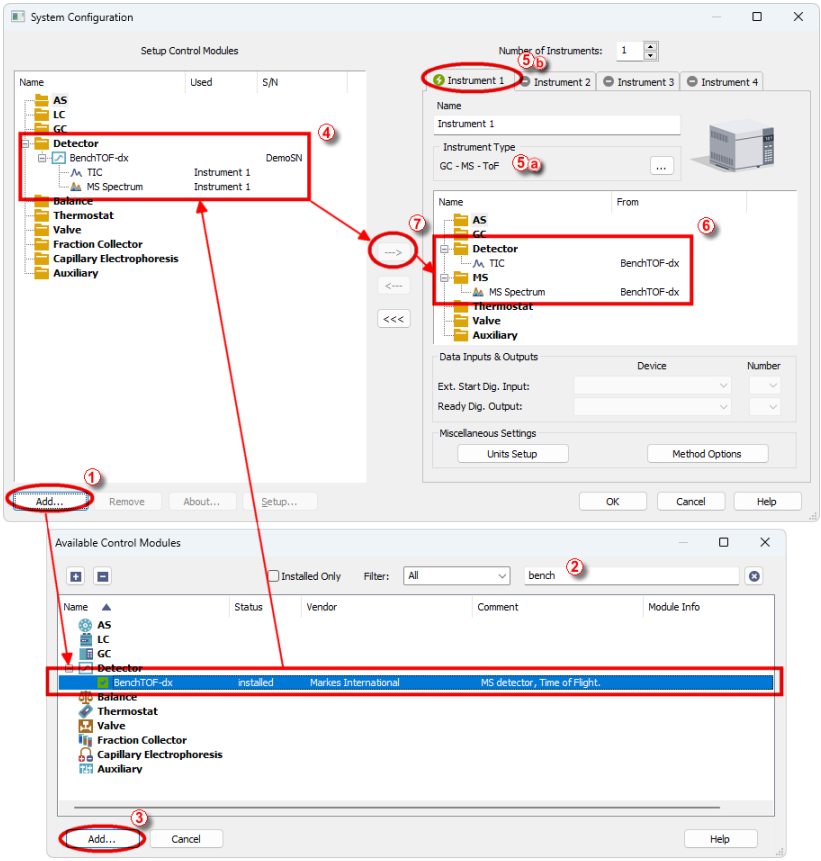

Fig. 2: How to add Markes BenchTOF

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

The BenchTOF-dx Setup dialog will appear (see **Fig. 3** on pg. **4**.).

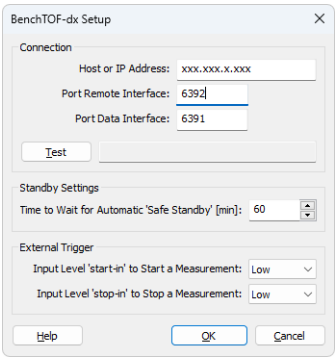

Fig. 3: BenchTOF-dx Setup

- Select the correct *IP Address* and *Port* numbers, then click the *Test* button to ensure the detector communicates correctly.

Note: Other fields from this dialog are described later in the description of the BenchTOF-dx Setup dialog.

- Press the *OK* button.

The **BenchTOF-dx** will appear in the *Setup Control Modules* list ④ of the ***System Configuration*** dialog.

- Change the *Instrument Type* ⑤ ⓐ on the desired *Instrument* tab ⑤ ⓑ to GC-MS-ToF.
- Drag and drop the **BenchTOF-dx** item from the *Setup Control Modules* list on the left ④ to the *Instrument* tab on the right ⑥ , or use the ---> button ⑦ .

Note: The configuration dialog of the **Markes BenchTOF** detector (BenchTOF-dx Setup) can be displayed any time by double-clicking on its icon or using the *Setup* button.

4 Using the control module

New MS tab is created in the *Method Setup* dialog. It can be accessed by using the *Method - MS Control…* command from the *Instrument* window.

4.1 Method Setup - MS

The *Method Setup - MS* tab for the **Markes BenchTOF** detector allows to set the acquisition parameters of the **BenchTOF-dx** detector.

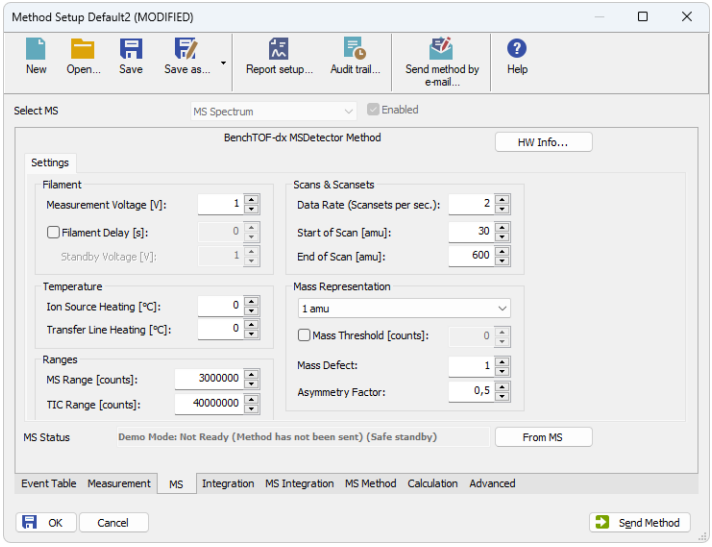

Fig. 4: Method Setup - MS

Filament

Sets the working conditions for the filament in the **Markes BenchTOF** detector ion source.

Measurement Voltage

Sets the voltage on the electrodes during the measurement. The available values range between *0* and *3.8* Volts, with a step of *0.01* V.

Filament Delay

Sets the time after which will the voltage set on the filament be lowered to the voltage set in the *Standby Voltage* field to prevent excessive filament wear. The delay is set in seconds and may use values between *0* and *40000*.

Temperature

Section allowing to set the temperatures for the different zones of the **Markes BenchTOF** detector.

Ion Source Heating

Sets the temperature for the ion source.

Transfer Line Heating

Sets the temperature for the transfer line.

Ranges

Sets the range of the signals in the scans using the *MS Range* field and range of the TIC signal using the *TIC Range* field. Both fields allow values between *0* and *1000000000* counts.

Scans & Scansets

Sets the data rate and scan size.

Data Rate (Scansets per sec.)

Defines the sample rate in terms of number of scans obtained per second. The size of the scan is defined using the *Start of Scan* and *End of Scan* fields, with the maximum scan size of *0* to *1747.7* amu. The *Start of Scan* value must be always at least *0.1* amu smaller than *End of Scan* value.

Mass Representation

Sets how the measured spectra are processed to create final spectra representation. The description of the fields is available in the **Markes BenchTOF** detector documentation made by **Markes**.

4.2 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. It displays the actual values for detector parameters and allows to switch the detector between *OPERATE* and *STANDBY* states.

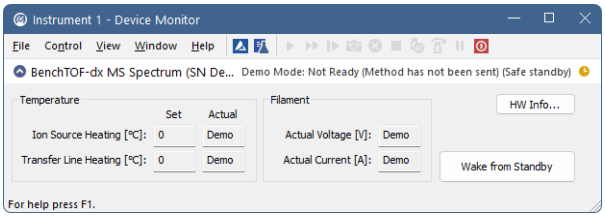

Fig. 5: Device Monitor

Caution: Please head the instructions by **Markes** company on working with the **Markes BenchTOF** detector to prevent possible damage done to the detector.

Temperature

Displays the *Set* and *Actual* temperatures on Ion Source and in the Transfer Line. *Set* values are taken for the current method, the *Actual* display the values as read from the detector.

Filament

Displays the *Actual Voltage* and *Actual Current* on the filament as provided by the **Markes BenchTOF** detector.

HW Info…

Button opening the *Hardware Configuration* dialog displaying the status of the detector including it's serial number.

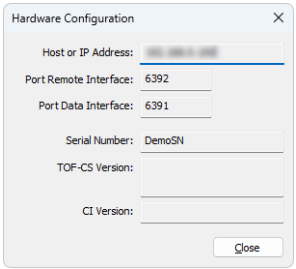

Fig. 6: Hardware Configuration

Wake from Standby/Switch to Standby

Button switching the detector to and from the *STANDBY* state. If the detector is in the *STANDBY* state, no analysis can be performed in **Clarity**Clarity. The detector switches down to the *STANDBY* state automatically after long inactivity, the time for the switch defined in the BenchTOF-dx Setup dialog.

4.3 BenchTOF-dx Setup

The *BenchTOF-dx Setup* dialog serves for the correct setting of the communication between **Clarity** and the **Markes BenchTOF** detector.

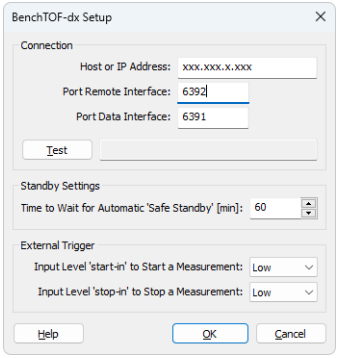

Fig. 7: BenchTOF-dx Setup

Connection

Section allowing to set the communication with the **Markes BenchTOF** detector. To establish the communication successfully the correct IP address must be entered into the *Host or IP Address* field. *Port Remote Interface* and *Port Data Interface* fields can be changed too, but same as with the IP address, the change must be also performed in the **Markes BenchTOF** to match the settings. Default values for both fields are *6392* and *6391*, respectively.

Test

Serves for detecting the **Markes BenchTOF** detector. If the communication attempt is successful, the serial number of the detector is displayed in the field next to the button.

Standby Settings

Sets the time after which the **Markes BenchTOF** switches to the *STANDBY* state automatically during it's inactivity.

External Trigger

Sets the necessary level of the detector's Start-in and Stop-in Input.

5 Report Setup

All of the detector settings accessible on the Method Setup - MS tab for the **Markes BenchTOF** detector are reported. To do so, the *Instrument Control* parameter on the ***Method*** tab of the *Report Setup* dialog must be checked.

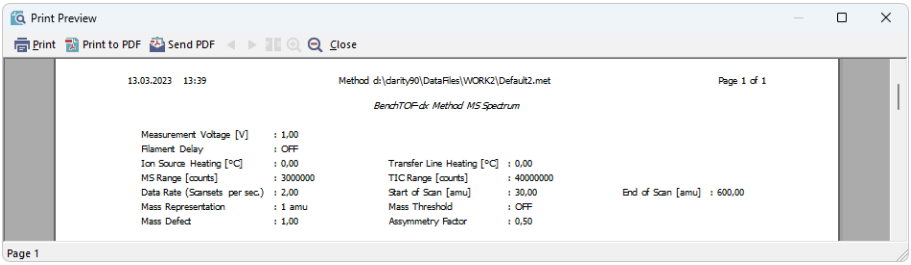

Fig. 8: Report Setup