DataApex
Clarity™
CHROMATOGRAPHY SOFTWARE

METTLER TOLEDO
BALANCES

Clarity Control Module   ENG

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Contents

To facilitate the orientation in the **Mettler Toledo Balances** 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 Mettler Toledo Balance Control Module

This manual describes the setting of the **Mettler Toledo AT**, **MT**, **UMT** and **Excellence** series balance. The control module enables direct control of the instrument over serial line.

Fig. 1: Mettler Toledo balance

Direct control means that the balance can be completely controlled from the **Clarity** environment. The weight of samples can be obtained from **Clarity** and automatically transferred into the sequence table.

2 Requirements

- **Clarity** Installation with EA Extension (p/n A30).
- Free serial COM port in the PC.

Note: Modern computers usually have only 1 (if any) serial (COM) port installed. To use more devices requiring the RS232 port, the **MultiCOM** adapter (p/n MC01) is available.

- Appropriate communication cable provided by the balance's manufacturer for the **AT**, **MT** and **UMT** balances, or serial DB9F-DB9M cable (p/n SK02) for **Excellence** balances.

3 Installation Procedure

3.1 Mettler balance communication

The **Mettler Toledo** balance are controlled by serial (RS232) communication. They use special serial cable provided by the valves manufacturer (in case of **AT**, **MT** and **UMT** models, or serial DB9F-DB9M cable (p/n SK02) for **Excellence** balances. The special Mettler cable bears standard DB9F connector on the computer side, on the balance's side there is special MiniMETTLER connector (15- pin). The communication parameters on the balance and in **Clarity** are variable, **Clarity** uses these values as default:

Baud rate *1200*, parity *Odd*, data bits *7*, stop bit *1*.

The procedure which sets particular communication parameters to the balance depends on the controller type, so consult Mettler hardware manual for more details.
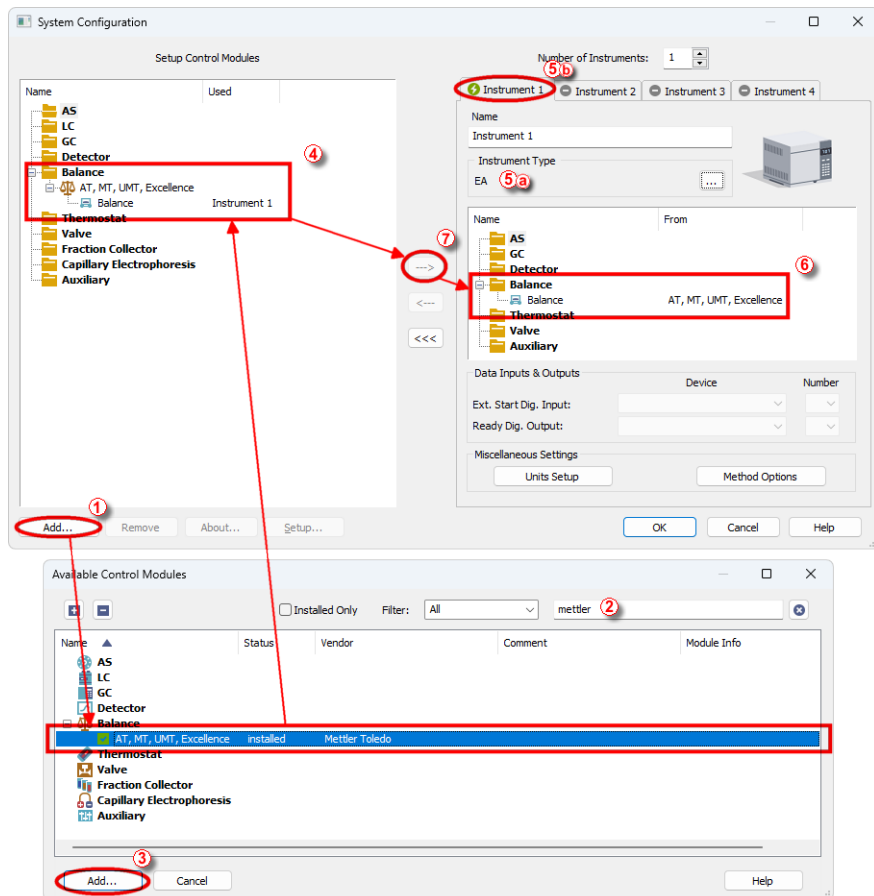
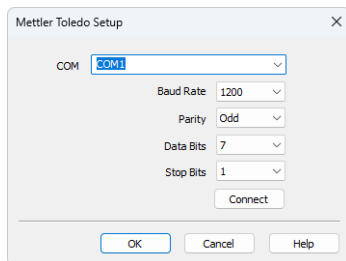The Mettler Toledo Setup dialog will appear.

Fig. 3: Mettler Toledo Setup

- Select the correct *COM* port and set the *Baud Rate*, *Parity*, *Data Bits* and *Stop Bits* so that these parameters correspond to the same parameters set in the hardware. Then press the *Connect* button. If the communication is correct, the confirmation message will pop up.

Note: The Mettler Toledo Setup dialog is more closely described in the chapter **"Mettler Toledo Setup"** on pg. **8**.

The **Mettler Toledo** balance item will appear in the *Setup Control Modules* list of the *System Configuration* dialog

- Change the *Instrument Type*⑤ ⓐ on the desired *Instrument* tab ⑤ ⓑ to EA.
- Drag the Balance item ⚖ from the *Setup Control Modules* list on the left ④ to the *Instrument* tab on the right ⑥ , or use the ⟶ button ⑦ .

4 Using the control module

The display of the *Instrument* window changes after the **Clarity** Instrument is switched into the **EA** mode in the *System Configuration* dialog. These changes are described in detail in the EA Extension manual.

The **Mettler Toledo** balance control module doesn't add any windows or tabs to the EA Instrument window, but allows for the direct insertion of the sample weights into the EA-modified **Sequence Table**.

4.1 Standard operation procedure

- In the *Sequence* window, mark the *Sample Amount* field on the line where you want to transfer the value or the entire line. You can mark more fields/lines at the same time - values will be transferred sequentially after each use of the *Get Weight* button.
- Open the Get Weight dialog using the *Sequence - Balance...* command or the ⚖ icon ① .

  Note: Get weight icon is not present in the toolbar by default but you can add it by right-clicking the toolbar and customizing it.

Fig. 4: Standard operation procedure
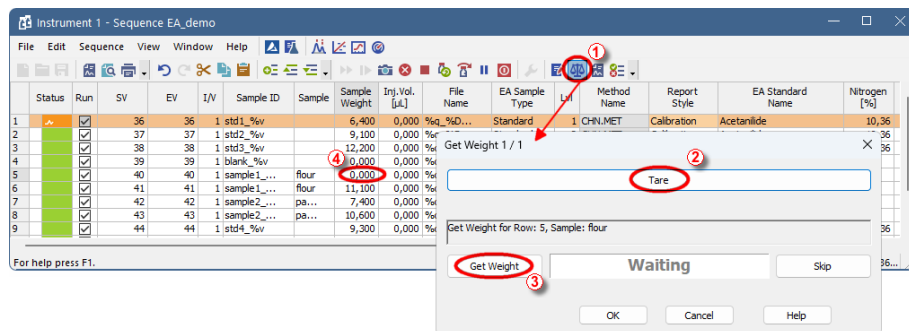
- If necessary, use the *Tare* button ② to subtract the weight of an empty container.
- Place the container with sample on the balance.
- Use the *Get Weight* button ③ to transfer the weight from the analytical balance directly into the *Sample Amount* ④ field of the **Sequence Table**.

Note: Function can be used only for lines where analysis did not take place.

4.2 Get Weight

The *Get Weight* dialog is used for acquiring the weight and its automatic transfer into the *Sample Amount* fields of the **Sequence Table**. The numbers behind the "Get Weight" inscription in the name of the dialog show the number of the sample to be weighted and the total number of samples selected for weighting. The *Get Weight* dialog is opened by *Sequence - Balance...* command from the **Sequence** window.

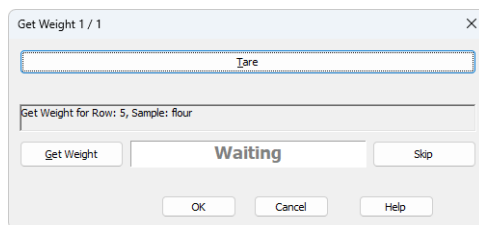*Note:*   You can also open the *Get Weight* dialog using the ⚖ icon from the **Sequence** window.

Fig. 5: Get Weight

Tare
Subtracts the weight of an empty container.

Information Panel
Displays messages from the **Sequence Table** indicating current sample.

Get Weight
Transfers the weight from the analytical balance directly into the *Sample Amount* field of the **Sequence Table**.

Status Panel
Displays current status of the analytical balance. Refer to the Mettler Toledo balance documentation for description of the individual states.

Skip
Skips current sample.

4.3 Mettler Toledo Setup

The *Mettler Toledo Setup* dialog sets the communication settings of the control module.
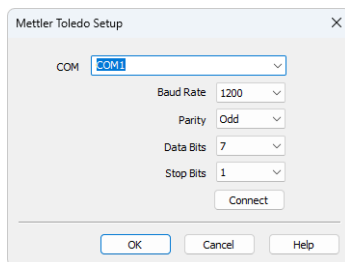

Fig. 6: Mettler Toledo Setup

COM
Sets the COM Port used for communication between the balance and **Clarity**.

Baud Rate
Sets the speed of data on the COM Port used for communication between the balance and **Clarity**.

Parity
Sets the parity of the data used for communication between the balance and **Clarity**.

Data Bits
Sets the number of data bits in the communication between the balance and **Clarity**.

Stop Bits
Sets the number of stop bits in the communication between the balance and **Clarity**.

Connect
Tries to connect to the balances using the set COM port and other communication parameters.

Note: For successful communication, all of these settings must correspond to the settings of the balance.

5 Troubleshooting

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

Note: Instead of COM1 type the correct serial port used to communicate with the **Mettler Toledo Balances**. This port number is displayed in the Mettler Toledo 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.