

870 KF Titrino plus



Installation and tutorial

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1 Introduction

1.1 Structure of the tutorial



This tutorial describes the installation and the first steps with the 870 KF Titrimo plus. You will be introduced to the most important operating features by using a titer determination with a water standard, followed by the water determination of a sample as an example.

1.2 Further information

You will find general information about about Karl Fischer titration on the corresponding Metrohm CD. Additional information concerning the 870 KF Titrimo plus can be found in the manual.

1.3 Symbols and conventions

The following symbols and styles are used in this documentation:

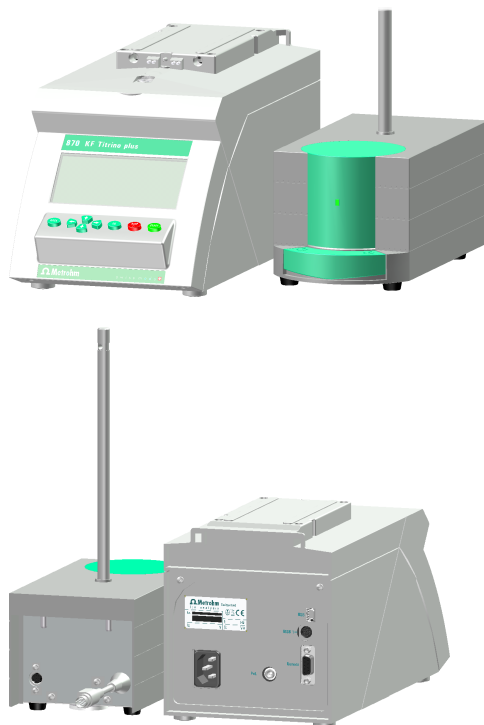
	Instruction step Carry out these steps in the sequence shown.
Method	Dialog text, parameter in the software
File ► New	Menu or menu item
[Next]	Button or key
	Note This symbol marks additional information and tips.



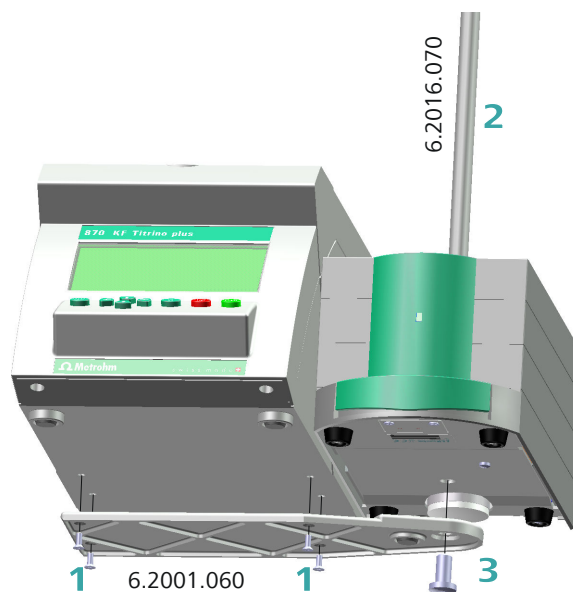
2 Installation

2.1 Setting up and connecting the instrument

870 KF Titrino plus and the 803 Ti Stand



Mounting the stand

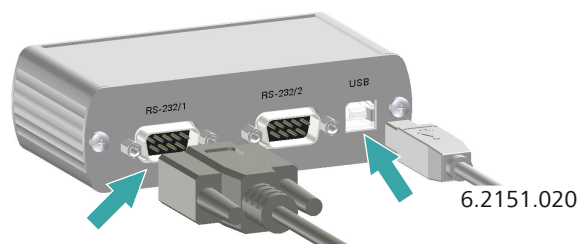


- 1** Screw the stand plate 6.2001.060 with the accompanying four screws tightly to the bottom of the instrument.
- 2** Guide the support rod 6.2016.070 from above into the titration stand and slide all the way down to the bottom.
- 3** Screw the stand plate with the hexagon screw (hexagon key supplied) firmly to the titration stand to mount the support rod.

Connecting the titration stand to the MSB 1



Observe the marking on the socket.



When a USB cable 6.2151.020 is used, then the RS 232/USB Box 6.2148.030 can be connected to the 870 KF Titrino plus by means of a USB hub or an adapter 6.2151.100 (see preceding section).

Connect the 9-pin plug of the respective balance connecting cable to the **RS-232/1** connector. Consult the user manual for the balance or the manual for the 870 KF Titrino plus in order to select the correct connecting cable.

The parameters for the RS 232 interfaces on the instrument must match those on the balance. For this purpose, check the user manual for the balance and the manual for the 870 KF Titrino plus.

2.2 Connecting the instrument to the power grid



WARNING

Electric shock from electrical potential

Risk of injury by touching live components or through moisture on live parts.

- Never open the housing of the instrument while the power cord is still connected.
- Protect live parts (e.g. power supply unit, power cord, connection sockets) against moisture.
- Unplug the power plug immediately if you suspect that moisture has gotten inside the instrument.
- Only personnel who have been issued Metrohm qualifications may perform service and repair work on electrical and electronic parts.

Connecting the power cord

Accessories

Power cord with the following specifications:

- Length: max. 2 m
- Number of cores: 3, with protective conductor
- Instrument plug: IEC 60320 type C13
- Conductor cross-section 3x min. 0.75 mm² / 18 AWG



- Power plug:
 - according to customer requirement (6.2122.XX0)
 - min. 10 A

**NOTICE**

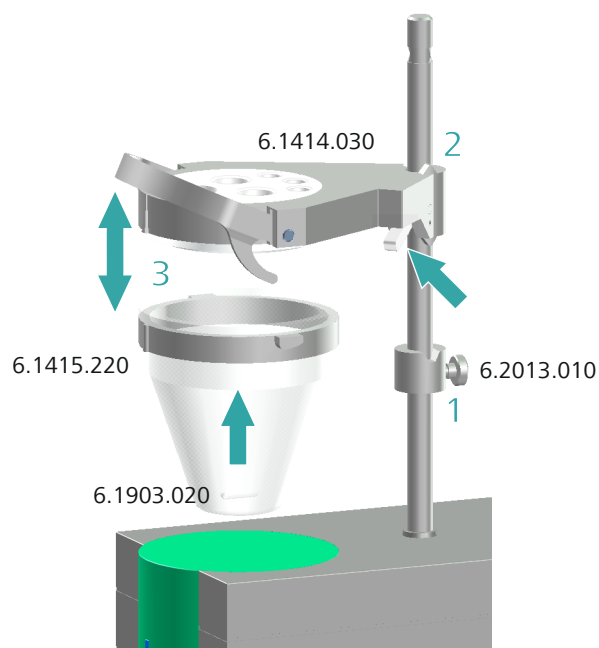
Do not use a not permitted power cord!

1 Plugging in the power cord

- Plug the power cord into the instrument's power socket.
- Connect the power cord to the power grid.

2.3 Setting up the KF titration cell

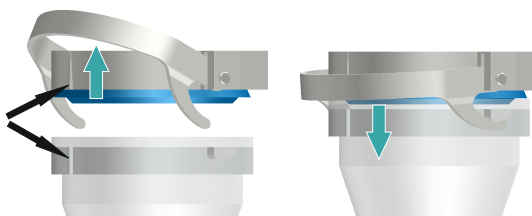
Mounting the KF titration cell



Install the KF titration cell as follows:

- 1** Screw the clamping ring 6.2013.010 tightly to the support rod.
- 2** Mount the vessel lid 6.1414.030 of the KF titration cell to the support rod. Keep the locking lever pressed down until it can be released at the desired position.

- 3** Fasten the titration vessel 6.1415.220 (or 6.1415.250) with a stirring bar 6.1903.020 (or 6.1903.030) inside on the vessel lid. Fold back the holding bracket upwards while doing so. The markings on the vessel lid and on the plastic ring must be aligned above one another. Afterwards, press the holding bracket downward in order to mount the titration vessel. The levers of the holding bracket must enclose the cams of the plastic ring on the titration vessel in order to ensure a secure hold.

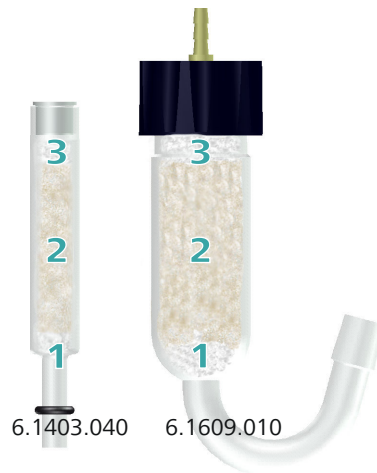


- 4** Adjust the height of the KF titration cell by pressing the locking lever. It should almost touch the surface of the stirrer. The position can now be fixed by readjusting the clamping ring.

Once the height of the KF titration cell has been adjusted correctly, the entire cell can be raised and swiveled as required by pressing the locking lever.

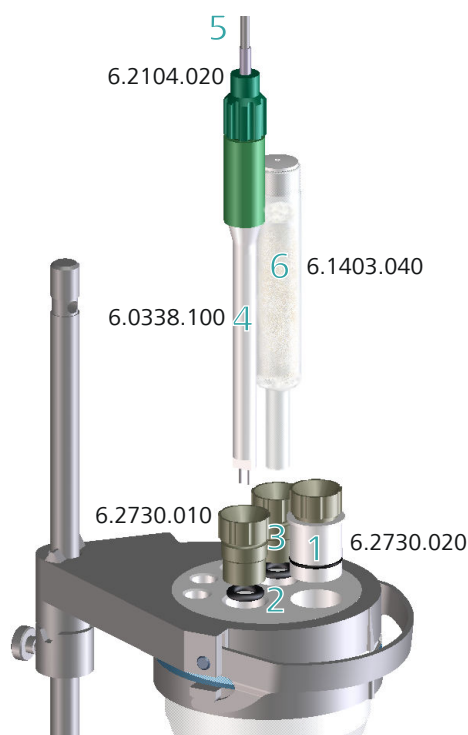
Filling the drying and adsorber tube

The drying tube 6.1403.040 and the adsorber tube 6.1609.010 must be filled with molecular sieve 6.2811.000 prior to mounting. Proceed as follows:



- 1** Insert a small plug made of cotton wadding into the bottom of the drying tube or adsorber tube. Do not pack the cotton wadding too tightly.
- 2** Fill up the molecular sieve up to the $\frac{3}{4}$ level.
- 3** Place a small plug made of cotton wadding on the molecular sieve. Do not pack the wadding too tightly.
- 4** Seal the drying tube or the adsorber tube with the appropriate cover.

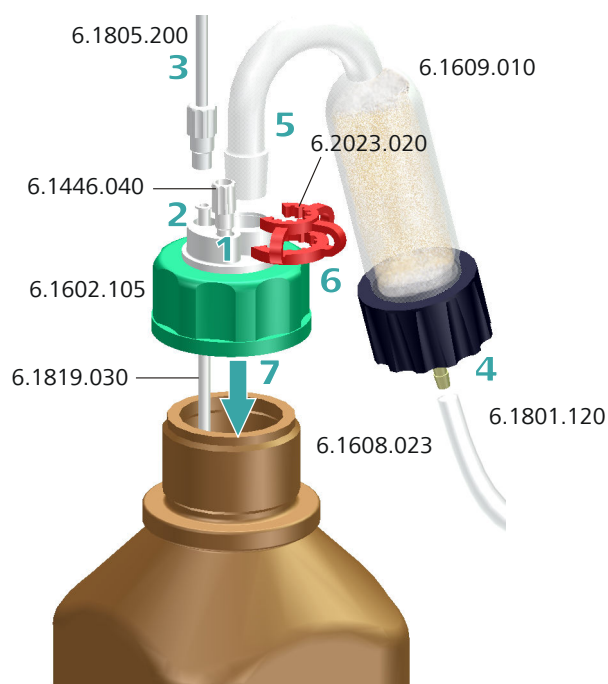
Equipping the KF titration cell



The KF titration cell can now be equipped as follows:

- 1** Introduce the septum stopper 6.2730.020 (with septum inserted) into the front opening of the vessel lid.
- 2** Insert the O-rings of the electrode and of the drying tube into the middle openings of the vessel lid.
- 3** Screw the two screw nipples 6.2730.010 into the openings with the O-rings. Do not screw them in too tightly.
- 4** Introduce the double Pt-wire electrode 6.0338.100 into the left-hand opening and then tighten the screw nipple until it seals.
- 5** Screw the electrode cable 6.2104.020 tightly onto the electrode.
- 6** Introduce the filled drying tube 6.1403.040 on the right of the electrode into the remaining opening and then tighten the screw nipple until it seals.

Metrohm offers suitable thread adapters for bottles with other threads than GL 45.



To equip the solvent bottle, proceed step-by-step as follows:

- 1** Place a thread stopper 6.1446.040 in the M6 connector (smallest opening) of a bottle top 6.1602.105 and screw it tightly.
- 2** Insert the long PTFE cannula 6.1819.030 into the M8 connector (second-smallest opening) of the bottle top.
- 3** Insert a PTFE tubing 6.1805.200 into the M8 connector of the bottle top and screw it tightly.
- 4** Connect a PVC tubing 6.1801.120 to the adsorber tube 6.1609.010 that is filled with the molecular sieve.
- 5** Place the adsorber tube with the SGJ 14 standard ground joint on the bottle top.
- 6** Secure the SGJ 14 standard ground joint of the adsorber tube with the SGJ clip 6.2023.020.

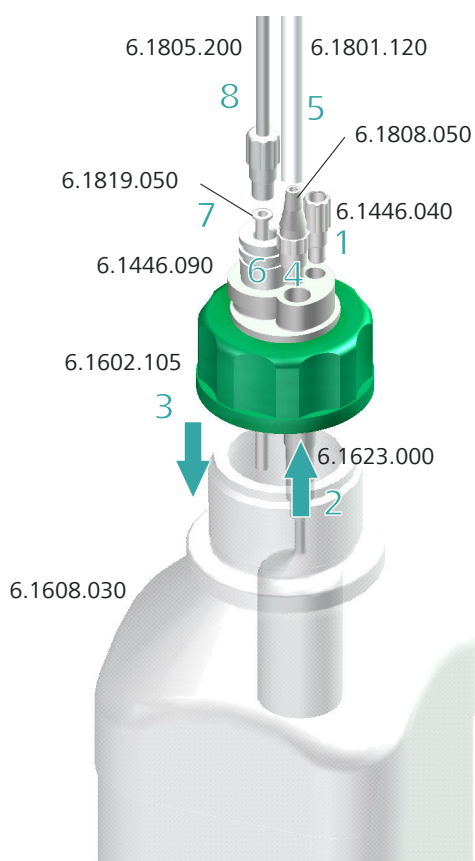


- 7** Place the completely equipped bottle top 6.1602.105 on the amber glass bottle 6.1608.023 filled with solvent/methanol or a reagent bottle from your chemicals manufacturer and screw it tightly.

Setting up the aspiration bottle

The aspiration bottle is used as a waste container and must be sealed against leaks.

Metrohm offers suitable thread adapters for bottles with other threads than GL 45.



To equip the aspiration bottle, proceed step-by-step as follows:

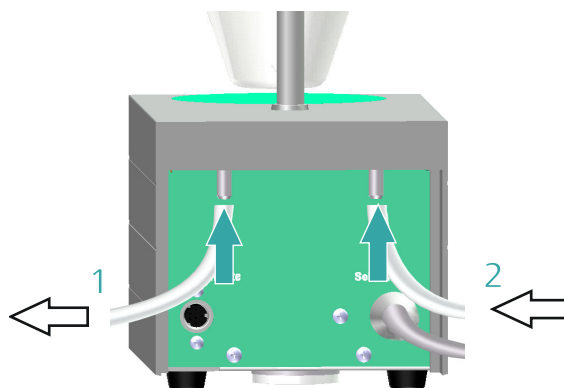
- 1** Place a thread stopper 6.1446.040 in the M6 connector (smallest opening) of a bottle top 6.1602.105 and screw it tightly.
- 2** Introduce the overflow protection 6.1623.000 into the M8 connector from below (second-smallest opening) of the bottle top.

- 3 Place the bottle top on the clear glass bottle 6.1608.030 (or on a different bottle with GL 45 thread) and screw it tightly.
- 4 Place the olive 6.1808.050 in the M8 connector of the bottle top and screw it tightly.
- 5 Place the PVC tubing 6.1801.120 on the olive.
- 6 Insert the stopper 6.1446.090 into the remaining opening on the bottle top.
- 7 Introduce the PTFE cannula 6.1819.050 into the opening of the stopper.
- 8 Insert a PTFE tubing 6.1805.200 with M8 connector into the opening of the stopper and screw it tightly.

2.5 Connecting the pump

Connecting tubings to the pump

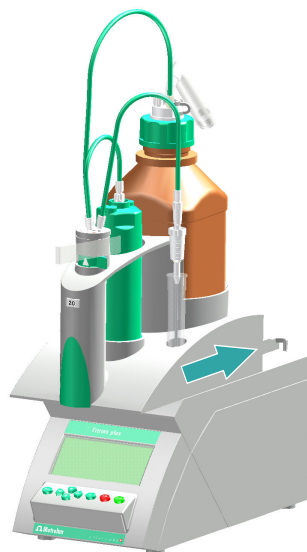
The pump connectors of the 803 Ti Stand are located on the rear side.



Please ensure that you connect the tubings to the pump correctly. Proceed as follows:

- 1 Fasten the PTFE tubing from the aspiration bottle (clear glass) securely to the **Waste** connector (left-hand connector).
- 2 Fasten the PTFE tubing from the solvent bottle (amber glass with drying tube) securely to the **Solvent** connector (right-hand connector).

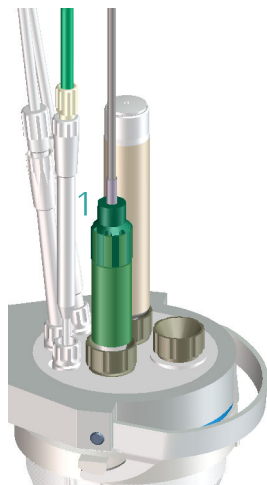
Attaching the exchange unit



- 1 Slide the exchange unit from the front onto the 870 KF Titrino plus and push all the way to the rear.

It must snap in audibly.

Inserting the titration tip



- 1 Insert the titration tip of the exchange unit into the remaining opening at the rear on the vessel lid.

The end of the tip should be located just above the stirring bar, but is not permitted to touch it.


```

>Menu ready
Method      KFT Ipol-Blank
ID1
ID2
Sample size      1.0
Unit            g

```

Switching off the instrument

Proceed as follows:

- 1
 - Keep the red **[STOP]** key pressed down. A progress bar is displayed. If the key is released during this time, then the instrument will not be switched off.
 - Keep the **[STOP]** key pressed down until the progress bar is finished.

3.1.2 Setting the dialog language

If the dialog does not appear in the appropriate language, the dialog language can easily be changed. Proceed as follows:

- 1 **Open the system settings**
 - In the main dialog, select **Menu** and press **[OK]**.
 - In the main menu, select **System** and press **[OK]**.
 - In the system menu, select **Settings** and press **[OK]**.
- 2 **Change the language**
 - Select **Language** and press **[OK]**.
 - Select the required language and press **[OK]**.
 - Press **[BACK]**.

If no second dialog language is available, a corresponding language file must first be loaded into the instrument. The chapter **Instrument diagnosis** in the manual of the 870 KF Titrino plus describes how to proceed.

3.1.3 Adding and configuring a solution



NOTICE

The buret unit must be attached before carrying out the instructions listed below.

2 Define a name

- With the arrow keys [←] or [→], select the function **Edit** in the function bar and confirm with [OK].

The properties dialog opens:

Edit solution		ready
Name		
Type		IEU
Cylinder volume		20 mL
Concentration		1.000
Concentration unit		mol/L
Titer		1.000
Titer unit		↓

- The parameter **Name** is already selected. Open the text editor with [OK]:

Name
█
█BCDEFGHIJKLMNOPQRSTUVWXYZ
█abcdefghijklmnopqrstuvwxyz
█0123456789,-_!@#&'()*+./
█ÄÅÄÉÏÑÖÓÚÜáâãäåçèéëìíîõöøÙ
Accept Cancel Clear [+]
←- →

- Enter a name for the titrant.
For this, use the arrow keys [←], [→], [↑] and [↓] to select the required character and press [OK] to apply it in the text line. [+] deletes the character on the left of the cursor, ←-| and |→ move the cursor one character to the left or right. With **Clear** the entire text is deleted, with **Cancel** the text editor is closed, without applying the modifications. With **Accept**, the modification is applied and the text editor closed. The [BACK] key has the same function.
- Apply the name with **Accept** or [BACK].

The text editor is closed and the new name is displayed in the properties dialog.

3 Define the concentration and the unit

- Select the parameter **Concentration** and open the editing dialog with [OK].

Concentration	
█1.000	
█1234567890-.	
Accept Cancel Clear [+]	
<hr/>	
Range: 10 characters	
Default: 1.000	



- Enter the theoretical concentration of the titrant and apply with **Accept** or **[BACK]**.
The input functions the same way as with the text editor.
- Select the parameter **Concentration unit** and use **[OK]** to open the list of available units.
- Select the unit **mg/mL** and apply with **[OK]**.

4 Switch to the main dialog

- Repeated pressing on **[BACK]** will switch you to the main dialog.

3.1.4 Configuring external devices

In the system settings you can define whether the results are to be put out as PC/LIMS reports. You have the possibility to save them on a USB stick and to read them into tiBase afterwards. The reports can also directly be sent to the PC and imported into tiBase. For this, you have to install the software **RS Server** on your PC.

For the titrations you can use further external devices. These include:

- Printer
- Balance
- Keyboard

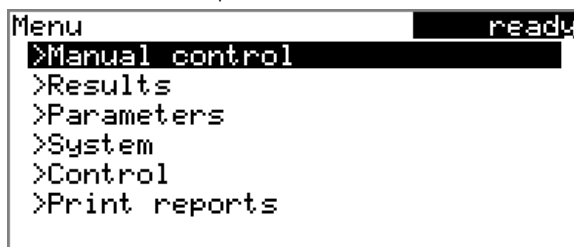
The configuration of the PC/LIMS report output and the external devices are defined under **Menu ▶ System ▶ External devices**.

Proceed as follows:

1 Open the dialog External devices

- In the main dialog, select **Menu** with the arrow keys [↑] or [↓] and confirm with **[OK]**.

The main menu opens.



- Select the menu item **System** and open the system dialog with **[OK]**.

```
System ready
>Settings
>Sensors
>Solutions
>Common variables
>File management
>External devices
>Diagnosis
```

- Select the menu item **External devices** and confirm with **[OK]**. The list of configurable external devices is displayed:

```
External devices ready
PC/LIMS report USB Stick
Printer Custom (ESC-POS)
Graphics width 200 px
Keyboard layout English US
Balance Sartorius
>COM1 settings
>COM2 settings
```

Saving PC/LIMS reports on a USB stick

- 1 ▪ With the arrow key [↓], select the menu item **PC/LIMS report** and confirm with **[OK]**.
The properties dialog **PC/LIMS report** opens:
 - Select **USB Stick** and apply with **[BACK]**.

Sending PC/LIMS reports directly to a PC

If you directly send the PC/LIMS reports to a PC and import them into tiBase, you have to configure the COM2 port.

Proceed as follows:

- 1 **Define the PC/LIMS report**
 - With the arrow key [↓], select the menu item **PC/LIMS report** and confirm with **[OK]**.
The properties dialog **PC/LIMS report** opens:
 - Select **COM2** and apply with **[BACK]**.
- 2 **Configure the interface**
 - Select **COM2 settings** and confirm with **[OK]**.
 - Select **Handshake** and confirm with **[OK]**.
 - Select **software** and apply with **[Back]**.

- Select the a balance type and apply with **[BACK]**.
The balance is entered in the dialog **External devices**.

```

External devices      ready
PC/LIMS report       COM2
Printer              Custom (ESC-POS)
Graphics width       200 px
Keyboard layout      English US
Balance              Sartorius
>COM1 settings
>COM2 settings

```

Under **COM1 settings** you have to set the interface parameters of the connected balance (see manual 870 KF Titrino plus). Use the identical settings as defined for the balance.

Switching to the main dialog

- 1 Repeated pressing on **[BACK]** will switch you to the main dialog.

3.2 Carrying out titrations

3.2.1 Creating a method for titer determination

Below you will find a description of how to create your own method for titer determination. The 870 KF Titrino plus contains method templates which are already configured except for a few parameters.

The titer of the reagent should be determined by a fivefold determination of a water standard. If you have a printer connected, then a report with the result and the curve should be printed out automatically at the end of the determination.

Proceed as follows:

- 1 **Load the method template**

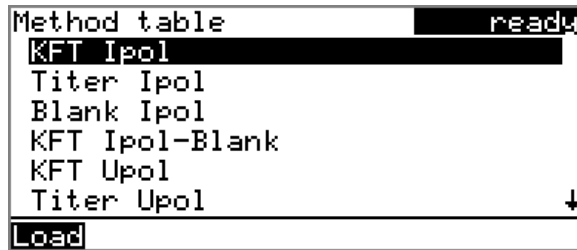
```

>Menu      ready
Method     KFT Ipol-Blank
ID1
ID2
Sample size      1.0
Sample unit      g

```

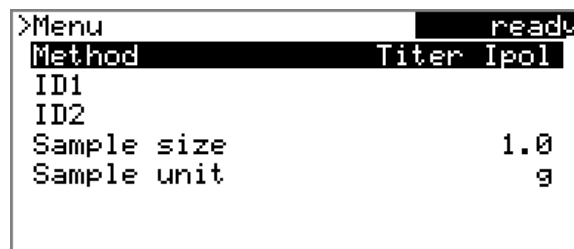


- In the main dialog, select **Method** and confirm with **[OK]**.
The method table with the stored templates opens:



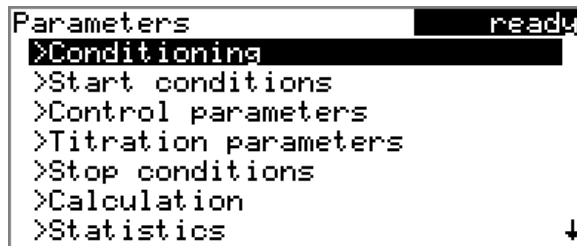
- Select the template **Titer Ipol**.
- In the function bar, select the **Load** function and confirm with **[OK]**.

The method template **Titer Ipol** is now loaded and is displayed in the main dialog under **Method**.

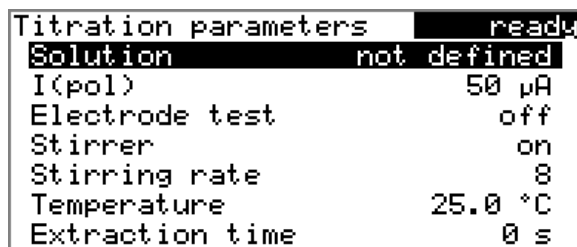


2 Select a solution

- In the main dialog, select **Menu** and confirm with **[OK]**.
The main menu opens.
- Select the menu item **Parameters** and confirm with **[OK]**.
The parameters dialog opens:



- Select the menu item **Titration parameters** and confirm with **[OK]**.



- Select the parameter **Solution** and confirm with **[OK]**.
The list of the configured solutions is displayed:

```
Solution
not defined
Titrant 5
```

- Select the newly configured solution and apply with **[OK]**.

3 Adjust the calculation

- With **[BACK]**, switch to the parameters dialog.
- Select the menu item **Calculation** and open the corresponding dialog with **[OK]**.

```
Calculation          readw
(C00#FCT)/EP1
Factor (FCT)         1.0
Decimal places       4
Result unit          mg/mL
```

The calculation formula is defined for every method template and cannot be modified.

- Select the parameter **Factor (FCT)** and open the editing dialog with **[OK]**.
- Enter the water content of the water standard used in mg/g (see certificate of the water standard).
- Apply the value with **Accept** or **[BACK]**.



NOTICE

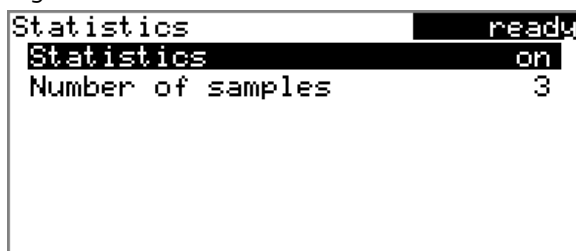
In the manual you will find details as to how the conversion factor **FCT** is to be adjusted if you do not use a water standard to carry out the titer determination.

4 Activate the statistics

- With **[BACK]**, switch to the parameters dialog.



- Select the menu item **Statistics** and open the corresponding dialog with **[OK]**.



- Select the parameter **Number of determinations** and open the editing dialog with **[OK]**.
- Enter the number of titer determinations to be carried out, in this example **5**.
- Apply the value with **Accept** or **[BACK]**.

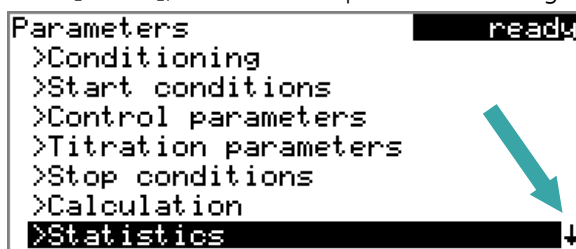


NOTICE

Continue with step 6, if you do not have a printer connected.

5 Select the reports

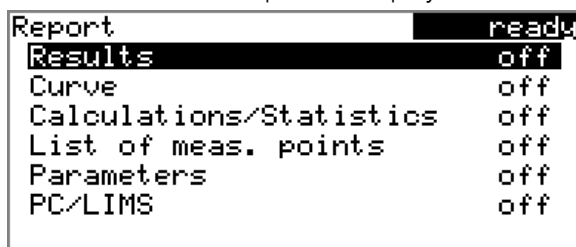
- With **[BACK]**, switch to the parameters dialog.



The arrow at the lower right edge of the screen indicates that the dialog contains more menu items. These can be selected as usual with the arrow key [**↓**].

- With the arrow key [**↓**], select the menu item **Reports** and open the corresponding dialog with **[OK]**.

The list of available reports is displayed:



- Select the parameter **Results** and confirm with **[OK]**.
- Select **on** and confirm with **[OK]**.
- Select the parameter **Curve** and confirm with **[OK]**.

- Select **on** and confirm with **[OK]**.

6 Save the method

- The modified parameters are saved automatically. It is not necessary to save the method under a name of its own.

7 Switch to the main dialog

- Repeated pressing on **[BACK]** will switch you to the main dialog.

3.2.2 Preparing the buret unit

The **PREP** function is used to rinse the cylinder and tubings of the buret unit and fill them bubble-free. You should carry out this function before the first determination or once per day.

Proceed as follows:

1 Open the manual control

- In the main dialog, select **Menu** and confirm with **[OK]**. The main menu opens.
- Select **Manual control** and confirm with **[OK]**.



2 Carry out the PREP dosing function



NOTICE

Make sure that the buret tip is directed into a vessel that can accommodate the cylinder volume of your buret unit several times over.



- With the arrow keys [←] or [→], select the function **PREP** in the function bar and confirm with [OK].
The following message is displayed:

```
Splash warning          010-132
-----
  Check the buret tip. It
  should point into a vessel.
  Do you want to continue?
-----
Yes No
```

- Select **Yes** and confirm the message with [OK].

The preparing is carried out with permanently set parameters (see manual).

3.2.3 Carrying out a titer determination

1 Condition the titration cell

- Add the working medium (e.g. methanol).
- Press [START].

Conditioning starts. **Conditioning not OK** is displayed until the endpoint is reached.

```
Titer Ipol              cond.busy
-----
Conditioning not OK
Drift                   80 µL/min
-----
Stirrer
```

In the function bar, the **Stirrer** function is selected. The parameters dialog of the stirrer is opened by pressing [OK].

```
Stirrer                 cond.ok
-----
Stirrer  on  Rate  8
-----
Off Stir- Stir+
```

The stirring rate can be reduced with **Stir-** and increased with **Stir+**. **off** switches the stirrer off. If the stirrer is switched off, then this text switches to **on**. This can be used to switch the stirrer back on. This dialog is exited with [BACK].

The working medium is titrated to the endpoint. This is indicated by **Conditioning OK**. The status is kept stable.

```

Titer Ipol          cond.ok
Conditioning OK
++Drift            0.5 µL/min
Stirrer

```

2 Inject water standard



NOTICE

Calculate the amount of the water standard in such a way that a titration consumption of 10...90 % of the cylinder volume will result.

- Press **[START]**.
Conditioning is stopped. The request for adding the water standard will be displayed for 8 s.
The water standard should be injected during this time.

```

Titer Ipol          busw
Add sample          4 s
Stirrer

```

- Inject the water standard.

Afterward the request for the sample size appears:

```

Titer Ipol          hold
Sample size         1.0
Press [START] key to continue

```

3 Enter the sample size

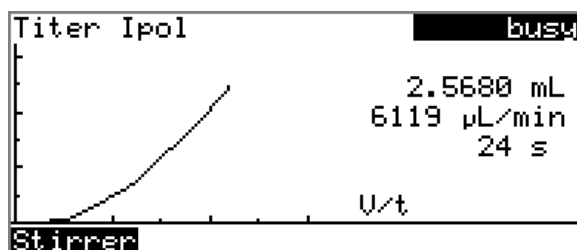
- Open the editing dialog with **[OK]**.
- Enter the sample size and apply with **Accept** or **[BACK]**.

4 Start the titration

- Press **[START]**.



The titration starts and the curve is displayed:



After the completion of the titration, the results dialog is displayed. If a printer is connected, then the report will now be printed out. Conditioning is restarted automatically.



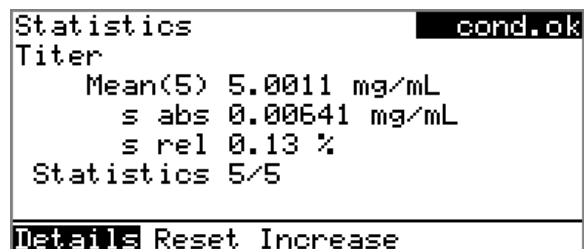
5 Carry out the remaining determinations

- Carry out the remaining titer determinations in the same way.

6 Show the statistics data

- After the final determination, select the function **Statistics** in the function bar and confirm with **[OK]**.

The statistical overview is shown.



The mean value (**Mean()**), the absolute and the relative standard deviation (**s abs** and **s rel**) are displayed in the overview. For the mean value, the number of individual results from which it has been calculated is displayed. In this example it is 5. **Statistics** shows how many determinations have already been carried out and how many determinations are to be carried out in total. All five determinations were carried out in this example.

- In the function bar, select the **Details** function and confirm with **[OK]**.

Details		cond.ok
Result	Sample size	
1 4.9993 mg/mL	2.5863 g	
2 5.0069 mg/mL	2.5907 g	
3 4.9916 mg/mL	2.5987 g	
4 5.0072 mg/mL	2.5904 g	
5 5.0007 mg/mL	2.5875 g	
On/Off		

The result and the sample size of each determination are shown. **On/Off** removes the selected determination from the statistics. The line will then be marked with an asterisk (*), the statistics will be recalculated automatically.

7 Cancel the conditioning

- Press **[STOP]**.

Conditioning is canceled and the dosing cylinder is filled.

3.2.4 Creating a titration method

Below you will find a description of how to create your own method for water content determination. The 870 KF Titrino plus contains method templates which are already configured except for a few parameters.

The water content of a sample should be determined by means of a triple determination. If you have a printer connected, then a report with the result and the curve should be printed out automatically at the end of the determination.

Proceed as follows:

1 Load the method template

- In the main dialog, select **Method** and confirm with **[OK]**.
The method table with the stored templates opens:

Method table	ready
KFT Ipol	
Titer Ipol	
Blank Ipol	
KFT Ipol-Blank	
KFT Upol	
Titer Upol	
Load	

- Select the template **KFT Ipol**.
- In the function bar, select the **Load** function and confirm with **[OK]**.

The method template **KFT Ipol** is now loaded and is displayed in the main dialog under **Method**.

- Select the menu item **Calculation** and open the corresponding dialog with **[OK]**.

Calculation		ready
EP1*TITER*FCT/(C00*DIU)		
Factor (FCT)		0.1
Divisor (DIU)		1.0
Titer		1.000
Decimal places		2
Result unit		%

The calculation formula is defined for every method template and cannot be modified. Depending on the unit of the sample size and the result, only the conversion factors **FCT** and **DIV** need to be adjusted.

- Select the line with the calculation formula and press **[OK]**.

Result	Smpl	Factor	Divisor
%	g	0.1	1
%	mg	100	1
%	mL	0.1	density ¹
ppm	g	1000	1
ppm	mL	1000	density ¹
mg/mL	g	density ¹	1
mg/mL	mL	1	1

This conversion table is for purposes of information only. It is not possible to apply values taken from there.

- Find the desired result unit and the unit of the sample size in the table and make a note to yourself of the factor and divisor contained in this line.
- Close the table with **[BACK]**.
- Enter the values for **Factor (FCT)** and **Divisor (DIV)** according to the conversion table shown above.

4 Activate the statistics

- With **[BACK]**, switch to the parameters dialog.
- Select the menu item **Statistics** and open the corresponding dialog with **[OK]**.
- Select the parameter **Statistics** and confirm with **[OK]**.
- Select **on** and confirm with **[OK]**.
The parameter **Number of determinations** is additionally displayed.
- Select the parameter **Number of determinations** and open the editing dialog with **[OK]**.
- Enter the number of determinations to be carried out, in this example **3**.
- Apply the value with **Accept** or **[BACK]**.

3.2.5 Determining the water content of a sample

You can use either the working medium from the previous titer determination or fresh methanol.

1 Start conditioning

- Press **[START]**.

Conditioning starts. **Conditioning not OK** is displayed until the endpoint is reached.

```

KFT Ipol                               cond.busy
Conditioning not OK
Drift                                   162 µL/min
Stirrer
  
```

In the function bar, the **Stirrer** function is selected. The parameters dialog of the stirrer is opened by pressing **[OK]**.

```

Stirrer                               cond.ok
Stirrer  on  Rate  8
Off Stir- Stir+
  
```

The stirring rate can be reduced with **Stir-** and increased with **Stir+**. **off** switches the stirrer off. If the stirrer is switched off, then this text switches to **on**. This can be used to switch the stirrer back on. This dialog is exited with **[BACK]**.

The working medium is titrated to the endpoint. This is indicated by **Conditioning OK**. The status is kept stable.

```

KFT Ipol                               cond.ok
Conditioning OK
++Drift                                   1.8 µL/min
Stirrer
  
```

2 Enter the sample data

You can enter information about the sample in different ways. You can enter the sample data (sample size and sample identifications) at



the start of a determination. To do that, you can activate an automatic request by the instrument (under **Menu ▶ Parameters ▶ Start conditions**). You can also enter the sample data during the conditioning of the titration cell or during the running determination. Of course all this applies as well if you transfer the sample size from a balance.

By default, the automatic request of the sample size at the start of the determination is activated.

Now, enter information about the sample:

- Press **[BACK]**.

The 870 KF Titrino plus switches from the live display to the main page.

```

>Menu                                cond.ok
Method                               KFT Ipol
ID1
ID2
Sample size                          1.0
Unit                                  g
  
```

- Select **ID1** and press **[OK]**.
- Enter the text (e.g. product name, number of the analysis etc.) and apply with **[BACK]**.
- Select **ID2** and press **[OK]**.
- Enter the text (e.g. batch number, sampling date etc.) and apply with **[BACK]**.
- With **[BACK]**, switch again to the live display.

3 Add sample



NOTICE

Calculate the amount of the sample in such a way that a titrant consumption of 10...90 % of the cylinder volume will result.

- Press **[START]**.
Conditioning is stopped. The request for adding the sample will be displayed for 8 s.
The sample should be added during this time.

```

KFT Ipol                               busy
Add sample                               5 s
Stirrer

```

- Add the sample.

Afterward, the request for the sample size appears:

```

KFT Ipol                               hold
Sample size                             2.5875
Press [START] key to continue

```

4 Enter the sample size

- Open the editing dialog with **[OK]**.
- Enter the sample size and apply with **Accept** or **[BACK]**.

5 Start the titration

- Press **[START]**.

The titration starts and the curve is displayed:

```

KFT Ipol                               busy
5.1660 mL
143 µL/min
26 s
U/t
Stirrer

```

After the completion of the titration, the results dialog is displayed. If a printer is connected, then the report will now be printed out. Conditioning is restarted automatically.



8 Cancel the conditioning

- Press **[STOP]**.

Conditioning is canceled and the dosing cylinder is filled.