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798 MPT Titrino

Short instructions for use

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Summary of the most important signs

Signs in the Titrino dialog:

> Title of inquiry groups. Press <ENTER> to go to the inquiries.

: Values can be chosen with keys <←> or <→>.

Signs that are used in the instructions for use

<> sign for "key", e.g. <ENTER> or <←>.

1 Getting started

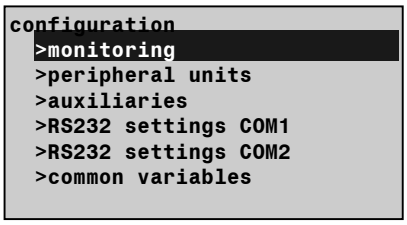
This is a step by step introduction into the operation of the Titrino.
You learn how to go round with the Titrino and you get an idea of the possibilities that the Titrino offers you.

1.1 Principle of data input

Press <STOP> if the Titrino is busy. It is now in the inactive standby state.

<CONFIG>

Then press the <CONFIG> key.

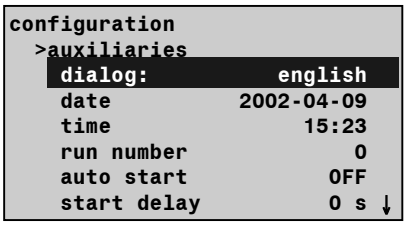


The first line indicates the "path", which means the place where you are right now: You pressed the <CONFIG> key and are now in the "configuration" inquiries.
In the next lines you find a list of the inquiry groups of key <CONFIG>. They are all marked with ">". This sign means that you get to the inquiries with <ENTER>.
The inquiry group ">monitoring" is inverted, which means that the cursor is placed on this line. You can move the cursor up and down with the <↑> and <↓> keys.

<↓>
<ENTER>

Set the cursor to ">auxiliaries" and open this inquiry group with <ENTER>.

The arrow in the lower right corner means that there are more inquiries. They appear if you move the cursor below.



Set the cursor to the inquiry "dialog:". You may select a different dialog language with the keys <←> or <→> (Key <→> "turns" forward, <←> backward).

<←> or <→>
<ENTER>

Select any language and press <ENTER>.

Note the sign ":" in the text "dialog:". If you see this sign in the dialog text you can always use the <←> or <→> keys to select a value.

Readjust the language to "english" again.

2 x <QUIT>

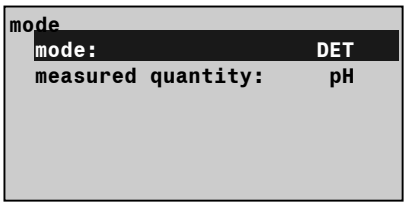
Quit the inquiries in the <CONFIG> key pressing <QUIT> twice.

1.2 Development of a method

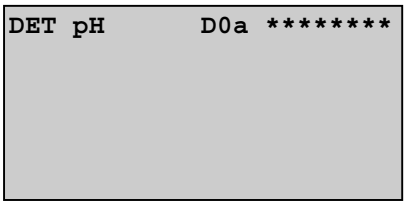
You learn how to elaborate a method .
First you select a titration mode. A general survey of the different titration modes is given on page 10.

Selecting the mode

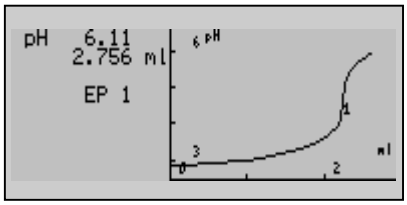
<MODE>



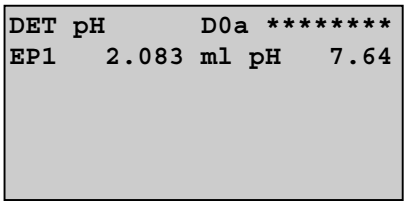
<←> or <→>
<ENTER>



<START>



<STOP>



Press the <MODE> key.
Select the mode DET with <←> or <→> keys, press <ENTER>, select the measured quantity "pH" and press <ENTER> again.
DET stands for **D**ynamic **E**quivalence point **T**itration. In this titration, the size of the volume increments vary as a function of the slope of the titration curve. After each increment, a preset measured value drift (or time) is awaited until the next increment is added (so called "equilibrium titration"). After the titration, the equivalence points are evaluated automatically.

You are now ready to titrate. You titrate with the internal dosing unit D0, i.e. the Exchange Unit on the Titrino.

Mount an Exchange Unit with NaOH, c=0.1 mol/L on the Titrino.
Plug a combined pH glass electrode into measuring input ("Ind I").
Pipette 2 mL HCl, c =0.1 mol/L into the titration vessel, dilute it with ca. 20 mL. dist. water, adjust the stirrer and press <START>.

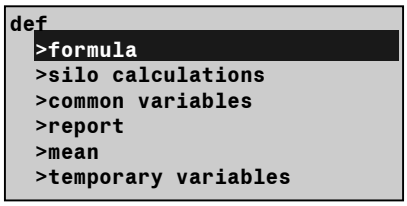
During the titration the titration curve is displayed. To the left of the curve, the current measured values (pH and volume) are displayed.
As soon as the Titrino has found an equivalence point, it will also be shown the left.

Let the titration continue for a short while, e.g. until ca. pH=11.50. Now stop it with <STOP>.

The equivalence point is displayed.

Calculation of the result, entry of a formula

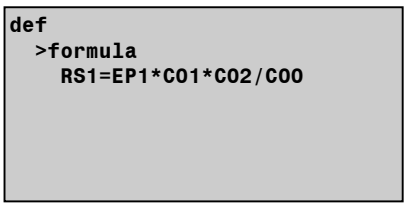
<DEF>



You may calculate results with the equivalence point.
Press <DEF>.

<ENTER>
<1>

Press <ENTER> to move on to the formula entry. The display now shows "RS? ".
Press "1", i.e. the first formula.

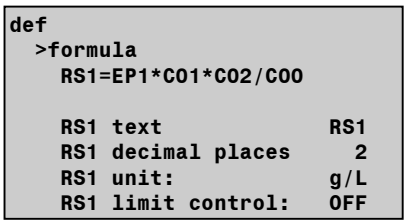


You can now enter a formula. Note here the inscriptions in the right corner of the keys and the numbers.
You can use mathematical operations, parentheses as well as the following symbols:

EP# EP's with 1-digit number, e.g. EP1.
RS# Previously calculated results, e.g. RS1 in the second formula.
C## Calculation values, e.g. C01. C00 is reserved for the sample size. The meaning of the different calculation values is given on page 16.

Calculate the content of your hydrochloric acid in g/L:
RS1=EP1*C01*C02/C00
EP*conc(titrant)*molar mass/sample size
If you made a typing mistake, you can delete the symbols one by one with <CLEAR>.
Confirm the formula with <ENTER>.

<ENTER>



You may enter a text for the result output, see page 7.
Enter the desired number of decimal places for the result.
Select the unit g/l with <←> or <→> or enter a text as unit.

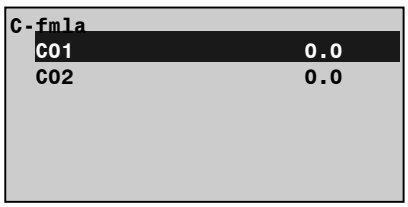
2 x <QUIT>

Quit the formula entry by pressing <QUIT> twice.

Instead of the equivalence point, the calculates result will be displayed. It is 0 because the calculation values C01 and C02 are still zero.

Entry of the calculation constants

<C-FMLA>

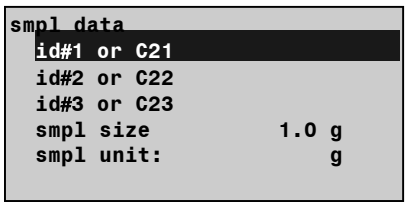


Press <C-FMLA>, to enter the calculation values.
The constants which have been used in the formula are requested:
C01: Concentration of your titrant = 0.1 mol/L
C02: Molar mass of HCl = 36.47 g/mol

The result is recalculated.

Entry of the sample size

<SMPL DATA>



You also need the sample size for the calculation of your result. Enter it with the <SMPL DATA> key:
Place the cursor to "smpl size" and enter 2.

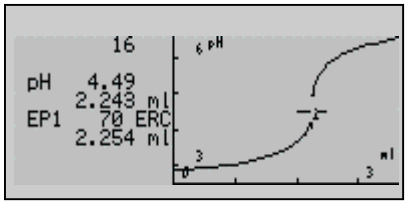
Select the unit "ml" for the sample size using the <←> or <→> keys and confirm with <ENTER>.

The result is recalculated.

Viewing the titration curve

<←> or <→>

You can view the titration curve after the titration using the <←> or <→> keys.



With the <↑> and <↓> you can trace the curve. To the left the measured values of the current point are displayed. On the first line you will find the index of the point.
At the equivalence point, you find its ERC (see Instructions for Use page 20, 21) and its volume.

<←> or <→>

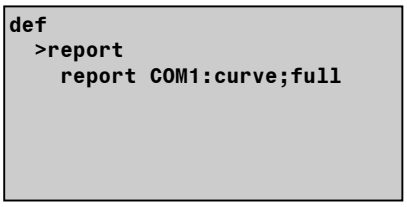
Quit the curve display with <←> or <→> key.

Selection of the automatic report output

<DEF>
<↓>
<ENTER>
<←> or <→>

If you have a printer connected, you can select the report blocks to be printed out automatically at the end of the titration.

Press <DEF> and place the cursor to ">report".
Press <ENTER> to define the report output.
(If you have your printer connected to COM2 press <ENTER> once again.)



Select the individual report blocks with the <←> or <→> keys. Use a ";" as delimiter between the report blocks. If you wish to print out a curve and a full result report, set "curve;full".

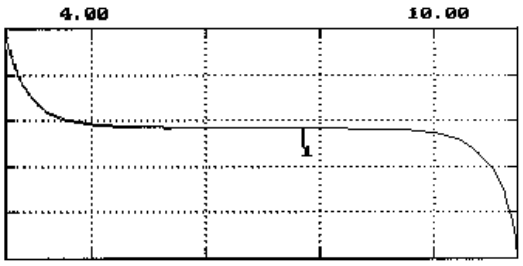
<ENTER>

Confirm the entry with <ENTER> and quit the inquiries with <QUIT>

2 x <QUIT>

Press <PRINT> <REPORTS> <ENTER> to print your reports. Your printout will look as follows:

```
 'cu
798 MPT Titrino          01105     798.0010
date  2002-04-09      time 09:07          1
Start V      0.000 ml   DET pH    ********
1.0 ml/div        dpH=2.0/div
```




```
        ----------------


 'fr
798 MPT Titrino          01105     798.0010
date  2002-04-09      time 09:07          1
pH(init)          2.88   DET pH    ********
smpl size            2 ml
EP1              2.083 ml              7.64
RS1               3.80 g/L
manual stop
          ----------------
```

Identification of report type (cu = curve)

Start volume and method identification
Scaling of curve axis

Instrument type with identification and program version
Initial pH

Volume and pH value of EP1
Calculated result

Entry of a stop criterion

<PARAM>
<↓>
<ENTER>

```
parameters
  >stop conditions
    stop V:              abs.
    stop V           99.99 ml
    stop pH               aus
    stop EP                 9
    filling rate max. ml/min
```

Entries <ENTER>

2 x <QUIT>

You don't want to stop your titration manually each time. Let us enter an automatic stop criterion.

Press <PARAM> and place the cursor to ">stop conditions". Press <ENTER> to go to this inquiry group.

The absolute stop volume. It can be used as a safety volume to prevent overflow of the titration vessel. Enter a value for the stop volume that appears suitable for your titration vessel.

Set the pH value, e.g. 11.5 as stop criterion.
If several stop criteria have been set, the one that is reached first, applies.

Confirm the input with <ENTER> and quit the inquiry with <QUIT>.

Try another titration with this method.

1.3 Storing methods

You learn how to operate the method memories.
The Titrino offers 2 types of method memories:

- Internal method memory, key <USER METH>
- External method memory on the card, key <CARD>

Storing a method in the internal method memory

<USER METH>
<↓>
<ENTER>

Press <USER METH>, place the cursor to ">store method" and press <ENTER>.

```
user methods
  >store method
    method name:

  ABCDEFGHIJKLMNOPQRSTUVWXYZ
  abcdefghijklmnopqrstuvwxyz
  µ°!"#$&'()*+,-./ 0123456789
```

Press <CLEAR> to delete the existing method name (********).
Open text entry with key <ABC>.
A field with letters and symbols appears. You can select a letter with the cursor keys and confirm this letter with <ENTER>. The letter then appears in the input field of the method name.

Entries <ENTER>

Enter an identification for your method, e.g. HCl:
If you made a typing error you can delete the characters one by one with <CLEAR>.

<QUIT>
<ENTER>

Quit the text input with <QUIT> when you completed your name.
Confirm the name with <ENTER>. The method will be stored in the internal method memory.

The method runs now under the identifier "HCl".

A list of contents of the method memory can be printed with the key sequence <PRINT><USER METH><ENTER>.

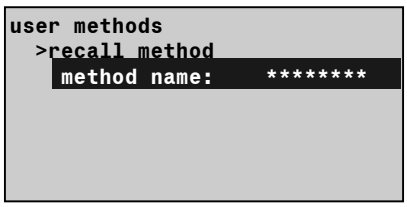
```
 'um
798 MPT Titrino          01105   798.0010
date  2002-04-09    time  07:49
user methods                      bytes
DET  pH       Titer_pH              190
DET  U           Blank              178
DET  U        Chloride              234
MET  U           Diazo              208
MET  Ipol     Br-Index              226
DET  U        Perox.No              172
DET  pH            HCl              108
     remaining bytes               98684
         ------------
```

mode and meas.quantity

method name

Recall a method from the internal method memory

<USER METH>
<ENTER>



<←> or <→>
<ENTER>

Stored methods can always be recalled into the working memory.

Press <USER METH> and <ENTER> to go to ">recall method".

You can select a method with <←> or <→> or enter its name directly.

Recall the method with <ENTER>.

The method is now ready to work.

Method memory on the card

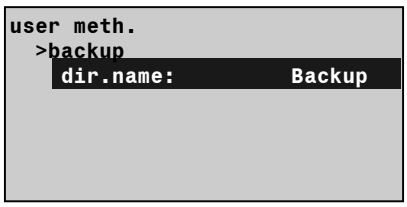
The card offers additional memory space for methods. It may be used e.g.

- as a backup-medium for the internal method memory
- as an extended method memory, where the methods can be organized in various directories
- if every user wants to store his methods on his own card
- for exchanging methods between various laboratories, apparatus, and/or users

The card has a battery, which should be exchanged periodically, see page 57 of the Instructions for Use.

As an example, perform a backup from the internal method memory to the card. If the card is not formatted, see page 56 of the Instructions for Use.

<CARD>
<↓>
<ENTER>



<←> or <→>
<ENTER>

Press <CARD> and place the cursor to ">backup".

Confirm this function with the key <ENTER> and give a name for the backup directory.
If you wish to overwrite an existing directory, choose a name with <←> or <→>. Then press <ENTER>

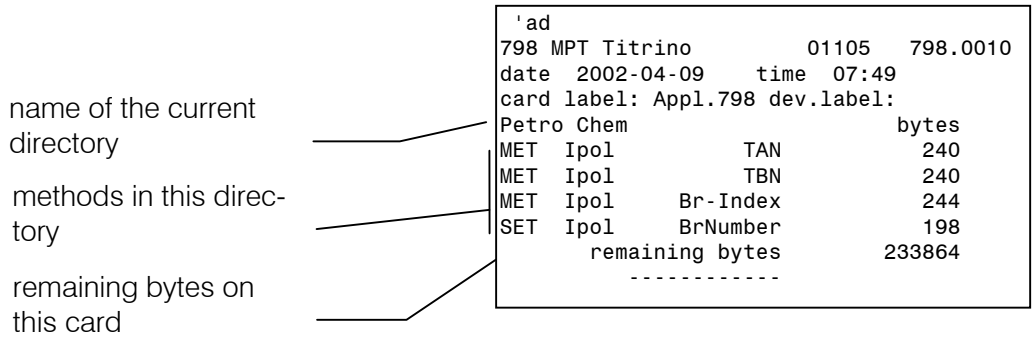
The backup will be effected.

Printing a list of contents of the card

The following card reports can be printed:

Current directory

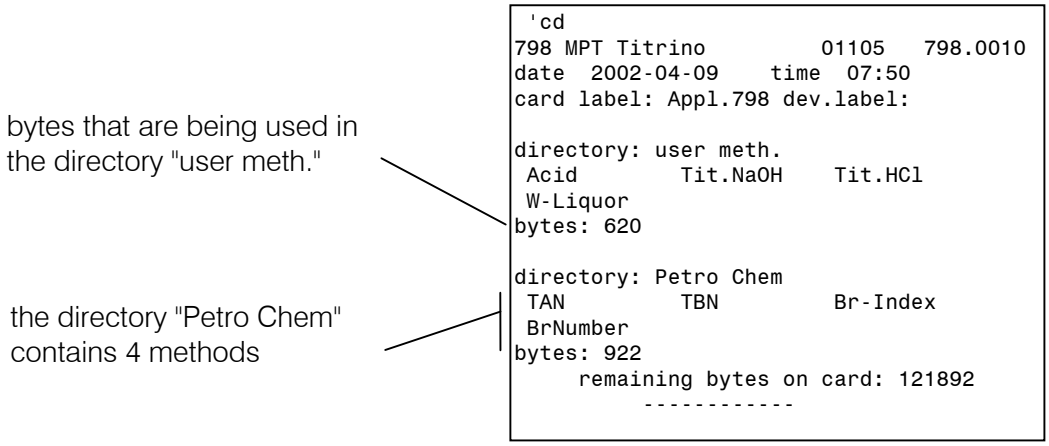
<PRINT><CARD><ENTER>



Contents of the whole card

<PRINT><←> or <→><ENTER>

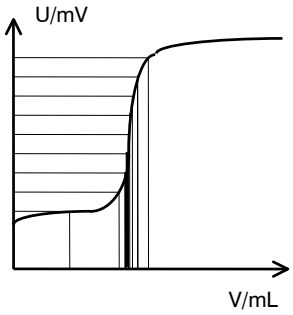
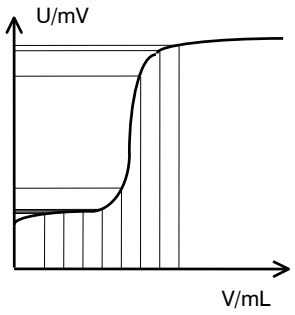
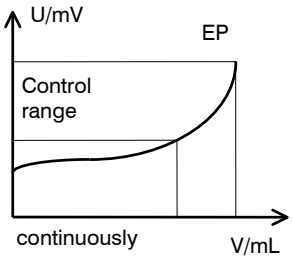
Press <←> or <→> repeatedly until "mem card" appears in the display.



2 Titration and measuring modes

This chapter gives you a survey over the titration, dosing and measuring modes. You will find the parameters of all modes. The standard values are printed in bold face in the following tables.
If you are looking for more information to the different quantities, you will find the display text as a keyword in the index of the Instructions for Use.

2.1 Survey of the titration modes

	DET **Dynamic Equivalence point Titration**	**MET** **Monotonic Equivalence point Titration**	**SET** **Endpoint Titration**
Titration	Reagent feeding: Variable volume increments, depending on the slope of the curve.  Drift controlled ("equilibrium titration") and/or after a fixed equilibration time.	Reagent feeding: Constant volume increments, independent of the slope of the curve.  Drift controlled ("equilibrium titration") and/or after a fixed equilibration time.	Titration to preset end-point. 
Evaluation	The evaluation of EP' s is based on the zero crossing of the second derivative with a Metrohm correction for the distortion of the curve from superimposed jumps. Can be combined with selectable recognition criteria. **Recognition criteria**: as for MET	The evaluation of EP's is based on the Fortuin interpolation. **Recognition criteria**: all EP's only the last EP only the greatest EP EP windows	Volume that has been dispensed up to the endpoint (EPX in mL).
Applications	Suitable titration mode for most problems. Specially recommended if jumps lie very close together and for very flat jumps. **Note**: The reagent feeding algorithm is based on measured data. The curve should therefore not deviate markedly from S-shape.	For • slow titration reactions (diazotations, coupling reactions) • sluggish electrode response.	• For rapid, quantitative determinations in analytical chemistry. Requirement: EP of the titration reaction is known and does not change during a determination series. • If an excess of titrant must be avoided.

2.2 Mode DET and MET, parameters

Display	Meaning	Input range
>titration parameters		
meas.pt.density	Measuring point density.	0...**4**...9
min.incr.	Minimum increment for DET.	0...**10.0**...999.9 µL
[V step]	Volume increment for MET.	0...**0.10**...9.999 mL
dos.rate	Dosing rate for increments.	0.01...150 mL/min, **max.**
signal drift	Drift for measured value acquisition.	pH, U:0.5..**50**..999 mV/min, OFF
equilibr.time	Waiting time for value acquisition.	0...**26**...9999 s, OFF
start V:	Type of start volume: absolute, relative.	abs., rel., **OFF**
start V	Volume for **absolute** start volume.	**0**...999.99 mL
factor	Factor for calculation of **relative** start volume: factor * smpl size.	**0**...±999 999
dos.rate	Dosing rate for start volume.	0.01...150 mL/min, **max.**
pause	Waiting time, e.g. after start volume.	**0**...999 999 s
meas.input:	Measuring input for pH and U.	**1**, 2, diff.
temperature	Titration temperature.	-170.0...**25.0**...500.0 °C
>stop conditions		
stop V:	Type of stop volume: absolute or relative.	**abs.**, rel., OFF
stop V	Volume for **absolute** stop volume.	0...**99.99**...9999.99 mL
factor	Factor for calculation of **relative** stop volume: factor * smpl size.	0...**±999 999**
stop pH	Stop at measured value pH, U, I.	pH: 0.00...±20.00, **OFF** U: 0...±2000 mV, **OFF**
stop EP	Stop after a number of EP's have been found.	1...**9**, OFF
filling rate	Filling rate after the titration.	0.01...150 mL/min, **max.**
>statistics		
status:	Status of statistics calculation.	ON, **OFF**
mean n=	Number n of single values for statistics.	**2**...20
res.tab:	Result table for statistics calculation.	**original**, delete n, delete all
delete n=	Delete data from sample number n.	**1**...20
>evaluation		
EPC	Endpoint criterion.	DET 0...**5**...200 MET pH: 0.10...**0.50**...9.99 U: 1...**30**...999 mV
EP recognition:	Type of EP recognition: all EP's, only greatest EP, only last EP, only EP's in windows, no evaluation. If ”window” is selected, lower and upper limits of windows are inquired.	**all**, greatest, last, window, OFF
fix EP1 at pH	Interpolation of volume at given pH, U, or I, resp. Up to 9 fix EP's.	pH: 0.00...±20.00, **OFF** U: 0...±2000 mV, **OFF**
pK/HNP:	Evaluation of pK or half neutralization potential (HNP).	ON, **OFF**
>preselections		
req.ident:	Request of identifications after start.	id1, id1 & 2, all, **OFF**
req.smpl size:	Request of sample size after start.	value, unit, all, **OFF**
limit smpl size:	Limit control of sample size.	ON, **OFF**
activate pulse:	Pulse output on I/O line L6.	ON, **OFF**

2.3 Mode SET, parameters

Display	Meaning	Input range
>SET1	Individual parameters for EP1.	
EP at pH	Preset EP1 at pH, U, or I, resp.	pH: 0.00...±20.00, **OFF** (0...±2000 mV, 0.0...±200.0 uA)
dynamics	Distance from EP where constant dosing stops and controlling begins.	pH: 0.01...20.00, **OFF** (1...2000 mV, 0.1...200.0 uA)
max.rate	Maximum dosing rate.	0.01...**10**...150 mL/min, max.
min.rate	Minimum dosing rate.	0.01...**25.0**...9999 µL/min
stop crit:	Type of stop criteria.	**drift**, time
stop drift	Titration stops if stop drift is reached.	1...**20**...999 µL/min
t(delay)	Stop if there is no dosing during t(delay). If t(delay) is "INF": stop after a time.	0...**10**...999 s, INF 0...999 999 s, **OFF**
stop time		
>SET2	Parameters for EP2. Identical as SET1.	
>titration parameters	General titration parameters.	
titr.direction:	+:Titration to higher pH, voltage, or current. Auto: Direction is set automatically.	+, -, **auto**
pause 1	Waiting time **before** start volume.	**0**...999 999 s
start V:	Type of start volume: absolute or relative.	abs., rel., **OFF**
start V	Volume for **absolute** start volume.	**0**...999.99 mL
factor	Factor for calculation of **relative** start volume: factor * smpl size.	**0**...±999 999
dos.rate	Dosing rate for start volume.	0.01...150 mL/min, **max.**
pause 2	Waiting time **after** start volume.	**0**...999 999 s
extr.time	Extraction time.	**0**...999 999 s
meas.input:	Measuring input for pH and U.	**1**, 2, diff.
temperature	Titration temperature.	-170.0...**25.0**...500.0 °C
time interval	Time interval for measured value acquisition.	1...**2**...999 999 s
>stop conditions		
stop V:	Type of stop volume: absolute or relative.	**abs.**, rel., OFF
stop V	Volume for **absolute** stop volume.	0...**99.99**...9999.99 mL
factor	Factor for calculation of **relative** stop volume: factor * smpl size.	0...±**999 999**
filling rate	Filling rate after titration.	0.01...150 mL/min, **max.**
>statistics	Statistics calculation see at DET, page 11	
>preselections		
conditioning:	Automatic conditioning of titration vessel	ON, **OFF**
display drift:	Display of drift during conditioning.	**ON**, OFF
drift corr:	Type of drift correction.	auto, man., **OFF**
drift value	Value for manual drift correction.	**0.0**...99.9 µL/min
req.ident:	Request of identifications after start.	id1, id1 & 2, all, **OFF**
req.smpl size:	Request of sample size after start.	value, unit, all, **OFF**
limit smpl size:	Limit control of sample size.	ON, **OFF**
activate pulse:	Pulse output on I/O line L6.	first, all, cond., **OFF**

2.4 Mode MEAS and CAL, parameters

MEAS

Display	Meaning	Input range
>measuring parameters		
signal drift	Drift for measured value acquisition.	pH, U: 0.5..999 mV/min, **OFF** T: 0.5...999 °C/min, **OFF**
equilibr.time	Waiting time for meas. value acquisition.	0...9999 s, **OFF**
meas.input:	Measuring input for pH and U.	**1**, 2, diff.
temperature	Measuring temperature.	-170.0...**25.0**...500.0 °C
time interval	Time interval for measured value acquisition.	1...**2**...999 999s
>statistics	Statistics calculation see at DET, page 11.	
>preselections		
req.ident:	Request of identifications after start.	id1, id1 & 2, all, **OFF**
req.smpl size:	Request of sample size after start.	value, unit, all, **OFF**
Limit smpl size:	Limit control of sample size.	ON, **OFF**
activate pulse:	Pulse output on I/O line L6.	ON, **OFF**

CAL

Display	Meaning	Input range
>cal. parameters		
meas.input:	Measuring input.	**1**, 2, diff.
cal.temp.	Calibration temperature.	-20.0...**25.0**...120.0 °C
buffer 1 pH	pH-value for buffer 1. up to 9 buffer.	0...±20.00
signal drift	Drift for measured value acquisition.	0.5..**2**...999 mV/min, OFF
equilibr.time	Waiting time for meas. value acquisition.	0...**110**...999 s, OFF
electr.id	Electrode identification.	up to 8 ASCII characters
sample changer cal:	Calibration with Sample Changer.	ON, **OFF**
activate pulse:	Pulse output on I/O line L6.	all, first, **OFF**
>statistics	Statistics calculation see at DET, page 11.	

2.5 Mode TIP, parameters

With TIP, methods and other functions can be linked to a titration sequence. Press the key <DEF> to define the titration sequence.

Display	Meaning	Input range
>sequence		
method:	Method from the internal method memory or from the card.	method name
pause	Waiting time. Can be aborted with <QUIT>.	**0**...999 999 s, inf.
L4 output:	Set a signal when on I/O line L4.	active, inactive, pulse, **OFF**
L6 output:	Set a signal when on I/O line L6.	active, inactive, pulse, **OFF**
info	The sequence will be held and an info appears in the display.	up to 16 characters
stirrer:	Switching the stirrer ON/OFF.	**ON**, OFF
>statistics	Statistics calculation see at DET, page 11.	
>preselections		
req.ident:	Request of identifications after start.	id1, id1 & 2, all, **OFF**
req.smpl size:	Request of sample size after start.	value, unit, all, **OFF**
limit smpl size:	Limit control of sample size.	ON, **OFF**
meas.mode:	Selection of the measured quantity for <MEAS/HOLD>.	pH, U, I(pol), U(pol), T, **OFF**
meas.input:	Measuring input for pH and U.	**1**, 2, diff.
temperature	Temperature for the compensation of the pH values.	-170.0...500.0 °C

2.6 Calculations

The results are calculated with the formulas given in the method. For the calculation, the raw values, determined in the method (EP's and C variables), are available.
The results and the raw values can be assigned for further calculations, e.g. for statistics or as common variables.

Formula input and assignments, key <DEF>

Display	Meaning	Input range
>formula	Input of formula.	
RS?	Enter result number.	1...9
RS1=EP1*CO1/COO	Enter formula by means of 3rd functions of keyboard.	
RS1 text	Text for result output.	**RS1** or up to 8 ASCII characters
RS1 decimal places	Number of decimal places for result output.	0...**2**...5
RS1 unit:	Select result unit.	**%**, ppm, g/L, mg/mL, mg/pc, mol/L, mmol/L, g, mg, mL, s, mL/min, no unit or up to 6 ASCII characters
RS1 limit control:	Limit control of the result.	ON, **OFF**
RS1 low lim.	Lower limit for RS1.	**0.0**...999 999
RS1 up.lim.	Upper limit for RS1	0.0...**999 999**
RS1 L13 output:	Output on line L13 if the result is out of limits. Enter values of calculation variables with <C-FMLA>.	**OFF**, active, pulse
>silo calculations	Allocations for silo calculation, see page 63 of the Instructions for Use.	
C24=	Enter values to be stored in the silo memory.	RSX, EPX, CXX
C25=		
match id:	Indication which id's must coincide for the statistical evaluation in the silo memory.	id1, id1 & 2, all, **OFF**
>common variables	Allocations of common variables C30...C39.	
C30=	Assign RSX, EPX, CXX, or MNX.	RSX, MNX, EPX, CXX
>report	Selection of report blocks for data output at COM1.	full, short, mplist, curve, derive, comb, scalc full, scalc srt, calc, param, calib, ff
report COM1:	Depends on the selected mode. If you wish several reports, use ";" as separator.	
report COM2:	As for COM1.	
>mean	Allocations for statistics.	
MN1=	Assign RSX, EPX, or CXX.	RSX, EPX, CXX
>temporary variables	Allocations of temporary variables for calculations under TIP.	
C70=		RSX, EPX, CXX

Meaning of the calculation variables

C variables are

- determined by the method (C24...C27, C4X, C5X, C6X, C7X)
- entered as sample specific data (C00, C21...C23)
- given as fixed constants in the methods (C01...C19)

Variable	Meaning
C00	Sample size, key <SMPL DATA>.
C01...C19	Method specific calculation values, such as molecular mass, factors, key <C-FMLA>.
C21...C23	Sample specific calculation values, such as dilution factors, key <SMPL DATA>.
C24, C25	Variables for storing determination results in the silo memory.
C26, C27	Means from silo calculations.
C30...C39	Common variables, e.g. for titer.
C40	Initial measured value of the sample, last measured value for MEAS.
C41	End volume.
C42	Determination time.
C43	Volume drift for SET with conditioning.
C44	Temperature.
C45	Dispensed start volume.
C46	Asymmetry pH (pH calibration).
C47	Electrode slope (pH calibration).
C48	Volume at the point of the curve with maximum voltage.
C49	Volume at the point of the curve with minimum voltage.
C51...C59	Fix EP for DET and MET.
C61...C69	pK/HNP values for DET and MET.
C70...C79	Temporary variables for calculations in TIP.

Sample data, key <SMPL DATA>

- Sample identifications or sample specific calculation values C21...C23
- Sample size C00

For working with the silo memory, see page 19.

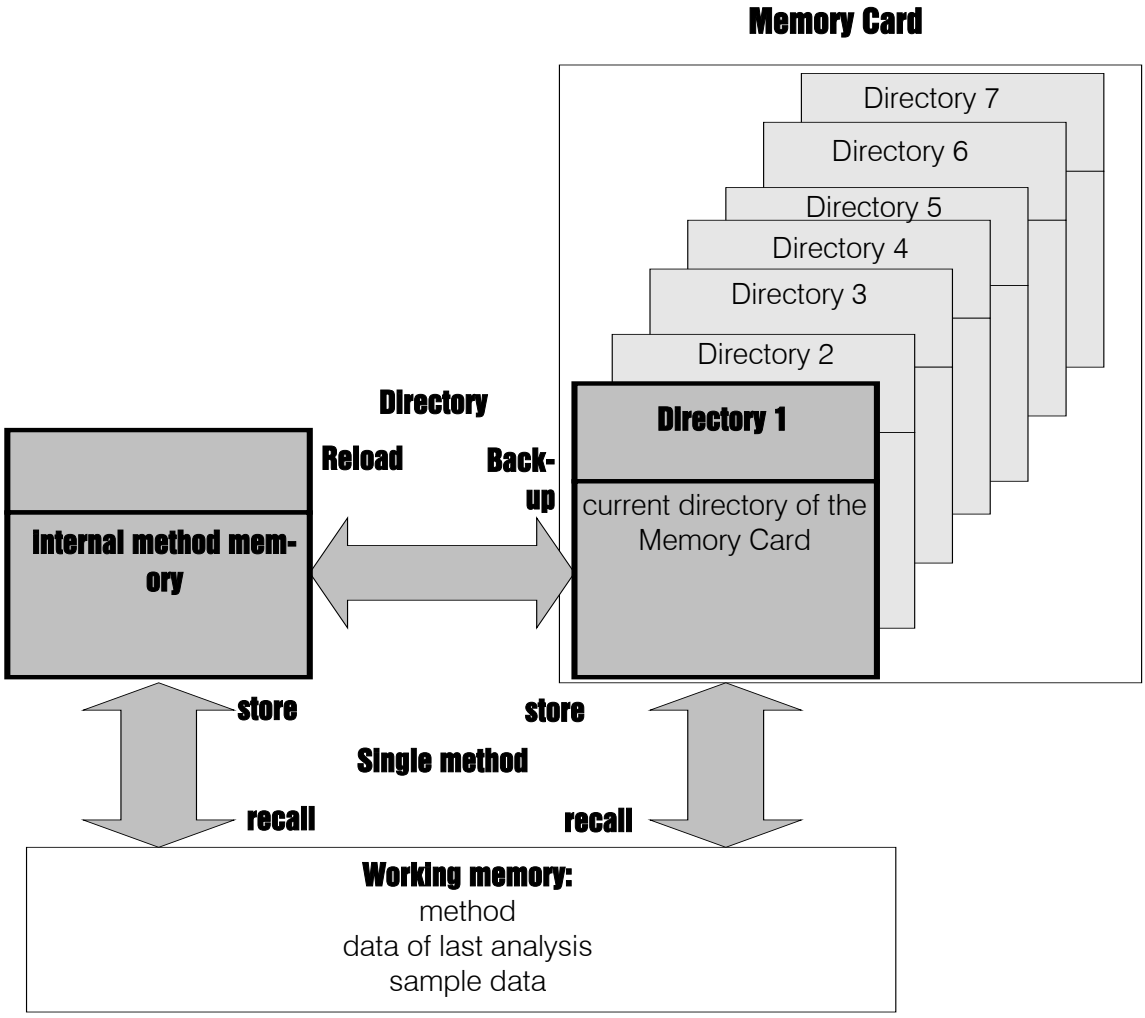
Display	Meaning	Input range
	Inquiries with silo = OFF (LED "silo" is OFF):	
id#1 or C21 id#2 or C22 id#3 or C23	Sample identification. Can be used as sample specific calculation values.	up to 8 ASCII characters or 0...±999 999
smpl size	Sample size	-999 999...**1**...999 999
smpl unit:	Unit of sample size	**g**, mg, mL, µL, pc, no unit or up to 5 ASCII characters

3 Other functions

This chapter gives you a survey over other functions of the Titrino.
If you are looking for more information to the different quantities, you will find the display text as a keyword in the index of the Instructions for Use.

3.1 Method memory

Methods can be stored in the internal method memory or on the memory card. These method memories are organized as follows:



Internal method memory, key <USER METH>

Display	Meaning	Input range
>recall method method name:	Recall method from the internal method memory to the working memory.	up to 8 characters
>store method method name:	Store method from the working memory to the internal method memory.	up to 8 characters
>delete method method name:	Delete method from the internal method memory.	up to 8 characters

Method memory on the card, key <CARD>

Display	Meaning	Input range
>recall method method name:	Recall method from the card (current directory) to the working memory.	up to 8 characters
>store method method name:	Store method from the working memory to the current directory on the card.	up to 8 characters
>delete method method name:	Delete method from the current directory on the card.	up to 8 characters
>change directory dir.name:	Change current directory on the card.	up to 10 characters
>create directory dir.name:	Create new directory on the card.	up to 10 characters
>delete directory dir.name:	Delete directory on the card together with its methods.	up to 10 characters
>backup dir.name:	Backup of the internal method memory on the card.	up to 10 characters
>reload dir.name:	Reload of the whole directory from the card to the internal method memory.	up to 10 characters
>format card label format:	Card formatting. Card labeling. Confirm formatting.	up to 8 characters ON, **OFF**
>change battery date	Date for changing the card battery.	YYYY-MM-DD

3.2 User name, key <USER>

If a user name is entered it will be printed in in the print-out.

Display	Meaning	Input range
name:	User name. Select a name with keys <←> or <→>.	up to 10 ASCII characters
>delete name:	Deletes a user name.	up to 10 ASCII characters

3.3 Sample data, keys <SMPL DATA> and <SILO>

In the silo memory sample data can be stored on reserve.
For working without the silo memory see page 16 of the instructions for use.
Press the key <SILO> for working with the silo memory, and the key <SMPL DATA> to input data.

Display	Meaning	Input range
>edit silo lines	Input for the silo memory:	
silo line	Silo line number.	**1**...255
method:	Method name.	up to 8 ASCII characters
id#1 or C21 **id#2 or C22** **id#3 or C23**	Sample identification. Can be used as specific calculation values.	up to 8 ASCII characters
smpl size	Sample size	-999 999...**1**...999 999
smpl unit:	Unit of sample size.	**g**, mg, mL, µL, pc, no unit or up to 5 ASCII characters
>delete silo lines	Delete individual silo lines.	
delete line n	Line number of the line to be deleted.	1...255, **OFF**
>delete all silo lines	Delete all silo lines.	
delete all:	Confirmation.	ON**, OFF**
cycle lines:	With "ON", worked off silo lines will be copied to the highest line of the silo memory.	ON, **OFF**
save lines:	Determination results will be stored as C24 or C25 in the silo memory according to the allocations in the methods, see page 15.	ON, **OFF**

3.4 Configuration, key <CONFIG>

Display	Meaning	Input range
>monitoring	Monitoring functions	
validation:	Validation of Titrino.	ON, **OFF**
time interval	Time interval for the validation.	1...**365**...9999 d
time counter	Time elapsed since the validation.	**0**...9999 d
calibration:	PH calibration	ON, **OFF**
meas.input:	Measuring input.	**1**, 2, diff.
time counter	Time interval for the calibration.	**0**...9999 d
service:	Service of instrument.	ON, **OFF**
next service	Date for the next service.	YYYY-MM-DD
system test report:	Print-out of the system test report after switching on the Titrino.	ON, **OFF**
>peripheral units	Settings of peripheral units.	
send to COM1:	Selection of printer at COM1.	Epson, Seiko, Citizen, HP, **IBM**
send to COM2:	as for COM1.	
man.reports to COM:	Output of manually triggered reports.	**1**, 2, 1&2
balance:	Selection of balance.	**Sartorius**, Mettler, Mettler AT, AND, Precisa
stirrer control:	Stirrer control in titration sequences.	ON, **OFF**
remote box:	Connection of a remote box.	ON, **OFF**
keyboard:	Type of the PC keyboard connected to the remote box.	US, deutsch, francais, espanol, schweiz.
barcode:	Target for datas eneterd by a barcode reader.	**input**, method, id1, id2, id3, smpl size
>auxiliaries	General settings.	
dialog:	Selection of dialog language.	**English**, deutsch, français, español, italiano, portugese, svenska
date		YYYY-MM-DD
time		HH:MM
run number	Current run number for result output.	**0**...9999
auto start	Automatic starts of titrations.	1...9999, **OFF**
start delay	Waiting time before start of titration.	**0**...999 999 s
result display:	Result display at the end of determination.	**bold**, standard
dev.label	Device label.	up to 8 characters
program	Program version.	read only
>RS232 settings COM1	RS232 settings for COM1.	
baud rate:	Baud rate.	300,600,1200,2400, 4800, **9600**, 19200, 38400, 57600, 115200
data bit:	Data bit.	7, **8**
stop bit:	Stop bit.	**1**, 2
parity:	Parity.	**none**, odd, even
handshake:	Handshake.	**HWs**, Swchar, Swline, none
>RS232 settings COM2	as for COM1.	
>common variables	Values of common variables C30...C39.	

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