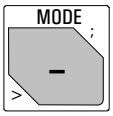
794 Basic Titrino

Metrohm

Quick References

8.794.1013

Mode selection



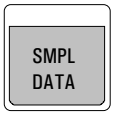
Press key <MODE> until the desired mode is displayed, press <ENTER>, select desired measured quantity with <SELECT>, and confirm with <ENTER>.

Recall method from internal method memory with <USER METH>. Select method with <SELECT> or by entering its name.

Modes:

DET	**pH, U, Ipol, Upol**	**D**ynamic **E**quivalence Point **T**itration.
MET	**pH, U, Ipol, Upol**	**M**onotonic **E**quivalence Point **T**itration.
SET	**pH, U, Ipol, Upol**	**S**et **E**ndpoint **T**itration.
MEAS	**pH, U, Ipol, Upol, T**	**MEAS**uring.
CAL		**CAL**ibration.
TIP		**Ti**tration-**P**rocedure. Linking of various commands and methods to a titration procedure.

Sample data

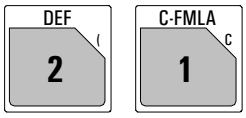


Input for sample data:
- Sample identification. Can be used as sample specific calculation values
- Sample size

Inquiries with silo = OFF (LED "Silo" is OFF).

Display	*Initial value*	*Meaning*	*Input range*
id#1 or C21 **id#2 or C22** **id#3 or C23**		Sample identification. Can be used as sample specific calculation values C21...C23.	up to 8 ASCII characters
smpl size	**1.0 g**	Sample size, value C00.	0...±999 999
smpl unit:	**g**	Unit of sample size.	g, mg, mL, µL, pc or up to 5 ASCII characters

Calculations and definitions for data output



Input of formula.
Preselection of automatic report output at the end of a determination.
Allocations of values for statistics, common variables, silo calculations and temporary variables (TIP calculations).

Display *Initial value*	*Meaning*	*Input range*
>formula	**Input of formulas**	
RS? **RS1=EP1*C01/C00**	Enter formula number. Enter formula by means of 3rd functions of keyboard and confirm with <ENTER>. CXX are calculations variables, see below.	1...9
RS1 text RS1	Text for result output.	RS1 or up to 8 ASCII characters
RS1 decimal places 2	Number of decimal places for result.	0...5
RS1 unit: %	Selection of result unit. Select the unit with <SELECT> or enter a unit. Enter the values of calculation variables C01..C19 with <C-FMLA>.	%, ppm, g/L, mg/mL, mol/L, g, mg, mL, mg/pc, no unit or up to 6 ASCII characters
>silo calculations	**Allocations for silo calculations**	
>common variables	**Allocations for common variables**	
>report	**Selection of report blocks for data output**	
report:	Press <SELECT> for selection. If you wish several reports, use ";" as separator.	full, short, mplist, curve, derive, comb, scalc full, scalc srt, calc, param, calib, ff
>mean	**Allocations for statistics calculations**	
>temporary variables	**Allocations for calculations in TIP**	

Meaning of the calculation variables CXX

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, i.e. for titer.
C40	Initial measured value of the sample, in MEAS last measured value.
C41	End volume.
C42	Determination time.
C43	Volume drift for SET with conditioning.
C44	Temperature.
C45	Dispensed start volume.
C46	Asymmetry-pH (calibration).
C47	Electrode slope (calibration).
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.

Configuration

Settings of peripheral units.
General settings.
Settings of RS232 interface, values of the common variables.

Display	*Initial value*	*Meaning*	*Input range*
>peripheral units		**Settings of peripheral units**	
send to:	**IBM**	Selection of printer.	Epson, Seiko, Citizen, HP, IBM
balance:	**Sartorius**	Selection of balance.	Sartorius, Mettler, Mettler AT, AND, Precisa
record:	**U**	Selection of record type to be outputted at the analog output.	U, dU/dt, V, dV/dt, U(rel), T
>auxiliaries		**General settings**	
dialog:	**english**	Selection of dialog language.	english, deutsch, français, español, italiano, portugese, svenska
date **time**	**YYYY-MM-DD** **HH:MM**		
run number	**0**	Current run number for result output.	0...9999
auto start	**OFF**	Automatic starts of titrations.	1...9999, OFF
start delay	**0 s**	Waiting time before start of titration.	0...999999 s
device label		Device label.	8 ASCII characters
program	**794.0010**	Program version.	read only
>RS232 settings		**RS232-settings**	
baud rate:	**9600**	Baud rate.	300, 600, 1200, 2400, 4800, 9600
data bit:	**8**	Data bit.	7, 8
stop bit:	**1**	Stop bit.	1, 2
parity:	**none**	Parity.	none, odd, even
handshake:	**HWs**	Handshake.	HWs, HWf, SWchar, SWline, none
RS control:	**ON**	Receiving of commands via RS	ON, OFF
>common Variables		**Values of common variables**	

Parameters for DET and MET

Display *Initial value*	*Meaning*	*Input range*
>titration parameters	**General titration parameters**	
meas.pt.density 4	Parameter for DET: Measuring point density. 0 is highest.	0...9
min.incr. 10.0 µl	Parameter for DET: Minimum increment.	0...999.9 µL
[V step 0.10 ml]	Parameter for MET: Volume increment.	0...9.999 mL
titr.rate max. ml/min	Dosing rate for increments.	0.01...150 mL/min, max.
signal drift 50 mV/min	Drift criterion for measured value acquisition.	pH, U: 0.5...999 mV/min, OFF I: 0.1…**50**…99.9 µA, OFF
equilibr.time 26 s	Waiting time for measured value acquisition.	0...9999 s, OFF
start V: OFF **start V 0.00 ml** **factor 0.0** **dos.rate max. ml/min**	Type of start volume. Volume for *absolute* start volume. Factor for *relative* start volume: factor * smpl size. Dosing rate for start volume.	abs., rel. OFF 0...999.99 mL 0... ±999999 0.01...150 mL/min, OFF
pause 0 s	Waiting time, i.e. after start volume.	0...999999 s
meas.input: 1	Measuring input for pH and U.	1, 2, diff.
temperature 25.0 °C	Temperature.	-170.0...500.0 °C
>stop conditions	**Stop conditions for titration**	
stop V: abs. **stop V 99.99 ml** **factor 999999**	Type of stop volume. Volume for *absolute* stop volume. Factor for *relative* stop volume: factor * smpl size.	abs., rel., OFF 0.00...9999.99 mL, OFF 0.. ±.999999
stop pH OFF	Stop at measured value pH, U, I.	pH: 0.00...±20.00, OFF U: 0... ±2000 mV, OFF I: 0.0... ±200 µA, OFF
stop EP 9	Stop after a number of EP's have been found.	1...9, OFF
filling rate max. ml/min	Filling rate.	0.01...150 mL/min, max.
>statistics	**Statistics calculation**	
status: OFF **mean n= 2** **res.tab: original** **delete n= 1**	Status of statistics calculation. Number n of single values for statistics. Result table for statistics calculation. Delete data from sample number n.	ON, OFF 2...20 original, delete n, delete all 1...20
>evaluation	**EP evaluation/recognition**	
EPC 5	Endpoint criterion.	DET 0...200 MET pH: 0.10...**0.5**…9.99 U: 1...**30**…999 mV I: 0.1…**2**…99.9 µA
EP recognition: all	Recognition of EP's which fulfill the EP criterion. If "window" is selected, lower and upper limits of windows are inquired.	all, greatest, last, window, OFF
Fix EP1 at pH OFF	Interpolation of volume at a given measured value pH, U or I. Up to 9 fix EP's (→ C5X).	pH: 0.00... ±20.00, OFF U: 0... ±2000 mV, OFF I: 0.0 ... ±200 µA, OFF
pK/HNP: OFF	Evaluation of pK or half neutralization potential (HNP → C6X).	ON, OFF
>preselections	**Preselections for the sequence**	
req.ident: OFF	Request of identifications after start of titration.	id1, id1 & 2, all, OFF
req.smpl size: OFF	Request of sample size after start of titration.	value, unit, all, OFF
activate pulse: OFF	Pulse output on I/O line L6.	ON, OFF

Parameters for SET

Display *Initial value*	*Meaning*	*Input range*
>SET1	**Control parameters for EP1**	
EP1 at pH OFF	Preset EP1at pH, U or I.	pH: 0.00... ±20.00, OFF U: 0... ±2000 mV, OFF I: 0.0 ... ±200 µA, OFF
dynamics OFF	Distance from EP where constant dosing should stop and controlling begins.	pH: 0.01... ±20.00, OFF U: 1... ±2000 mV, OFF I: 0.1 ... ±200 µA, OFF
max.rate 10.0 ml/min	Maximum dosing rate.	0.01...150 mL/min, OFF
min.rate 25.0 µl/min	Minimum dosing rate.	0.01...9999 µL/min
stop crit: drift **stop drift 20 µl/min** **t(delay) 10 s** **stop time OFF s**	Type of stop criteria. Titration stops if stop drift is reached. Titration stops if there is no dosing during t(delay). If t(delay) is "INF" stop after at time.	drift, time 1...999 µL/min 0...999 s, inf. 0...999999 s, OFF
>SET2	**Parameters for EP2. Identical as for EP1.**	
>titration parameters	**General titration parameters**	
titr.direction: auto	auto: Direction is set automatically. +: Titration to higher pH, voltage or current.	+, -, auto
start V: OFF **start V 0.00 ml** **factor 0.0** **dos.rate. max. .mL/min**	Type of start volume: absolute or relative. Volume for *absolute* start volume. Factor for *relative* start volume: factor * smpl size Dosing rate for start volume.	abs., rel., OFF 0...999.99 ml 0... ±999999 0.01...150 mL/min, OFF
pause 0 s	Waiting time *after* start volume.	0...999999 s
meas. input: 1	Measuring input for pH and U or polarization current Ipol or polarization voltage for Upol in steps of 10 mV and test for polarized electrodes.	1, 2, diff.
temperature 25.0 °C	Titration temperature.	-170.0...500.0 °C
>stop conditions	**Stop conditions for titration**	
stop V: abs. **stop V: 99.99 ml** **factor 999999**	Type of stop volume. Volume for *absolute* stop volume. Factor for *relative* stop volume: factor * smpl size.	abs., rel., OFF 0.00...9999.99 mL, OFF 0... ±999999
filling rate max. ml/min	Filling rate.	0.01...150 mL/min, max.
>statistics	**Statistics calculation**	
status: OFF **mean n= 2** **res.tab: original** **delete n= 1**	Status of statistics calculation. Number n of single values for statistics calculation. Result table for statistics calculation. Delete data from sample number n.	ON, OFF 2...20 original, delete n, delete all 1...20
>preselections	**Preselections for the sequence**	
conditioning: OFF **display drift: ON**	Automatic conditioning of titration vessel. Display of drift during conditioning.	ON, OFF ON, OFF
req.ident: OFF	Request of identifications after start of titration.	id1, id1 & 2, all, OFF
req.smpl size: OFF	Request of sample size after start of titration.	value, unit, all, OFF
activate pulse: OFF	Pulse output on I/O line L6.	first, all, cond., OFF

Parameters for MEAS

Display *Initial value*	*Meaning*	*Input range*
>measuring parameters	**Measuring parameters**	
signal drift OFF mV/min	Drift criterion for measured value aquisition.	pH, U, Ipol: 0.5...999 mV/min, OFF Upol: 0.05...99.9 µA/min, OFF T: 0.5...999 °C/min, OFF
equilibr.time OFF s	Waiting time for measured value aquisition.	0...9999s, OFF
meas.input: 1	Measuring input for pH and U.	1, 2, diff.
I(pol) 1 µA	Polarization current.	–127...127 µA
U(pol) 400 mV	Polarization potential.	–1270...1270 mV
electrode test: OFF	Electrode test.	ON, OFF
temperature 25.0 °C	Temperature.	–170...500.0 °C
>statistics	**Statistics calculation**	
status: OFF **mean n= 2** **res.tab: original** **delete n= 1**	Status of statistics calculation. Number n of single values for statistics calculation. Result table for statistics calculation. Delete data from sample number n.	ON, OFF 2...20 original, delete n, delete all 1...20
>preselections	**Preselections for the sequence**	
req.ident: OFF	Request of identfications after start of titration.	id1, id1 & 2, all, OFF
req.smpl size: OFF	Request of sample size after start of titration.	value, unit, all, OFF
activate pulse: OFF	Pulse output on I/O line L6.	ON, OFF

Parameters for CAL

Display *Initial value*	*Meaning*	*Input range*
>calibration parameters	**Calibration parameters**	
meas.input: 1	Measuring input.	1, 2, diff.
cal.temp. 25 °C	Calibration temperature.	–20...120.0 °C
Puffer #1 pH 7.00 **Puffer #2 pH 4.00** **Puffer #3 pH OFF**	pH value of first buffer (up to 9 buffers). <CLEAR> sets OFF. Buffers are requested until "OFF" is set.	0... ±20, OFF
signal drift 2.0 mV/min	Signal drift for measured value acquisition.	0.5...999 mV/min, OFF
equilibr.time 110 s	Equilibration time.	0...9999 s, OFF
electr.id	Electrode identification.	up to 8 characters
sample changer cal: OFF	Calibration with sample changer.	ON, OFF
activate pulse: OFF	Pulse output on the I/O line L6.	all, first, OFF
>statistics	**Statistics calculation**	
status: OFF **mean n= 2** **res.tab: original** **delete n= 1**	Status of statistics calculation. Number n of single values for statistics calculation. Result table for statistics calculation. Delete data from sample number n.	ON, OFF 2...20 original, delete n, delete all 1...20