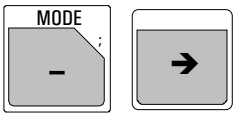
799 GPT Titrino

Metrohm

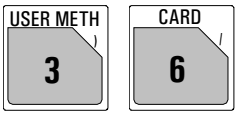
Quick References

8.799.1013

Mode selection



Press key <MODE> until the desired mode is displayed, press <ENTER>, select desired measured quantity with the cursor keys <➔> or <🡐>, and confirm with <ENTER>.

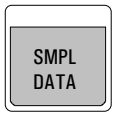


Recall method from internal method memory (key <USER METH>) or from card (key <CARD>):
>Recall method <ENTER>
Select method name with <➔> or <🡐> or by entering its name.

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.
KFT	**Ipol, Upol**	**K**arl **F**isher **T**itration (Determination of water content).
STAT	**pH, U, Ipol, Upol**	Keeping a measured value constant, i.e. pH STAT; with controlling of measured value, rate and temperature.
DOC	**pH, U, Ipol, Upol**	**Do**sing **C**ontrolled by a measured value gradient; with controlling of measured value and temperature.
DOS		**Dos**ing function with controlling of measured value and temperature.
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

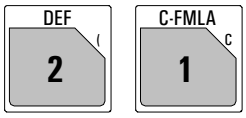


Input for sample data:
- Sample identification. Can be used as sample specific calculation values
- Sample size

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 <➔> or <🡐> or enter a unit.	up to 6 ASCII characters
RS1 limit control: OFF	Limits for the result may be entered. Enter the values of calculation variables C01..C19 with <C-fmla>.	ON, OFF
>silo calculations	**Allocations for silo calculations**	
>common variables	**Allocations for common variables**	
>report	**Selection of report blocks for data output**	
report COM1:	Output to COM1. Identical for COM2. Press <➔> or <🡐> for selection. If you wish several reports, use ";" as separator.	full, short, mplist, curve, derive, comb, meas crv, temp crv, 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 KFT and SET with conditioning.
C44	Temperature.
C45	Dispensed start volume.
C46	Asymmetry-pH (calibration).
C47	Electrode slope (calibration).
C48	Volume at maximum voltage in the curve.
C49	Volume at minimum voltage in the curve.
C51...C59	Fix EP for DET and MET or Fix V for STAT.
C61...C69	pK/HNP values for DET and MET or Fix V for STAT.
C70...C79	Temporary variables for calculations in TIP.
C80	Mean rate for STAT: Overall rate, evaluated over all points of the measuring list.
C81...C89	Rates, evaluated in preset time windows for STAT.

Configuration

Monitoring of various GLP functions
Settings of peripheral units
General settings
Settings of RS232 interface, values of the common variables
Settings for dosing units

Display	*Initial value*	*Meaning*	*Input range*
>monitoring		**Monitoring functions**	
validation:	**OFF**	Monitoring of a time interval for instrument validation.	ON, OFF
calibration:	**OFF**	Monitoring of a time interval for pH calibration.	ON, OFF
service:	**OFF**	Monitoring of the date for the next instrument service.	ON, OFF
system test report:	**OFF**	Print-out of a system test report after switching on.	ON, OFF
>peripheral units		**Settings of peripheral units**	
send to COM1:	**IBM**	Selection of printer at COM1. Identical for COM2.	Epson, Seiko, Citizen, HP, IBM
man.reports to COM:	**1**	Output of manually triggered reports.	1, 2, 1&2
balance:	**Sartorius**	Selection of balance.	Sartorius, Mettler, Mettler AT, AND, Precisa
stirrer control:	**OFF**	Stirrer control in the titration sequences.	ON, OFF
remote box: **keyboard:** **barcode:**	**OFF** **US** **input**	Connection of a remote box. Type of connected PC keyboard. Target of data from the barcode reader. "input" means current input field.	ON, OFF US, Deutsch, français, espanol, schweiz. input, method, id1, id2, id3, smpl size
>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...999 999
auto start	**OFF**	Automatic starts of titrations.	1...9999, OFF
start delay	**0 s**	Waiting time before start of titration.	0...999 999 s
result display:	**bold**	Result display at the end of the determinations.	bold, standard
device label		Device label.	8 ASCII characters
program	**799.0010**	Program version.	read only
>RS232 settings COM1		**RS232-sttings for COM1. Identical for COM2.**	
baud rate:	**9600**	Baud rate.	300,600,1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
data bit:	**8**	Data bit.	7, 8
stop bit:	**1**	Stop bit.	1, 2
parity:	**none**	Parity.	none, odd, even
handshake:	**HWs**	Handshake.	HWs, SWchar, SWline, none
>common Variables		**Values of common variables**	
>prep.dosing elements		**Prep. of titration burets**	

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
dos.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.	0.5...999 mV/min, OFF
equilibr.time	**26 s**	Waiting time for measured value acquisition.	0...9999 s, OFF
start V: **start V** **factor** **dos.rate**	**OFF** **0.00 ml** **0** **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...999.999 mL 0... ±999 999 0.01...150 mL/min, OFF
pause	**0 s**	Waiting time, i.e. after start volume.	0...999 999 s
dos.element: internal	**D0**	Selection of the dosing unit.	internal D0, external D1/D2
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: **stop V** **factor**	**abs.** **99.99 ml** **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.. ±999 999
stop pH	**OFF**	Stop at measured value.	pH: 0.00...±20.00, OFF U: 0... ±2000 mV, 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: **mean** **res.tab:** **delete**	**OFF** **n= 2** **original** **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...9.99 U: 1...999 mV
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 (→ C5X).	pH: 0.00... ±20.00, OFF U: 0... ±2000 mV, 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
limit smpl size:	**OFF**	Limit control of sample size entries.	ON, 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 EP1.	pH: 0.00...±20.00, OFF U: 0... ±2000 mV, OFF
dynamics	**OFF**	Distance from EP where constant dosing should stop and controlling begins.	pH: 0.01...20.00, OFF U: 1... 2000 mV
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: **stop drift** **t(delay)** **stop time**	**drift** **20 µl/min** **10 s** **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...999 999 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 or voltage.	+, -, auto
pause 1	**0 s**	Waiting time *before* start volume.	0...999 999 s
start V: **start V** **factor** **dos.rate. max. .mL/min**	**OFF** **0.00 ml** **0**	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...999.999 ml 0... ±999 999 0.01...150 mL/min, OFF
pause 2	**0 s**	Waiting time *after* start volume.	0...999 999 s
extr.time	**0 s**	Extraction time.	0...999 999 s
dos.element: internal D0		Selection of dosing unit.	internal D0, external D1/D2
meas. input:	**1**	Measuring input for pH and U.	1, 2, diff.
temperature	**25.0 °C**	Titration temperature.	-170.0...500.0 °C
time interval	**2 s**	Time interval for data acquisition.	1...999 999 s
>stop conditions		**Stop conditions for titration**	
stop V: **stop V:** **factor**	**abs.** **99.99 ml** **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... ±999 999
filling rate max. ml/min		Filling rate.	0.01...150 mL/min, max.
>statistics		**Statistics calculation**	
status: **mean** **res.tab:** **delete**	**OFF** **n= 2** **original** **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: **display drift:** **drift corr:** **drift value**	**OFF** **ON** **OFF** **0 µl/min**	Automatic conditioning of titration vessel. Display of drift during conditioning. Type of drift correction. Value for manual drift correction.	ON, OFF ON, OFF auto, man., OFF 0.0...99.9 µL/min
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
limit smpl size:	**OFF**	Limit control of sample size entries.	ON, OFF
activate pulse:	**OFF**	Pulse output on I/O line L6.	first, all, cond., OFF

Parameters for STAT

Display	*Initial value*	*Meaning*	*Input range*
>control parameters		**Control parameters**	
EP at pH	**OFF**	Endpoint, control point: This value is kept constant.	0.00..±20.00 (0..±2000 mV), OFF
dynamics	**1**	Controlling range. Outside: constant dosing.	0.01...20.00 (1... 2000 mV), OFF
max.rate	**10.0 ml/min**	Maximum dosing rate.	0.01...150 ml/min, OFF
min.rate	**25.0 ul/min**	Minimum dosing rate.	0.01...9999 ul/min
>titration parameters		**General titration parameters**	
start V:	**OFF**	Type of start volume.	abs., rel., OFF
start V	**0.00 ml**	Volume for *absolute* start volume.	0...999.999 ml
factor	**0**	Factor for *relative* start volume: factor ∗ smpl size.	0... ±999 999
dos.rate max.	**ml/min**	Dosing rate for start volume.	0.01...150 ml/min, OFF
pause	**0 s**	Waiting time after start volume.	0...999 999 s
start time	**0 s**	Start time for data acquisition.	0...999 999 s
start pH	**OFF**	Start measured value for data acquisition.	pH: 0.00...±20.00, OFF U: 0... ±2000 mV, OFF
start rate	**OFF**	Start rate for data acquisition.	0.01...150 ml/min, OFF
time interval	**2 s**	Time interval for data acquisition.	1...999 999 s
titr.direction:	**auto**	auto: Direction is set automatically. +: Titration to higher pH or U.	+, -, auto
dos.element: internal D0		Selection of dosing unit.	internal D0, external D1/D2
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**	
stop time:	**OFF**	Type of stop time.	abs., rel., delta, delay, OFF
stop time	**999999 s**	Time for *absolute* stop time.	0...999 999 s
factor	**999999**	Factor for *relative* stop time: factor ∗ smpl size.	0... ±999 999
t(delta)	**999999 s**	Time after EP is once reached.	0...999 999 s
t(delay)	**999999 s**	Time after last dosing step.	0...999 999 s
stop V:	**abs.**	Type of stop volume.	abs., rel., OFF
stop V	**99.99 ml**	Volume for *absolute* stop volume.	0.00...9999.99 ml, OFF
factor	**999999**	Factor for *relative* stop volume: factor ∗ smpl size.	0... ±999 999
stop rate	**OFF ml/min**	Stop when dosing rate is smaller than the preset rate.	0.01...150 ml/min, OFF
filling rate max.	**ml/min**	Filling rate.	0.01...150 ml/min, max.
>statistics		**Statistics calculation**	
>evaluation		**Evaluation**	
low lim.	**OFF s**	Evaluation of dosing rates within time windows (→C8X). Max.	0...999 999 s, OFF
up lim.	**OFF s**	9 windows.	0...999 999 s, OFF
fix V1	**OFF s**	Interpolation of volumes at fixed times (→C5X).	0...999 999 s, OFF
fix time 1	**OFF V(dead)**	Interpolation of times at volume ratios of the end V (→C6X).	0.01...1 V(tot), OFF
>monitoring		**Monitoring of measured values**	
meas.val:	**OFF**	Monitoring of measured values.	ON, OFF
low lim.pH	**-20.00**	Limits for measured values.	pH: 0.00...±20.00
up lim.pH	**20.00**		U: 0... ±2000 mV
action:	**none**	Action, if a limit is exceeded.	end, hold, wait, none
		Monitoring of rate and temperature same as above.	
assign output L10:	**none**	Assignment of output L10 to a monitored quantity. Identical for lines L11, L12, L13.	meas, temp, rate, all, none
violated limit:	**any**	Assignment of the line to a violated limit.	any, upper, lower
output L10:	**pulse**	Set a signal when a limit is violated.	active, pulse
>preselections		**Preselections for the sequence**	