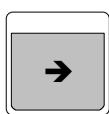
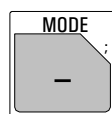
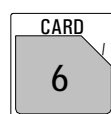


Mode selection



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

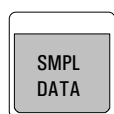


Recall method from internal method memory (key <USER METH>) or from card (key <CARD>):
> Recall method <ENTER>
Select method name with <→> or <←> or by entering its name.

Modes:

DET	pH, U, Ipol, Upol	Dynamic Equivalence Point Titration.
MET	pH, U, Ipol, Upol	Monotonic Equivalence Point Titration.
SET	pH, U, Ipol, Upol	Set Endpoint Titration.
KFT	Ipol, Upol	Karl Fisher Titration (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	Dosing Controlled by a measured value gradient; with controlling of measured value and temperature.
DOS		Dosing function with controlling of measured value and temperature.
MEAS	pH, U, Ipol, Upol, T	MEASuring.
CAL		CALibration.
TIP		Titration-Procedure. Linking of various commands and methods to a titration procedure.

Sample data



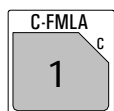
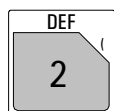
Input for sample data:

- 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
snpl size snpl unit:	1.0 g g	Sample size, value C00. Unit of sample size.	0...±999 999 g, mg, ml, ul, 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 3 rd 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.	ON, OFF
		Enter the values of calculation variables C01..C19 with <C-fmla>.	
>silo calculations		Allocations for silo calculations	
>common variables		Allocations for common variables	
>report		Selection of report blocks for data output	
report COM:		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 COM:	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:	OFF	Connection of a remote box.	ON, OFF
keyboard:	US	Type of connected PC keyboard.	US, Deutsch, français, espanol, schweiz.
barcode:	input	Target of data from the barcode reader. "input" means current input field.	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	751.0020	Program version.	read only
>RS232 settings COM			
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 ul	Parameter for DET: Minimum increment.	0...999.9 ul
[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:	OFF	Type of start volume.	abs., rel. OFF
start V	0.00 ml	Volume for <i>absolute</i> start volume.	0...999.999 ml
factor	0	Factor for <i>relative</i> 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, 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:	abs.	Type of stop volume.	abs., rel., OFF
stop V	99.99 ml	Volume for <i>absolute</i> stop volume.	0.00...9999.99 ml, OFF
factor	999999	Factor for <i>relative</i> stop volume: factor * smpl size.	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:	OFF	Status of statistics calculation.	ON, OFF
mean	n= 2	Number n of single values for statistics.	2...20
res. tab:	original	Result table for statistics calculation.	original, delete n, delete all
delete	n= 1	Delete data from sample number n.	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 ul/min	Minimum dosing rate.	0.01...9999 ul/min
stop crit:	drift	Type of stop criteria.	drift, time
stop drift	20 ul/min	Titration stops if stop drift is reached.	1...999 ul/min
t(delay)	10 s	Titration stops if there is no dosing during t(delay).	0...999 s, inf.
stop time	OFF s	If t(delay) is "INF" stop after at time.	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 <i>before</i> start volume.	0...999 999 s
start V:	OFF	Type of start volume: absolute or relative.	abs., rel., OFF
start V	0.00 ml	Volume for <i>absolute</i> start volume.	0...999.999 ml
factor	0	Factor for <i>relative</i> 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 2	0 s	Waiting time <i>after</i> 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:	abs.	Type of stop volume.	abs., rel., OFF
stop V:	99.99 ml	Volume for <i>absolute</i> stop volume.	0.00...9999.99 ml, OFF
factor	999999	Factor for <i>relative</i> stop volume: factor * smpl size.	0... ±999 999
filling rate max.	ml/min	Filling rate.	0.01...150 ml/min, max.
>statistics			
Statistics calculation			
status:	OFF	Status of statistics calculation.	ON, OFF
mean	n= 2	Number n of single values for statistics calculation.	2...20
res. tab:	original	Result table for statistics calculation.	original, delete n, delete all
delete	n= 1	Delete data from sample number n.	1...20
>preselections			
Preselections for the sequence			
conditioning:	OFF	Automatic conditioning of titration vessel.	ON, OFF
display drift:	ON	Display of drift during conditioning.	ON, OFF
drift corr:	OFF	Type of drift correction.	auto, man., OFF
drift value	0 ul/min	Value for manual drift correction.	0.0...99.9 ul/min
req. ident:	OFF	Request of identifications after start of titration.	id1, id1 & 2, all, OFF
req. snpl size:	OFF	Request of sample size after start of titration.	value, unit, all, OFF
limit snpl 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 <i>absolute</i> start volume.	0...999.999 ml
factor	0	Factor for <i>relative</i> 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. 9 windows.	0...999 999 s, OFF
up lim	OFF s		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	