



License ID 1874704
Client ID 001-nbk-03142
User Metrohm

Program version viva 4.0 - 78
2026-09-21 13:48:38 UTC+2

Method parameters

Method MVA-23 – Leveler determination - method 1
Method saving date 2026-09-21 13:18:54 UTC+2
Method version 1
Method group Main group
Method status original
Method saved by (full name) Metrohm International Headquarters
Method saved by (short name) Metrohm

START

Main track

General

Workplace view

Current view on

Track view for live window

Live display 1 Main track

Live display 2 Main track

Electrode check on

Application note

Sample data variables

Name	Type	Assignment	Fixed value	Comment	Monitoring
ID1	Text	ID1		Sample identification 1	off
ID2	Text	ID2		Sample identification 2	off
ID3	Text	ID3		Sample identification 3	off
Sample type	Text	Sample type		Sample type	off
Sample position	Number	Sample position		Sample position number	off
Sample amount	Number	Sample amount		Sample amount	off
Sample amount unit	Text	Sample amount unit		Sample amount unit	off

Name **ID1**
Type Text
Assignment on. ID1
Fixed value off.
Check at start on
Comment Sample identification 1

Name **ID2**
Type Text
Assignment on. ID2
Fixed value off.



License ID 1874704
Client ID 001-nbk-03142
User Metrohm

Program version viva 4.0 - 78
2026-09-21 13:48:38 UTC+2

Check at start on
Comment Sample identification 2

Name **ID3**
Type Text
Assignment on. ID3
Fixed value off.
Check at start on
Comment Sample identification 3

Name **Sample type**
Type Text
Assignment on. Sample type
Fixed value off.
Check at start on
Comment Sample type

Name **Sample amount unit**
Type Text
Assignment on. Sample amount unit
Fixed value off.
Check at start on
Comment Sample amount unit

Name **Sample position**
Type Number
Assignment on. Sample position
Fixed value off.
Check at start on
Comment Sample position number
Variable monitoring off
Lower limit
Upper limit
Message
Display message on
Record message on
Message by e-mail off
 E-mail template
 Subject Message from viva - method 'New method 1' - command 'Main track'
Acoustic signal off
Action off
Cancel determination on
Cancel determination and series off

Name **Sample amount**
Type Number



License ID 1874704
Client ID 001-nbk-03142
User Metrohm

Program version viva 4.0 - 78
2026-09-21 13:48:38 UTC+2

Assignment on. Sample amount
Fixed value off.
Check at start on
Comment Sample amount
Variable monitoring off
Lower limit
Upper limit
Message
Display message on
Record message on
Message by e-mail off
 E-mail template
 Subject Message from viva - method 'New method 1' - command 'Main track'
Acoustic signal off
Action off
Cancel determination on
Cancel determination and series off

Command comment

800105023: MVA-23 - Determination of leveler by CVS-RC without dilution of the sample

CALL Sample or standard?

Call text	Track name	Sample type	Condition
Sample	RC determination	Sample	off
Standard	RC calibration	on Standard	off

CALL CALL Final rinsing

Call text	Track name	Sample type	Condition
Rinsing cycle	Rinsing cycle	off Sample	off

VA TRACK VA track

Return immediately off

CVS

CVS

General/Hardware

Device

Device name 884_1
Device type 884 Professional VA

Sensors/Electrodes

Working electrode RDE
Sensor type RDE/SSE
Reference electrode Reference electrode
Auxiliary electrode Auxiliary electrode



License ID 1874704
Client ID 001-nbk-03142
User Metrohm

Program version viva 4.0 - 78
2026-09-21 13:48:38 UTC+2

Electrode check on

Stirrer

Stirring rate 2500 min⁻¹

Hydrodynamic measurement on

Pretreatment

Stirring time 5.0 s

Cyclovoltammetric pretreatment

Start potential 0.2 V

Vertex potential 1.625 V

Sweep rate 1 V/s

Cycles off

Duration - s

Potentiostatic pretreatment

Potential 1 off V

Waiting time 1 0.0 s

Potential 2 off V

Waiting time 2 0.0 s

Potential 3 off V

Waiting time 3 0.0 s

Potential 4 off V

Waiting time 4 0.0 s

Potential 5 off V

Waiting time 5 0.0 s

Equilibration time 5.0 s

Sweep

Start potential 1.625 V

1st vertex potential -0.175 V

2nd vertex potential 1.625 V

Potential step 0.006 V

Potential step time 0.060 s

Sweep rate 0.100 V/s

Preparation cycles 1

Measuring cycles 2

Sweep duration 109.08 s

Post-treatment

Cleaning

Cleaning potential off V

Cleaning time 0.0 s

Standby potential

Standby potential off V

Potentiostat

Current measuring range

Highest range 224 mA

Lowest range 20 µA

RC electrolyte



License ID 1874704
Client ID 001-nbk-03142
User Metrohm

Program version viva 4.0 - 78
2026-09-21 13:48:38 UTC+2

TRACK Return immediately off

Delete old data off

CALL Empty vessel electrolyte

Call text	Track name	Sample type	Condition
Drain	Drain	off Sample	off

CALL Add electrolyte

Call text	Track name	Sample type	Condition
Add VMS	Electrolyte VMS	off Sample	off
Add suppressor	Electrolyte suppressor	off Sample	off
Add brightener	Electrolyte brightener	off Sample	off

**CALL
COND**

Conditioning electrolyte

Call text Conditioning electrolyte
Track name VA track
Stop criteria
Evaluation quantity on
Voltammetry command CVS
Substance Leveler
Standard deviation 2 %
Number of runs on
Number of runs 20
Action Cancel command
Run time off
Condition off

**CALL
ELECTROL
YTE**

Measure electrolyte

Call text Measure electrolyte
Track name VA track
Condition off

TRACK

RC determination

Return immediately off
Delete old data off

CALL

Call electrolyte sample

Call text	Track name	Sample type	Condition
RC electrolyte	RC electrolyte	off Sample	off

Empty vessel sample



License ID 1874704
Client ID 001-nbk-03142
User Metrohm

Program version viva 4.0 - 78
2026-09-21 13:48:38 UTC+2

CALL

Call text	Track name	Sample type		Condition
Drain	Drain	off	Sample	off

**SET
TOTAL
VOLUME**

Set volume to 0
Volume 0.000 mL

CALL**Sample addition**

Call text	Track name	Sample type		Condition
Add sample automatically	Add sample automatically	off	Sample	off

CALL**Additional additives**

Call text	Track name	Sample type		Condition
Additional suppressor	Electrolyte suppressor	off	Sample	off
Additional brightener	Electrolyte brightener	off	Sample	off

CALL VA**Measure sample**

Call text Measure sample
Track name VA track
Condition off

CALL**CALL Rinse needle**

Call text	Track name	Sample type		Condition
Rinse needle	Rinse Needle	off	Sample	off

TRACK**RC calibration**

Return immediately off
Delete old data off

CALL**CALL PREP Standard**

Call text	Track name	Sample type		Condition
CALL PREP Standard	PREP Standard	on	Standard	off

CALL**Call electrolyte standard**

Call text	Track name	Sample type		Condition
RC electrolyte	RC electrolyte	off	Sample	off



License ID 1874704
Client ID 001-nbk-03142
User Metrohm

Program version viva 4.0 - 78
2026-09-21 13:48:38 UTC+2

LOOP

Variations

Stop criteria

Max. run number on
Max. run number 5
Maximum run time off
Signal assessment for DT off
Condition off

ADD STD

Add standard

Standard

Solution Standard or sample

Addition increments

Number 1
Addition volume 1 0.05 mL

Addition

Add manually off
Already added off
Add with dosing device on
Dosing rate 2.0 mL/min
Filling rate maximum mL/min

CALL VA

Measure standard

Call text Measure standard
Track name VA track
Condition off

CALL

Clean DU standard

Call text	Track name	Sample type	Condition
Clean DU standard	Rinse DU standard	off Standard	off

TRACK

Add sample automatically

Return immediately off
Delete old data off

CALL

CALL Next sample

Call text	Track name	Sample type	Condition
Next sample	Next sample	off Sample	off

CALL

Transfer sample

Call text	Track name	Sample type	Condition
Peristaltic pump	Peristaltic pump	off Sample	off

Add sample



License ID 1874704
Client ID 001-nbk-03142
User Metrohm

Program version viva 4.0 - 78
2026-09-21 13:48:38 UTC+2

**ADD
SAMPLE**

Addition

Add manually off
Already added on
Add with dosing device off

TRACK

PREP Standard

Return immediately off
Delete old data off

CALL

Empty vessel standard

Call text	Track name	Sample type	Condition
Drain	Drain	off Sample	off

CALL

Move to standard

Call text	Track name	Sample type	Condition
Move to standard	Next sample	off Sample	off

LOOP

LOOP PREP Standard

Stop criteria

Max. run number on
Max. run number 2
Maximum run time off
Signal assessment for DT off
Condition off

PREP

PREP with standard

Dosing device

Dosing unit 2 mL Standard or sample

CALL

Rinsing PREP standard

Call text	Track name	Sample type	Condition
Rinsing cycle	Rinsing cycle	off Sample	off

TRACK

Next sample

Return immediately off
Delete old data off

MOVE

MOVE to sample position

Device

Device name 858 Professional Sample Processor 1
Device type 858.0020 Professional Sample Processor

Target

Tower 1



License ID 1874704
Client ID 001-nbk-03142
User Metrohm

Program version viva 4.0 - 78
2026-09-21 13:48:38 UTC+2

Move Sample position
Beaker test
Display message on
Cancel determination off
Cancel determination and series off
Parameters
Shift rate 20 %/s
Shift direction auto
Swing rate 55 %/s

LIFT Needle → Work position

Device
Device name 858 Professional Sample Processor 1
Device type 858.0020 Professional Sample Processor
Target
Tower 1
Lift position Work position mm
Parameters
Lift rate 25 mm/s

TRACK Peristaltic pump

Return immediately off
Delete old data off

PUMP Peristaltic pump ON

Device
Device name 858 Professional Sample Processor 1
Device type 858.0020 Professional Sample Processor
Pumps
Tower 1
Pump(s) Peristaltic
Rate 10
Action
Switch on off
Switch off off
Duration on
Time 300 s

TRACK Rinsing position

Return immediately off
Delete old data off

MOVE Go to rinsing position

Device
Device name 858 Professional Sample Processor 1
Device type 858.0020 Professional Sample Processor
Target
Tower 1



License ID 1874704
Client ID 001-nbk-03142
User Metrohm

Program version viva 4.0 - 78
2026-09-21 13:48:38 UTC+2

Move Rack position
Number = 'SD.Sample position' + 28
Beaker test
Display message on
Cancel determination off
Cancel determination and series off
Parameters
Shift rate 20 °/s
Shift direction auto
Swing rate 55 °/s

LIFT Needle → Rinsing solution

Device
Device name 858 Professional Sample Processor 1
Device type 858.0020 Professional Sample Processor
Target
Tower 1
Lift position Work position mm
Parameters
Lift rate 25 mm/s

TRACK Rinse Needle

Return immediately off
Delete old data off

CALL Empty vessel rinse needle

Call text	Track name	Sample type	Condition
Drain	Drain	off Sample	off

CALL Rinsing position needle

Call text	Track name	Sample type	Condition
Rinsing position	Rinsing position	off Sample	off

CALL Transfer rinsing solution

Call text	Track name	Sample type	Condition
Peristaltic pump	Peristaltic pump	off Sample	off

TRACK Rinse DU standard

Return immediately off
Delete old data off

CALL Empty vessel rinsing DU



License ID 1874704
Client ID 001-nbk-03142
User Metrohm

Program version viva 4.0 - 78
2026-09-21 13:48:38 UTC+2

Call text	Track name	Sample type	Condition
Drain	Drain	off Sample	off

CALL**Rinsing position DU**

Call text	Track name	Sample type	Condition
Rinsing position	Rinsing position	off Sample	off

PREP**PREP rinsing solution**

Dosing device

Dosing unit 2 mL Standard or sample

LIFT**Needle → Shift DU**

Device

Device name 858 Professional Sample Processor 1

Device type 858.0020 Professional Sample Processor

Target

Tower 1

Lift position Shift position mm

Parameters

Lift rate 25 mm/s

PUMP**Empty needle**

Device

Device name 858 Professional Sample Processor 1

Device type 858.0020 Professional Sample Processor

Pumps

Tower 1

Pump(s) Peristaltic

Rate 10

Action

Switch on off

Switch off off

Duration on

Time 30 s

TRACK**Electrolyte VMS**

Return immediately off

Delete old data off

ADD AUX**Add VMS**

Auxiliary solution

Solution VMS

Volume 23.5 mL

Include volume in calculation on

Addition



License ID 1874704
Client ID 001-nbk-03142
User Metrohm

Program version viva 4.0 - 78
2026-09-21 13:48:38 UTC+2

Add manually off
Already added off
Add with dosing device on
 Dosing rate maximum mL/min
 Filling rate maximum mL/min

TRACK Electrolyte suppressor

Return immediately off
Delete old data off

ADD AUX Add suppressor

Auxiliary solution

Solution Suppressor concentrate
Volume 0.5 mL
Include volume in calculation on

Addition

Add manually off
Already added off
Add with dosing device on
 Dosing rate 2.0 mL/min
 Filling rate maximum mL/min

TRACK Electrolyte brightener

Return immediately off
Delete old data off

ADD AUX Add brightener

Auxiliary solution

Solution Brightener concentrate
Volume 1 mL
Include volume in calculation on

Addition

Add manually off
Already added off
Add with dosing device on
 Dosing rate 2.0 mL/min
 Filling rate maximum mL/min

TRACK Rinsing cycle

Return immediately off
Delete old data off

STIR Stirrer ON

Device

Device name 884_1
Device type 884 Professional VA

Stirrer

Stirring rate 2500 min⁻¹



License ID 1874704
Client ID 001-nbk-03142
User Metrohm

Program version viva 4.0 - 78
2026-09-21 13:48:38 UTC+2

Action

Switch on on
Switch off off
Duration off
Time 300 s

LOOP

Rinsing cycles

Stop criteria

Max. run number on
Max. run number 2
Maximum run time off
Signal assessment for DT off
Condition off

CALL

CALL Drain

Call text	Track name	Sample type	Condition
Drain	Drain	off Sample	off

CALL

CALL Rinse

Call text	Track name	Sample type	Condition
Rinse	Rinse	off Sample	off

STIR

Stirrer rinsing OFF

Device

Device name 884_1
Device type 884 Professional VA

Stirrer

Stirring rate 2500 min⁻¹

Action

Switch on off
Switch off on
Duration off
Time 300 s

TRACK

Rinse

Return immediately off
Delete old data off

PUMP

PUMP Rinse

Device

Device name 858 Professional Sample Processor 1
Device type 858.0020 Professional Sample Processor

Pumps

Tower 1
Pump(s) 2



License ID 1874704
Client ID 001-nbk-03142
User Metrohm

Program version viva 4.0 - 78
2026-09-21 13:48:38 UTC+2

Action

Switch on off
Switch off off
Duration on
Time 9 s

TRACK

Drain

Return immediately off
Delete old data off

PUMP

PUMP Drain

Device

Device name 858 Professional Sample Processor 1
Device type 858.0020 Professional Sample Processor

Pumps

Tower 1
Pump(s) 1

Action

Switch on off
Switch off off
Duration on
Time 50 s

TRACK

Fill DU VMS

Return immediately off
Delete old data off

LQH

DU 50 mL VMS

General/Hardware

Dosing device

Dosing unit 50 mL VMS

Parameters

Function Fill
Port 2
Rate maximum mL/min

TRACK

Fill DU suppressor

Return immediately off
Delete old data off

LQH

DU 2 mL Suppressor

General/Hardware

Dosing device

Dosing unit 2 mL Suppressor

Parameters

Function Fill
Port 2
Rate maximum mL/min



License ID 1874704
Client ID 001-nbk-03142
User Metrohm

Program version viva 4.0 - 78
2026-09-21 13:48:38 UTC+2

TRACK	Fill DU brightener Return immediately off Delete old data off
LQH	DU 2 mL Brightener General/Hardware Dosing device Dosing unit 2 mL Brightener Parameters Function Fill Port 2 Rate maximum mL/min
TRACK	Fill DU standard Return immediately off Delete old data off
LQH	DU 2 mL Standard/Sample General/Hardware Dosing device Dosing unit 2 mL Standard or sample Parameters Function Fill Port 2 Rate maximum mL/min
TRACK	Shut off Return immediately off Delete old data off
PUMP	Rinse Drain pumps OFF Device Device name 858 Professional Sample Processor 1 Device type 858.0020 Professional Sample Processor Pumps Tower 1 Pump(s) 1+2 Action Switch on off Switch off on Duration off Time 8.0 s
PUMP	Peristaltic pump OFF Device Device name 858 Professional Sample Processor 1 Device type 858.0020 Professional Sample Processor Pumps



License ID 1874704
Client ID 001-nbk-03142
User Metrohm

Program version viva 4.0 - 78
2026-09-21 13:48:38 UTC+2

Tower 1
Pump(s) Peristaltic
Rate 10
Action
Switch on off
Switch off on
Duration off
Time 300.0 s

STIR

Stirrer OFF

Device
Device name 884_1
Device type 884 Professional VA
Stirrer
Stirring rate 2500 min⁻¹
Action
Switch on off
Switch off on
Duration off
Time 300 s

LIFT

Needle → Shift position

Device
Device name 858 Professional Sample Processor 1
Device type 858.0020 Professional Sample Processor
Target
Tower 1
Lift position Shift position mm
Parameters
Lift rate 25 mm/s

**SERIES
START**

Series start track

RACK

Rack init

Device
Device name 858 Professional Sample Processor 1
Device type 858.0020 Professional Sample Processor
Rack test on
Test rack 6.2041.450

MOVE

Move to Pos 1

Device
Device name 858 Professional Sample Processor 1
Device type 858.0020 Professional Sample Processor
Target
Tower 1
Move Rack position



License ID 1874704
Client ID 001-nbk-03142
User Metrohm

Program version viva 4.0 - 78
2026-09-21 13:48:38 UTC+2

Number 1
Beaker test
Display message on
Cancel determination off
Cancel determination and series off
Parameters
Shift rate 20 °/s
Shift direction auto
Swing rate 55 °/s

EXIT Exit track

CALL Exit shut off

Call text	Track name	Sample type		Condition
Exit shut off	Shut off	off	Sample	off

CALL Fill Dosing Units

Call text	Track name	Sample type		Condition
Fill DU VMS	Fill DU VMS	off	Sample	off
Fill DU suppressor	Fill DU suppressor	off	Sample	off
Fill DU brightener	Fill DU brightener	off	Sample	off
Fill DU Standard or sample	Fill DU standard	off	Sample	off

ERROR Error track

CALL Error shut off

Call text	Track name	Sample type		Condition
Error shut off	Shut off	off	Sample	off

Evaluation parameters

General

CVS

Data processing

Smoothing 1
Reversed peaks off

Curve evaluation

Fixed point evaluation off

Substances



License ID 1874704
Client ID 001-nbk-03142
User Metrohm

Program version viva 4.0 - 78
2026-09-21 13:48:38 UTC+2

CVS

Substances - Recognition

Substance	Active	Characteristic potential	Tolerance	Min. width	Max. width	Min. measured quantity	Sweep direction
Leveler	on	0.3 V	0.2 V	0.01 V	1 V	200 pA	anodic

CVS

Substances - Baseline

Substance	Baseline type	Start base point	End base point
Leveler	Horizontal	0.8 V	-0.05 V

Standards

Standards

Name Standard or sample

Leveler 1000 mL/L

Calibration

General

Calibration method RC

Measurement of the electrolyte value

In the same determination as sample/standard on

In a separate determination off

CVS

Calibration curves

Substance	Evaluation quantity	Curve type for standard	Weighting
Leveler	Area	Linear interpolation	on

Begin of evaluation standard

1.1

Results

Substance concentration in the sample

CVS

Substance	Decimal places	Assignment
Leveler	2	RS01



License ID 1874704
Client ID 001-nbk-03142
User Metrohm

Program version viva 4.0 - 78
2026-09-21 13:48:38 UTC+2

Results

Additional results

Result	Places	Prefix	Unit
Peak potential	3		V
Height	2	#	A
RSD of the heights of all replications	1		%
Measured value	2	#	A
RSD of the measured values of all replications	1		%
Area	2	#	C
RSD of the areas of all replications	1		%
Start base point	3		
End base point	3		
Normalized area	3		
Normalized height	3		
Normalized measured value	3		
Total volume	3	#	L
Zero-order coefficient	3		
First-order coefficient	3		
Second-order coefficient	3		
Fourth-order coefficient	3		
Coefficient of determination	5		
Substance concentration in measuring vessel	2	#	
RSD of the substance concentration in measuring vessel	1		%
Amount of substance	2	#	
RSD of the substance concentration in the sample	1		%
Effective addition volume of the standard solution for the evaluation ratio	2	#	L
RSD of the effective addition volume of the standard solution for the evaluation ratio	1		%
Calibration factor DT	2	#	
RSD of the calibration factor DT	1		%
Effective addition volume of the sample solution for the evaluation ratio	2	#	L
RSD of the effective addition volume of the sample solution for the evaluation ratio	1		%

Database

Name database viva