

# High Accuracy Potentiostat / Galvanostat & Multipotentiostat

## Model 2559

### Table of Contents

1	General Description.....	1
2	Metrological Properties.....	2
2.1	Counter Electrode.....	2
2.2	Working Electrode.....	2
2.3	Reference Electrode.....	2
2.4	Polarization Capability.....	3
2.5	IR Compensation.....	3
2.6	Response Time.....	3
2.7	Meters and Interfaces.....	3
2.8	Digital Interface.....	3
2.9	Cell Connections.....	3
2.10	Power Supply and Dimensions.....	3
3	Implemented Electrochemical Techniques.....	4
3.1	Detection.....	4
3.2	Voltammetric.....	4
3.3	Stripping.....	4
4	Spare Parts.....	4



## 1 General Description

**Model 2559**, the newest member of AMEL's compact series, allows for working both in potentiostatic and galvanostatic modes varying from 1nA to 100mA Full Scale over 9 different current ranges. It is recommended for ultra sensitive measurements and, thanks to its portability, for on the field applications. The instrument can be powered using both 230V power supply (singularly or with Model 2560) or standalone 12V battery. This feature enables for easy operations in Faraday cages or isolated environments. The aluminium container delivers both electromagnetic shielding and sturdiness. Model 2559 has been designed to be used individually or transformed into a multipotentiostat using Model 2560 8-channel power supply. It can be further associated to Frequency Response Analyzer, Model 2700, to perform impedance measurements. The instrument connects to your personal computer via USB and it is controlled by the new VApeak software allowing for electrochemical (batteries, electrodes, corrosion and more) and quantitative electroanalytical measurements both as single or multipotentiostat.



## 2 Metrological Properties

### 2.1 Counter Electrode

Voltage Output	$\pm 10\text{V max}$
Current Output	$\pm 100\text{mA max}$
Slew Rate	$0,01\text{mV/s to }10\text{V/s}$
Protection	Thermal, overload and short-circuit

### 2.2 Working Electrode

Current Measure	From 1nA to 100mA Full Scale in 9 ranges
Current Resolution	From 1pA at 1nA Full Scale to 10 $\mu\text{A}$ at 100mA Full Scale
Measuring Accuracy	< 5% of Full Scale in 1nA to 1 $\mu\text{A}$ ranges < 0,25% of Full Scale in 10 $\mu\text{A}$ to 100mA ranges

### 2.3 Reference Electrode

Input Impedance	> 1T $\Omega$
Input Capacitance	< 20pF (1m cable)
Biasing Current	< 10pA at 25°C
Common Mode Rejection	> 60dB full frequency response
Voltage Range	$\pm 10\text{V max}$



## 2.4 Polarization Capability

Voltage	± 10V max
Current	± 100mA max
Voltage Resolution	0,1mV
Current Resolution	10pA
Accuracy	± 0,2% & 0,1% (conversion at Full Scale)

## 2.5 IR Compensation

Positive Feedback Range 2Ω to 100MΩ (depending on current range)

## 2.6 Response Time

Potentiostatic Rise Time < 1μs resistive load (1000Ω)

Galvanostatic Rise Time < 17μs resistive load (1000Ω)

## 2.7 Meters and Interfaces

A/D Converter	16 BIT
D/A Converter	16 BIT
Temperature Meter	0 to +100°C with PT1000 probe (0,1°C resolution and ± 0,2°C accuracy)
Sampling Rate	200μs

## 2.8 Digital Interface

Connection	USB with full instrument control (baud rate 57600 – N – 8 – 1)
Memory	EEPROM 64kB – SRAM 32kB
Port Output	8 external accessories
I/O port	8 optional

## 2.9 Cell Connections

Cables	3 cables connector to 4mm banana plug
--------	---------------------------------------

## 2.10 Power Supply and Dimensions

Voltage Mains	12 to 24V AC/DC 50/60Hz
External Power	Model 2560 8-channel Power Supply Single Power Supply (provided if Model 2560 is not present)
Power Consumption	10VA max
Dimensions (L x W x H)	200 x 215 x 80mm
Weight	1,5kg



## 3 Implemented Electrochemical Techniques

### 3.1 Detection

AD	Amperometric Detection
PD	Potentiometric Detection
DSA	Double Step Amperometry
DSV	Double Step Potentiometry
PAD	Pulsed Amperometric Detection

### 3.2 Voltammetric

LSV	Linear Scan Voltammetry
CYV	Cyclic Voltammetry
GLV	Galvanostatic Linear Voltammetry
GCV	Galvanostatic Cyclic Voltammetry
SWV	Square Wave Voltammetry
NPV	Normal Pulse Voltammetry
ACV	Alternating Current Voltammetry
DPV	Differential Pulse Voltammetry
DNV	Differential Normal Pulse Voltammetry
DAV	Differential Alternate Pulse Voltammetry

### 3.3 Stripping

LSS	Linear Scan Stripping
ACS	Alternate Current Stripping
SWS	Square Wave Stripping
DAS	Differential Stripping
DPS	Differential Pulse Stripping
DNS	Differential Normal Pulse Stripping
PSA	Potentiometric Stripping Analysis
CCSA	Constant Current Stripping Analysis

## 4 Spare Parts

191/SUPS24	Power supply for single unit
191/USB	USB cable
191/3M4	Set of WE, RE and CE multicable
191/C3	Set of 3 crocodile clips for WE, RE and CE 4mm banana plugs