



High Current Potentiostat / Galvanostat

Model 2550

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1 General Description

Model 2550, AMEL's high current potentiostat and galvanostat, is designed to meet the most demanding needs. Reliability and performances make this tool the perfect choice for high current electrochemical applications. AMEL has been producing excellent reliable equipment since 1959 and offers now novel features among which positive feedback control, fast transient response, automatic or manual current ranging and IR compensation. The equipment is fully controlled by the new VApeak software allowing for a complete range of electrochemical and electroanalytical techniques.



2 Metrological Properties

2.1 Counter Electrode

| | |
|----------------|-------------------------------------|
| Voltage Output | $\pm 16\text{V max}$ |
| Current Output | $\pm 5,5\text{A max}$ |
| Slew Rate | 0,01mV/s to 10V/s |
| Protection | Thermal, overload and short-circuit |

2.2 Working Electrode

| | |
|--------------------|--|
| Current Measure | From 100nA to 10A Full Scale in 9 ranges |
| Current Resolution | From 100pA at 100nA Full Scale to 1mA at 10A Full Scale |
| Measuring Accuracy | < 1% of Full Scale in 100nA to 1 μ A ranges < 0,25% of Full Scale in 10 μ A to 1A ranges < 5% of Full Scale in 10A range |

2.3 Reference Electrode

| | |
|-----------------------|--|
| Input Impedance | > 1T Ω |
| Input Capacitance | < 20pF (1m cable) |
| Biassing Current | < 10pA at 25°C |
| Common Mode Rejection | > 60dB full frequency response |
| Voltage Range | $\pm 10\text{V max}$ or $\pm 50\text{V max}$ |
| Input BNC | Grounded outer contact |

2.4 Polarization Capability

| | |
|--------------------|---|
| Voltage | $\pm 10\text{V max}$ |
| Current | $\pm 5\text{A max}$ |
| Voltage Resolution | 0,1mV |
| Current Resolution | 100pA |
| Accuracy | $\pm 0,2\%$ & 0,1% (conversion at Full Scale) |

2.5 IR Compensation

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

2.6 Response Time

| | |
|--------------------------|--|
| Potentiostatic Rise Time | < 1 μ s resistive load (1000 Ω) |
| Galvanostatic Rise Time | < 17 μ s resistive load (1000 Ω) |



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 $\pm 0,2^\circ\text{C}$ accuracy) |
| Sampling Rate | 200 μs |

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 | 2, 3, 4 cables. BNC connector for Reference (Hi & Low) and PL258 for Working and Counter electrodes to 4mm banana connectors. |
|--------|---|

2.10 Power Supply and Dimensions

| | |
|------------------------|-----------------------------------|
| Voltage Mains | 115 or 230V AC $\pm 10\%$ 50/60Hz |
| Power Consumption | 120VA max |
| Dimensions (L x W x H) | 400 x 440 x 145mm |
| Weight | 15kg |

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 |



PRODUCT CODE:

Model 2550

REVISION:

16/01/2020

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- 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/GPC Grid power cable
191/USB USB cable
191/4BN4 Set of 4 CE, WE and RE cables
191/C4 Set of 4 crocodile clips for WE, RE and CE 4mm banana plugs