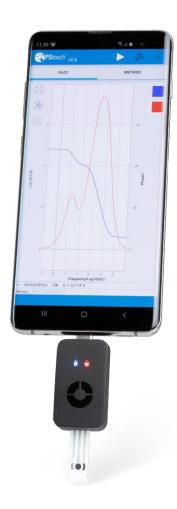
sensit /SMART™





POTENTIOSTAT FOR SMARTPHONE AND TABLET



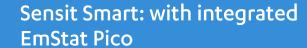
Contents

Sensit Smart: with integrated EmStat Pico	2
Supported Techniques	3
Main Specifications	3
PSTrace: research software for Windows	5
PStouch: App for Android	7
Build your own app or PC software	8
MethodSCRIPT™: EmStat Pico Scripting Language	8
Sensit Smart customization ontions for OEM	a



WITH INTEGRATED

EmStatpico



The Sensit Smart is built around the EmStat Pico module.

The EmStat Pico is a joint development by PalmSens BV and Analog Devices Inc. PalmSens is known for introducing the first commercially available handheld potentiostat. Together with Analog Devices, PalmSens has developed the EmStat Pico: the world's smallest electrochemical interface module.

More information: www.emstatpico.com

Main specifications

Power and communication: USB-C

Full dc-potential range: -1.7 V to +2 V

EIS frequency range: 0.016 Hz to 200 kHz

Current ranges: 100 nA to 5 mA (max ±3 mA)

Current resolution: 0.006% (5.5 pA on 100 nA range)

Dimensions: 43 x 25 x 11 mm (excl. USB connector)

Weight: 10 g

Compatible with most Screen Printed Electrodes / Sensors

Sensor pitch: 2.54 mm

Electrode connections: RE, WE, CE

Allowed sensor thickness: Between 0.1 mm and 0.8 mm

Maximum sensor width: 11 mm



Supported Techniques

The following electrochemical techniques are supported by the Sensit Smart.

Voltammetric techniques:

Linear Sweep Voltammetry
 Cyclic Voltammetry
 Square Wave Voltammetry
 Differential Pulse Voltammetry
 Normal Pulse Voltammetry
 NPV

The above techniques can also be used for stripping voltammetry

Techniques as a function of time:

Chronoamperometry
 Pulsed Amperometric Detection
 Open Circuit Potentiometry
 MultiStep Amperometry
 MA

Electrochemical Impedance Spectroscopy:

Scanning or fixed frequency mode

Specifications

The Sensit Smart works in three different modes;

Low Speed mode: for scan rates up to 1 V/s or a bandwidth of 100 Hz.

High Speed mode: for high scan rates and frequencies.

Max Range mode: a combination of the Low and High Speed modes for optimal

dynamic dc-potential range

The optimal mode is automatically selected in **PSTrace** for Windows and **PStouch** for Android, based on the selected technique and parameters.

General	Low Speed mode	High Speed mode	Max Range mode
Full dc-potential range	-1.2 to +2 V	-1.7 to +2 V	-1.7 to +2 V
 Dynamic dc-potential range ¹ 	2.2 V	1.2 V	2.6 V
 Compliance voltage 		-2.0 to +2.3 V ²	
Maximum current		±3 mA	
 Max. acquisition rate (datapoints/s) 	100	1000	100
 Supports FRA/EIS 	NO	YES	NO

¹ The dynamic range is the range that can be covered during a single scan within the full potential range. For example; a linear scan can start at -1.5 V and end at 1.1 V or vice versa, covering 2.6 V dynamic range.



² The compliance voltage is the maximum potential between Working and Counter electrode and depends on the selected mode.

Potentiostat (controlled potential mode)	Low Speed mode	High Speed mode	Max Range mode
 Applied dc-potential resolution 	537 μV	395 μV	932 μV
 Applied potential accuracy 	< 0.2%	< 0.5%	< 0.5%
 Available current ranges 	100 nA, 2 uA, 4 uA, 8 uA, 16 uA, 32 uA, 63 uA, 125 uA, 250 uA, 500 uA, 1 mA, 5 mA	100 nA, 1 uA, 6 uA, 13 uA, 25 uA, 50 uA, 100 uA, 200 uA, 1 mA, 5 mA	100 nA, 1 uA, 6 uA, 13 uA, 25 uA, 50 uA, 100 uA, 200 uA, 1 mA, 5 mA
■ Current accuracy	< 0.5 % for current ranges > 100 nA, < 2% for 100 nA current range	< 1% of the selected current range, < 2% for 100 nA current range	< 1% of the selected current range, < 2% for 100 nA current range
Measured current resolution	0.006% of selected current range (5.5 pA on 100 nA range)		
 Measured potential resolution (for OCP) 	56 μV		

FRA / EIS (impedance measurements) in High Speed Mode only	
 Frequency range 	0.016 Hz to 200 kHz
Ac-amplitude range	1 mV to 0.25 V rms, or 0.708 V peak-peak

Electrometer		
 Electrometer amplifier input 	> 1 TΩ // 10 pF	
Bandwidth	250 kHz	

Other		
Storage	4000 datapoints on-board	
Dimensions	43 x 25 x 11 mm (excl. USB connector)	
On-board temperature sensor	±0.25 °C	
Operation temperature range	0 °C to +40 °C	





Included with Sensit Smart

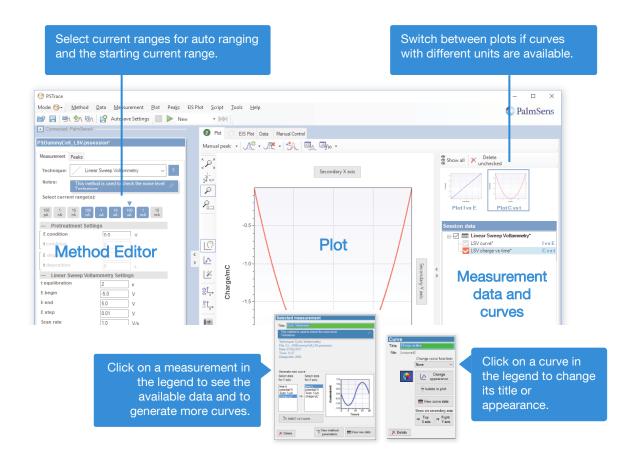


The Sensit Smart comes with:

- Dummy Cell
- SPE to screw-terminal adapter
- USB-C Female to USB-A cable
- USB-C Female to Micro USB adapter
- USB-C port protector
- Quick Start
- Access to software on <u>my.palmsens.com</u>
- 3-year warranty

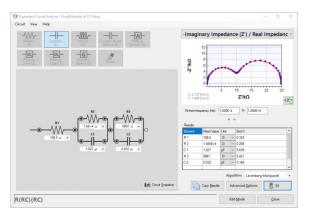
PSTrace: research software for Windows

PSTrace software for Windows is compatible with the Sensit Smart.



Other functions in PSTrace 5

- Equivalent Circuit Fitting
- Scripting
- Open your data in Origin and Excel with one click of a button
- Save all available curves, measurement data and methods to a single file
- Direct feedback on method parameters
- Generate MethodSCRIPT[™] for EmStat Pico



Integration with third party software:

- Excel
- Origin
- Matlab
- ZView









System requirements

Minimum PC requirements are:

- Windows Vista, 7, 8, or 10 (32-bit or 64-bit)
- 1 GHz or faster 32-bit (x86) or 64-bit (x64) processor
 - 1 GB RAM (32-bit) or 2 GB RAM (64-bit)

For more information about software visit www.palmsens.com/software



PStouch: App for Android



PStouch for Android devices is compatible with the Sensit Smart.

PStouch features:

- Setting up and running measurements
- Loading and saving measured curves
- Analysing and manipulating peaks
- Sharing data directly via e-mail or Dropbox
- Concentration determination by means of Standard Addition or Calibration Curve
- Support for PalmSens accessories such as a Multiplexer or Stirrer

All method and curve files are fully compatible with PSTrace software for Windows. PStouch is designed for use with tablets and smartphones.

For more information about software visit www.palmsens.com/software



Build your own app or PC software

With the PalmSens SDKs you can develop user friendly software for use with Sensit Smart in a short amount of time.



Using the PalmSens SDK for Xamarin you can create an Android (mobile) application for your Sensit Smart.

The SDK comes with working code examples which can be used as a basis for your application.

The PalmSens SDK for WinForms or WPF allows you to build a Windows application for either Bluetooth or USB connected devices.

MethodSCRIPT™: EmStat Pico Scripting Language

The Sensit Smart is built around the EmStat Pico module. The EmStat Pico module works with the new MethodSCRIPT™ scripting language. This language allows developers to program a human-readable script directly into the Pico module. The simple script language allows for running electrochemical techniques supported by EmStat Pico and makes it easy to combine different measurements and other tasks.

More script features include:

- Use of variables
- (Nested) loops
- Logging results to an SD card
- Digital I/O for example for waiting for an external trigger
- Reading auxiliary values like pH or temperature
- Going to sleep or hibernate mode















Sensit Smart customization options for OEM



Please don't hesitate to contact PalmSens BV for more details: info@palmsens.com

PalmSens BV The Netherlands www.palmsens.com

DISCLAIMER

Changes in specifications and typing errors preserved. Every effort has been made to ensure the accuracy of this document. However, no rights can be claimed by the contents of this document.

