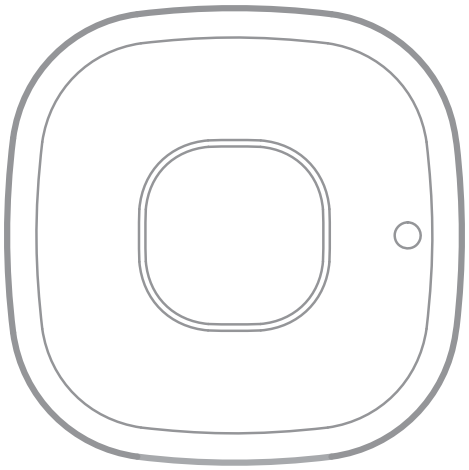
PRODUCT DESCRIPTION

SENSIT WEARABLE™

potentiostat / impedance analyzer

Lab-Grade Electrochemistry You Can Wear



PalmSens

Rev. 11-2026-012

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› See for more information:
www.palmsens.com/senwb

Your Shortcut to Next-Gen, Non-Invasive Electrochemical Sensors

The Sensit Wearable is a groundbreaking device designed to enhance the research, development, and validation of wearable biosensors. This lightweight instrument, weighing just 10 grams, is battery-powered, wireless, and fully programmable.



Sensit Wearable with mounting bracket

Supported Techniques

The Sensit Wearable supports the following electrochemical techniques:

- Linear Sweep Voltammetry **LSV**
- Cyclic Voltammetry **CV**
- Differential Pulse Voltammetry **DPV**
- Square Wave Voltammetry **SWV**
- Normal Pulse Voltammetry **NPV**
- Chronoamperometry **CA**
- MultiStep Amperometry **MA**
- Pulsed Amp. Detection **PAD**
- Mixed Mode **MM**
- Open Circuit Potentiometry **OCP**
- Impedance spectroscopy **EIS**
  at fixed frequency
  or frequency scan vs
  - fixed potential
  - scanning potential
  - time

Connecting to Your Sensor or Cell

The Development Kit comes with accessories that allows you to attach the Sensit Wearable to any electrochemical (bio)sensor that works with one or two Working Electrodes, a Reference Electrode (RE) and Counter Electrode (CE). The RE and CE can also be combined in a 2-electrode configuration.



See page 5 for an overview of available adapters and options to make a connection to your sensor, skin patch or electrochemical cell.

Key specifications	
▪ dc-potential range	-1.7 V to +2 V
▪ compliance voltage	-2.0 V to +2.3 V
▪ maximum current	±3 mA
▪ current resolution	0.006% of range (5.5 pA on 100 nA range)
▪ potentiostat interface	2x WE, 1x CE, 1x RE
▪ ac-amplitude range	1 mV to 0.25 V rms, or 0.708 V p-p
▪ EIS frequency range	0.016 Hz to 200 kHz
▪ communication	USB-C and Bluetooth 5.0 Low Energy
▪ charging	USB-C and wireless
▪ battery life	multiple days depending on script
▪ internal storage	14 MB, equivalent to >450k datapoints

See page 9 for more detailed specifications.

Programming the Sensit Wearable

The Sensit Wearable can be used directly with our PSTrace software for research, and controlled like any other lab potentiostat.

No programming skills are required to start running measurements.

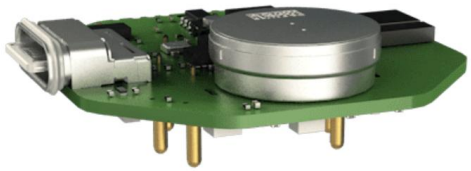
MethodSCRIPT™ by PalmSens

MethodSCRIPT™

The powerful and versatile MethodSCRIPT communications protocol allows for writing scripts to run measurements over a longer period and go into a deep-sleep state when the instrument is idle.
The raw or processed data can be stored on the internal mass storage and be retrieved via USB or Bluetooth for further analysis.
See page **Error! Bookmark not defined.** for more information.

Battery Life

The internal re-chargeable 50 mAh battery allows for 2 hours of continuous measurements. Using its deep-sleep mode in a script, its battery life can be extended to days or even weeks.
The Sensit Wearable can be programmed to wake up and run a measurement at certain intervals, or when tapping it.
See page 11 for more information about the battery.



Bipotentiostat Functionality

The second working electrode (WE2) functions as a BiPotentiostat, where the potential of the second working electrode is biased versus the first working electrode (WE1) or at a fixed potential. Both working electrodes are recorded simultaneously in the BiPotentiostat mode.

The BiPotentiostat mode is supported for all techniques, excluding EIS and OCP.



Sensit Wearable Development Kit

The Development Kit includes:

- Sensit Wearable
- Development Board
- Velcro Strap with mounting bracket and universal connector
- 2 Sensit Wearable mounting brackets
- USB-C cable
- 1 m cell cable with 2 mm banana pins
- Set of 5 croc clips
- Dummy Cell
- Connectors for screen-printed electrodes (SPE)

Also in the box:

- USB stick with PSTrace software for Windows (see page 11)
- Manual (hardcopy)



Two example mounting brackets for integration with your patch design. Also available as 3D STEP files.



Development board for easy connecting to Sensit Wearable pogo pins



Velcro strap with mounting bracket and universal connector

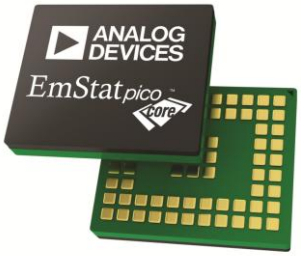




1 meter cell cable with croc clips

Sensit Wearable is Powered by the EmStat Pico Core Chip

At the heart of the Sensit Wearable is our EmStat Pico Core potentiostat chip.



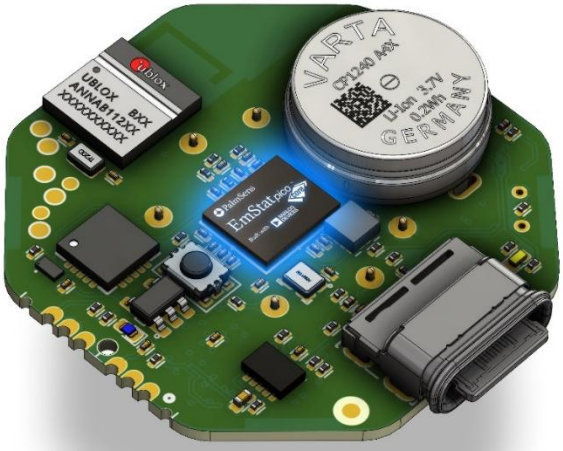
The EmStat Pico Core is a joint development by PalmSens BV and Analog Devices Inc., based on the ADuCM356 and powered by the MethodSCRIPT™ protocol from PalmSens.

The ADuCM356 is an ultralow power, mixed-signal microcontroller based on the Arm® Cortex™-M3 processor. The device features current, voltage, and impedance measurement capability.

The on-board MethodSCRIPT parser on the EmStat Pico Core allows for using the AduCM356 as a generic potentiostat for use with any type of electrochemical sensor or biosensor. MethodSCRIPT allows you to use the full potential of the AduCM356 without reading its datasheets or touching a compiler. The human-readable MethodSCRIPT can be generated with PSTrace for Windows. You can also make use of the extensive MethodSCRIPT documentation with many code examples available.

More information:

- EmStat Pico Core - PalmSens
- PSTrace - PalmSens
- ADuCM356 - Analog Devices Inc.



AHEAD OF WHAT'S POSSIBLE™

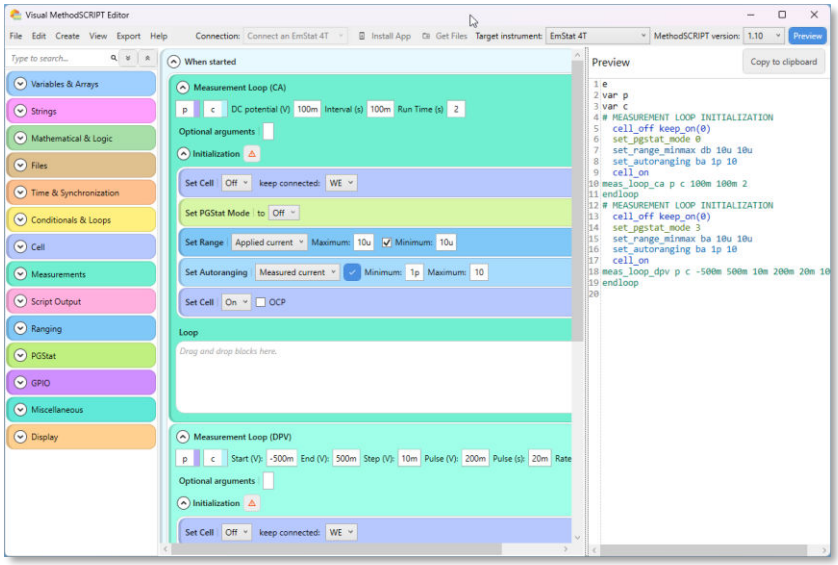
Sensit Wearable Works With MethodSCRIPT™

MethodSCRIPT™ gives you full control over your Sensit Wearable. The compact script language is parsed and executed directly on the instrument, so you can run not only every supported technique but also complex electrochemical workflows with microsecond-precise timing, conditional logic, and on-board data processing, without external drivers or continuous host intervention. Combine and sequence techniques, adapt parameters on the fly based on measured values, and synchronise with external equipment, all from a single script.

MethodSCRIPT™ features include:

- **Seamless Technique Sequencing & Custom Waveforms:** Beyond running standard techniques (CV, SWV, DPV, EIS, Chronoamperometry), you can chain multiple different measurements into a single continuous script or generate custom potential/current waveforms.
- **On-Board Execution & Deterministic Timing:** The hardware handles microsecond-precise timing and execution autonomously, eliminating continuous host-computer intervention, OS latency, and proprietary driver dependencies.
- **Platform-Agnostic Communication:** integrate the instrument into virtually any environment.
- **On-Instrument Logic, Variables, and Nested Loops**: MethodSCRIPT supports variables, conditional branching (if/else), and nested loops directly on the device. This lets your measurement adapt in real time.
- **Built-In Signal Processing & Math:** The firmware can execute mathematical operations, data smoothing, and peak detection on the fly.
- **Data Logging:** Scripts can write results directly to internal storage.

The new Visual MethodSCRIPT Editor lets you build your own script by simply dragging and dropping commands, so even complex, tailored experiments can be put together in minutes.



› See for more information:
www.palmsens.com/methodscript

Measurement Specifications

The following table shows Sensit Wearable limits for some technique-specific parameters, when using PSTrace for Windows. Some of these limits can be exceeded when using a customized MethodSCRIPT.

	Parameter	Min	Max
All techniques (unless otherwise specified)	Conditioning time	0	4000 s
	Deposition time	0	4000 s
	Equilibration time	0	4000 s
	N data points	3	1 000 000 (> 100 days at 10 s interval)
▪ NPV ▪ DPV	Scan rate	0.02 mV/s (0.280 mV step)	5 V/s (10 mV step)
	Pulse time	1 ms	300 ms
▪ SWV	Frequency	1 Hz	500 Hz
▪ LSV ▪ CV	Scan rate	0.02 mV/s (0.280 mV step)	5 V/s (10 mV step)
▪ PAD	Interval time	1 ms	10 s
	Pulse time	1 ms	1 s
	N data points	3	1 000 000 (> 100 days at 10 s interval)
▪ CA ▪ OCP	Interval time	1 ms	10 s
	Run time	1 ms	> 10 days
▪ MM ▪ MA	N cycles	1	20000
	N levels	1	255
	Level switching overhead time	~10 ms (typical)	-
	Interval time	1 ms	300 s
Note	Running measurements directly via Bluetooth limits the maximum data rate to 100 datapoints per second.		

› See for more information:
www.palmsens.com/methodscript

Potentiostat Specifications

General	
▪ dc-potential range	-1.6 V to +2 V
▪ compliance voltage	-2.0 V to +2.3 V
▪ maximum current	±3 mA
▪ max. data acquisition rate	1000 samples/s

Potentiostat (controlled potential mode)	
▪ applied potential resolution	395 µV
▪ applied potential accuracy	≤ 0.2% ±1 mV offset
▪ current ranges	100 nA, 1 uA, 6 uA, 13 uA, 25 uA, 50 uA, 100 uA, 200 uA, 1 mA, 5 mA
▪ measured current resolution	0.006% of CR (5.5 pA on 100 nA range)
▪ measured current accuracy	< 0.5% of current ±0.1% of range

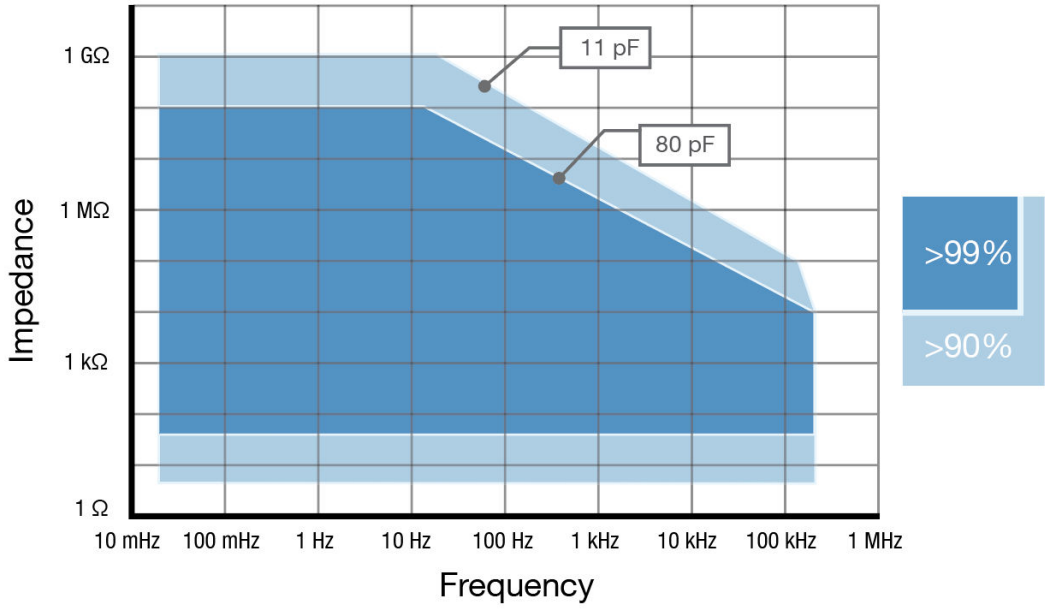
FRA / EIS (impedance measurements)	
▪ frequency range	16 mHz to 200 kHz
▪ ac-amplitude range	1 mV to 250 mV rms, or 708 mV p-p

Electrometer	
▪ electrometer amplifier input	> 1 TΩ // 10 pF
▪ bandwidth	250 kHz

BiPotentiostat	
▪ modes	1. WE2 at fixed potential (E offset vs RE1) 2. WE2 scanning (E offset vs WE1)
▪ max. potential WE2	ΔE(WE1) + ΔE(WE2) < 1.6 V [1]

[1] If your main WE1 is scanning from -0.5V to +0.5V, the WE2 can only have a maximum offset of 0.6V.

EIS Accuracy Contour Plot



Note
The accuracy contour plot was determined under lab conditions and should be used for reference purposes. Please note that the true limits of an impedance measurement are influenced by all components in the system, e.g. cables, the environment, and the cell.

Other Specifications

Other			
▪ **housing**	35 x 35 x 12 mm (including mounting bracket)		
▪ **weight**	~10 g		
▪ **electrode connections**	6 pogo pins for: WE1, WE2, RE, CE, AUX, and ground		
▪ **battery**	Varta CP 1240 A4 UN 38.3 passed relevant tests acc. IEC 62133 passed		
▪ **battery power capacity**	50 mAh (at 0.2C from 4.2 V to 3.0 V at 20 °C) or 0.2 Wh		
▪ **power consumption**	off:	0.1 mW	(75 days)
	idle or measuring:	92 mW	(2 hours)
	sleep with Bluetooth connected:	1 mW	(7.5 days)
	sleep without Bluetooth connection:	0.3 mW	(25 days)
	sleep with 10 mV bias potential applied on WE1:	4.44 mW	(40 hours)
▪ **communication**	USB-C and Bluetooth 5.0 low energy		
▪ **charging**	USB-C or wireless ~2 hours for a full charge		
▪ **internal storage space**	14 MB, equivalent to >450k datapoints		
▪ **indicators**	status indicator (blue) charge indicator (orange)		

Battery life for a common use case scenario

In this situation the Sensit Wearable is programmed to sample current every 10 minutes for 500 ms, store the data and go back to sleep mode. The battery life for this scenario is:

(599.5/600 * 0.3 mW) +
(0.5/600 * 92 mW) = 0.38 mW

Battery life = 180 mWh / 0.38 mW = 470 h
or ~20 days



PSTrace software

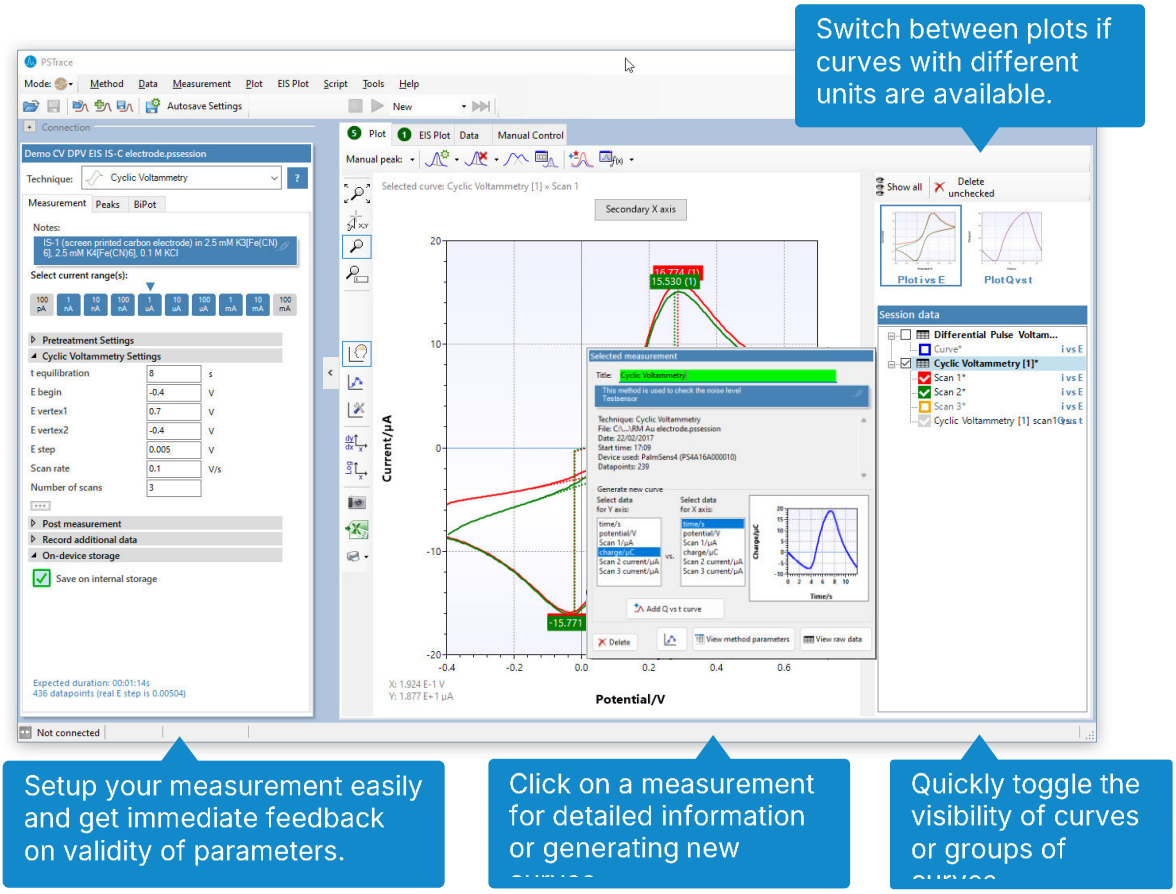
PSTrace is designed to get the most out of your instrument right after installation, without going through a long learning period.

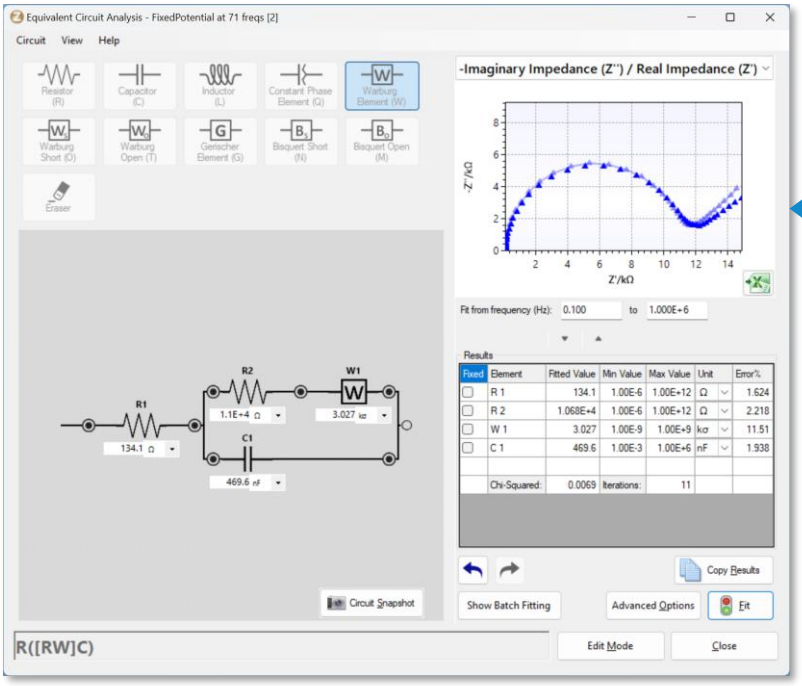
The Analytical Mode is designed for use with (bio)sensors and allows you to do concentration determinations. Extensive help files and prompts guide the user through a typical analysis.

Windows

Minimum System Requirements

- Windows 11
- 1 GHz or faster 64-bit (x64) processor
- 4 GB RAM
- Screen resolution of 1280 x 800 pixels





Use the graphical editor to draw the equivalent circuit or enter the CDC directly.

Other functions in PSTrace

- Concentration determination
- Advanced peak search algorithms
- 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
- Load measurements from the internal instrument storage
- Direct validation of method parameters
- Run custom MethodSCRIPTs™

Integration with third party software

- Excel
- Origin
- Matlab
- ZView



› See for more information:
www.palmsens.com/pstrace

SDKs: Integrate Sensit Wearable into Your Applications

Seamless Instrument Control

- Access all PalmSens potentiostats (single- and multi-channel) through our SDKs.
- Full control of measurement techniques, data acquisition, and real-time analysis.

Cross-Platform Support

- **Python SDK**
  Script and automate experiments across platforms.
- **Windows .NET SDK**
  Easily integrate in C#, VB.NET, or any .NET language.
- **Android & iOS SDKs**
  Build mobile apps to run PalmSens instruments in the field.
- **LabVIEW & MATLAB examples**
  Quick start for engineers and researchers.

{ } PalmSens
For Developers

Accelerate Development

- Pre-built code samples
- Clear documentation & active support
- Sample apps to get started within minutes



PalmSens SDKs
put you in control
from the lab to the field

python™

MATLAB LabVIEW Microsoft® .NET

› See for more information:
www.palmsens.com/dev

PStouch: App for use with Sensit Wearable

PStouch



GET IT ON Google Play

PStouch is an app for Android devices compatible with all PalmSens, EmStat and Sensit potentiostats. Your smartphone or tablet connects with the Sensit Wearable via Bluetooth or USB.

PStouch features:

- Setting up and running measurements
- Loading and saving measured curves
- Analyzing and manipulating peaks
- Sharing measurement data directly via any service like email 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.

› See for more information:
www.palmsens.com/pstouch

PalmSens BV has more than 50 distributors around the world.
Please contact us at **info@palmsens.com** or go to our website to get in touch with a distributor in your region.



Please do not hesitate to contact PalmSens for more details: info@palmsens.com

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