PalmSens

Enabling Electrochemistry Inside *and* Outside the Lab

Potentiostats for Research
Catalog

PalmSens

Enabling Electrochemistry Inside *and* Outside the Lab

At PalmSens BV we are committed to making electrochemistry easier, more portable, and more accessible for novice and advanced researchers. We provide a comprehensive range of instruments for most types of electrochemistry with an emphasis on mobility. We manufacture the world's smallest commercially available potentiostat module with EIS capabilities: the EmStat Pico. While our unique flagship instrument, the PalmSens4, is one of the most versatile and compact frequency response analysis (FRA) / EIS capable device in the market.

Partner of Analog Devices Inc.

PalmSens BV is specialized in OEM applications and customized solutions.
The EmStat Pico, the world's smallest embedded potentiostat module, is a joint development between PalmSens BV and Analog Devices.

ANALOG DEVICES
AHEAD OF WHAT'S POSSIBLE™
ALLIANCES

20+
years of experience in designing high-end and versatile potentiostats for research and OEM

100%
user-friendly software: up and running in a few minutes, no training required
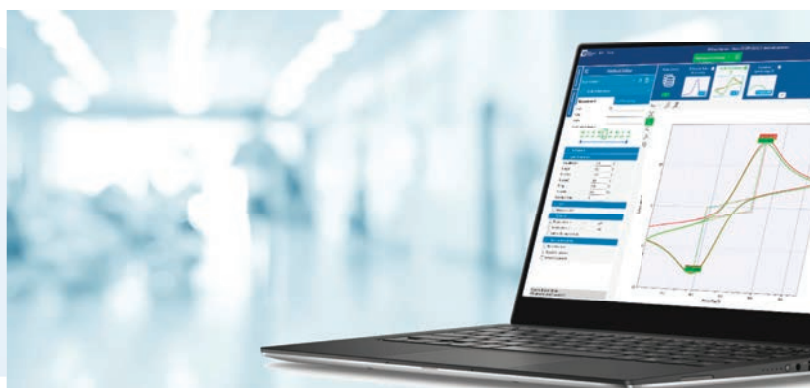
200+
OEM customers: PalmSens is a proven OEM partner, supplying potentiostat modules and market-ready solutions worldwide

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3995 GA Houten
The Netherlands

+31 30 2459211
info@palmsens.com

All our instruments come
standard with a

3 YEAR WARRANTY

PalmSens4 ™

(Bi)Potentiostat / Galvanostat / Impedance Analyzer

- FRA/EIS from 10 µHz to 100 kHz or 1 MHz
- 9 current ranges: 100 pA to 10 mA
- Optional bipotentiostat
- 18-bit resolution
- Always a backup with 8 GB internal storage

⚡ USB and battery powered (10+ hours)

🅱 Bluetooth

⇆ USB-C

▭ 15.5 x 8.5 x 3.5 cm

⚖ 500 g

▯ 8 GB internal storage

Compact, Versatile and Powerful

The economical PalmSens4 is a complete laboratory instrument but its compact and rugged design makes it also ideal for field work. Connecting via Bluetooth guarantees a perfectly floating measurement.

See page 14 for the multi-channel version

Configuration options

potential range:	±5 V	±10 V	
max. frequency for EIS:	no EIS	100 kHz	1 MHz
Bipotentiostat:	yes	no	
iR compensation:	yes	no	

{ } PalmSens
SDK for .NET

Specifications

Supported techniques

Voltammetric techniques
- Linear Sweep Voltammetry   LSV
- Cyclic Voltammetry   CV
- Fast Cyclic Voltammetry   FCV
- AC Voltammetry   ACV

Pulsed techniques
- Differential Pulse Voltammetry   DPV
- Square Wave Voltammetry   SWV
- Normal Pulse Voltammetry   NPV

These methods can all be used in their stripping modes which are applied for (ultra) trace analysis

Amperometric techniques
- Chronoamperometry   CA
- Zero Resistance Amperometry   ZRA
- Chronocoulometry   CC
- Multistep Amperometry   MA
- Fast Amperometry   FAM
- Pulsed Amperometric Detection   PAD
- Multiple Pulse Amperometric Detection   MPAD

Galvanostatic techniques
- Linear Sweep Potentiometry   LSP
- Chronopotentiometry   CP
- Multistep Potentiometry   MP
- Open Circuit Potentiometry   OCP
- Stripping Chronopotentiometry   SCP / PSA

Impedance Spectroscopy
at fixed frequency or frequency scan vs   EIS / GEIS
- fixed potential or fixed current
- scanning potential or scanning current
- time

Other
- Mixed Mode   MM

General

▪ dc potential range	±5 V	or ±10 V
▪ compliance voltage	±10 V	
▪ maximum current	±30 mA	
▪ max. acquisition rate	150 000 points/s	

Potentiostat (controlled potential mode)

▪ applied dc-potential resolution	76.3 µV (18-bit)
▪ applied potential accuracy	≤ 0.1% ±1 mV offset
▪ current ranges (CR)	100 pA to 10 mA (9 ranges)
▪ measured current accuracy	< 0.2% of current ±10 pA ±0.1% of CR
▪ measured current resolution	0.005% of CR (18-bit, 5 fA on 100 pA range)

Galvanostat (controlled current mode)

▪ current ranges (CR)	1 nA to 10 mA (8 ranges)
▪ applied dc-current	±6 x applied CR
▪ applied dc-current resolution	0.0076% of applied CR
▪ applied dc-current accuracy	< 0.2% of current ±10 pA ±0.1% of CR
▪ potential ranges	10 mV, 100 mV, 1 V

FRA / EIS (impedance measurements, optional)

▪ frequency range	10 µHz to 100 kHz	or 10 µHz to 1 MHz
▪ ac-amplitude range	1 mV to 0.25 V rms, or 0.7 V p-p	

GEIS (galvanostatic impedance measurements, optional)

▪ frequency range	10 µHz to 100 kHz
▪ ac-amplitude range	0.001 * CR to 0.4 * CR rms

See the product page on our website for more specifications.

> palmsens.com/**ps4**

EmStat*4X* ™

- Potential range of ±3 V or ±6 V
- Max. current of ±30 mA or ±200 mA
- FRA / EIS up to 200 kHz
- Auxiliary port for multiplexer
- iR compensation

High performance in a small footprint

The EmStat4X is a small battery and USB-powered Potentiostat, Galvanostat, and optional Frequency Response Analyser (FRA) for Electrochemical Impedance Spectroscopy (EIS).

Potentiostat / Galvanostat / Impedance Analyzer

⚡ USB and battery powered

🅱 Bluetooth

⇆ USB-C

▦ 11.4 x 8.0 x 4.5 cm

⚖ 500 g

▤ 500 MB internal storage
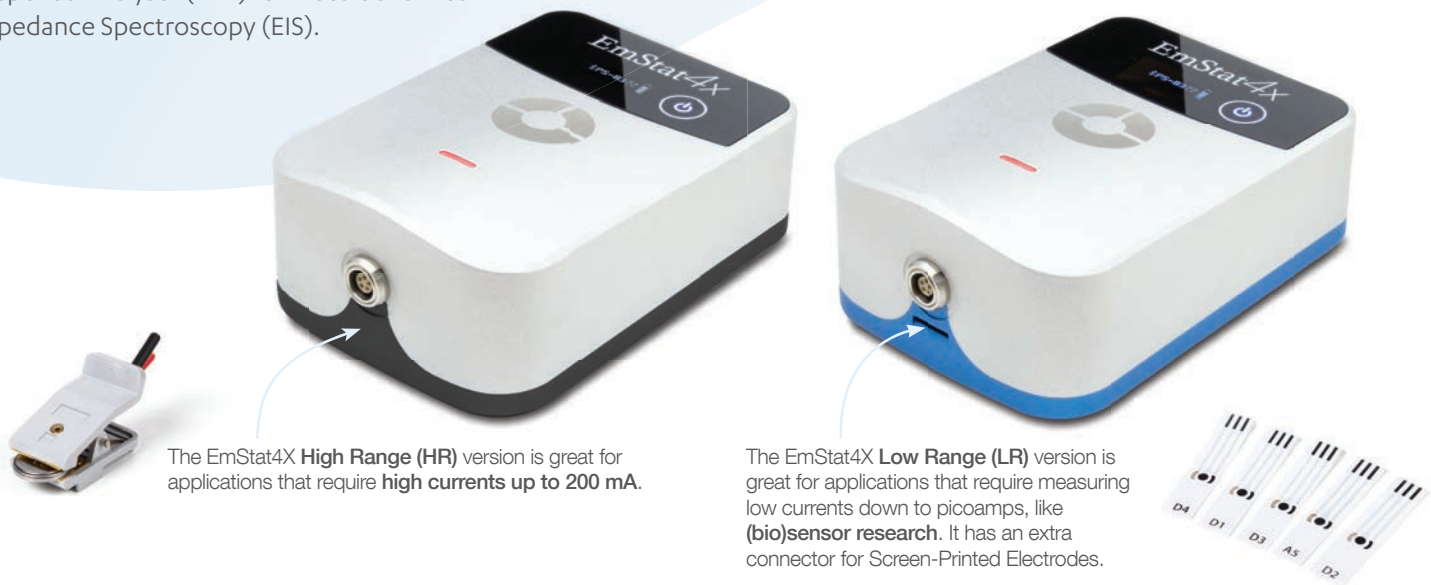
The EmStat4X **High Range (HR)** version is great for applications that require **high currents up to 200 mA**.

The EmStat4X **Low Range (LR)** version is great for applications that require measuring low currents down to picoamps, like **(bio)sensor research**. It has an extra connector for Screen-Printed Electrodes.

Configuration options

version:	LR	HR
max. frequency for EIS:	no EIS	200 kHz

PalmSens SDK for .NET

MS MethodSCRIPT™

Specifications

Key specifications

version	LR	HR
▪ dc potential range	±3 V	±6 V
▪ compliance voltage	±5 V	±8 V
▪ current ranges	1 nA to 10 mA (8 ranges)	100 nA to 100 mA (7 ranges)
▪ maximum current	±30 mA	±200 mA
▪ FRA / EIS (optional)	10 µHz to 200 kHz	
▪ electrode connections	WE, RE, CE and ground, with 2 mm banana plugs and SPE connector	WE, RE, CE, S, and ground, with 2 mm banana plugs

For more detailed specifications, please refer to the EmStat4S specifications on .

Other specifications

version	LR	HR
▪ electrode connections	WE, RE, CE and ground, with 2 mm banana plugs and SPE connector	WE, RE, CE, S, and ground, with 2 mm banana plugs
▪ battery life	~7 h of continuous measurements with 100 Ohm load at 1 V (10 mA).	
▪ power source	USB-C or internal LiPo battery	
▪ communications	USB-C or Bluetooth	
▪ housing	aluminum body: 11.4 x 8.0 x 4.5 cm	
▪ weight	500 g	
▪ internal storage space	500 MB, equivalent to >15M datapoints	

EmStat4X LR: ideal for sensor applications

The SPE connector is compatible with most common screen-printed electrodes (SPEs).

Auxiliary port

The EmStat4X is equipped with an auxiliary port. Options include connecting to a switchbox for automatic stirrer control, setting digital triggers, and connecting to a temperature sensor or multiplexer.

Compatible with most screen-printed electrodes

▪ 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

See the product page on our website for more specifications.

> palmsens.com/**es4x**

EmStat*4R* ™

- Portable: battery, Bluetooth and rugged housing
- User Exchangeable Connection Module for use with cable or screen-printed electrodes
- FRA / EIS from 10 µHz up to 200 kHz (optional)

Desktop performance in a rugged enclosure

The EmStat4R is a portable Potentiostat, Galvanostat, and optional EIS Analyzer. The EmStat4R is great for applications that require low currents, from 30 mA down to picoamps. The Connection Module at the front can easily be exchanged and even customized.

Potentiostat / Galvanostat / Impedance Analyzer

- ⚡ USB and battery powered (4+ hours)
- 🅱 Bluetooth
- 🔌 USB-C
- 📏 11.8 x 6.8 x 3.3 cm
- ⚖ 310 g
- 💾 500 MB internal storage

SPE version for use with screen-printed electrodes

SNS version for use with standard cell cable

Customization options for OEM

The EmStat4R can be re-branded and customized for OEM purposes. Contact us about the possibilities.

Configuration options

connector version:	SNS	SPE
max. frequency for EIS:	no EIS	200 kHz

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Specifications

Key specifications

▪ **potential range**	±3 V
▪ **max. compliance voltage**	±5 V
▪ **current ranges**	1 nA to 10 mA (8 ranges)
▪ **max. current**	±30 mA

For more detailed specifications, please refer to the EmStat4S LR specifications on .

Other specifications

▪ **housing**	aluminum body only: 11.1 x 6.0 x 2.7 cm with rubber sleeve: 11.8 x 6.8 x 3.3 cm
▪ **weight**	310 g
▪ **power**	USB-C port
▪ **communication**	USB-C or Bluetooth
▪ **battery life**	Connected via Bluetooth: ~3 hours with cell on at 10 mA current ~5 hours with cell off
▪ **internal storage space**	500 MB, equivalent to >15M datapoints

Ideal for sensor applications

The Connection Module can be exchanged by the user with a Connection Module suitable for using screen-printed electrodes (SPE). This allows for transforming your lab instrument with cable to a cableless solution for use in the field.

SNS Connection Module

▪ **cable length**	1 m
▪ **electrode connections**	2 mm banana pins WE, RE, CE, and ground

SPE Connection Module

▪ **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

See the product page on our website for more specifications.

SNS Connection Module

SPE Connection Module

> palmsens.com/**es4r**

EmStat*4S* ™

Potentiostat / Galvanostat / Impedance Analyzer

- Two versions: Low Range and High Range
- Potential range of ±3 V or ±6 V
- Max. current of ±30 mA or ±200 mA
- FRA / EIS from 10 µHz up to 200 kHz (optional)
- USB-powered

⚡ USB powered

⇆ USB-C

▭ 7.2 x 5.5 x 2.6 cm

⚖ 130 g

▤ 500 MB internal storage

Desktop performance in the palm of your hand

The EmStat4S is a portable USB-powered Potentiostat, Galvanostat, and optional EIS Analyzer. With its very small footprint it will fit any lab desk, without making compromises on its specifications.

Two versions

The EmStat4S Low Range version is great for applications that require measuring low currents down to picoamps, whereas the High Range version is very suitable for applications that need a maximum current of up to 200 mA.

See page 18 for the multi-channel version

Low Range (LR) version

High Range (HR) version

Configuration options

version:	LR	HR
max. frequency for EIS:	no EIS	200 kHz

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See page 21 for an overview of accessories

More about software: see pages 22-27

Specifications

Supported techniques

Voltammetric techniques
- Linear Sweep Voltammetry — LSV
- Cyclic Voltammetry — CV
- Fast Cyclic Voltammetry — FCV
- AC Voltammetry — ACV

Pulsed techniques
- Differential Pulse Voltammetry — DPV
- Square Wave Voltammetry — SWV
- Normal Pulse Voltammetry — NPV

These methods can all be used in their stripping modes which are applied for (ultra) trace analysis

Amperometric techniques
- Chronoamperometry — CA
- Zero Resistance Amperometry — ZRA
- Chronocoulometry — CC
- Multistep Amperometry — MA
- Fast Amperometry — FAM
- Pulsed Amperometric Detection — PAD
- Multiple Pulse Amperometric Detection — MPAD

Galvanostatic techniques
- Linear Sweep Potentiometry — LSP
- Chronopotentiometry — CP
- Multistep Potentiometry — MP
- Open Circuit Potentiometry — OCP

Impedance techniques
- Potentiostatic and Galvanostatic impedance spectroscopy — EIS / GEIS
  at fixed frequency or frequency scan vs
  - fixed potential or fixed current
  - scanning potential or scanning current
  - time
- Fast EIS/GEIS — FEIS / GEIS
  Very low interval fixed-frequency measurements

Other
- Mixed Mode — MM

MethodSCRIPT™ allows for developing custom techniques.
See page 27 for more information.

General

version	LR	HR
dc potential range	±3 V	±6 V
compliance voltage	±5 V	±8 V
maximum current	±30 mA	±200 mA
max. acquisition rate	1M points/s	

Potentiostat (controlled potential mode)

version	LR	HR
applied dc-potential resolution	100 µV	183 µV
applied potential accuracy	≤ 0.2% ±1 mV offset	
current ranges (CR)	1 nA to 10 mA 8 ranges	100 nA to 100 mA 7 ranges
measured current resolution	0.009% of CR (92 fA on 1 nA range)	
measured current accuracy	< 0.2% of current ±20 pA ±0.2% of CR	< 0.2% of current ±0.2% of CR

Galvanostat (controlled current mode)

version	LR	HR
current ranges	10 nA, 1 uA, 100 uA, 10 mA 4 ranges	1 uA, 100 uA, 10 mA, 100 mA 4 ranges
applied dc-current	±3 * CR	
measured dc-potential accuracy	≤ 0.2% potential ±1 mV offset	

FRA / EIS (impedance measurements, optional)

frequency range	10 µHz to 200 kHz
ac-amplitude range	1 mV to 900 mV rms, or 2.5 V p-p

See the product page on our website for GEIS and more specifications.

> palmsens.com/es4s

sensit /BT ™

Potentiostat / Impedance Analyzer

- FRA / EIS up to 200 kHz
- Potential range of -1.7 V to +2 V
- Current resolution: 0.006% of range (5.5 pA on 100 nA range)
- Bipotentiostat for second WE (SNS version)
- Ideal for use with a smartphone

⚡ USB and battery powered (12+ hours)

🔵 Bluetooth

⎓ USB-C

▭ 7.5 x 5.5 x 2.3 cm

⚖ 75 g

▯ 500 MB internal storage

Ideal for electrochemical sensor applications

The Sensit BT connects via USB or Bluetooth to your PC, smartphone or tablet. The Sensit BT comes in two versions: SNS with cable and SPE, for screen-printed electrodes.

SNS version

SPE version

Customization options for OEM

The Sensit BT can be re-branded for OEM purposes. Contact us about the possibilities.

YOUR LOGO HERE

PalmSens
SDK for .NET

MethodSCRIPT™

Specifications

Supported techniques

Voltammetric techniques
- Linear Sweep Voltammetry — LSV
- Cyclic Voltammetry — CV

Pulsed techniques
- Differential Pulse Voltammetry — DPV
- Square Wave Voltammetry — SWV
- Normal Pulse Voltammetry — NPV

These methods can all be used in their stripping modes which are applied for (ultra) trace analysis

Amperometric techniques
- Chronoamperometry — CA
- Chronocoulometry — CC
- Multistep Amperometry — MA
- Pulsed Amperometric Detection — PAD

Galvanostatic techniques
- Open Circuit Potentiometry — OCP

Impedance Spectroscopy
at fixed frequency or frequency scan vs — EIS
- fixed potential
- scanning potential
- time

MethodSCRIPT™ allows for developing custom techniques.
See for more information.

General

dc-potential range	-1.7 to +2 V
dynamic dc-potential range	2.2 V
compliance voltage	-2.0 to 2.3 V
maximum current	±3 mA
max. acquisition rate	1000 points/s

Potentiostat (controlled potential mode)

applied dc-potential resolution	537 µV
applied potential accuracy	≤ 0.2% ±1 mV offset
current ranges	100 nA to 5 mA (10 or 12 ranges) *
measured current accuracy	< 0.5 % of the current ±0.1% of range
measured potential resolution	56 uV (for OCP)

FRA / EIS (impedance measurements)

frequency range	0.016 Hz to 200 kHz
ac-amplitude range	1 mV to 0.25 V rms, or 0.7 V p-p

Cell connections

version	SNS	SPE
connection options	40 cm cable with 2 mm plugs	SPE connector
electrodes	RE, WE, WE2, CE and Ground	2x RE, WE and CE alternate or sequential

Sensit BT.SPE electrode requirements

sensor pitch	2.54 mm
electrode connections	RE, WE, CE
allowed sensor thickness	between 0.1 mm and 0.5 mm
maximum sensor width	10.8 mm

See the product page on our website for more specifications.

> palmsens.com/**bt**

sensit /SMART ™

- FRA / EIS up to 200 kHz
- Potential range of -1.7 V to +2 V
- Current resolution: 0.006% of range (5.5 pA on 100 nA range)
- Ideal for use with a smartphone

Customization options for OEM

The Sensit Smart can be re-branded for OEM purposes. Contact us about the possibilities.

See also www.palmsens.com/oem

Potentiostat / Impedance Analyzer

⚡ USB powered

🔌 USB-C

📏 4.3 x 2.5 x 1.1 cm

⚖ 15 g

Ideal for screen-printed sensor applications

The Sensit Smart is the world smallest ready-to-go potentiostat available on the market. The Sensit Smart can be directly inserted in a smartphone or tablet and controlled via the Android app PStouch.
You can use a USB-C female to USB-A cable to connect the Sensit Smart to a classic USB port on your PC and control the Sensit Smart via our PC software PSTrace.
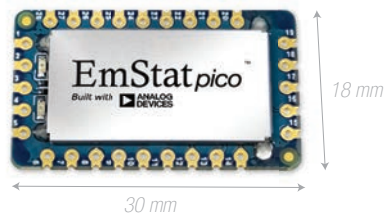
Compatible with most screen-printed electrodes	
▪ sensor pitch	2.54 mm
▪ electrode connections	RE, WE, CE
▪ allowed sensor thickness	0.1 to 0.8 mm
▪ max. sensor width	11 mm

For more specifications, please refer to the Sensit BT specifications on .

More about software: see pages 22-27

> palmsens.com/smart

18 mm

30 mm

Accelerating your way out of the lab,
discover our research-grade potentiostat modules, and our Market-Ready Solutions

❯ palmsens.com**/oem**

Multi **PalmSens 4** ™

- 4 to 10 individual channels
- FRA/EIS from 10 µHz to 100 kHz or 1 MHz
- 9 current ranges: 100 pA to 10 mA
- Channel synchronization for polypotentiostat functionality
- 8 GB internal storage memory per channel
- Combined or individual channel control

Multi-channel Potentiostat / Galvanostat / Impedance Analyzer

- ⚡ external 12 V AC/DC adapter
- ⇦ USB-B
- 📏 15 x 25 x 25 cm
- ⚖ 4 kg
- 🗔 8 GB internal storage per channel

Highly configurable

The MultiPalmSens4 is a flexible multi-channel potentiostat, galvanostat and impedance analyzer which you can tailor to your requirements and budget.

Your ideal multi-channel system

The MultiPalmSens4 configurator on our website allows you to compose your ideal multi-channel potentiostat to suit your requirements and budget.

Open the configurator at:
palmsens.com/mps4config

CONFIGURE

Configuration options per channel

potential range:	±5 V	±10 V	
max. frequency for EIS:	no EIS	100 kHz	1 MHz
BiPot module:	yes	no	
iR Compensation module:	yes	no	
Galvanic Isolation on all channels (floating):	yes	no	

PalmSens
SDK for .NET

See pages 20-21 for an overview of accessories

More about software: see pages 22-26

Specifications

Supported techniques

Voltammetric techniques
- Linear Sweep Voltammetry — LSV
- Cyclic Voltammetry — CV
- Fast Cyclic Voltammetry — FCV
- AC Voltammetry — ACV

Pulsed Techniques
- Differential Pulse Voltammetry — DPV
- Square Wave Voltammetry — SWV
- Normal Pulse Voltammetry — NPV

These methods can all be used in their stripping modes which are applied for (ultra) trace analysis

Amperometric techniques
- Chronoamperometry — CA
- Zero Resistance Amperometry — ZRA
- Chronocoulometry — CC
- Multistep Amperometry — MA
- Fast Amperometry — FAM
- Pulsed Amperometric Detection — PAD
- Multiple Pulse Amperometric Detection — MPAD

Galvanostatic techniques
- Linear Sweep Potentiometry — LSP
- Chronopotentiometry — CP
- Multistep Potentiometry — MP
- Open Circuit Potentiometry — OCP
- Stripping Chronopotentiometry — SCP / PSA

Impedance Spectroscopy
at fixed frequency or frequency scan vs — EIS / GEIS
- fixed potential or fixed current
- scanning potential or scanning current
- time

Other
- Mixed Mode — MM

General

dc potential range	±5 V	or ±10 V	
compliance voltage	±10 V		
maximum current	±30 mA (typical)		
max. acquisition rate	150 000 points/s		

Potentiostat (controlled potential mode)

applied dc-potential resolution	76.3 µV (18-bit)
applied potential accuracy	≤ 0.1% ±1 mV offset
current ranges	100 pA to 10 mA (9 ranges)
measured current accuracy	< 0.2% of current ±10 pA ±0.1% of range
measured current resolution	0.005% of range (18-bit, 5 fA on 100 pA range)

Galvanostat (controlled current mode)

current ranges	1 nA to 10 mA (8 ranges)
applied dc-current	±6 x applied current range
applied dc-current resolution	0.0076% of applied range
applied dc-current accuracy	< 0.2% of current ±10 pA ±0.1% of range
potential ranges	10 mV, 100 mV, 1 V

FRA / EIS (impedance measurements, optional)

frequency range	10 µHz to 100 kHz	or 10 µHz to 1 MHz
ac-amplitude range	1 mV to 0.25 V rms, or 0.7 V p-p	

GEIS (galvanostatic impedance measurements, optional)

frequency range	10 µHz to 100 kHz
ac-amplitude range	0.001 * CR to 0.4 * CR rms

See the product page on our website for more specifications.

> palmsens.com/**mps4**

Multi EmStat *4* ™

- 4, 8 or 12 individual channels
- FRA / EIS from 10 µHz up to 200 kHz (optional)
- Channel synchronization for polypotentiostat functionality
- 500 MB internal storage memory per channel
- Combined or individual channel control

Multi-channel Potentiostat / Galvanostat / Impedance Analyzer

⚡ external 12 V AC/DC adapter

🔌 USB-B

📏 21 x 22 x 8 cm

⚖️ 3 kg

💾 500 MB internal storage per channel

No Compromises on Productivity and Performance

The MultiEmStat4 is a compact Potentiostat, Galvanostat, and optional EIS Analyzer with 4, 8 or 12 channels. The Low Range (LR) version is great for applications that require measuring low currents down to picoamps, and the High Range (HR) version is suitable for applications that need a maximum current of up to 200 mA.

Configuration options

version:	LR	HR	
number of channels:	4	8	12
max. frequency for EIS:	no EIS	200 kHz	
Galvanic Isolation on all channels (floating):	yes	no	

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Specifications

Voltammetric techniques

- Linear Sweep Voltammetry   LSV
- Cyclic Voltammetry   CV
- Fast Cyclic Voltammetry   FCV
- AC Voltammetry   ACV

Pulsed techniques

- Differential Pulse Voltammetry   DPV
- Square Wave Voltammetry   SWV
- Normal Pulse Voltammetry   NPV

These methods can all be used in their stripping modes which are applied for (ultra-) trace analysis

Amperometric techniques

- Chronoamperometry   CA
- Zero Resistance Amperometry   ZRA
- Chronocoulometry   CC
- Multistep Amperometry   MA
- Fast Amperometry   FAM
- Pulsed Amperometric Detection   PAD
- Multiple Pulse Amperometric Detection   MPAD

Galvanostatic techniques

- Linear Sweep Potentiometry   LSP
- Chronopotentiometry   CP
- Multistep Potentiometry   MP
- Open Circuit Potentiometry   OCP
- Stripping Chronopotentiometry   SCP / PSA

Impedance Spectroscopy

at fixed frequency or frequency scan vs   EIS / GEIS
- fixed potential or fixed current
- scanning potential or scanning current
- time

Other

- Mixed Mode   MM

MethodSCRIPT™ allows for developing custom techniques.
See for more information.

General

version	LR	HR
dc potential range	±3 V	±6 V
compliance voltage	±5 V	±8 V
maximum current	±30 mA	±200 mA
max. acquisition rate	1M points/s	

Potentiostat (controlled potential mode)

version	LR	HR
applied dc-potential resolution	100 µV	183 µV
applied potential accuracy	≤ 0.2% ±1 mV offset	
current ranges	1 nA to 10 mA 8 ranges	100 nA to 100 mA 7 ranges
measured current resolution	0.009% of CR (92 fA on 1 nA range)	
measured current accuracy	< 0.2% of current ±20 pA ±0.2% of range	< 0.2% of current ±0.2% of range

Galvanostat (controlled current mode)

version	LR	HR
current ranges	10 nA, 1 uA, 100 uA, 10 mA 4 ranges	1 uA, 100 uA, 10 mA, 100 mA 4 ranges
applied dc-current	±3 * CR (current range)	
measured dc-potential accuracy	≤ 0.2% potential, ±1 mV offset	

## FRA / EIS (impedance measurements, optional)

frequency range	10 µHz to 200 kHz
ac-amplitude range	1 mV to 900 mV rms, or 2.5 V p-p

See the product page on our website for GEIS and more specifications.

> palmsens.com/**mes4**

MUX8-*R2*™

Multiplexer for 8 up to 128 channels

- Automatically switch between electrochemical cells
- Easy stacking with magnetic feet and top
- Compatible with PalmSens4, EmStat4X and MultiPalmSens4
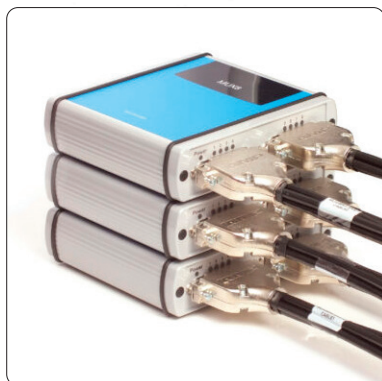
Multiple MUX8-R2s can be stacked and daisy-chained to multiplex up to 128 channels
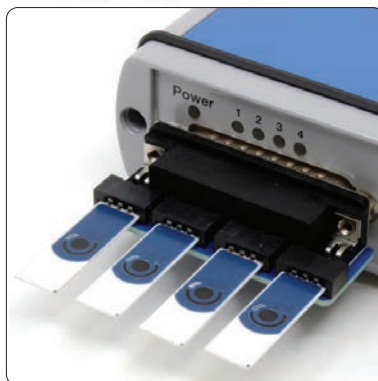
Our MUX8-R2 SPE adapter allows for easily connecting up to eight screen-printed electrodes
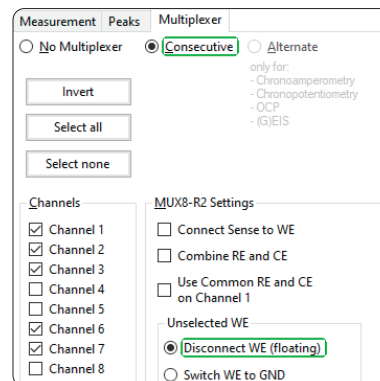
Configure the MUX8-R2 in software to run an automated sequence on a selection of channels

> palmsens.com/**mux8**

More Accessories

SPE connector for 2 mm pins

Can be used with most common screen-printed electrodes with a width of 10.8 mm and a thickness between 0.1 and 0.5 mm.

SPE connector

Universal sensor connector with LEMO connector (for a direct connection to PalmSens or EmStat) and a connection for screen-printed electrodes with a width of 10.8 mm and a thickness between 0.1 and 0.5 mm.

Differential Electrometer Amplifier

The PalmSens Differential Electrometer Amplifier (DEA) is a general purpose input amplifier. It can be used as a floating voltage amplifier with differential input and single output to the auxiliary port of your instrument. It has two stackable 2 mm banana plugs for the signal input.

Coin cell battery connector

This battery holder from ItalSens allows to test coin cell batteries. The built-in spring gives a good grip on the coin cell. On the back side is a black and red 2 mm banana plug, to easily connect a standard PalmSens sensor cable.

LM36 temperature sensor

The calibration curve shows a linear slope of 10 mV/°C with ±0.5°C linearity. It is rated for 1°C accuracy at 25°C. The sensor has low self-heating (0.08°C in still air). Can be used with PalmSens4, EmStat4X and MultiPalmSens4 instruments.

Magnetic stirrer with switchbox

Extremely convenient magnetic mini-stirrer for mixing quantities up to 250 ml. This stirrer comes with a switch box for your Palm-Sens or EmStat4X enabling your potentiostat to control the stirrer.

Flow cells

Third-party flow cells from different manufacturers are available on our website.

Glass cells

Different glass cells from different manufacturers for use with 3 or more electrodes can be found on our website.

> palmsens.com/**accessories**
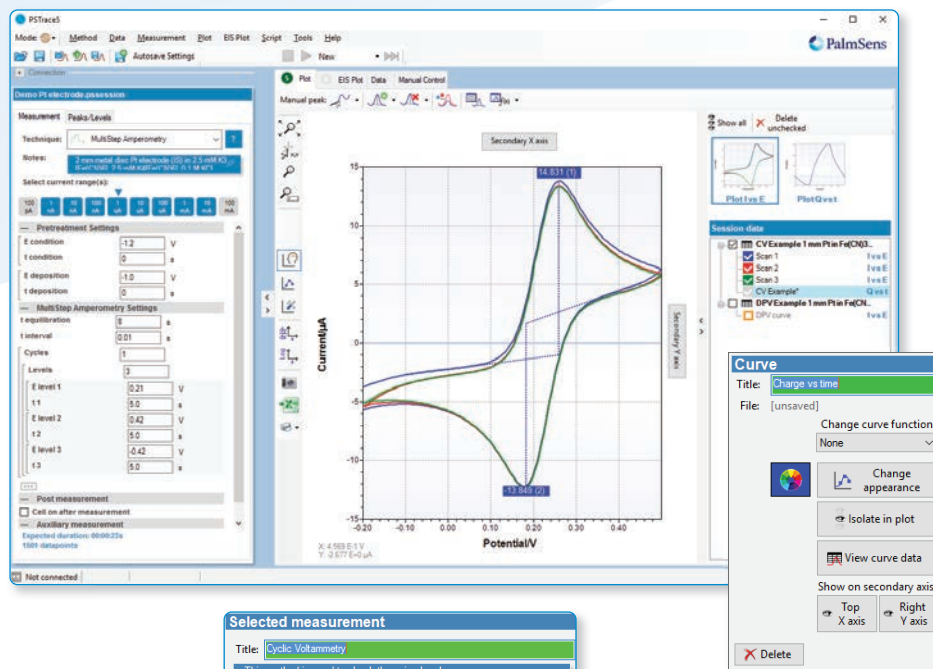
Software

PSTrace

All our single-channel and multiplexed instruments come with the PSTrace software for Windows. PSTrace provides support for all techniques and instrument functionalities. The interface of PSTrace is designed to easily handle many curves in a single window.

PSTrace main window

PSTrace features:

- Automated and manual peak and level find
- Curve addition and subtraction (e.g. with a measured blank)
- Advanced baseline subtraction
- Savitzky Golay smoothing
- Equivalent Circuit Fitting for Impedance Spectroscopy
- Export data to Excel and Origin with one mouse click
- Trace Analysis
- Corrosion Analysis
- Scripting for running a sequence of methods and commands
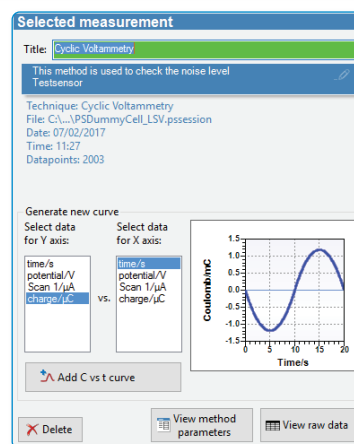
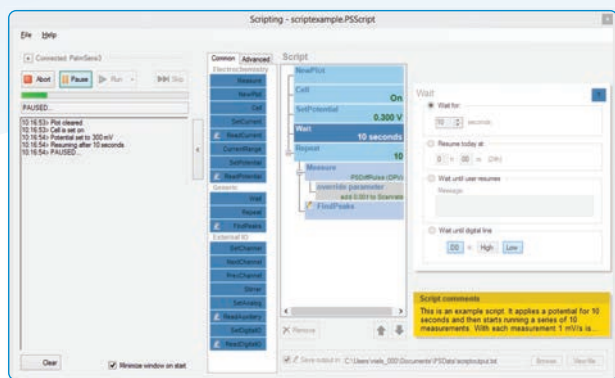Click on a measurement in the legend to see all available data and to generate different curves.

Minimum System Requirements

- Windows 7, 8, 10 or 11
- 1 GHz or faster 32-bit (x86) or 64-bit (x64) processor
- 2 GB RAM (32-bit) or 4 GB RAM (64-bit)
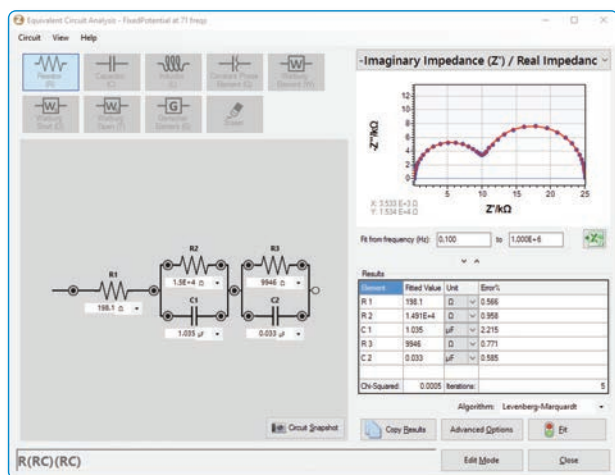- Screen resolution of 1280 x 800 pixels

Scripting Window



Script window for automated tasks, including:

- Cell control
- Running measurements
- Repeat loops
- Changing parameters on each repeat
- Starting on external or time trigger
- Controlling external devices
- and more …

Equivalent Circuit Fitting

Drawing your circuit and fitting your data has never been easier. The interface allows you to quickly draw or change the circuit design. You can also enter the CDC circuit directly. The circuit and fitted data is automatically saved with your .pssession data file.

Analytical Mode, for Trace Analysis
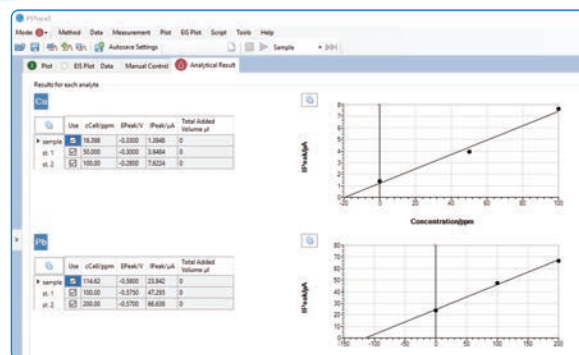
The Analytical Mode provides a template for all the functions to perform analysis on unknown samples or calibration of electrodes. Quantitative analysis according to the standard addition method or a calibration curve is performed in a few easy steps. Even multiple analytes are possible. The results window then provides the platform to complete the analysis, calculate the results and statistical variations of them. The Analytical mode is perfect for everyone, who wants to save time during their quantitative analysis.

Corrosion Mode with Tafel Plot Analysis
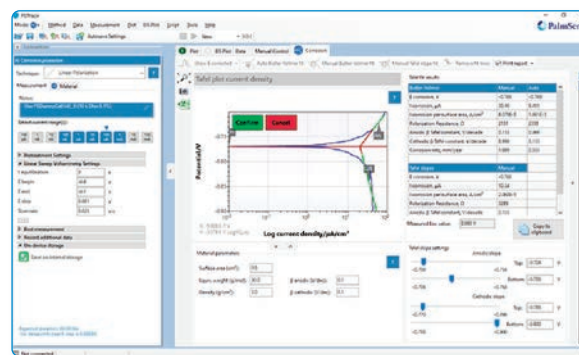
This mode is made to convert your data quickly into physical properties. This mode supports using the techniques, Potentiostatic, EIS, Linear and Cyclic Polarization and Potentiometry/OCP. Interacting with the plot and results is focused to corrosion analysis, so Tafel Plots and the common corrosion modelling functions such as the Butler-Volmer equation are done with a few clicks.

> palmsens.com/**pstrace**

Software

All our multi-channel instruments come with the MultiTrace software for Windows. MultiTrace software controls all individual potentiostats from a single window and allows you to run synchronized measurements accross a selection of channels. MultiTrace works with two modes;

Simultaneous mode

All potentiostats run the same measurement.
The measured curves are displayed in a single plot and stored in a single data file. The Simultaneous mode also allows for starting a selection of channels with Hardware Synchronization enabled.

Individual mode

All potentiostats are used independently. Each selected technique can be different and can be started individually. It is possible to start all measurements or loaded scripts simultaneously in this mode. Each measured curve is shown in its own plot. Data files are stored separately.

In the Individual mode, MultiTrace provides the option to open a separate fully featured window for each channel for further analysis or post-measurement data treatment.

Scripting

Scripting is available in the Individual mode only. A separate script can be run for each channel separately. A single script can also be composed and copied to all channels for convenience. All scripts can then be started with a single click of a button.

Minimum System Requirements
- Windows 7, 8, 10 or 11
- 1 GHz or faster 32-bit (x86) or 64-bit (x64) processor
- 2 GB RAM (32-bit) or 4 GB RAM (64-bit)
- Screen resolution of 1280 x 800 pixels

MultiTrace in the Simultaneous mode
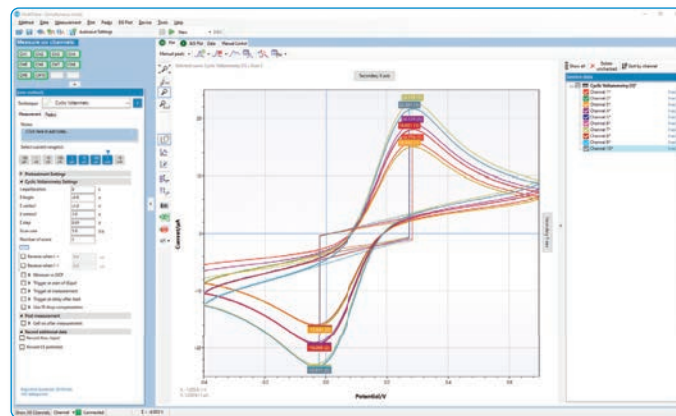
MultiTrace in the Individual mode

> palmsens.com/**multitrace**

Smartphone / Tablet App

PStouch

PStouch is an app for Android devices that can be used with all our potentiostats. PStouch can communicate with your potentiostat via USB or via Bluetooth. All method and curve files are fully compatible with PSTrace software for Windows.

PStouch features:

- Connecting via Bluetooth or USB
- Setting up and running measurements
- Loading and saving measured curves
- Analysing 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

Perform measurements in the field,
and share data instantly with colleagues in the lab

scan with your phone

GET IT ON Google Play

> palmsens.com/**pstouch**

PalmSens
SDK for .NET

If you have some experience in writing software in C#, Visual Basic or another .NET language, our free Software Development Kits are a great solution for speeding up your research.

Three SDKs for .NET

There are three PalmSens SDKs for .NET. Each SDK can be used with any of our instruments or OEM potentiostat modules to develop your own software. The SDKs come with a set of examples that shows how to use the libraries. PalmSens SDKs are available for the following .NET Frameworks: **WinForms, Xamarin (Maui) and WPF.**

For each .NET framework we provide examples that show how to:
- Connect to instruments
- Run measurements
- Control the cell manually
- Access and process measured data
- Analyze and manipulate data
- Do peak detection
- Do equivalent circuit fitting on impedance data
- Saving and loading data and method files
- And more ...

We also have examples showing how to use the libraries with **Matlab, LabVIEW and Python.**

Connect
and start a measurement,
with a few lines of code

> palmsens.com/**sdk**

The MethodSCRIPT™ scripting language is designed to integrate our instruments and potentiostat (modules) effortlessly in your hardware setup, product, or experiment.

MethodSCRIPT™ gives you full control over your potentiostat. The simple script language is parsed on-board the instrument and allows for running all supported electrochemical techniques, making it easy to combine different measurements and other tasks.

Generated in PSTrace

No DLLs or other type of code libraries are required for MethodSCRIPT™. You can edit and run the MethodSCRIPTs as generated in PSTrace or copy them to your own code project in another environment.

MethodSCRIPT features include:
- Use of variables
- (Nested) loops and conditional logic support
- User code during a measurement iteration
- Exact timing control
- Simple math operations on variables (add, sub, mul, div)
- Digital I/O, e.g. for using an external trigger
- Logging results to internal storage or external SD card
- Reading auxiliary values like pH or temperature
- and many more..

Code examples are available for:

Example MethodSCRIPT for running an EIS measurement:

> palmsens.com/**methodscript**
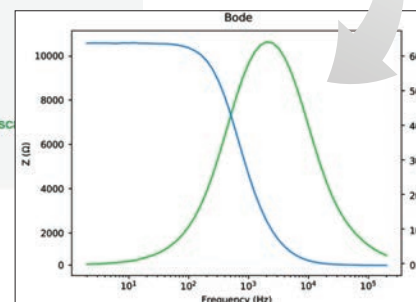
Our Application Kits are a combination of instruments, sensors and/or cells, accessories and literature.

(EIS) Corrosion Kits

The corrosion packages combine nearly everything needed for corrosion analysis. The instrument included is either a PalmSens4 or EmStat4S, with EIS as an option. Together with our Corrosion Handbook and the Corrosion Cell Kit, it makes an ideal combination to get started with electrochemical corrosion studies.

Educational Kit

The PalmSens Educational Kit it is designed as the foundation for an electrochemistry course, lab class or similar teaching events. We combined our potentiostat with the necessary equipment and electrodes for a series of educational electrochemical experiments.
The kit comes with a Teacher's and Student's guide.

> palmsens.com/**kits**

Learning and training

Get to know more about your instruments

Webinars

Unboxing

Explained

Tutorials

> palmsens.com/**kb**

Screen-Printed Electrodes

PalmSens BV provides Screen-Printed Electrodes (SPEs) from different suppliers. This page gives an overview of the most popular suppliers. For a complete overview please visit our website.

Phase Zero Sensors

- Available in Gold and Carbon
- Plasma treated gold sensors
- Best gold sensor in our tests
- Scalable to high volumes
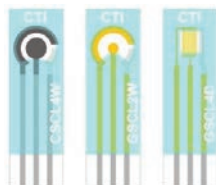
Country of origin: USA

Phase Zero Sensors support early stage development in the design of an assay for measurement of electrochemical signals between test fluids and a targeted analyte via a potentiostat. They support iterative testing of reagent mixtures used in the detection of unique analytes within biological samples.

OG Carbon

- Available in Carbon
- WE/CE thermo/chemical resistance carbon
- 4 mm working electrode

Country of origin: UK

OG Carbon creates disposable and high quality screen-printed electrodes. The low standard deviation results in great repeatability. These sensors are great for biosensor research, quality control systems and teaching of electrochemistry. OG Carbon can customize electrodes as well on request.

Integrated Graphene

- 3D graphene foam
- Higher accuracy in comparison to carbon sensors
- Scalable to high volumes

Country of origin: Scotland (UK)

Gii-Sens is a pure 3D Graphene Foam sensing electrode for enabling the super properties of graphene to be used for sensing applications. All Gii-Sens products are readily scaled for commercial volumes.

ItalSens

- Available in Gold and Carbon
- Economic solution
- Scalable to high volumes

Country of origin: Italy

The ItalSens Sensors, formerly known as Florence Sensors, are based on years of research experience and are delivered in uncut strips of 20 electrodes. They provide cost effective screen printed carbon and gold electrodes.

Micrux

- Available in Gold & Carbon.
- High performance ink with excellent intra- and inter-electrode precision
- Low cost ink for basic electrochemistry

Country of origin: Spain

MicruX develops innovative microfluidic platforms, electrochemical sensors based on Lab-on-a-Chip (LOC) Technologies for research & industrial activities. Micrux provides two types of substrate: white flexible PET and rigid ceramic.

Classic Electrodes

A wide selection of Classic Electrodes from different manufacturers can be ordered on our website.

Ag/AgCl reference electrode

Platinum wire counter electrode

Classic metal disk electrode

BASI coiled platinum auxiliary electrode

Browse our webshop for your ideal sensor connector:

SPE adapter for use with MUX8-R2 Multiplexer

Integrated Graphene SPE Adapter

SPE Connector (2 mm banana)

Micrux SPE adapter

SPE Connector (4 mm banana)

SPE Connector with LEMO connector

SPE Connector with LEMO connector

> palmsens.com/sensors

Worldwide Distribution Network

PalmSens BV has more than 30 distributors all 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.