

Explore Deeper. Measure Smarter.

# ELECTROCHEMISTRY AND ELECTRICAL TESTING

Potentiostats & Galvanostats  
Scanning Electrochemical Systems  
Solar Test Systems  
Materials Test System  
Climatic Chambers  
Accessories



Hi-Tech Detection Systems

# POTENTIOSTATS & GALVANOSTATS

## PORTABLE INSTRUMENTS

HTDS offers a complete range of electrochemistry instrumentation and materials characterization equipment. The devices are general purpose potentiostat and are highly suitable for embedded use in all your applications.

We have different small USB and battery powered potentiostats: EmStat is available as single channel potentiostat but can also be combined with a multipotentiostat as a polypotentiostat, or as multichannel potentiostat.

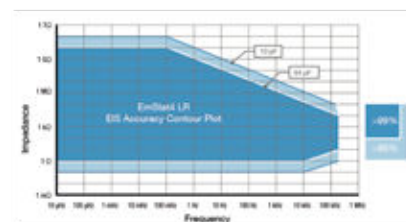
### EMSTAT4X LR AND HR: HIGH PERFORMANCE IN A SMALL FOOTPRINT

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

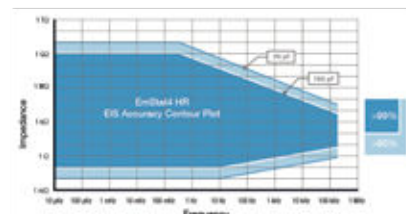
	EmStat 4X Low Range	EmStat 4S High Range
DC-potential range	$\pm 3V$	$\pm 6V$
Compliance voltage	$\pm 5V$	$\pm 8V$
Current range	1nA to 10mA (8 ranges)	100nA to 100mA (7 ranges)
Max current	$\pm 30mA$	$\pm 200mA$
EIS (in option)	10 $\mu$ Hz to 200KHz	10 $\mu$ Hz to 200KHz



EmStat4X LR EIS Accuracy Contour Plot



EmStat4X HR EIS Accuracy Contour Plot



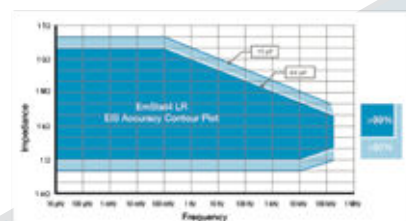
### EMSTAT4S LR AND HR: USB POWERED POTENTIOSTAT/ GALVANOSTAT WITH EIS

The EmStat 4S powered potentiostat galvanostat EIS is the smallest research grade electrochemical interfaces available on the market.

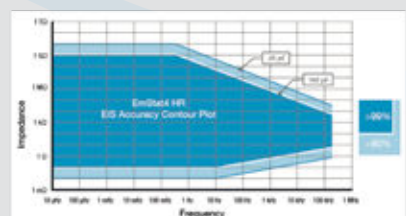
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EmStat4S LR EIS Accuracy Contour Plot



EmStat4S HR EIS Accuracy Contour Plot



# POTENTIOSTATS & GALVANOSTATS

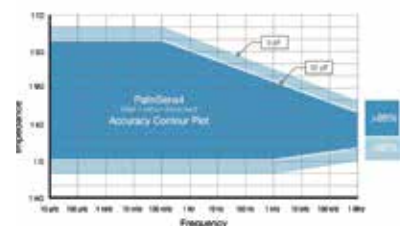
## PORTABLE INSTRUMENTS

### PALMSENS 4: COMPACT, VERSATILE AND POWERFUL

The PalmSens 4 is a USB and battery powered Potentiostat Galvanostat and an optional Frequency Response Analyser (FRA) for Electrochemical Impedance Spectroscopy (EIS). The PalmSens4 is available  $\pm 5V$  or  $\pm 10V$  DC-potential ranges and with two different maximum frequencies for FRA / EIS.



	PalmSens 4
FRA / EIS	10 $\mu$ Hz up to 1MHz
Current range	100pA to 10mA (9 ranges) - Max current $\pm 30mA$
Compliance voltage	$\pm 5V$ or $\pm 10V$ potential range at 75 $\mu V$ resolution
Charge	USB and battery powered
Memory	Always a backup of your data with 8GB of internal storage



### SENSIT SMART: THE SMALLEST POTENTIOSTAT ON THE MARKET

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. The Sensit Smart supports most common electrochemical techniques, including Cyclic Voltammetry, Square Wave Voltammetry and Impedance Spectroscopy (FRA/EIS).

	Sensit Smart
DC potential range	-1.7 to +2V
Compliance voltage	-2.0 to +2.3V
Max current	$\pm 3mA$
Current range	100nA to 5mA (10 or 12 ranges, depending on the mode)
Frequency range	0.016Hz to 200kHz
Power and communication	USB-C



## SPECTRO UV Vis/IR

Gain more insight into electrochemistry with a spectrometer

This kit will allow users to conduct fully synchronous and in-situ measurements for electrochemistry along with UV-Vis Spectroscopy in the wavelength range of 200-1100 nm. Customized versions are possible for IR, Vis-NIR or Raman Spectroscopy as well:

- Measure current, potential and spectrum simultaneously
- Tested Spectroelectrochemistry setup
- Synchronized measurements
- Combine results in PStace



# SINGLE CHANNEL INSTRUMENTS

## POWERFUL AND PREMIUM INSTRUMENTS IN A COMPACT CHASSIS



	NEXUS	CompactStat. H20250	CompactStat. h10030	IviumStat
<b>Polarization Voltage</b>	$\pm 10V$	$\pm 20V$	$\pm 100V$	$\pm 10V$
<b>Max Current Output</b>	$\pm 1,1A$	$\pm 250mA$	$\pm 30mA$	$\pm 5A$
<b>Min Current Range</b>	100pA (11 ranges)	1pA	1pA	1pA
<b>EIS Frequency Range</b>	10 $\mu$ Hz to 1MHz	10 $\mu$ Hz to 3MHz	10 $\mu$ Hz to 3MHz	10 $\mu$ Hz to 8MHz

## AFFORDABLE RESEARCH GRADE INSTRUMENTS



	VERTEX 50V1A	VERTEX 20V2A	VERTEX 20V1A	VERTEX 10V5A	VERTEX 5V10A
<b>Polarization Voltage</b>	$\pm 50V$	$\pm 20V$	$\pm 20V$	$\pm 10V$	$\pm 5V$
<b>Max Current Output</b>	$\pm 1A$	$\pm 2A$	$\pm 1A$	$\pm 5A$	$\pm 10A$
<b>Min Current Range</b>	100pA				
<b>EIS Frequency Range</b>	10 $\mu$ Hz to 1MHz				



### DATA STORAGE & CONNECTION MODULE

Stay connected and stream data real-time.

Never lose data

- Operate independent of computer
- WIFI | LAN | USB connection
- Supports all single- and multichannel Ivium instruments



# SINGLE CHANNEL INSTRUMENTS

## XM SERIES LABORATORY INSTRUMENTS

HTDS provides a range of high-performance potentiostats designed for demanding applications such as battery research, electrolysis, and fuel cell development — ensuring precision and reliability even in the most challenging conditions.



	ModuLab XM ECS (4 or 8 slots)	EnergyLab XM	EchemLab XM
<b>Polarization, Compliance Voltage</b>	$\pm 8\text{V}$ to $\pm 100\text{V}$	$\pm 8\text{V}$	$\pm 100\text{V}$
<b>Max Current Output</b>	$\pm 300\text{mA}$ up to $\pm 100\text{A}$	$\pm 2\text{A}$ up to $\pm 100\text{A}$	$\pm 300\text{mA}$ up to $\pm 100\text{A}$
<b>Min Current Range</b>	$\pm 30\text{nA}$ (1,5pA resolution) to $\pm 3\text{pA}$ (0,15fA resolution)	$\pm 30\text{nA}$ (1,5pA resolution)	$\pm 30\text{nA}$ (1,5pA resolution)
<b>EIS Frequency Range</b>	10 $\mu\text{Hz}$ to 1MHz	10 $\mu\text{Hz}$ to 1MHz	10 $\mu\text{Hz}$ to 1MHz

## XP SERIES - HIGH POWER POTENTIOSTAT

The XP range of potentiostats has been specially designed for high power applications such as battery research, electrolysis and fuel cell measurements.



	XP 10	XP 20	XP 40
<b>Polarization, Compliance Voltage</b>	$\pm 40\text{V}$	$\pm 20\text{V}$	$\pm 10\text{V}$
<b>Max Current Output</b>	$\pm 10\text{A}$	$\pm 20\text{A}$	$\pm 40\text{A}$
<b>Min Current Range</b>	$\pm 10\text{nA}$ to $\pm 10\text{A}$		
<b>EIS Frequency Range</b>	10 $\mu\text{Hz}$ to 500KHz		

### SPECIAL FEATURES

- Direct thermocouple connection
- Integrated Current Interrupt function
- 19inch rack mountable housing

① Customized solutions on demand up to 500A.

# MULTI-CHANNEL INSTRUMENTS

## THE MULTI CHANNEL FULLY TAILORED TO YOUR BUDGET

Our multi-channel potentiostats are designed for the most demanding users who want quality and high productivity without compromising on cost.

- Corrosion
- Sensors
- Education
- Fundamental Electrochemistry
- Coatings



	MultiEmStat 4		MultiPalmsens 4
	Low Range	High Range	
<b>Channels number</b>	4, 8 or 12 channels	4, 8 or 12 channels	4 to 10
<b>Compliance Voltage</b>	±5V	±8V	±5V , ±10V
<b>Polarization</b>	±3V	±6V	±5V , ±10V
<b>Max Current Output</b>	±30mA	±200mA	±30mA
<b>Min Current Range</b>	±1nA (92fA resolution)	±100nA (9,2pA resolution)	±1nA (1pA resolution)
<b>EIS Max Frequency</b>	200KHz (in option)	200KHz (in option)	100KHz or 1MHz (in option)

## THE ULTIMATE MULTI-CHANNEL INSTRUMENT

The Ivium-n-Stat is designed for the complete DC and impedance characterization of a wide range of application from research to production testing. The speed, range and resolution of the our systems also make it suited to other research applications:

- Corrosion
- Batteries
- Sensors
- SuperCaps
- Fundamental Electrochemistry
- Coatings



Channel Type	Specifications	Options
<b>Single Channel</b>	±2.5A / ±10V ±5A / ±10V ±10A / ±5V ±2A / ±20V ±1A / ±50V	Optional Bipotentiostat Optional Bipotentiostat -- -- --
<b>Dual Channel</b>	2 x ±2.5A / ±10V 2 x ±1A / ±20V	
<b>Integrated EIS</b>	FRA/EIS integrated on all channels	Standard: 10μHz – 250kHz Optional upgrade up to 1MHz
<b>Main Frame</b>	Maximum of 8 modules (16 channels) Stackable up to 64 channels	

# BENCHTOP POTENTIOSTATS

HTDS distributes and supports AMETEK Scientific Instruments solutions, including the Versastat Series, Parstat Series, and PMC systems. Our team ensures long-term follow-up, expert maintenance, and responsive customer service to keep your equipment running at peak performance. Whether you're expanding your lab or maintaining existing systems, we're here to support you at every step.



## ACCESSORIES

HTDS offers a wide range of accessories for all of products, including cells, classical electrodes and SPE, spectro UV-vis/IR.

### CELLS

HTDS offers a various range of cells such as Standard three electrodes, Bulk electrolysis, EC and photo-EC H-Cells, photo-Electrochemical Cell Kit, Corrosion Cells, In-situ and operando Cells, Low Volume Cells, Spectro-electrochemistry cells and flow cells.



### ELECTRODES

#### CLASSICAL ELECTRODES

We offer different types of classical electrodes as working electrodes (Pt, Au, Glassy Carbon...), reference electrodes (aqueous and non aqueous media), RDE electrodes...

#### SPE (SCREEN PRINTED ELECTRODES)

Compact and disposable, these units provide electrochemical cell systems with various configurations for the lab on the go.



# SCANNING ELECTROCHEMICAL AND SOLAR TEST SYSTEMS

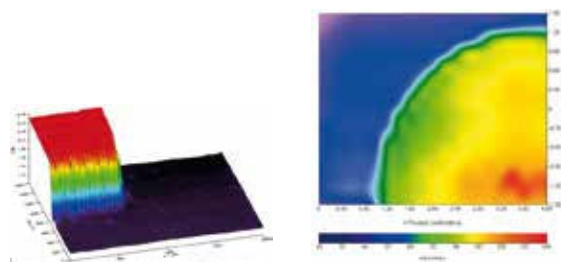
## AN ADVANCED AND FLEXIBLE PLATFORM

In general way on electrochemical experiments, the electrode response to a perturbation signal corresponds to a surface-averaged measurement ascribable to the behaviour of the whole electrode surface. However, electrochemical systems rarely show an ideal behaviour, and this can lead to difficulties with data interpretation. Thanks to this localized electrochemical platform, we look beyond this homogeneity to study the spatial dependence of the electrode properties. To do so, our solution includes up to 9 localized measurement techniques.

### VERSASCAN

The VersaSCAN is a single platform capable of providing spatial resolution to both electrochemical and materials-based measurements. Potentiostats and Signal Recovery Lock-in Amplifiers are integrated via ethernet control to make accurate measurements of these small signals. Our platform offers 9 different techniques:

- Scanning Electrochemical Microscope System (SECM and ac-SECM)
- Constant Distance SECM (VS STYLUS)
- Scanning Vibrating Electrode Technique (SVET)
- Localized Electrochemical Impedance Spectroscopy (LEIS)
- Scanning Kelvin Probe (SKP)
- Scanning Droplet Cell (SDC and ac-SDC)
- Optical Surface Profiling (OSP)



## PHOTOELECTROCHEMISTRY

HTDS offers a range of products focused on solar cell / photovoltaic research (developed in collaboration with Professor Laurie Peter of the University of Bath, UK). These instruments are very versatile. They can be used for various photoelectrochemical applications like water splitting research, PV cells, including Perovskites, research, or PhotoElectrolyzers and PhotoBatteries...

### SOLARLAB XM

SolarLab XM is an application specific XM instrument designed for research of solar cells and photovoltaics.

- Includes fully integrated optical bench
- Wavelength range: 300nm - 1100nm
- Multiple techniques IMPS, IMVS, I-V, Charge extraction, PV decay with automated data analysis, AC measurement
- Measured parameters: Effective Diffusion Coefficient of Electron, Effective Lifetime of Electrons, Effective Lifetime of Electrons, Fill Factor, Pmax, Voc, Isc, Efficiency, Trapped Charge Density, Quantum Efficiency, Impedance / Capacitance
- Wide bandwidth impedance and capacitance measurements
- IPCE available as an option
- Compact chassis for smaller footprint





# MATERIALS TEST SYSTEMS

## MATERIALS & IMPEDANCE ANALYZERS

HTDS provides integrated solutions that enable researchers to measure the combined electrical, thermal and mechanical properties of materials. Testing over a wide temperature range from -268 to >1200°C is simplified using PC software with integrated temperature control facilities.

### MODULAB XM MTS

The ModuLab XM MTS can perform time domain (DC) and frequency domain (AC) tests. As with other ModuLab-platform systems it can be expanded for electrochemical or photoelectrochemical experiments.

- Widest impedance range - 10  $\mu$ ohms to >100 Tohms
- Configurable for specific materials applications and expandable to electrochemical and photoelectrochemical experiments



### MATERIALSLAB XM

The Materials Lab XM uses the same XM based platform to deliver ModuLab performance to a focused application, the study of materials. This focused design allows this instrument to occupy a small footprint.

- Application-focused on dielectrics, insulators, and electronic materials
- Impedance Range from 1 mOhm to 1 TOhm ( $1E^{15}$  Range)
- Auxiliary measurement port for synchronized measurement of optical, mechanical or other transducers.



	Modulab XM MTS	Materials Lab
Maximum Frecency	1MHz	1MHz
Combines with DC for Electrochemical Measurements	Yes, with XM PSTAT 1MS/s	No
Highest Impedance	100Tohms	1Tohms
Lowest Impedance	10 $\mu$ Ohms	1mOhms
Software	XM Studio	

# SAMPLE HOLDERS

Combined with the XM series analyzers, remote controlled furnaces and cryostats with dedicated designed sample holders simplify testing of solids, liquids and powders. Materials can also be tested in controlled atmospheric conditions with the use of single or dual gases for fuel cell, solid oxide and super ionic conductor applications.

## 129610A LHE/LN2 CRYOSTAT SYSTEM

The 129610A cryostat may be used together with any Solartron materials test system to run I-V, Pulse, C-V, Impedance, Mott-Schottky and a wide range of other materials test techniques. It offers fully integrated temperature control.

- Cryogen not in contact with sample - prevents sample damage
- Temperature Range of 5K to 600K
- Compatible with both liquid helium (LHe) and liquid nitrogen (LN2)



### KEY POINTS

- Very low cryogen consumption
- Capillary tube around sample space

## 129620A HIGH TEMPERATURE TEST SYSTEM

An integrated system uses a split tube furnace design together with a lab jack that allows easy sample access and positioning. The sample is positioned in a purpose designed sample holder between platinum electrodes that allow testing at very high temperature. Key applications are: solid-state materials, included SOFC and solid-state batteries.

- Operating range room temperature to 950 K (1200°C)
- Various sample holder configurations are available depending on material requirements – 2 terminal/4 terminal/van der Pauw



### KEY POINTS

- Dual gas supply is available for SOFC type applications
- Controlled atmospheres

## 12962A ROOM TEMPERATURE SAMPLE HOLDERS

The sample holder consists of two parallel electrodes, one of which is fixed in position and the other which can be moved into contact with the sample by adjustment of a micrometer.

- Electrode diameter of 20mm standard. Options of 10mm, 30mm, 40mm.
- Sample thickness range of 0.2mm to 25.4mm



### KEY POINTS

- 2 terminal connections
- Sample types of solid, liquid, powder

## 129630 MICRO VACUUM PROBE STATIONS

As the “micro” name implies these probe stations are extremely small (140mm / 5.5”) and portable so you can easily move the test station from one experiment to the next.

- Peltier model 129630 PT/PTH (w -40°C to 200°C with light emission options)
- Ceramic model 129630 CHL/CHH (RT to 450° / 750°C)
- Liquid Nitrogen model 129630 LN2 (w 77K to 300K)



### KEY POINTS

- testing ceramics
- polymers
- sensors
- solid state materials
- thin films

# CLIMATIC CHAMBERS

HTDS offers a complete range of climatic chambers including temperature & humidity and vibration test (high and low temperature operation & storage and a large humidity range).

Test chambers are widely used in research and industries included but not limited to: battery/new energy, aerospace, automotive, medical, pharmaceutical industry, machinery, electronical components, telecommunication, transportation, household appliances ... Corrosion tests are also in the focus of these solutions.

Our test chambers are mainly configured with international famous brand components (Tecumseh, Bitzer, Schneider, Rainbow...). They provide reliable performance and work continuously.

Our range of temperature / humidity climatic chambers meet all needs offering a variety of temperatures and sizes for various test solutions.

## APPLICATIONS

### Battery/New energy testing

Battery explosion-proof oven, battery explosion-proof vacuum oven, high low temperature explosionproof test chamber, walk-in high temperature explosion-proof chamber, battery thermal abuse test chamber, parallel wind test chamber for battery, explosion-proof high low temperature shock chamber, half-hass vibration test.

### Reliability testing

Temperature humidity chamber, thermal shock chamber, ESS chamber, temperature test chamber, walk in altitude test chamber, walk in temperature test chamber, temperature humidity and vibration combined chamber.

### Weathering resistance testing

Rain test chamber (IP1-9K), Dust test chamber, Xenon lamp weathering chamber, Ozone aging test chamber.

UV weathering test chamber, temperature humidity and salt spray combined chamber.

### Vibration/Shock testing

Vibration test system, shock test system.

### Corrosion

Temperature and humidity controlled chamber, salt spray test chamber (brine test method, erosion resistant testing method).



### KEY POINTS

- Fully customizable
- Remote monitoring a control (ethernet connection)
- Compact design
- Color LCD touch panel



# OUR INTERNATIONAL NETWORK

HTDS (Hi-Tech Detection Systems) is a company specialized in the distribution and maintenance of high-tech detection systems in France and abroad.

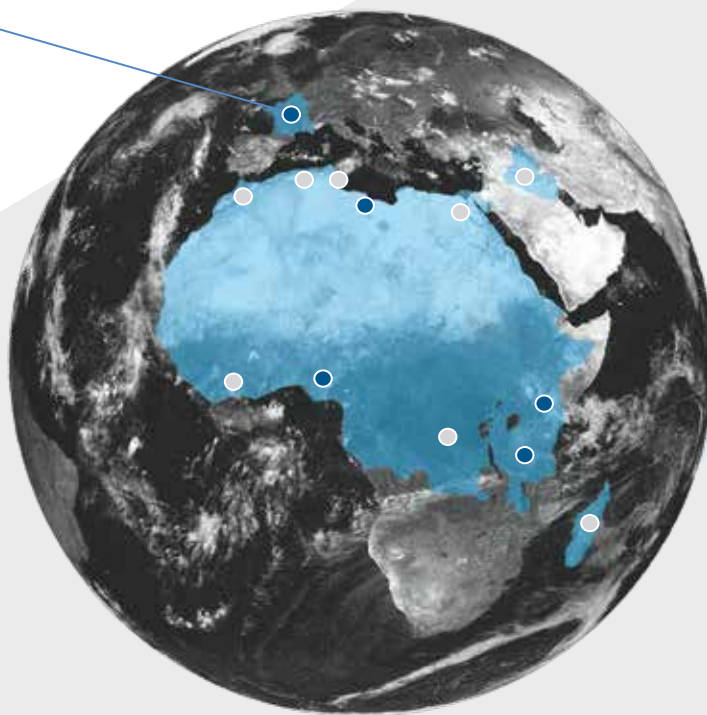
HTDS offers a full range of detection solutions dedicated to the following areas:  
Electrochemistry and electrical test - Security - Product Inspection - Analytical Sciences  
- Nuclear and Radiation Protection - Optoelectronics

HTDS's exclusive partners for electrochemistry are recognized as world leaders in their field.



Headquarter

- Subsidiaries
- Offices
- Commercial cover



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