IVIUM TECHNOLOGIES

Experts in Electrochemistry and Battery Testing

IVIUM TECHNOLOGIES

innovative solutions for electrochemical research

Vertex.One

Low cost all-round potentiostat/galvanostat/ZRA

The Vertex.One is an all-round potentiostat/galvanostat/ZRA with optional FRA/EIS. It has been specifically designed to be an affordable and robust solution, making it ideal for educational and basic electrochemistry. The cell is connected via standard 4mm banana plugs (a 1m shielded cell cable is included) allowing the user to simply use their own off-the-shelf banana leads to supplement or extend the cell cable. The Vertex.One is capable of all standard electrochemical techniques and includes a complete suite of IviumSoft control and data processing software.

KEY SPECIFICATIONS

- Current ranges: 100pA to 100mA
- WE/RE/S/CE 4-electrode configuration
- User selectable grounded/floating operation
- Optional FRA/EIS: 10µHz to 250kHz
- Optional True Linear Scan function
- Convenient banana cell connection

System Performance	
Current compliance	±100mA
Maximum output voltage	±21V
4 electrodes	WE, CE, RE, S
Potentiostat bandwidth	>250kHz
Stability settings	High Speed, Standard and High Stability
Programmable response filter	1MHz, 100kHz, 10kHz, 1kHz, 10Hz
Signal acquisition	Dual channel 16bit ADC, 100,000 samples/s
Potentiostat	
Applied potential range	±10V, 0.333mV resolution
Applied potential accuracy	0.2% or 2mV
Current ranges	±100pA to ±100mA in 10 steps
Measured current resolution	0.015% of current range, min. 0.01pA
Measured current accuracy	0.2%
Galvanostat	
Applied current resolution	0.033% of applied current range
Applied current accuracy	0.2%
Galvanostatic current ranges	±10nA to ±100mA in 8 steps
Measured potential resolution	0.003% of potential range, min. 0.4µV
Measured potential accuracy	0.2% or 2mV

Electrometer	
Input impedance	>1000Gohm//<10pF
Input bias current	<10pA
Bandwidth	>5MHz
Impedance analyser (optional)	
Frequency range	10µHz to 250kHz
Amplitude	0.015mV to 1.0V, 0.03% to 100% of current range
DC offset	DC offset subtraction decoupling
Special functions	
Ohmic drop compensation	2V/current range, 16bit resolution
Peripheral Connections	
Shared input/output	User selectable input or output ±10V, 16bit, bandwidth 40kHz
Environment	
Power requirements	main supply included
Interfacing	USB
Size	w x d x h = 10 x 19 x 2.5cm
Weight	500g

Vertex.Q

4-Channel instrument

4-Channel low power potentiostat/galvanostat/ZRA

The Vertex.Q is a 4-channel potentiostat/galvanostat/ZRA with optional FRA/EIS. It has been designed to offer a solution for low channel count measurement and testing, making it ideal for sensor applications and coin cell testing. Each channel can be independently controlled and has 4 electrode connections. The Vertex.Q is capable of all standard electrochemical techniques and includes a complete suite of IviumSoft control and data processing software.

KEY SPECIFICATIONS

- 4 channels: each ±30mA/±10V
- 4 x 4 electrodes: WE/RE/S/CE
- Optional FRA/EIS: 10µHz to 1MHz
- Synchronous/simultaneous measurements
- Optional True Linear Scan function
- User selectable analog I/O

System Performance	**Vertex.One**
Current compliance	4 x ±30mA
Maximum output voltage	±10V
4 electrodes	WE, CE, RE, S
Potentiostat bandwidth	>250kHz
Stability settings	High Speed, Standard and High Stability
Programmable response filter	1MHz, 100kHz, 10kHz, 1kHz, 10Hz
Signal acquisition	Dual channel 16bit ADC, 100,000 samples/s
Potentiostat	
Applied potential range	±10V, 0.333mV resolution
Applied potential accuracy	0.2% or 2mV
Current ranges	±10nA to ±10mA in 7 steps
Measured current resolution	0.015% of current range, min. 1.5pA
Measured current accuracy	0.2%
Galvanostat	
Applied current resolution	0.033% of applied current range
Applied current accuracy	0.2%
Galvanostatic current ranges	±10nA to ±10mA in 7 steps
Measured potential resolution	0.003% of potential range, min. 0.4µV
Measured potential accuracy	0.2% or 2mV

Electrometer	
Input impedance	>100Gohm//<10pF
Input bias current	<10pA
Bandwidth	>5MHz
Impedance analyser (optional)	
Frequency range	10µHz to 1MHz
Amplitude	0.015mV to 1.0V, 0.03% to 100% of current range
DC offset	DC offset subtraction/decoupling
Special functions	
Ohmic drop compensation	2V/current range, 16bit resolution
Peripheral Connections	
Shared input/output	User selectable input or output ±10V, 16bit, bandwidth 40kHz
Environment	
Power requirements	mains supply included
Interfacing	USB
Size	w x d x h = 15 x 36 x 4.5cm
Weight	1.5kg

Vertex

Entry level potentiostat/galvanostat/ZRA

The Vertex is an entry level potentiostat/galvanostat/ZRA with optional FRA/EIS. Its price easily matches its application in educational and applied electrochemistry. The Vertex is capable of all standard electrochemical techniques and includes a complete suite of IviumSoft control and data processing software.

THE VERTEX IS AVAILABLE IN 5 POWER CONFIGURATIONS:

- ±100mA / ±10V
- ±1A / ±10V
- ±5A / ±10V
- ±10A / ±5V
- ±2A / ±20V

KEY SPECIFICATIONS

- Current ranges: 10nA to 1A (10A)
- WE/RE/S/CE 4-electrode configuration
- Selectable floating operation
- Data acquisition rate: 100kHz
- Optional FRA/EIS: 10µHz to 1MHz

EXPANDABILITY

The Vertex can be expanded with an optional True Linear Scan module and FRA/EIS. The Vertex is also compatible with other Ivium modules, such as multiplexers and current interrupt module.

WIDE APPLICATION RANGE

The robust design, wide range of available models, floating operation and the availability of all standard electrochemical techniques makes the Vertex ideal for a variety of applications, including: education, routine electrochemistry and analysis, batteries and fuel cells, corrosion, sensors and biotechnology.

System Performance	**Vertex.100mA**
Current compliance	±100mA
Maximum output voltage	±10V
4 electrodes	WE, CE, RE, S
Potentiostat bandwidth	>500kHz
Stability settings	High Speed, Standard and High Stability
Programmable response filter	1MHz, 100kHz, 10kHz, 1kHz, 10Hz
Signal acquisition	Dual channel 16bit ADC, 100,000 samples/s
Potentiostat	
Applied potential range	±10V, 0.333mV resolution
Applied potential accuracy	0.2% or 2mV
Current ranges	±10nA to ±100mA in 8 decades
Measured current resolution	0.015% of current range, min. 1.5pA
Measured current accuracy	0.2%
Galvanostat	
Applied current resolution	0.033% of applied current range
Applied current accuracy	0.2%
Potential ranges	±10mV, ±100mV, ±1V, ±10V
Measured potential resolution	0.003% of potential range, minimum 0.4µV
Measured potential accuracy	0.2% or 2mV
Electrometer	
Input impedance	>1000Gohm //<10pF
Input bias current	<10pA
Bandwidth	>5MHz
Impedance analyser (optional)	
Frequency range	10µHz to 1MHz
Amplitude	0.015mV to 1.0V, or 0.03% to 100% of current range
DC offset	16bit DC offset subtraction, and 2 DC-decoupling filters
Special functions	
Ohmic drop compensation	2V/current range, 16bit resolution
Peripheral Connections	
Shared input/output	User selectable input or output ±10V, 16bit, bandwidth 40kHz
Environment	
Power requirements	100-240V, 45-65Hz, 700mA
Interfacing	USB
Size	w x d x h = 13 x 27 x 4cm
Weight	1.5kg
PC requirements	Windows 7/8/10, with free USB port

Vertex*	**1A**	**5A**	**10A**	**2A**
System performance	**1A/10V**	**5A/10V**	**10A/5V**	**2A/20V**
Current compliance	±1A	±5A	±10A	±2A
Additional current ranges	±1A	±1A, ±10A	±1A, ±10A	±1A
Maximum output voltage	±10V	±10V	±5V	±20V
Peripheral connections	*)	**)	**)	**)
Power requirements	100-240V, 50-60Hz 700mA	100-240V, 50-60Hz 2A	100-240V, 50-60Hz 4A	100-240V, 50-60Hz 2A
Weight	1.5kg	2kg	3kg	2kg

*) All other specs same as standard model.

) **Peripheral connections:

2 Analog in	*±10V, 16bit resolution, bandwidth 40kHz*	*I-out, and E-out*	*analog monitor for cell current and potential*
		AC-out	*±0.5V sinewave 10µHz-1MHz with variable attenuation*
1 Analog out	*±10V, 16bit resolution*	*Channel-X, and*	*±4V: to record impedance from peripheral devices*
1 Digital input, 3 Digital outputs	*0 to +5V*	*Channel-Y inputs*	

pocketSTAT2™

Handheld potentiostat/galvanostat/ZRA with integrated impedance analyser

The pocketSTAT2 is a complete electrochemical measurement instrument which is the size of a smart phone. It has been specifically designed for (field) measurements such as corrosion and analytical electrochemistry, but suits any low current electrochemical application.

HANDHELD

The pocketSTAT2 has the size and weight of a smart phone. It can be controlled via USB connection from any netbook, laptop or PC that is Windows operated.

KEY SPECIFICATIONS

- Size: 16 x 6.7 x 1.9cm
- Weight: 300g
- Scan range: ±10V @ ±30mA
- 4-electrode connection: RE, WE, CE, S
- Max. acquisition rate: 100,000 pnts/s

RUGGED DESIGN

The pocketSTAT2 has a housing made of strong, yet light weight, aluminium. It has a detachable header that allows replacement with other compatible modules. Various headers are possible:

- Cell cable connection
- High performance cell cable
- Blue tooth connection module
- Battery pack
- Screen printed electrode connection
- Options available on request

ALL TECHNIQUES

All standard electrochemical techniques are available, including impedance analysis and corrosion techniques. The pocketSTAT2 includes a full suite of IviumSoft control and data analysis software.

APPLICATION

As the pocketSTAT2 is USB powered and it has a very small footprint, as well as the integrated impedance analyser, it is ideally suited for:

- Field measurements
- Corrosion
- Coating testing
- Analysis
- Use in a glove box/fume hood

System Performance	
Current compliance	±30mA
Maximum output voltage	±10V
4 electrodes	WE, CE, RE, S
Potentiostat bandwidth	>1MHz
Stability settings	High Speed, Standard, and High Stability
Programmable response filter	1MHz, 100kHz, 10kHz, 1kHz, 10Hz
Signal acquisition	Dual channel 16bit ADC, 100,000 samples/s
Electrode connection	4mm banana plugs
Potentiostat	
Applied potential range	±10V, 0.33mV resolution
Applied potential accuracy	0.2% or 2mV
Current ranges	±100pA to ±10mA in 9 decades
Measured current resolution	0.015% of current range, minimum 0.15pA
Measured current accuracy	0.2%
Galvanostat	
Applied current resolution	0.033% of applied current range
Applied current accuracy	0.2%
Potential ranges	±1mV, ±10mV, ±100mV, ±1V, ±10V
Measured potential resolution	0.003% of potential range, minimum 16nV
Measured potential accuracy	0.2% or 2mV
Impedance analyser	
Frequency range	10µHz to 1MHz
Amplitude	0.015mV to 1.0V, or 0.03% to 100% of current range
DC offset	16bit DC offset subtraction, and 2 DC-decoupling filters
Electrometer	
Input impedance	>1000Gohm //<10pF
Input bias current	<10pA
Bandwidth	>2MHz
Environment	
Power requirements	via USB
Interfacing	USB
Size	w x d x h = 16 x 6.7 x 1.9cm
Weight	300g
PC requirements	Windows 7/8/10, with free USB port

CompactStat™

24 BIT INSTRUMENT

Portable USB powered potentiostat/galvanostat/ZRA with integrated impedance analyser

The CompactStat can be operated via the USB port of a laptop or PC without additional power supply. With its small footprint (<600 gram) and low power consumption, the CompactStat provides a truly mobile electrochemical measurement station. Among its many applications are corrosion, analytical, nano, bio, and battery/fuel cell testing.

THE COMPACTSTAT IS AVAILABLE IN 6 POWER CONFIGURATIONS

- ± 30mA @ ±10V
- ± 1.25A @ ±6V*
- ± 800mA @ ±10V*
- ± 250mA @ ±20V*
- ± 30mA @ ±100V*
- ± 15mA @ -20 to +200V*

*) With internal power booster.

EXPANDABILITY

The CompactStat is fully compatible with all options and modules, including: integrated Bipotentiostat and True Linear Scan, the MultiWE32, ModuLight, multiplexer, QuickScan, etc.

LOW NOISE AND GALVANIC ISOLATION

The CompactStat is electrically isolated from power lines and PC. It has a superior noise immunity and is capable of determining very small signals, required in nanotechnology applications. Additionally, the instrument can be applied in situations where the sample must be disconnected from a common ground (floating).

COMPLETE SOLUTION

The CompactStat offers a complete package. The hardware includes a built-in high-performance Frequency Response Analyser and all the standard electrochemical techniques. Complete measurement and dataprocessing software is included.

AUTOMATION

Multiple analog and digital input and output ports are available that can be used to monitor and control peripheral equipment. The software integrates this functionality.

System Performance	**Standard (30mA / 10V)**
Current compliance	±30mA
Maximum output voltage	±10V
4 electrodes	WE, CE, RE, S
Potentiostat bandwidth	>3MHz
Stability settings	High Speed, Standard, and High Stability
Programmable response filter	1MHz, 100kHz, 10kHz, 1kHz, 10Hz
Signal acquisition	Dual channel 24bit ADC, 100,000 samples/s
Potentiostat	
Applied potential range	±4V, 0.01mV resolution (20bits)/±10V, 0.02mV resolution
Applied potential accuracy	0.2% or 1mV
Current ranges	±10nA to ±1A in 9 decades
High sensitivity current ranges	±1pA, ±10pA, ±100pA, ±1nA
Measured current resolution	0.00001% of current range, minimum 0.6aA
Measured current accuracy	0.2%
Galvanostat	
Applied current resolution	0.00013% of applied current range
Applied current accuracy	0.2%
Potential ranges	±0.4mV, ±4mV, ±40mV, ±0.4V, ±4V, ±10V
Measured potential resolution	0.00001% of potential range, minimum 0.05nV
Measured potential accuracy	0.2% or 1mV
Impedance analyser	
Frequency range	10µHz to 3MHz
Amplitude	0.015mV to 1.0V, or 0.03% to 100% of current range
DC offset	16bit DC offset subtraction, and 2 DC-decoupling filters
Dynamic range	0.05nV to 10V, and 0.2aA to 30mA
Electrometer	
Input impedance	>1000Gohm //<8pF
Input bias current	<10pA
Bandwidth	>16MHz
Special functions	
Ohmic drop compensation	2V/current range, 16bit resolution
Safety features	Automatic disconnect on internal/external limits
Peripheral connections	
8 analog in, and 2 analog out	0 to +4V, 16bit resolution
2 digital inputs, and 3 digital outputs	0 to +5V
I-out and E-out	Analog monitor for cell current and potential
AC-out	±0.5V sinewave 10µHz-3MHz with variable attenuation
Channel-X and Channel-Y inputs	±4V: to record impedance from peripheral devices
Environment	
Power requirements on USB power	Standard 5V, 500mA
External adapter	100-240V, 45-65Hz, 500mA
Interfacing	USB
Size	w x d x h = 12 x 26 x 2.5cm
Weight	0.6kg
PC requirements	Windows 7/8/10, with free USB port

CompactStat.h with booster*	**h06125**	**h10800**	**h20250**	**h10030**	**h20015**
System performance	**1.25A/6V**	**800mA/10V**	**250mA/20V**	**30mA/100V**	**15mA/200V**
Current compliance	±1.25A	±800mA	±250mA	±30mA	±15mA
Maximum output voltage	±6V	±10V	±20V	±100V	-20 to +200V
Additional applied range	-	-	±20V, 0.04mV res.	±100V, 0.2mV res.	+200V, 0.4mV res.
Additional measured range	-	-	±20V	±100V	+200V
Power requirements	100-240V, 50-60Hz, 700mA	100-240V, 50-60Hz, 700mA	100-240V, 50-60Hz, 700mA	100-240V, 50-60Hz, 700mA	100-240V, 50-60Hz, 700mA
Weight	0.7kg	0.7kg	0.7kg	0.7kg	0.7kg

*All other specs same as standard model.

IviumStat

24 BIT INSTRUMENT

High end general purpose potentiostat/galvanostat/ZRA with integrated impedance analyser

The IviumStat is well-suited for applications requiring a wide dynamic range.
The high current capability combined with its complete range of options enables application in research, corrosion, battery/fuel cell testing, analysis, and bio- and nano-electrochemistry.

THE IVIUMSTAT IS AVAILABLE IN 3 POWER CONFIGURATIONS:

- ±5A / ±10V
- ±10A / ±10V
- ±2A / ±50V
- Current and voltage boosters available

EXPANDABILITY

The IviumStat is fully compatible with all options and modules, including: integrated Bipotentiostat and True Linear Scan, the MultiWE32, ModuLight, multiplexer, QuickScan and all current and voltage boosters.

AUTOMATION

Multiple analog and digital input and output ports are available that can be used to monitor and control peripheral equipment. The software integrates this functionality.

SAFETY

The compliance (maximum current or potential) of the instrument can be limited by the operator. This allows samples to be protected and unsafe situations prevented.

COMPLETE SOLUTION

The IviumStat offers a complete package. The hardware includes a built-in high-performance Frequency Response Analyser and all the standard electrochemical techniques. Complete measurement and data processing software is included.

System Performance	**Standard (5A / 10V)**
Current compliance	±5A
Maximum output voltage	±10V
4 electrodes	WE, CE, RE, S
Potentiostat bandwidth	8MHz for small signals 300kHz for large signals
Stability settings	High Speed, Standard, and High Stability
Programmable response filter	1MHz, 100kHz, 10kHz, 1kHz, 10Hz
Signal acquisition	Dual channel 24bit ADC, 100,000 samples/s
Potentiostat	
Applied potential range	±10V with 0.02mV resolution (20bits)
Applied potential accuracy	0.2% or 1mV
Current ranges	±10nA to ±10A in 10 decades
High sensitivity current ranges	±1pA, ±10pA, ±100pA, ±1nA
Measured current resolution	0.00001% of current range, minimum 0.6aA
Measured current accuracy	0.2%
Galvanostat	
Applied current resolution	0.00013% of applied current range
Applied current accuracy	0.2%
Potential ranges	±1mV, ±10mV, ±100mV, ±1V, ±10V
Measured potential resolution	0.00001% of potential range, minimum 0.15nV
Measured potential accuracy	0.2% or 1mV
Impedance analyser	
Frequency range	10µHz to 8MHz
Amplitude	0.015mV to 1.0V, or 0.03% to 100% of current range
DC offset	16bit DC offset subtraction, and 2 DC-decoupling filters
Dynamic range	0.05nV to 10V, and 0.2aA to 30mA
Electrometer	
Input impedance	>1000Gohm //<8pF
Input bias current	<10pA
Bandwidth	>16MHz
Special functions	
Ohmic drop compensation	2V/current range, 16bit resolution
Safety features	Automatic disconnect on internal/external exceptions
Peripheral connections	
8 analog in, and 2 analog out	0 to +4V, 16bit resolution
2 digital inputs, and 3 digital outputs	0 to +5V
I-out, and E-out	Analog monitor for cell current and potential
AC-out	±0.5V sinewave 10µHz-8MHz with variable attenuation
Channel-X and Channel-Y inputs	±4V: to record impedance from peripheral devices
Environment	
Power requirements	100-240V, 47-63Hz, 150VA
Interfacing	USB
Size	w x d x h = 26 x 33 x 12cm
Weight	4.2kg
PC requirements	Windows 7/8/10, with free USB port

IviumStat*	**XRi**	**XRe**
System performance	**10A / 10V**	**2A / 50V**
Current compliance	±10A	±2A
Maximum output voltage	±10V	±50V
Additional (applied) potential range	-	±50V, 0.1mV resolution
Power requirements	100-240V, 45-63Hz, 300VA	100-240V, 45-63Hz, 300VA
Weight	5.3kg	5.3kg

*) All other specs same as standard model.

XP

High power potentiostat/galvanostat/ZRA

The XP range of potentiostats has been especially designed for high power applications such as battery research, electrolysis and fuel cell development. It is a merger of a potentiostat and a booster in a single housing and is equipped with a full color display that shows real time measurement results. The XP has all the advantages of both the potentiostat and the booster, such as switching through all current ranges with full resolution at low and high power, high bandwidth to facilitate impedance measurements at high power, etc. It is equipped with an EMergency Off (EMO) functionality, as well as a direct connection for a thermocouple to monitor temperature. Both are accessible directly from the front panel. The XP is capable of all standard electrochemical techniques and includes a complete suite of IviumSoft control and data processing software.

POWER CONFIGURATIONS:

- ±20A / ±20V
- ±40A / ±10V

SPECIAL FEATURES:

- Full color display that shows real time measurement results and graphs
- Direct thermocouple connection
- Integrated Current Interrupt function
- Separate cell cables for low and high currents to ensure the best performance
- 19inch rack mountable housing

SAFETY

The compliance (maximum current or potential) of the instrument can be limited by the operator in the software. Addionally a hard wired EMO function is available for further safety.

APPLICATION

The XP is a high power potentiostat that has been designed for applications such as:

- Battery research
- (Bio) Fuel cell measurements
- Electrolysis
- Electrodialysis

System performance		
Current compliance	±40A	±20A (ex factory option)
Maximum output voltage	±10V	±20V
4 electrodes	WE, CE, RE, S	
Potentiostat bandwidth	>500kHz	
Stability settings	High Speed, Standard and High Stability	
Programmable response filter	1MHz, 100kHz, 10kHz, 1kHz, 10Hz	
Signal acquisition	Dual channel 16bit ADC, 100,000 samples/s	
Potentiostat		
Applied potential range	±10V 0.333mV res.	±10V 0.333mV res.
Applied potential accuracy	0.2% or 2mV	
Current ranges	±10nA to ±10A in 10 decades	
Measured current accuracy	0.015% of current range, min. 1.5pA	
Measured current accuracy	0.2%	
Galvanostat		
Applied current resolution	0.033% of applied current range	
Applied current accuracy	0.2%	
Galvanostat current ranges	±10nA to 10A in 10 steps	
Measured potential resolution	0.003% of potential range, min. 0.4µV	
Measured potential accuracy	0.2% or 2mV	
Electrometer		
Input impedance	>1000Gohm//<10pF	
Input bias current	<10pA	
Bandwidth	>5MHz	
Impedance analyser (optional)		
Frequency range	10µHz to 500kHz	
Amplitude	0.015mV to 1.0V, or 0.03% to 100% of current range	
DC offset	16bit DC offset subtraction and 2 DC-decoupling filters	
Special features		
Display	Full color real time data	
Selectable shut-off	Electronic comparators: Emin, Emax, Tmax	
IR compensation	2V/current range, 16bit res. current feedback	
Current interrupt	<5µs	
Peripheral connections		
Temperature input	K-type thermocouple, 0-150 ±2 deg	
2 Analog in	±10V, 16 bit resolution, bandwidth 40kHz	
1 Analog out	±10V, 16 bit resolution	
AC-out	±0.5V sinewave 10µHz-1MHz with variable attenuation	
3 Dig out, 1 Dig in, E-out, I-out	0 to 3.3V, 5V compliant, E-out, I-out monitor	
Channel-X and Channel-Y inputs	±4V: to record impedance from peripheral devices	
Environment		
Power requirements	100-240V, 45-65Hz, 600VA	
Interfacing	USB	
Size	w x d x h = 45 x 37 x 10cm	
Weight	15kg	

Ivium-n-Stat

High power multi-channel potentiostat/ galvanostat/ZRA with integrated impedance analyser

The Ivium-n-Stat is a state-of-the-art multi-channel potentiostat/galvanostat with integrated impedance analyser in each channel. It can be operated in grounded or in floating mode. The variety of different channels, the high sensitivity, and the separate or synchronous control of channels allow the Ivium-n-Stat to be used in a wide range of applications from research to production testing.

VAROUS CHANNELS AVAILABLE

Single channel sModule
- ±2.5A / ±10V (optional BipotentioStat)
- ±5A / ±10V (optional BipotentioStat)
- ±10A / ±5V
- ±2A / ±20V

Dual channel dModule
- 2 x ±500mA / ±10V
- 2 x ±2.5A / ±10V

Four channel qModule
- 4 x ±30mA / ±10V

Integrated EIS
All channels include integrated FRA/EIS as standard 10µHz - 250kHz (Optional High Frequency upgrade to 1MHz).

Main frame
- 40A
- Maximum 8 modules
- Stackable up to 64 channels

EXPANDABILITY

The Ivium-n-Stat main frame contains 8 slots for a maximum of 32 channels and can be stacked up to 8 frames and a maximum of 64 channels. Modules are encased for easy handling so that users can upgrade the number of channels in a simple plug and play manner. With the exception of the dual channel module and qModule, an integrated peripheral port with multiple analog and digital input and output ports is available that can be used to monitor and control peripheral equipment. The software integrates this functionality.

SIMULTANEOUS CONTROL

The IviumSoft allows control of separate channels or all channels simultaneously with synchronized start. Data can be plotted per channel or simultaneously for all channels on a single screen.

Ivium-n-Stat

Available Channel modules:

	Single channel sModules				Dual channel dModules		Four channel qModule
Channel Performance	**2.5A / 10V**	**5A / 10V**	**10A / 5V**	**2A / 20V**	**500mA / 10V**	**2.5A / 10V**	**30mA / 10V**
Number of channels in module	1	1	1	1	2	2	4
Current compliance	±2.5A	±5A	±10A	±2A	±500mA	±2.5A	±30mA
Maximum output voltage	±10V	±10V	±5V	±20V	±10V	±10V	±10V
Floating operation available	Yes	Yes	Yes	Yes	Module floating	Module floating	Module floating
Potentiostat							
Applied potential range	±10V	±10V	±5V	±10V	±10V	±10V	±10V
Resolution	0.33mV	0.33mV	0.33mV	0.33mV	0.33mV	0.33mV	0.33mV
Applied potential accuracy	0.2%, or 2mV	0.2%, or 2mV	0.2%, or 2mV	0.2%, or 2mV	0.2%, or 2mV	0.2%, or 2mV	0.2%, or 2mV
Current ranges	±10nA to ±10A	±10nA to ±10A	±10nA to ±10A	±10nA to ±10A	±10nA to ±1A	±10nA to ±10A	±10nA to ±10mA
#	10 ranges	10 ranges	10 ranges	10 ranges	9 ranges	9 ranges	7 ranges
Measured current resolution	0.015% of range	0.015% of range	0.015% of range	0.015% of range	0.015% of range	0.015% of range	0.015% of range
Minimum Measured current accuracy	1.5pA 0.2%	1.5pA 0.2%	1.5pA 0.2%	1.5pA 0.2%	1.5pA 0.2%	1.5pA 0.2%	1.5pA 0.2%
Galvanostat							
Applied current resolution	0.033% of range	0.033% of range	0.033% of range	0.033% of range	0.033% of range	0.033% of range	0.033% of range
Applied current accuracy	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.3%
Potential ranges ±10mV, ±100mV, ±1V, ±10V	Yes	Yes	Yes	Yes, and ±20V	Yes	Yes	Yes, and ±1mV
Measured potential resolution	0.003% of range	0.003% of range	0.003% of range	0.003% of range	0.003% of range	0.003% of range	0.003% of range
Minimum Measured potential accuracy	400nV 0.2%, or 2mV	400nV 0.2%, or 2mV	400nV 0.2%, or 2mV	400nV 0.2%, or 2mV	400nV 0.2%, or 2mV	400nV 0.2%, or 2mV	400nV 0.2%, or 2mV
Peripheral connections	Yes	Yes	Yes	Yes	No	No	Yes*

*Analog input: ±10V, 16bit resolution, bandwidth 40kHz

All Channels:

Peripheral connections	
2 analog in	±10V, 16bit resolution, bandwidth 40kHz
1 analog out	±10V, 16bit resolution
1 digital input, and 3 digital outputs	0 to +5V
I-out, and E-out	Analog monitor for cell current and potential
AC-out	±0.5V sinewave 10µHz-250kHz with variable attenuation
Channel-X, and Channel-Y inputs	±4V: to record impedance from peripheral devices
Special functions	
Ohmic drop compensation	2V/current range, 16bit resolution
Dimensions	
Size	w x d x h = 3 x 35 x 13cm
Weight	0.8kg
Channel Performance	
4 Electrodes	WE, CE, RE and S
Potentiostat bandwidth	>500kHz
Stability settings	High Speed, Standard, and High Stability
Programmable response filter	1MHz, 100kHz, 10kHz, 1kHz, 10Hz
Dual Channel signal acquisition	Dual channel 16bit ADC, 100,000 samples/s
Impedance Analyser	
Frequency range	10µHz to 250kHz (optional: 10µHz to 1MHz)
Amplitude	0.015mV to 1.0V, or 0.03% to 100% of current range
DC offset	16bit DC offset subtraction, and 2 DC-decoupling filters
Electrometer	
Input impedance	>1000Gohm //<10pF
Input bias current	<10pA
Bandwidth	>5MHz

Specifications: Ivium-n-Stat main frame

Slot positions	Can mount up to 8 modules
Frame capability	40A max. for 8 slots
Common connectors	GND and combined EMO: emergency off control
Power requirements	100-240V, 47-63Hz, 600VA
Interfacing	USB
Size	w x d x h = 47 x 36 x 14cm
Weight	6.2kg (no modules) ca. 12kg (with 8 modules)
PC requirements	Windows 7/8/10, with free USB port

OctoStat

High performance rack-mountable battery test system with integrated impedance analyser

The OctoStat is a multi-channel test system with a fixed number of 8 channels per unit. Each channel is equipped with its own dedicated FRA/EIS and an input for temperature measurement. The OctoStat has an integrated DataSecure that stores all data independent of the PC to ensure that in the event of communication loss or computer crash, the measurement will continue and measurement data is never lost. This system stability makes the OctoStat a perfect system for long term testing applications. The OctoStat is built into a 19inch rack-mountable housing.

AVAILABLE

- OctoStat30: ±30mA / ±10V per channel
- OctoStat200: ±200mA / ±10V per channel
- OctoStat5000: ±5A / ±10V per channel

POWERBOOSTER

- OctoBoost16000: ±16A / ±10V each channel can be combined to increase power, for example 4 x ±32A, 2 x ±64A, 1 x ±64A and 4 x ±16A, 1 x ±128A, etc.

CONNECTION

- USB
- LAN / Ethernet

EXPANDABILITY

Different OctoStats can be combined in the same rack and connected/ controlled from the same computer. Each rack and channel can be assigned a freely user selectable number or name for easy recognition.

19INCH RACK MOUNTABLE HOUSING

Each OctoStat unit is built into a 19inch rack mountable housing. Multiple units and combinations of OctoStats can be built into the same rack.

SIMULTANEOUS CONTROL

The IviumSoft control software allows control of separate channels or all channels simultaneously with synchronized start. Data can be plotted per channel or simultaneously for all channels on a single screen.

Each Channel

- Dedicated embedded FRA/EIS
- Dedicated software for battery testing
- Capable of EIS during DC charge/discharge
- Overload handled via clamping (not shut-off) so measurements continue

OctoStat

	OctoStat30	OctoStat200	OctoStat5000	OctoBoost16000
				(Booster for OctoStat)
System				
Current compliance	±30mA	±200mA	±5A	±16A
Maximum output voltage	±10V	±10V	±10V	-2 to +9V, or ±5V
FRA/EIS	10µHz to 100kHz	10µHz to 100kHz	10µHz to 100kHz	10µHz to 10kHz
Analog I/O	16bit analog I/O channel	16bit analog I/O channel	16bit analog I/O channel	
Channel combination	No	No	No	Yes*
Potentiostat				
Applied potential range	±10V	±10V	±10V	-2 to +9V, or ±5V
Resolution	0.33mV	0.33mV	0.33mV	0.33mV
Applied potential accuracy	0.2%, or 2mV	0.2%, or 2mV	0.2%, or 2mV	0.2%, or 2mV
Current ranges	±10nA to ±10mA	±10nA to ±100mA	±10nA to ±10A	±10A
Measured current resolution	16bits min. 1pA	16bits min. 1pA	16bits min. 1pA	defined by controlling potentiostat
Measured current accuracy	0.2%	0.2%	0.2%	0.2%
Galvanostat				
Applied current resolution	0.033% of range	0.033% of range	0.033% of range	0.033% of range
Applied current accuracy	0.2%	0.2%	0.2%	0.2%
Measured potential resolution	16bits, min. 400nV	16bits, min. 400nV	16bits, min. 400nV	16bits, min. 400nV
Measured potential accuracy	0.2%, or 2mV	0.2%, or 2mV	0.2%, or 2mV	0.2%, or 2mV
Dimensions				
Width	44.2cm	44.2cm	44.2cm	44.2cm
Height	1U	1U	2U	3U

Channels can be combined to increase current, for example 4 x ±32A, 2 x ±64A, 1 x ±64A and 4 x ±16A, 1 x ±128A, etc.

All Channels

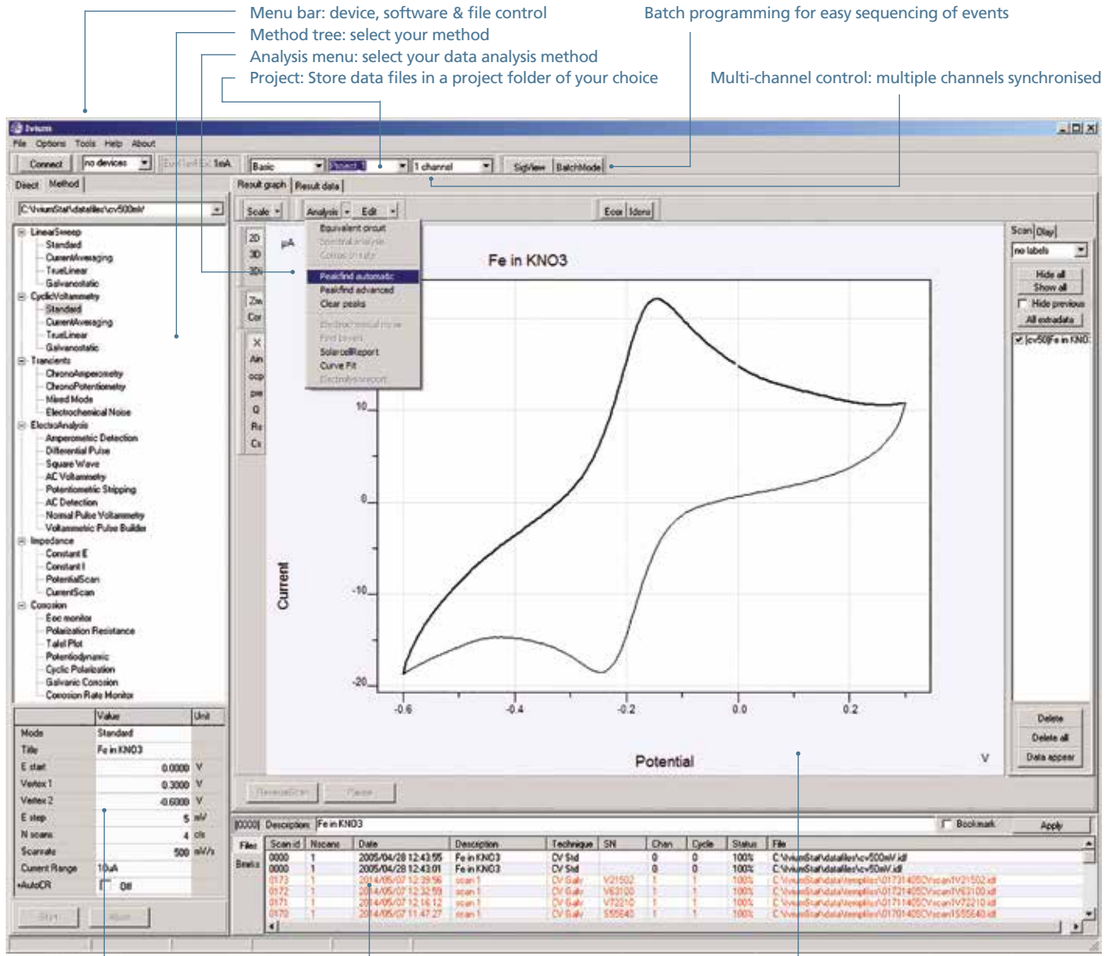
Channel Performance	
4 Electrodes	WE, CE, RE and S
Potentiostat bandwidth	>500kHz
Stability settings	High Speed, Standard, and High Stability
Programmable response filter	1MHz, 100kHz, 10kHz, 1kHz, 10Hz
Dual Channel signal acquisition	Dual channel 16bit ADC, 100,000 samples/s
Impedance Analyser	
Frequency range	10µHz to 100kHz (10kHz)
Amplitude	0.015mV to 1.0V, or 0.03% to 100% of current range
DC offset	16bit DC offset subtraction, and 2 DC-decoupling filters
Electrometer	
Input impedance	>1000Gohm //<10pF
Input bias current	<10pA
Bandwidth	>5MHz
Connection	
Connectors	GND and combined EMO: emergency off control
Communication	USB/LAN (Ethernet)
Integrated DataSecure	Data acquisition time: 2ms minimum Stored no. of data points: 20M each channel

DataSecure included

Software to match every research application

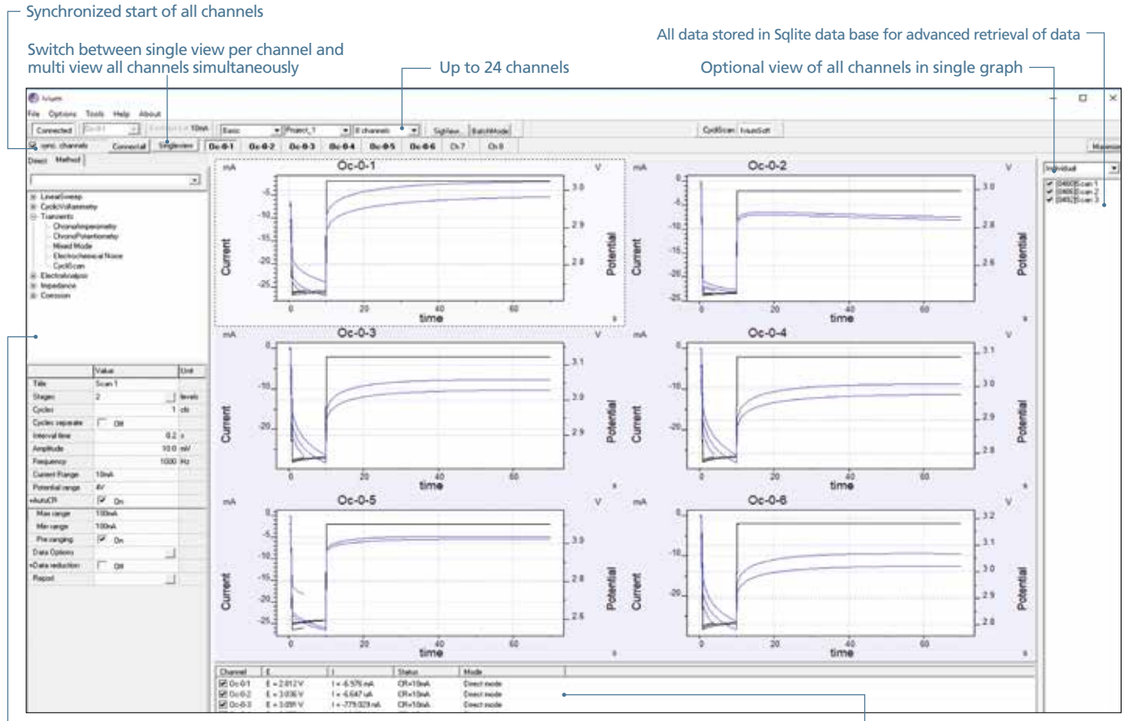
One software to control all Ivium instruments: IviumSoft includes all standard electrochemical techniques and allows integrated data processing and analysis. The software is feature rich, yet intuitive to use. All functions are directly available from the principle user interface. The full software is shipped with all Ivium instruments and is included as standard in the price. Installation is unlimited so there is no maximum to the number of operating Windows PCs.

IviumSoft: User Interface

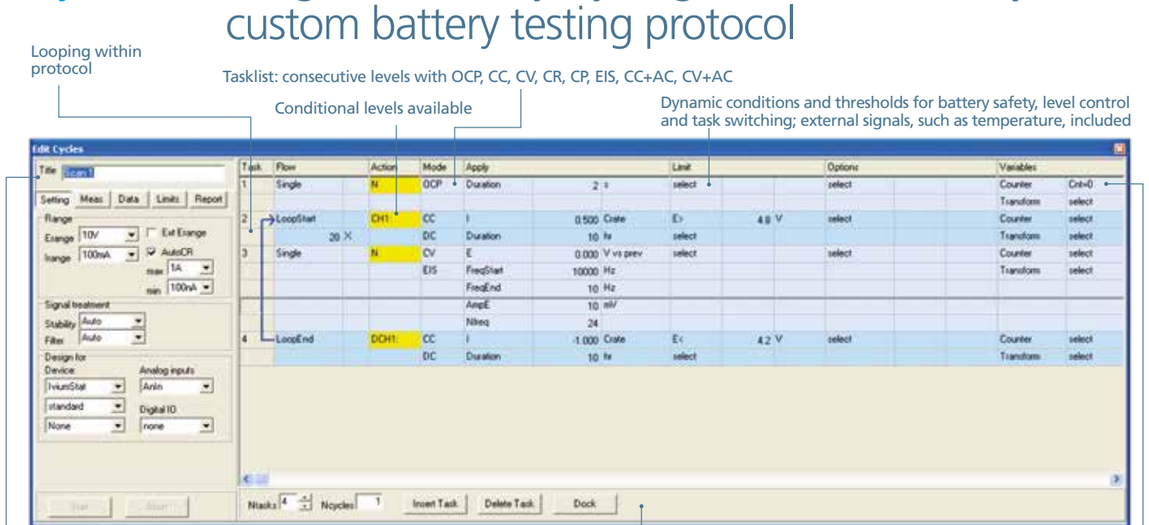


- Scan rate 1µV/s to 10,000V/s
- Minimum time interval 10µs
- Continuous scan at 500 points/s
- Transients up to 255 levels
- Transients with user selectable dynamic cut-off
- Single sine/multi sine impedance 10µHz to 8MHz
- Simultaneous peripheral I/O control and data acquisition
- Open Cell Potential measurement
- Ohmic drop compensation
- Batch processing for automation and sequencing
- Signal view monitoring
- Pulse generator
- Instrument diagnostics
- Software development driver for LabView™, delphi, C, etc.

Multichannel control: Control and synchronize multiple instruments/channels

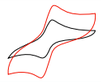
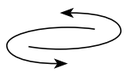


CycliScan: Integrated Battery Cycling Module to build your custom battery testing protocol



Options and Modules

Ivium Technologies manufactures a wide range of options and modules, both compatible with our potentiostats and for stand-alone use. These options includes functionality enhancements for our potentiostats, light modules, power boosters, multiplexers, etc. Below an overview is given of our Options & Modules. Detailed functionality and module specifications are given on our website at **www.ivium.com**, together with a compatibility table of all of our instruments.

Options & Modules		**Description**
	BIPOTENTIOSTAT	The bipotentiostat (BiStat) is an option that enables a second working electrode (WE2). It is used for various applications, including RRDE measurements.
	TRUE LINEAR SCAN	The True Linear Scan is a hardware option that applies a smooth analog ramp, instead of the standard staircase sweep of digital potentiostats. This is especially useful in case of fast transient behaviour, absorption, α-characteristics.
5 MHz	QUICKSCAN	A module for high speed signal application and data sampling is available. Both modules use a built-in memory for data storage before sending it to the PC. Available for CA, CP and CV.
   	PERIPHERAL INTERFACING MODULES	An analog/digital I/O port is available on most Ivium potentiostats for interfacing with external equipment (RDE, EQCM, etc.) and signals (temp, pH, etc.). Various standard modules are available for connection: • PPE: The Peripheral Port Expander is a junction box that offers easy connection via 4mm bananas. • PDA: 8-Channel Peripheral Differential Amplifier that offers the same junction box, but adds 8 high impedance differential inputs >10^{12}Ohm, allowing simultaneous recording of differential bipolar high-ohmic external voltages, such as reference electrodes or pH meters. • s/mPDA: 2-Channel Peripheral Differential Amplifier. • TCM-K: For connection of a K-Type thermocouple. • PDA-T: Combination of a PDA channel with a K-type thermocouple channel. • PLT: Peripheral Level Transformer for increasing the analog input voltage range of IviumStat/CompactStat to ±10V. • Custom modules available on request.
	CURRENT INTERRUPT MODULE	The Current Interrupt Module (CIM) facilitates the measurement of the IR-drop via the current-interrupt technique.
	HIZ MODULE	High Impedance pre-amplifier. Improves electrometer performance of the potentiostat to a higher input impedance and lower leakage: >10^{15}Ohm//0.2pF
	LC MODULE	The Low Current Range module adds 3 real current ranges below the available current ranges of an Ivium potentiostat, increasing the current resolution by a factor of 1000.
	MULTIWE32	This 32-channel potentiostat module can operate up to 32 working electrodes simultaneously that share a single counter electrode and reference electrode. It applies a potential across all channels continuously, with an independent programmable offset.
	MULTIPLEXERS	A variety of multiplexers are available for consecutive control of multiple cells and/or electrodes. In multiples of 8 and 32, counts of up to 256 channels can be reached. Also Multi Electrode Assemblies (MEA) are available and supported.
	LIGHT SOURCES	The ModuLight is a programmable light source that contains 7 LEDs with wave lengths ranging from 460-740nm. The IviSUN is a programmable light source capable of 1,000W/m2. Light sensors and an optical platform are available to facilitate IPCE and positioning of the light source.
	RRDE	Rotating Ring Disk apparatus for stand alone use or combination with an Ivium potentiostat. Feed-back controlled rotation speed: 100-10,000 rpm.

Never lose Data & Remote connection with the Ivium DataSecure

DATASECURE
Data Storage & Connection Module
The DataSecure module stores data from your entire running experiment, independent from your PC, e.g. even if your computer fails, your data will be saved on the DataSecure module. Your data will never be lost! During your experiment you can "log-on" at any time to stream the available data to your PC. Or just stay connected and stream data real-time.

The DataSecure module is the connection link between the Ivium potentiostat and your computer. Next to direct wired USB or LAN connection, the DataSecure can connect directly to your WI-FI network to be accessed from anywhere in the WI-FI covered area. If desired the DataSecure can also create its own hotspot, making password protected connection possible.

DATASECURE **Data storage and back-up, never lose your data**
- Data is stored independent of your PC
- Data storage of up to 1,000,000,000 datapoints
- "Log-on" any time with your PC to stream available data
- Compact size: l x w x h = 15 x 12 x 5.5cm

CONNECTION **WIFI | LAN | USB | Remote/direct**
- Wireless connection access anywhere: ideal for connection in fume hood or glove box
- Direct (hard wired) connection also possible
- Compatible with both single- and multi-channel Ivium potentiostats
- Password protected connection possible

ALSO AVAILABLE: µDATASECURE
The µDataSecure offers all the same advantages as the DataSecure, but does not have the WIFI connection/hotspot functionality. This makes it ideal for applications where wireless signals may be undesirable.

Accessories

	MCF CELL	Magnetic Corrosion Flat-cell designed for use both in the laboratory and in the field. It can be clamped to any (magnetic) steel object, in any position. Ideal for impedance measurement on coatings in the field.
	ELECTRODES & CELLS	A wide variety of (glass) electrochemical cells are available, including: flat cell, corrosion cell, photo-electrochemical cell, simple vials, etc. Electrodes to carry out your electrochemical experiments can also be supplied, including: reference electrodes (single/double junction), (non)acqueous, counter electrodes (wire, mesh, disc, bulk), working electrodes (wire, disc, RDE, RRDE), custom.
 	BATTERY HOLDERS	To facilitate easy connection of batteries for testing, battery holders are available for connection to a cell cable or for direct connection to the cell connector. • Coin cell • AAA cell • AA cell • 18650 cell
	FARADAY CAGE	Stainless Steel Faraday cage: 36x36x24cm. Door lined with beryllium strip to cover the gap for ultimate noise rejection.

High voltage and high current solutions

Ivium manufactures a range of power boosters to increase the potential and current of our potentiostat/galvanostat/ZRAs. Both internal and external power boosters are available. Internal power boosters are specifically designed for the CompactStat series. External power boosters are compatible with most of our potentiostats.

All our power boosters:

- are analog and fully comply with the resolution of the controlling instrument.
- have full potentiostat/galvanostat compliance.
- are capable of impedance measurements.
- are fully integrated in IviumSoft.
- offer all standard electrochemical techniques.

HIGH VOLTAGE

20V	• **IviumBoost205**	(5A@20V/EIS 10µHz-100kHz)	external booster
	• **h20250**	(250mA@20V/EIS 10µHz-3MHz)	internal booster for CompactStat
50V	• **IviumStat.XRe**	(2A@50V/EIS 10µHz-8MHz)	high voltage IviumStat
100V	• **h10030**	(30mA@100V/EIS 10µHz-3MHz)	internal booster for CompactStat
	• **IviumBoost1001**	(0.6A@100V/EIS 10µHz-100kHz)	external booster
200V	• **h20015**	(15mA@200V/EIS 10µHz-3MHz)	internal booster for CompactStat

HIGH CURRENT

10A	• **IviumBoost1010**	(10A@10V/EIS 10µHz-100kHz)	external booster
40A	• **XP40**	(40A@10V/EIS 10µHz-500kHz)	high power instrument
100A	• **IviumBoost10012**	(100A@12V/EIS 10µHz-100kHz)	external booster
128A	• **OctoBoost16000**	(8x16A@±5V or-2to+9V/EIS 10µHz-10kHz)	multi-channel external booster

Ivium Technologies was founded in 2001 and is based in Eindhoven. We develop and supply equipment for electrochemical research all over the world. We have grown to where we are today by combining modern design techniques and state-ofthe-art components with efficient manufacturing and swift customer service. We understand the needs of electrochemical researchers and are focused on developing the products and support to meet those needs. Our dedication to developing solutions for electrochemical research has resulted in high performance instrumentation for a wide variety of applications. Ivium potentiostats can be found in academic, industrial, and government laboratories around the world.

- Ivium offers 3 years warranty on our instruments
- IviumSoft is included for free with each potentiostat purchase

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www.ivium.com
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IVIUM TECHNOLOGIES

innovative solutions for electrochemical research