



EmStat/Mux OEM Interface for Electrochemical Sensor Arrays

EmStat is the smallest commercial potentiostat with an embedded microcontroller. It is available as an OEM product.

The EmStat can be extended with a 16 channel multiplexer. The multiplexer can be applied with sensorarrays:

- Up to 16 WE's sharing a common CE and common RE,
- Up to 16 WE's sharing a common combined CE / RE,
- Up to 16 WE's each having its own combined CE / RE.

The multiplexer can be used in two modes (set by a jumper on the board):

- all WE's have the same potential, which is continuously applied,
- only the selected WE has a controlled potential, all unselected WE's are at open circuit.

The instrument is programmed for amperometric measurements at a fixed dc-potential. The software supports amperometric detection in two modes:

- alternately: the current of all 16 WE's is obtained (semi-) simultaneously and plotted versus time,
- sequentially: curves of current versus time are obtained for all channels, one after another.

The PStTrace program for Windows XP or Vista is used to control the instrument and to plot the measured current versus time. This program can also be used to measure voltammograms on more than one channel consecutively.

The instrument is controlled and powered by means of a USB cable. A serial interface (UART / RS-232) version is also available.

EmStat has six current ranges: 1 nA to 100 μ A, with a resolution of 1 pA on the lowest current range. The instrument automatically selects the optimal current range.



Printed circuit boards of the EmStat/Mux with USB connection.

The software development kit (SDK, see www.palmsens.com) supports the device. This SDK allows customers to rapidly development their own software. The communication protocol is available on request for users who need to develop their own application program without the use of the SDK.

●●● Specifications (preliminary)

EmStat:

- dc-potential range	± 2.000 V
- compliance voltage	± 5.0 V
- dc-potential resolution	1 mV
- dc-offset error	2 mV
- accuracy	≤ 0.2 %
- current ranges	1 nA to 100 μ A (6 ranges)
- maximum output current	± 10 mA
- current resolution	0.1 % of current range 1 pA on lowest current range
- accuracy	≤ 0.2 % of current range at 100 nA to 100 μ A ≤ 0.5 % at 10 nA and ≤ 1 % at 1 nA all with additional 0.2 % offset error
- electrometer amplifier input	> 100 Gohm // 4 pF
- rise time	approx. 200 μ s
- dimensions	PCB 5.2 cm x 3.5 cm
- power	5 V / 60 mA from USB connector (or ac-adapter ¹)
- interfacing	USB (or RS-232 ¹)
- external I/O options ¹	analog: 1 input and 1 output channel (0 V - 4.096 V) digital: 4 input and/or output lines
- option	16 channel multiplexer ¹
- sensor connection	shielded cable with circular connector or specific connector ¹

Mux:

- number of channels	2 - 16
- multiplexer	WE only, CE and RE are not switched
- modes	1. all WE's are continuously polarized at the same potential 2. only the selected WE is polarized and all other WE's are at open potential
dimensions	7.6 cm x 6.9 cm
connection	the board is connected to EmStat by means of a pinheader
sensorconnector	1. boxed header IDC 34way as standard connector, 2. high density ERNI connector optional.

¹ Means that a modification is required.

Please contact Palm Instruments for more details: info@palmsens.com .



Palm Instruments BV
Ruitercamp 119
3992 BZ Houten
The Netherlands
Tel. + 31 30 2459211
Fax + 31 30 2459212
www.palmsens.com
info@palmsens.com