# Model 1000C Series Multi-Potentiostat

The model 1000C series is a computerized eight-channel potentiostat. The system contains a digital function generator and multiplexed data acquisition circuitry. The multi-potentiostat can work with eight independent cells or eight working electrodes in the same solution with common reference and counter electrodes. The potential control range is ±10 V for all channels and the current range is ±10 mA. The instrument is capable of measuring current down to picoamperes. Each electrode can be individually controlled, including on/off control, potential, and sensitivity settings; each can be set to an independent potential or the same potential as the primary channel, so that they can sweep or step potentials together with the primary channel.

The model 1000C series is an upgrade to the model 1000/1000A/1000B series. The instrument allows eight independent cells, simultaneous or sequential measurements, fast waveform generation and data acquisition speed (1M Hz @ 16-bit), and easy software update using flash memory.

Many electrochemical techniques are available in the 1000C series, including cyclic voltammetry and amperometric i-t measurements, with all eight channels available (except for open circuit potential measurements). The parameters for all channels must be set before running an experiment; you cannot alter parameter settings during experiments. During a run, you can toggle between single and multi-data set display (parallel or overlay plots). After a run, you can choose data from any channel for parallel or overlay plotting.

The instrument can be controlled by an external PC running Windows 98 or higher. It is easy to install and use. The instrument connects to your PC using USB (default) or serial port connectivity; no plug-in card or other hardware is required on the PC side. The commands, parameters, and options have been written using terminology that most chemists are familiar with. A customizable toolbar allows quick access to the most commonly used commands. A comprehensive help system provides context-sensitive information from each dialog box.

The instrument provides many powerful functions, such as straightforward file handling, extensive experimental control, flexible graphics, various data analyses, and efficient digital simulation. Additional features include macro commands, working electrode conditioning, color, legend and font selection, data interpolation, visual baseline correction, data point removal, visual data point modification, signal averaging, Fourier spectrum, and a convenient technique-specific electrochemical equation viewer. The maximum data length is 128K – 8192K points (selectable) if real-time data transfer is allowed.
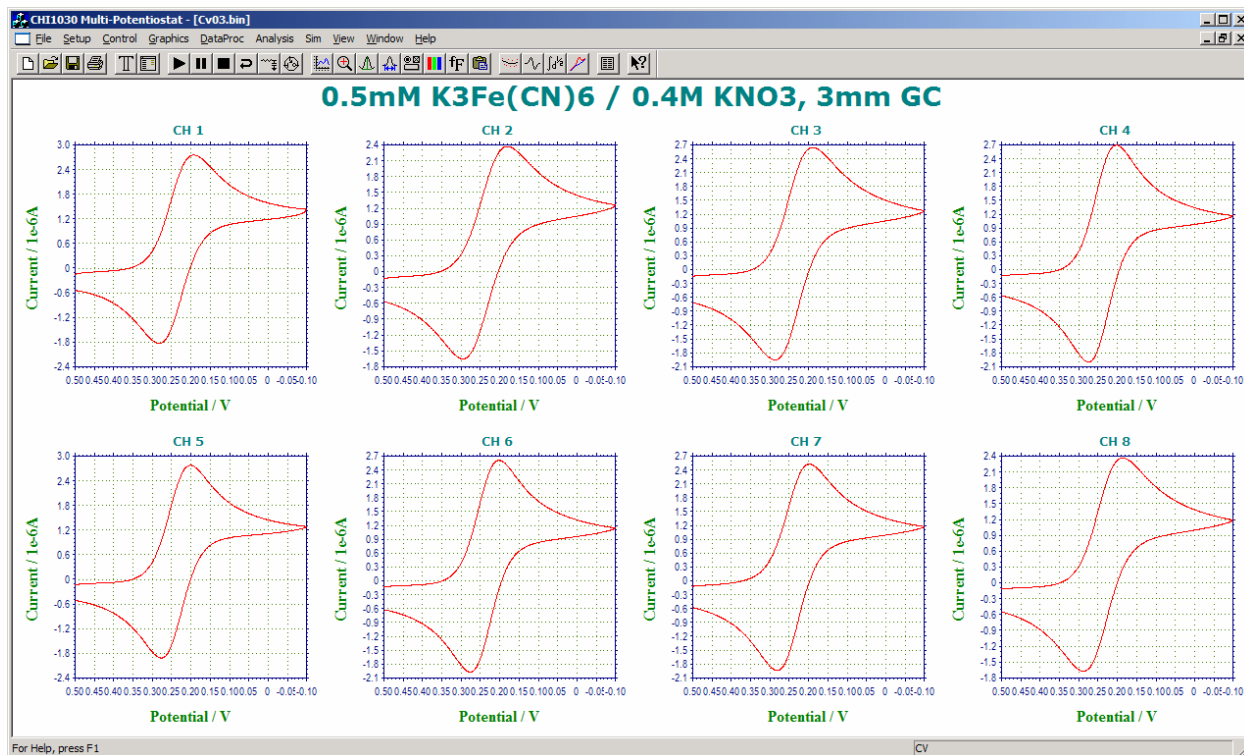
Differences of 1000C Series Models

Functions	1000C	1010C	1020C	1030C	1040C
Cyclic Voltammetry (CV)	●	●	●	●	●
Linear Sweep Voltammetry (LSV) &	●	●	●	●	●
Chronoamperometry (CA)				●	●
Chronocoulometry (CC)				●	●
Differential Pulse Voltammetry (DPV) &			●	●	●
Normal Pulse Voltammetry (NPV) &			●	●	●
Square Wave Voltammetry (SWV) &			●	●	●
AC Voltammetry (ACV) &					●
2nd Harmonic AC Voltammetry (SHACV) &					●
Fourier Transform AC Voltammetry (FTACV)					
Amperometric i-t Curve (i-t)	●	●		●	●
Differential Pulse Amperometry (DPA)		●		●	●
Triple Pulse Amperometry (TPA)		●		●	●
Sweep-Step Functions (SSF)				●	●
Multi-Potential Steps (STEP)				●	●
Open Circuit Potential - Time (OCPT)	●	●	●	●	●
Full version of CV simulation and fitting program				●	●
Limited version of CV simulation and fitting program	●	●	●		

&: Corresponding stripping mode can be performed.

Specifications

8-Channel potentiostat
(8 independent cells or a multi-working electrode cell)
Potential range (all channels): ±10 V
Applied potential accuracy: ±1 mV, ±0.01% of scale
Potentiostat rise time: < 2 µs
Applied potential noise: < 10 µV rms
Compliance voltage: ±12 V
Current range (each channel): 10 mA
Reference electrode input impedance: 1×10^{12} ohm
Sensitivity scale: 1×10^{-9} - 0.001 A/V in 7 ranges
Measured current resolution: 0.0015% of current range, minimum 0.3 pA
Input bias current: < 50 pA
Fast waveform updating rate: 5 MHz @ 16-bit
Fast data acquisition: up to 1 MHz @ 16-bit
- CV and LSV scan rate:
    0.000001 to 5000 V/s (sequential scan)
    0.000001 to 25 V/s (8 channel simultaneous scan)
    Potential increment during scan: 0.1 mV @ 500 V/s
- CC and CA pulse width: 0.0001 to 1000 sec
- CA and CC sample interval:
    1e-6 to 50 s (sequential step)
    8e-5 to 50 s (8 channel simultaneous step)

- DPV and NPV pulse width: 0.001 to 10 sec
- SWV frequency:
    1 to 100 KHz (sequential scan)
    1 to 3125 Hz (8 channel simultaneous scan)
- ACV frequency:
    1 to 10000 Hz (sequential scan)
    1 to 312 Hz (8 channel simultaneous scan)
- SHACV frequency:
    1 to 5000 Hz (sequential scan)
    1 to 250 Hz (8 channel simultaneous scan)
- FTACV frequency: simultaneously acquire 1st, 2nd, 3rd, 4th, 5th, and 6th harmonics ACV data
    0.1 to 50 Hz (sequential scan)
    0.1 to 34 Hz (8 channel simultaneous scan)
- i-t sample interval:
    1e-6 s to 100 s (sequential step)
    8e-5 s to 100 s (8 channel simultaneous step)
Current low-pass filters
Current analog output
Cell control: purge, stir, knock
Maximum data length: 128K-16384K selectable
Dimensions: 14.25"(W) × 9.25"(D) × 4.75"(H)

Overlay plot of 8 channel i-t Curve with different potential setting for each channel

Overlay plot of 8 channel SWV with all eight channel potential scanned simultaneously