

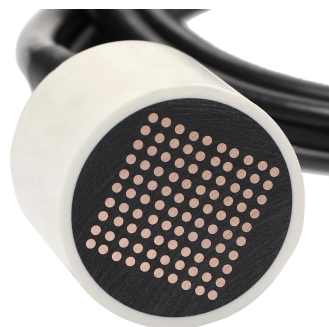
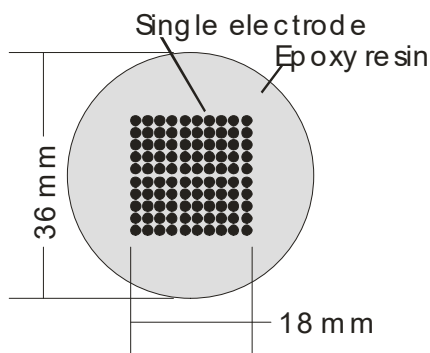
## CST520 Multi-electrode Array Electrochemical Mapper

Based on high-resolution AD converters and zero resistance ammeter techniques, CST520 can quickly map the galvanic current and OCP distribution on an arrayed multi-electrode and facilitate the study of non-uniform corrosion of metal samples under deposits, coatings and anti-rust oils. Further, it can work with CS potentiostat to map impedance distribution on a multiple-electrode sensor.



By cyclic scanning of the potential and current distribution on the surface of the array electrode, it can characterize the local corrosion distribution or non-uniform electrochemical dissolution process of bare metal or metal under coating.

CST520 can precisely measure the electrode potential and short-circuit current of any single electrode. It is particularly suitable to study the spontaneous corrosion of metals under non-perturbed state.



### Application

This instrument is suitable for studying the local corrosion distribution characteristics of metal surfaces in the laboratory, as well as the mechanism study of the occurrence and development of local corrosion. It can be widely used to study metal non-uniform corrosion behavior.

### Working principle

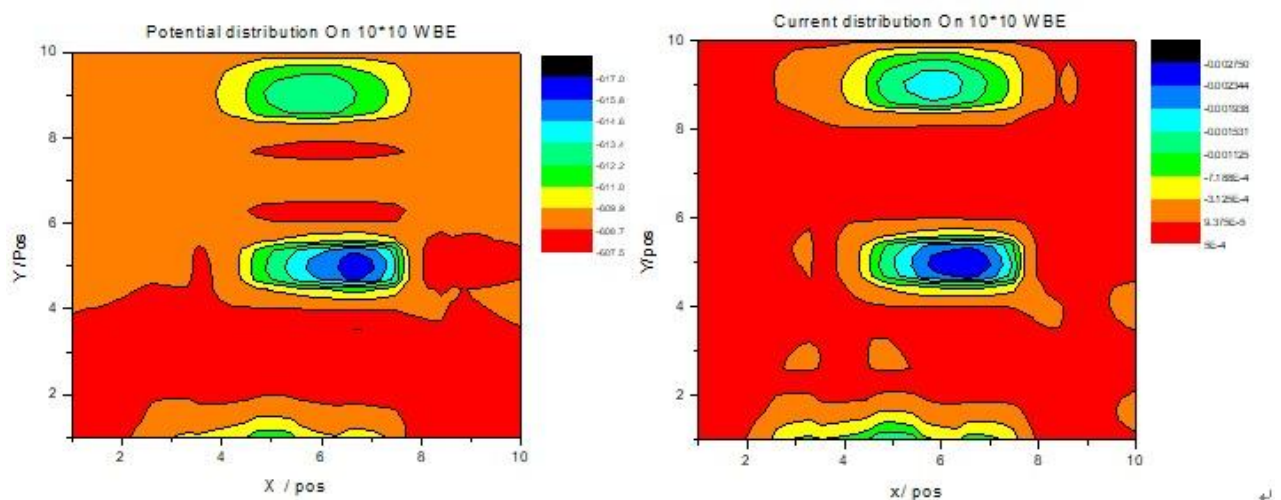
CST520 Multi-electrode Array electrochemical system consists of two parts: a multi-electrode interface and an electrochemical testing system. It can not only test the electrode potential and short-circuit current of any single electrode, but also measure the EIS and polarization curve, significantly enriching the evaluation methods of materials' corrosion resistance.

**The multi-electrode interface** mainly consists of RS485 communication circuit, IO expansion circuit, 10x10 relay matrix circuit, MCU circuit, etc. It supports up to 100-channel array electrode switching, with switch rate of up to 100Hz.

**The Electrochemical mapper** can not only conduct array electrode testing, but also serve as an independent potentiostat/electrochemical workstation with all techniques for corrosion measurements, such as open circuit potential (OCP), polarization curve (Tafel), linear polarization (LPR), EIS, M-S curve, and electrochemical noise (ECN) etc.

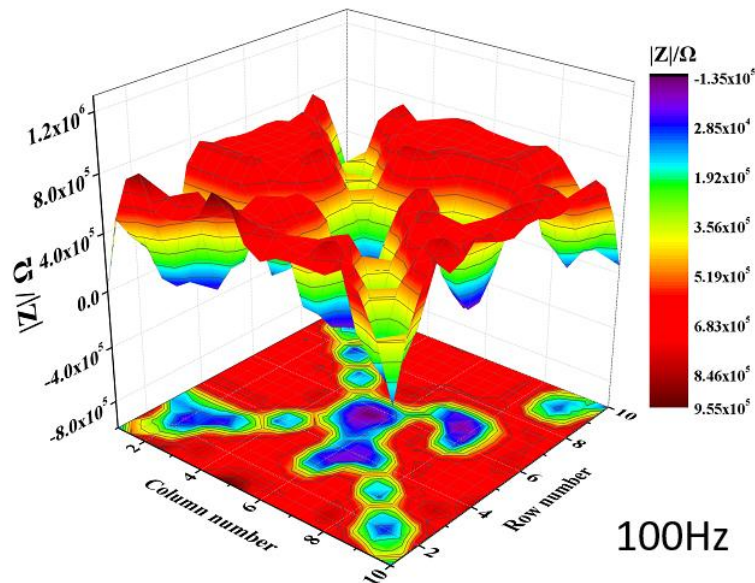
### Potential and current scanning

The CST520 can achieve cyclic potential/ current scan of the surface, or potential/current vs. time scan of any single electrode, with real-time potential/current distribution display. The data can be imported into Origin to display the 3D graphs.



As shown in above picture, it shows the potential/current distribution. It can be

seen that there are three areas with more negative potentials. Negative current also appears at the same areas in the current distribution diagram. Negative current means anode current, indicating that more severe corrosion occurs in these three areas on the electrode surface.



Impedance modulus distribution on a 10×10 wire beam electrodes

### Specifications

Potential range:  $\pm 10\text{V}$ ,  $\pm 5\text{V}$ ,  $\pm 2.5\text{V}$

Potential control accuracy: 0.1% of Full scale  $\pm 1\text{mV}$

Current range:  $2\text{nA} \sim 2\text{A}$ , 10 ranges

Maximum current output:  $\pm 2\text{A}$

Current control accuracy: 0.1% of Full scale

Channel switching rate: 100Hz

Expansion interface: RS485 115200bps

Power supply: AC 220V

### Standard supply:

CST520 Multi-electrode Array Electrochemical Mapper instrument \* 1 set

CS5000X Multi-electrode interface\*1 set

Software kit\*1

Expansion electrode cable\* 3(WE/SE/AGND(WE99))

Reference electrode input cable\*1

Counter electrode input cable \*1

DB9 communication cable \*1

Q235 carbon steel 10\*10 array electrode \*1

Electrode cable \*2

Power cable \*2

USB cable\*1

Dummy cell \*1