



## James Cor-Map II

**Advanced System for corrosion potential data acquisition and analysis, allowing the user to quickly identify areas of probable corrosion in the field.**

### ***Features and Benefits***

- Ruggedized Electronics allows rapid analysis of data in the field or office.
- Conforms to ASTM C-876 Standard Method of Half - Cell Potential of un-coated reinforcing steel in concrete.
- Electrode is designed for use on horizontal, vertical and inverted positions.
- Temperature and humidity sensors facilitate inclusion of environmental conditions in data analysis.

# James Cor-Map II



## Theory:

**F**or steel reinforcing bars in concrete, corrosion is an exchange of ions from the steel to the concrete.

This chemical exchange of ions produces rust ( $\text{FeO}_2$ ). It also produces areas of concrete where there is a larger concentration of negative ions due to the corrosion process of the steel reinforcing bar than areas where there is no corrosion. This larger concentration of ions creates a small electric voltage potential. By measuring and mapping the voltage potential found in the concrete we are able to determine rapidly the presence of corroded steel reinforcement without costly and time consuming demolition of the concrete.

This is done by recording the voltage between the rebar and a half cell, which is mapped across the surface of the concrete. Areas of rust with high corrosion will exhibit significantly lower voltages than areas without corrosion, thus areas of corroding steel reinforcing bar in concrete can be rapidly found. There is no need to know the exact position of the steel reinforcing bar or the amount of cover, the presence of the steel is all that is required. However, the voltmeter has to be connected to an exposed piece of the rebar network, and because the concrete is being tested, any material on the surface should be removed.

## Half Cell Reference Electrode:

The Cor Map Mark II system comes complete with rugged half - cells designed for the tough construction environment. Porous ceramic tips are used in order to provide long life and eliminate problems from clogs in the  $\text{Cu}/\text{CuSO}_4$  half - cell. The specially shaped tip has also been designed to allow the half cell to take read-

ings in the a vertical, horizontal or inverted position. They also have a semi transparent full view window, that allows liquid level observation without removal of sealed ends and still protects the half cell from damage by sunlight. The  $\text{Ag}/\text{AgCl}$  electrode uses an easily replaceable disposable cell. This also allows reading to be taken in the vertical, horizontal or inverted position. It also makes maintenance a simple matter.

## Instrumentation Unit:

The fully integrated data acquisition and analysis unit has been designed for the rapid analysis of data in the field or office. As large amounts of data are normally generated, interpretation of this information can be very difficult. Employing the simple to use menu driven CorMap main unit, data can not only be collected quickly and easily, but it can also be analyzed directly in the field on the graphic display. The unit produces a symbolic map of the structure, where symbols represent various half -cell potential voltage levels previously acquired. This symbolic map can then be interpreted like a contour map where areas of high potential represent areas most likely to be corroding.

Not only can this information be acquired and analyzed but the unit will also read the general environmental parameters of temperature and relative humidity.

All this data can also be stored and uploaded to a P.C. This allows the user to include the data in subsequent reports and spreadsheets for further analysis. Each data point is also recorded with the time and date to simplify later analysis.

## Specifications

**Instrument Weight:** 6 lbs. ( 2.75 Kg )

**Ship Weight:** 15 lbs. ( 6.8 Kg )

**Instrument Dimensions:** 4.5" x 8.5" x 10.5"  
(115mm x 225mm x 267 mm )

**Battery:** 12 Volt 4 - 10 Hours Continuous Operation

**Display:** 320 x 240 pixels backlit for daylight use

**Storage:** Over 5000 readings

**Operating Temperature:** 0 - 50 C

**Temperature Reading Range:** -273 - +130 C

**Temperature Accuracy:** +/- 0.5%

**Humidity Reading Range:** 0 - 100%

**Humidity Accuracy:** +/- 5%

## Sales Numbers

C-CM-5000-CU Cor-Map Complete System  $\text{Cu}/\text{CuSO}_4$  Sensors

C-CM-5000-AG Cor-Map Complete System  $\text{Ag}/\text{AgCl}$  Sensors

C-CM-4000  $\text{Cu}/\text{CuSO}_4$  Reference Electrode

C-CM-5500 Instrument & P.C. Software

C-CM-5400  $\text{Ag}/\text{AgCl}$  Reference Electrode

C-CM-4300 Cable Reel w/ 250 ft Cable

C-CM-5100 Sensor Adapter

C-CM-5200 Reservoir Housing

S-3180 Battery Charger

C-CM-5150 Extension Poles

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