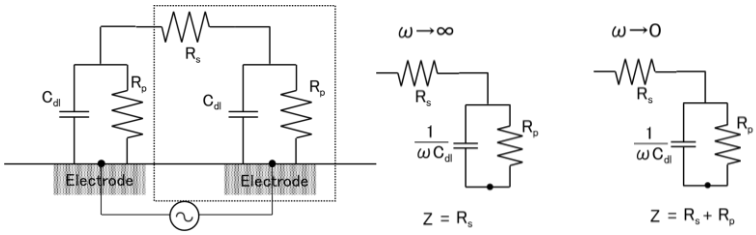
Corrosion Monitor SICM-714B/718B Specifications

【Overview】

This device, based on electrochemical impedance spectroscopy (EIS), enables continuous monitoring of TS sensor impedance by applying voltages at two specific frequencies.

【Structure and Appearance】

【Equivalent circuit model of corrosion reaction】



Atmospheric corrosion systems under electrolyte immersion and a water film are represented by the equivalent circuit. Z is the impedance, R_p is the polarization resistance ($\propto$ corrosion resistance), C_{dl} is the electric double layer capacitance, and R_s is the solution resistance. Since it can be approximated that $Z \fallingdotseq R_s$ when $\omega \to \infty$, and $Z \fallingdotseq R_s + R_p$ when $\omega \to 0$, the solution resistance R_s can be measured from the high frequency side, and the polarization resistance R_p can be calculated by subtracting value on the high frequency side from the value on the low frequency side. The inverse of the polarization resistance is correlated with the corrosion rate. Therefore, it is possible to grasp the change in the corrosion rate over time.

【Specification】

Number of Measurement Channels	SICM-714B: Max.4　SICM-718B: Max.8
Measurement frequency	High frequency side: 10kHz Low frequency side: Select from 1mHz, 10mHz, 100mHz *Can be changed (Consultation required)
Applied voltage	Sine wave, Select 20mVp-p, or 100mVp-p
Impedance measurement range	High frequency $\sim 10^5 \Omega$, Low frequency $\sim 10^9 \Omega$
How to measure	AC impedance measurement with DFI
Noise reduction	Noise cancellation by integrating 1 to 8 cycles, Noise removal with shield/guard function, Cable stray capacitance cancellation
Measurement interval	10 min. *Can be changed
Recorded data	Time, Solution resistance “R_s”, Corrosion resistance “R_c”, Electric double layer capacitance “C_{dl}”, Phase difference
Data format	Text (Can be read by spreadsheet software, etc.)
Data storage	SD card (4 ～ 32 GB)
Power supply	100V AC adapter or 12V battery
Weight	SICM-714B: App.1.7kg SICM-718B: App.1.9kg
Size	260mm(W) x 180mm(D) x 100mm(H) (Excluding protrusions)

【Accessories】

Measurement cable (1.5m)

SICM-714B: 4 pcs. SICM-718B: 8 pcs.

【Separately purchased items】

●We recommend purchasing our designated products (Operation confirmed).

TS Sensor	SD card	AC adapter

【Included software】

●Parameter setting software (For Windows)

Setting items：Frequency(low/high frequency), Applied voltage (low/high frequency), measurement interval, channel, low frequency integration times

【Option】

●Data import software

Connect the device to PC with a communication cable and save data

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