



HUMBOLDT

Giatec RCON™ Concrete Resistivity

RCON™ is a non-destructive testing device that measures the electrical resistivity of concrete samples. Resistivity has been shown to be an excellent method for evaluating the micro-structural properties of concrete, including:

- Diffusion of chloride in concrete;
- Rebar corrosion in concrete;
- Setting time of fresh concrete;
- Curing of concrete
- Moisture transfer in concrete, and
- Cathodic protection design.
- Crack detection in concrete

Since RCON™ is a non-destructive testing method and requires no special sample prep, it can utilize the same samples that are currently being used for compressive strength testing without affecting that test.

RCON™ is fast (measurement time is less than 5 seconds), accurate ($\pm 2\%$, utilizing variable frequency method) and flexible (the measurement can be taken with different settings and test configurations). RCON™ also allows for continuous measurement of electrical resistivity over time, which can be used to monitor several other parameters such as the changes of water content and time of setting in concrete specimens.

RCON™ employs an AC impedance technique for fast, accurate readings, which can be continuously obtained for various concrete materials, using RCON™'s customizable and user-friendly operating software. The electrical resistivity

of concrete can easily be related to pore network characteristics, such as pore size and connectivity, moisture content in the pores and pore solution chemistry.

In concrete materials, electrical resistivity has been well correlated with important durability parameters such as permeability and diffusivity. In addition, this non-destructive test can easily be conducted on fresh or hardened concrete specimens at different ages or various stages of hydration in order to study workability, setting times and durability performance of the concrete. The electrical resistivity method has also been applied to investigate corrosion of rebar in concrete, creep, aggregate segregation and freeze/thaw of concrete since they affect the pore network properties. The concrete electrical resistivity techniques is also a suitable replacement for the Rapid Chloride Permeability Test of concrete (as per ASTM C1202) since there is a strong correlation between the electrical resistivity and durability performance of concrete.



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Technical Specifications

General

Reading Range	Frequency spectrum	Phase measurement	Impedance accuracy	Phase accuracy
1 ~ 100 Ω	1Hz ~ 30KHz	0 ~ 180°	± 2% ± 2digit	5 % ± 3digit
100Ω~1000Ω				
1 ~ 10 KΩ				
10 ~ 100 KΩ				
100 KΩ ~ 1 MΩ	1Hz ~ 10KHz			

Measurement Time

Frequency	Sampling time	Reading time (minimum)
1 Hz ~ 4 Hz	5 seconds	10 seconds
5 Hz ~ 30 KHz	1 second	2 seconds

Operating Conditions

Type	Value
Operating temperature	15 ~ 45 °C
Operating humidity	30 ~ 80%
Storage temperature	0 ~ 60°C
Operating voltage/current	100-250 V ± 10%, 60Hz
Dimensions of RCON™	200 x 230 x 70 mm

Ordering Information

Model #	Description
HG-9035	RCON™ Device, Complete Package RCON™ unit, Power adapter, Test cable set, Alligator test clip, Sample holder, Verification kit, Fresh concrete probe, User manual, Communication software, USB cable, Conductive gels, 2 pairs of contact sponge
HG-9011	RCON™ Device RCON™ unit, Power adapter, Test cables, Verification kit, User manual, Communication software, USB cable
HG-9012	Verification Kit
HG-9013	Sample Holder, 2 pair Contact Sponges
HG-9014	Contact Sponge, 1 pair
HG-9015	Conductive Gel - Low Viscosity, 250ml.
HG-9016	Conductive Gel - Medium Viscosity, 250 ml.
HG-9017	Fresh Concrete Probe
HG-9018	Test Cable Set

RCON™ is a trademark of Giatec Scientific, Inc.



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