



DATA SHEET: CORRODEC® EARLY WARNING SYSTEM FOR HUMIDITY DETECTION IN CONCRETE

Operating Principle:

- Wireless and energy-free detection of humidity in concrete using moisture sensors paired with RFID technology.
- Accurate assessment of the current state for detecting deviations in moisture levels.
- Measurement of electrolytic resistance.
- Monitoring of concrete temperature.
- Long-term data readout capability, ensuring functionality for the full useful life of the structure (over 50 years).

Design Features:

- Circumferential stainless-steel rings used for reliable humidity detection.
- Housing material options include durable plastic or fiber cement.

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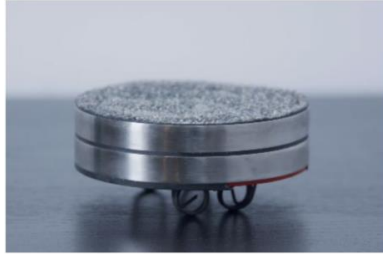
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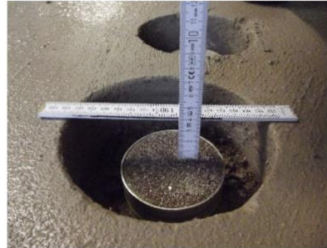
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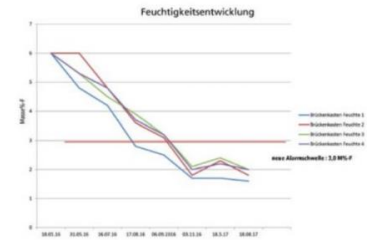
- Standard housing dimensions: 95 mm in diameter, 26 mm in height.
- Sensors are securely fastened to the reinforcement using integrated standard wire within the sensor housing.



Humidity sensor



Retrofit



Data chart

Modifications:

- Antenna extensions of up to 25 meters are possible, allowing the measuring and readout units to be placed up to 25 meters apart. Both units remain connected by a single cable, which does not extend outside the concrete.

Installation and Environmental Considerations:

- Minimum concrete cover: 15mm from the top edge of the sensor housing, suitable for concrete grade C35/45.
- Can be mounted either horizontally or vertically, parallel to the surface.
- Installation depth varies based on the reading range of the RFID readers (between 10 - 30 cm) depending on potential interference.

Factors Affecting Reading Range:

Condition	Impact
Steel reinforcement (standard wire connection)	Low impact
Steel reinforcement (welded connection)	High impact

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Condition	Impact
Operation underwater	Moderate impact
Operation under metal-coated waterproofing	No communication possible
Nearby RFID reader device	Very high impact
Embedded in concrete	No impact
Concrete covered with bitumen/pavement.	No impact

Measurement Specifications:

- **Working temperature:** -15°C to +55°C.
- **Measurement range:** -25°C to +55°C, with a resistance range from 500 Ohms to 20 kOhms.
- **Output:** Expressed as a percentage of humidity.
- **Measurement type:** Resistance-based.
- **Frequency:** 1 kHz.
- **Accuracy:**
 - For temperatures above 0°C: ±0.75°C.
 - For temperatures below 0°C: ±1.25°C.

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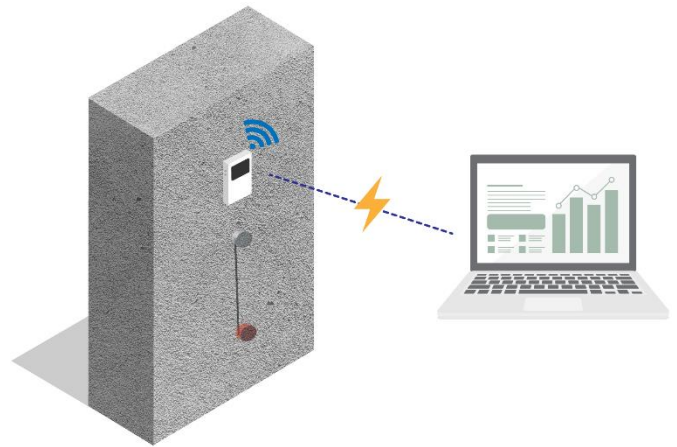
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Data Readout Options:

Option 1 - Online Monitoring:

- Data transmitted via an external gateway mounted to the concrete.
- Connectivity through Narrowband IoT (NB-IoT), ensuring robust data transmission even in challenging environments.
- NB-IoT offers strong building penetration, low operational costs, and energy efficiency.
- Each gateway supports up to four sensors.
- Data is transferred to a cloud-based platform for real-time, 24/7 monitoring.
- Alerts triggered when specific thresholds are exceeded, allowing for proactive intervention.



Option 2 - IoT Handheld Reader with Online Data Transmission:

- On-site data readout using an IoT handheld reader.
- Data is transferred to the online dashboard post-readout for analysis.
- Calibration of measured values is performed through the online dashboard.
- Option to integrate readings into existing monitoring systems.



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Applications:

The CorroDec® system is suitable for a wide range of concrete infrastructure projects, including:

- Bridges.
- Multi-story car parks and garages.
- Buildings.
- Tunnels.
- Stadiums.
- Utility infrastructures.
- Pre-stressed and post-tensioned concrete structures.

Key Benefits:

Reduced maintenance and repair costs	Lower inspection costs	Enhanced sustainability and durability	Improved safety
• through early detection of humidity issues.	• by offering efficient and remote monitoring capabilities.	• of infrastructure by preventing water-related damage.	• through continuous monitoring and early warnings.

For more information or inquiries, please visit our website, WWW.INFRASTRUCTURETEK.COM, or contact us directly through LinkedIn or info@infrastructuretek.com

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THAT PROMOTE
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