ER Probes (ERv2)

Corrosion Rate and Cathodic Protection Data
Ideal for Interference Corrosion Analysis

FEATURES

Corrosion rate – Highest resolution allowing for corrosion diagnostics

Coupon measurements – AC/DC current densities, polarized potentials, spread resistance

Embedded certificate data – No paperwork necessary

Engineered design – Particularly suited for AC or DC interference corrosion monitoring

Temperature compensation – Heat sink - Reference element – Proprietary compensation

Rugged design available for soil / high temperature / offshore

MEASUREMENTS

- ✓ Corrosion Rate
- ✓ Instant-off potential
- ✓ IR compensated potential
- ✓ DC current density
- ✓ AC current density
- ✓ Spread resistance

DESCRIPTION

ER Probes are required when using MetriCorr ICL units in order to determine corrosion rates and measure electrical fingerprints.

The probe simulates a coating defect. Measuring the electrical resistance of the exposed coupon element and a shielded reference element yields the probe thickness by use of simple mathematical algorithms.

Simultaneous logging of corrosion rate and electrical fingerprints allows for effective analysis of e.g. interference conditions. Measurement of all parameters, (corrosion rate, AC/DC potentials, AC/DC current densities and spread resistance) on the same metal surface ensures that all interacting chemical and electrochemical reactions are part of the analysis.

ER probes can be used to analyze corrosion in a wide range of environments, and various probe designs and housing materials ensures that the probes are fit for purpose and will continue to provide valuable corrosion and CP information to the operator throughout its life-time.

The latest version of MetriCorr ERv2 probes have embedded memory in the plugs, containing a digital certificate. This will automatically be read by the Slimline ICL or ICL-C from MetriCorr upon connecting the probe and the units are ready to measure.

Probes from left:

1. Circular probe Soil, 1 cm^2
2. Rod type probe Soil, 1 cm^2
3. Rod type probe Soil, 10 cm^2
4. Circular probe High temp., 1 cm^2
5. Circular probe Offshore, 31 cm^2

REFERENCES:

- NACE SP21424, Alternating Current Corrosion on Cathodically Protected Pipelines: Risk Assessment, Mitigation, and Monitoring
- NACE SP0104, Techniques for Monitoring and Measuring Corrosion and Related Parameters in Field Applications
- ISO18086; Corrosion of metals and alloys — Determination of AC corrosion — Protection criteria
- L.V.Nielsen, “Effect of Coating Defect Size, Coating Defect Geometry, and Cathodic Polarization on Spread Resistance – Consequences in relation to AC Corrosion Monitoring”, in CEOCOR international Congress, Editor. CEOCOR, c/o C.I.B.E., Brussels, Belgium, (2010).
- L.V. Nielsen, “Possible temperature effects on a.c. corrosion and a.c. corrosion monitoring” in CEOCOR international Congress, Editor: CEOCOR, c/o C.I.B.E., Brussels, Belgium, (2012)
- A. Junker, L. V. Nielsen, “Effect of coating fault geometry and orientation in AC corrosion of buried pipelines”, in CEOCOR international Congress, Editor: CEOCOR, c/o C.I.B.E., Brussels, Belgium, (2016).

Technical specifications

Options	
Element material	Steel (preferred) Iron* Zinc* custom*
Housing material	PVC (soil/water/atmospheric applications) Steel (high temperature applications) custom*
Element thickness	Standard: 100 µm, 500 µm, 1000 µm, custom*
Probe sensitivity	See chart
Probe lifetime	Depending on thickness and corrosion Minimum 2 years design life
Cable length	Standard: 6 m, 9 m, 12 m, custom*
Cable type	Soil, seawater, high temperature
Temperature range (static)	Soil probe: -40 to 80°C Seawater probe: -10 to 80°C High temperature probe: Up to 200°C
Area	Standard: 1 cm^2, 10 cm^2, 16 cm^2, 31 cm^2, custom*

** Ask for availability: info@metricorr.com*

RECOMMENDED PROBE

Rod type probe for AC interference and AC corrosion monitoring – designed for worst case AC corrosion.
Steel, 500 µm, 1 cm^2, PVC, standard cable.
This probe is also useful for general CP measurements.

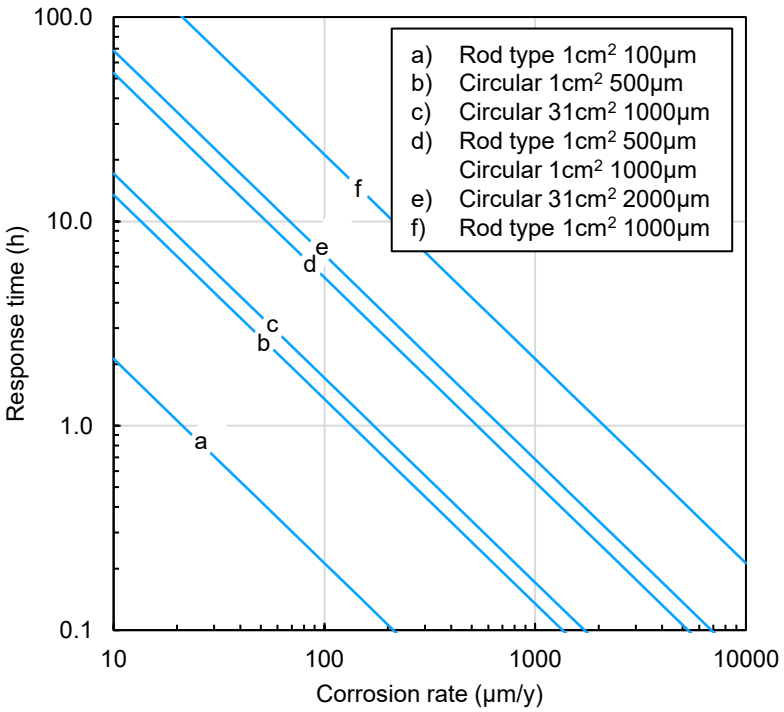

Chart (left) illustrates the sensitivity of different common MetriCorr probes in terms of the detectable corrosion rate over a period, or a probe's response time at different corrosion rates. This sensitivity must be divided by the attenuation factor depending on cable length (below).

For example, our recommended probe (above) for AC interference monitoring will be able to detect a corrosion rate of 25 µm/y (1 mpy) within 24 hours!