

ER Coupon – Soil Corrosion Probe

*Verify cathodic protection efficiency
or
Detect corrosion and diagnose the cause*

Probe featuring:

- Corrosion rate by ER measurement
- Cable wired for all electrical coupon measurements
- Cable terminated in gold plated plug
- Rugged probe construction and durable cable



Installation:

Place the ER probe in the soil in the vicinity of the pipeline.

Use an auger or make a larger excavation.

The flush type is designed for flexible mounting on the pipeline surface. Connect the cable electrically to the pipeline in a test post.



Principle:

The probe simulate a coating defect. It is designed for Electrical Resistance measurement with an exposed part and a shielded reference element. Measuring the electrical resistance and using simple mathematical algorithms, yield the thickness.



Rod type

Characteristics:

The probe lifetime is “infinite” provided protection is efficient.



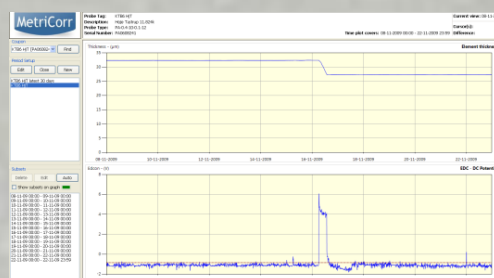
Once installed, replacement is only necessary in case the element is corroded through .



Flush type

ER coupons yields reliable results:

- during long time routine monitoring,
- validation of mitigating actions taken to prevent complicated interference problems.



ER Coupon – Soil Corrosion Probe for CP Verification

Technical data

To specify a MetriCorr standard ER probe for soil select:

Type	Material	Area	Thickness	Cable length
Rod Flush Gutter	Mild steel	1.0 cm ² 10 cm ²	100 µm 500 µm 1000 µm	6 m 12 m 30 m

Detection Limits using MetriCorr ICL-02i

Detectable change of thickness
based on 2 measurements
from the same logger

Rod – Mild steel – 100 µm

0.0045 µm

Rod – Mild steel – 500 µm

0.14 µm

Detection Time @ 100 µm/y

Time required to detect a
corrosion rate of 100 µm/y

Rod – Mild steel – 100 µm

0.5 hour

Rod – Mild steel – 500 µm

12 hours

Probe type

Dimensions

Rod – 1 cm²

Ø 32 x 190 mm

Flush – 1 cm²

180 x 190 x 45 mm

Rod – 10 cm²

Ø 32 x 245 mm

Conformance

ANSI/NACE RP0104-2004

Standard Recommended
Practice

The Use of Coupons for Cathodic
Protection Monitoring Applications

The ER probe includes

ER probe

Coupon certificate

Termination cable - adaptor cable

Swap for cleaning ER surface

Installation instruction



Information within this sheet subject to change without notice

ICL-02i - Interference Corrosion Logger

Corrosion rate and electrical diagnosis

- Monitor corrosion, induced AC and DC stray current

Features:

- Verification of CP efficiency
- Corrosion rate and electrical parameters from ER coupons
- Compare corrosion rate and electrical fingerprints
- Battery powered or mains supply - solar panel recommended

The ICL-02i is a datalogger, measuring corrosion of ER coupons. The ER coupon thickness and all electrical parameters are synchronously logged.

The ICL-02i provides a diagnostic tool for any detected corrosion.

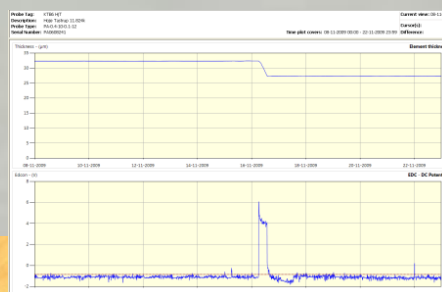
The ICL-02i can be placed in a test post with remote monitoring.

Installation is simple: Connect a MetriCorr coupon to the pipe through the logger, and connect a reference electrode to the logger.

MetriCorr Web Service is the advanced yet easy to use tool to organize and present the measurements. The sophisticated features are used to determine the cause of corrosion.

Measurements:

- Probe thickness, corrosion rate
- Edc, Pipeline DC potential
- Edc.IR.free, IR free potential, derived
- Jdc, DC current density on probe
- Uac, Pipeline AC voltage
- Jac, AC current density on probe
- Rs, Spread resistance on probe

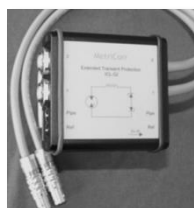


ICL-02i - for CP verification

Technical data

@ 23°C ± +/- 3°C

<u>ER resistance</u>	
TCR, -20°C – +60°C	< ±1 ppm/°C
Drift	< ±1 ppm/y
Range	0 – 80 mΩ
Repeatability (2σ)	0.4 μΩ
Precision (4σ)	0.8 μΩ



Extended Transient Protection



<u>Current</u>	
Range	300 mA _{rms}
Resolution	1 μA
AC accuracy	±4 μA ± 1% rdg.
DC accuracy	±1 μA ± 1% rdg.
Shunt resistance	20 Ω

<u>Voltage</u>	
Input resistance	2.2 MΩ
Range	100 V
Resolution	1 mV
AC accuracy	± 1 mV ± 1% rdg.
DC accuracy	± 1 mV ± 1% rdg.

<u>CE conformance</u>	EN61326-1: 1997
	Amendment A1: 1998
	Amendment A2: 2001

ICL-02i basic pack includes

ICL-02i
Extended Transient Protection, ETP, 20 kA – 8/20 μsec
Test certificate
DC power cable

ICL-02i accessory pack includes

CD rom with M-Config
Printed Operating manual
USB – RS232 converter
RS232 cable, 2 m
AC/DC adaptor 100–240 V AC / 12 V DC

<u>Connections</u>	
Communication	Serial RS232 subD (f) 9 pin
Pipe / Reference	Safety socket 4 mm
ER probe	ODU mini snap socket, 10 pin
Power	2.5 x 5.5 mm DC socket



Sockets for ER coupons

Communication and power



<u>General</u>	
Storage capacity	80,000 readings
Logging interval	10 min – ∞, Recommended 1 hour
Power requirement	11 – 15 V, 1A
Operating conditions	-40 – +60°C 0 – 95 % RH non condensing
Transient protection	1100 V for 150 ms
Extended Transient Protection, ETP	20 kA – 8/20 μsec
Weight (ICL / ETP)	400 / 350 g
Size (ICL) LxWxH	185 x 85 x 35 mm
Size (ETP) LxWxH	95 x 85 x 35 mm

Options

Skywave – Wireless communication, GSM/GPRS
Web service – data presentation
M-Report Presentation SW, included with Web Service
Test post with solar power system
Primary battery 15 V – 16 Ah
AC/DC power 100–240 V AC / 12 V DC for DIN rail
DIN rail fixture - N35

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