

# Corrosion Probes

## Corrosion Monitoring ER, LPR and ECN

Data Sheet

### ER

Electrical Resistance

Metal Loss

$\mu\text{m}$



### LPR

Linear Polarization  
Resistance with  
floating B-constant  
Corrosion Rate

$\mu\text{m}/\text{year}$



Picture upper left:  
1-inch probes: LPR probe  
(left) and ER probe (right).

Picture Upper right: Installed  
combined 2-inch probe in high  
pressure gas flow line.

Picture right: CO<sub>2</sub> corrosion in  
downhole tubing.



### ECN

Electrochemical Noise

Pitting Corrosion

0-100%

## Combining 4 methods in 1 probe and 1 instrument.

Electrochemical measurement techniques have been extensively investigated in laboratories and universities. For corrosion monitoring in the field on a large scale, the linear polarization resistance (LPR) technique normally is used. This is in accordance with ASTM G59. Several initiatives have been taken to extend LPR measurements with other electrochemical techniques in order to get more reliable information and enable to measure besides uniform corrosion, localized corrosion such as pitting, crevice corrosion and stress corrosion cracking. In oil and gas, ER probes are widely used. Conductivity even provides more information about the status of your concrete steel.

Corrodium developed a new probe for combined corrosion monitoring. This patented probe measures: Electrical Resistance (ER), Linear Polarisation Resistance (LPR), Electrochemical Noise and Conductivity in one. It's meant for better planning of maintenance and for control of the corrosion inhibitor regime (if applicable), thus saving a lot of money on annual base. Projects are oil and gas (worldwide), industry, cooling water, geothermal plants, and so on.

Item	Description
General:	Instrument with output for ER (metal loss), LPR (corrosion rate), ECN (pitting %) and Conductivity (Siemens).
Measuring principle	The measuring principle is both Electrical Resistance and Electrochemistry with a built in potentiostat.
Power and interface	4-20 mA HART, or a narrowband radio transmitter, connected to a server, or download on a USB card.
Operating temperature:	Standard -30°C to +40°C