

# Model MS4500L

## LPR Data Logger

The MS4500L is a hand-held, battery-powered, corrosion meter capable of measuring and storing data from Linear Polarization Resistance (LPR) corrosion probes. The instrument is light weight, microprocessor-based, and features a simple, menu-driven interface using a keypad and a backlit graphical LCD display.

Corrosion rate measurements are made using the Linear Polarization Resistance method. The instrument measures the current required to polarize the electrodes of a probe to a known potential. From the polarization potential and the measured current, the polarization resistance and corrosion rate can be calculated.

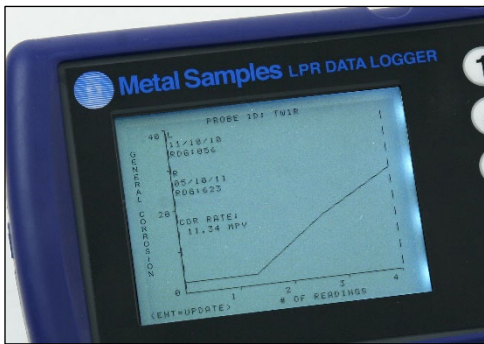


*Probe shown in photo not included with corrosion meter.*

MS4500L measures general corrosion, localized corrosion and conductance. The instrument utilizes state-of-the-art algorithms and data analysis techniques to accurately measure general corrosion rate and pitting. Harmonic distortion analysis (HDA) is applied to improve the performance of the industry-accepted linear polarization resistance (LPR) technique used to measure corrosion rate.

To further enhance the performance, an application-specific Stern-Geary variable (B value) is calculated and updated every measuring cycle. There is no need to manually update the B value because of process changes. During the measurement cycle, the MS4500L also performs an automated electrochemical noise (ECN) measurement which, in combination with the corrosion rate data, can provide a measurement of localized corrosion (pitting).

After taking a reading, the instrument displays conductance in  $\mu\text{S}$ , general corrosion rate in mils per year (mpy) and localized corrosion values. The reading can then be stored to memory or discarded. All stored readings are automatically time and date stamped. Readings are stored to non-volatile Flash memory which retains data without the need for a battery backup.



*On-screen charting*



*Transfer data directly to USB Flash drive*

The MS4500L can store 16,000 readings per probe on up to 125 different probes. Stored data can be downloaded directly to a certified data transfer unit in hazardous areas and regular USB Flash ("jump") drive in non-hazardous areas. Data can be opened and charted using the provided Corrosion Data Management software or can be imported into any standard data analysis (spreadsheet) program such as Microsoft Excel. Data can also be reviewed and charted on the instrument's LCD display for quick reference.

# Technical Specifications

## Model

MS4500L - Handheld LPR Corrosion Data Logger

## Physical Data

Instrument Weight\*: 2.13 lb. (0.97 kg)  
Total Weight w/ Case & Accessories: 7.40 lb. (3.35 kg)  
Instrument Dimensions\*: 8.57"L x 4.54"W x 2.38"D (21.77cm x 11.53cm x 6.05cm)  
Carrying Case Dimensions: 14.50"L x 11.38"W x 5.88"D (36.83cm x 28.89cm x 14.92cm)  
Operating Temperature: -13° to 140°F (-25° to 60°C)  
Storage Temperature: -13° to 158°F (-25° to 70°C)

\* Includes protective boot.

## Measurement Data

Probe Type	2-Electrode LPR and 3-Electrode LPR		
Measurement Type	<b>General Corrosion</b>	<b>Localized Corrosion</b>	<b>Conductance</b>
Measurement Unit	mpy (mils per year) or mmpy (mm per year)	Unitless	microSiemens (μS)
Measurement Range(s)	Default Range: 0 to 40 mpy (0 to 1 mmpy) Maximum: 1000 mpy (25 mmpy)	Default Range: 0.0 to 1.0 Low Range: 0.0 to 0.3 High Range: 0.3 to 1.0	5 to 333,333
Maximum Measured Error	Excitation voltage < 0.05% of full span Corrosion current measurement < 0.2% of full span		
Factory Settings	B value (Stern Geary value): 25.6 mV K value (corrosion constant): 11800 (2e- in reaction)		
Measurement Cycle	4 to 21 minutes (depends on configuration)		

## Electrical Data

Power Requirements: Four AA Batteries - Duracell PC1500 (or Duracell MN1500)  
Maximum Probe Cable Distance: 12 ft (3.6 m)  
Download Method: Directly to certified data transfer unit (in hazardous areas)  
To non-certified USB Flash drive (in non-hazardous areas only)

## Hazardous Location Certifications – Intrinsic Safety

USA / Canada for use in Class I Zone 0 AEx ia [ia] IIC T4 Ga  
Ex ia [ia] IIC T4 Ga  
Class I, Division 1, Groups A, B, C & D, T4  
Provides outputs to Class I, Division 1 [Ex ia]  
- 25°C ≤ Ta ≤ + 60°C



Europe and Worldwide II 1 (1) G Ex ia [ia] IIC T4 Ga  
(ATEX and IECEx) - 25°C ≤ Ta ≤ + 60°C  
ATEX Certificate No: **ITS18ATEX203161X**  
IECEx Certificate No: **IECEx ETL 18.0007X**



## Special Features

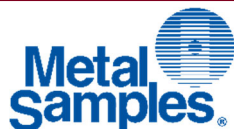
- LPR measurement with Harmonic Distortion Analysis
- Backlit graphical LCD display (240 x 128-pixel resolution)
- On-screen charting
- Automatic data-logging
- Non-volatile Flash memory
- Multilingual menu (English, Spanish, Portuguese, French)

## Included Accessory Items

Carrying Case, Probe Cable (1' coiled - 6' extended), Meter Prover, Operation Manual, Corrosion Data Management Software, Protective Boot

## Optional Accessory Items

Certified Data Transfer Unit  
Certified USB Barrier



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