CR - 200/300
Wireless & Inline Corrosion Rate Sensors

CR-300 (24 VDC Powered and 4-20mA Output w/Wireless Adapter for Configuration)

CR-200 (Bluetooth Enabled & Connection Options)

LPR Corrosion Sensors -vs- Corrosion Coupons

The use of the LPR corrosion rate represents a valuable tool that can be easily and affordably deployed to provide both general and localized corrosion measurements in an instantaneous format. There is a common industrial misnomer that the use of inline LPR corrosion sensors should be identical to that of corrosion coupons. The LPR corrosion level represents the real-time electrochemical measurement of corrosion. While it may be linear with respect to the corrosion rate obtained from the weight loss of a coupon exposed to water for a long period, the LPR corrosion rate may not necessarily be the same exact value of the latter. The instantaneous nature of the device measurement represents a "real-time condition" on an MPY scale based on the specific metallurgy being assessed and will in many cases vary, in a short time scale, from a corrosion coupon. The LPR data should be used to best understand the linear relationship with coupons and for real-time application performance assessment and adjustment.

The Pyxis CR-200/300 corrosion rate sensors are ideal for cooling and process water treatment monitoring where robustness and affordability are a must. The sensors utilize the linear polarization resistance (LPR) method to produce a raw signal. The raw signal is conditioned, amplified, and digitized directly in the sensor itself. This avoids the interferences and attenuation of the raw signal caused by long-distance wiring needed for other corrosion probes to a separate signal conditioner or transmitter box. The Pyxis corrosion sensors measure sample water conductivity directly and compensate for the conductivity impact on the LPR measurement. These unique product characteristics make the Pyxis LPR superior in performance and accuracy.

In addition to the LPR measurement to obtain the general corrosion rate, the CR-200/300 sensors also measure electrochemical noise. The measured noise data is used to calculate an index to quantify the localized corrosion rate also referred to as pitting.

The **CR-300** is a standalone sensor that can be powered by a 24 VDC power source such as an existing controller or PLC.

The **CR-200** is a battery powered and Bluetooth® enabled corrosion sensor for true wireless connectivity. A centralized Bluetooth® enabled display panel available via the BTA-100 for single probe or the BTA-400 for multiple probes can be used to display the readings from an array of CR-200 sensors. The CR-200 makes it possible to monitor corrosion at multiple test points, avoiding the complications of running power and signal output wires from the sensor to a controller and/or display unit. The CR-200 sensor can store up to 6-months' worth of data that can be wirelessly downloaded to a computer or phone using the uPyxis APP.

The CR-300, with the addition of a Pyxis Bluetooth Adpter (MA-WB), and the CR-200 can both communicate with any smart device via the **uPyxis** app. The uPyxis app, available for all smart phones and computers, is used to configure and obtain current sensor readings. Additional diagnostic information is available and can be used for determining the sensor performance or the need for maintenance.

The CR-200/300 sensors accept various test metal electrodes commonly used in the industry (Low-Carbon Steel, Copper, Admiralty Brass, 304 Stainless Steel, Copper Nickel, Aluminum 1100 &6061).

Application

Cooling & Process Water Monitoring

Features

- Anti-electromagnetic interference (anti-EMI) design with stainless steel sensor body
- MODBUS support with isolated RS-485 communication
- Battery life up to 1 year thru using our ultra-low power design and smart power management
- Three O-ring grooves positioned on the sensor body allow insertion depth control
- Bluetooth connectivity to uPyxis app: Downloadable at Google Play Store or Apple App store
- Ultra-low corrosion rate down to 0.001 MPY can be accurately measured
- Generalized Corrosion & Localized Corrosion Rate

Specifications

	CR-200	CR-300
Power Supply	3.6V ER26500 battery	24 V 2W
Output	Bluetooth 4.1	Isolated RS-485 MODBUS and two 4-20 mA
Data Storage	6 months (30 minutes per measurement)	N/A
Dimensions	10.3 in (260.5 mm) long, 0.9 in (23.0 mm) diameter lower portion, 1.7 in (43.0 mm) upper portion	11.1 In (281.5 mm) long, 0.9 in (23.0 mm) diameter lower portion, 1.7 in (43.0 mm) upper portion
Weight	655 g with battery	687 g
Cable Length	N/A	5 ft (1.5 m), extension cable available
Range, general corrosion	0.001 - 10 MPY	
Range, localized corrosion	0 – 100 (304 stainless steel in 10% ferric chloride as 100)	
Conductivity Compensation	10 - 10,000 µS/cm	
Sample Temperature	-20 – 50 °C	
Reading Interval	1 min, 2 min, 5 min, or 20 min	
Resolution	0.001 MPY	
Alloy Factor	0 - 3	
Installation	Flow cell with 1-inch NPT	
Enclosure Material	304 stainless steel	
Working Pressure	Up to 100 psi (7 bar)	
Temperature	Working: -10 – 50 °C Storage: -20 - 70 °C	
Protection	IP65	
Regulation	CE	

* With Pyxis' continuous improvement policy, this specification is subject to change without notice.

NEW

uPyxis

Universal Connectivity uPyxis APP

Pyxis has developed the uPyxis mobile app for iOS and Android.
The app can be used to configure both CR-200 and CR-300,
view live corrosion rate and for CR-200 wirelessly
transfer up to 6 months of General & Localized Corrosion Data via
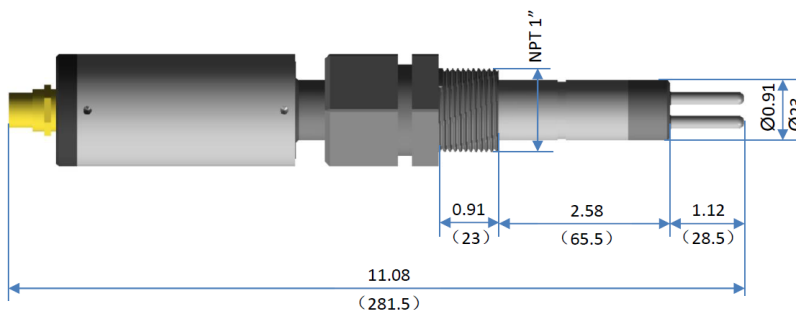emailing a CSV file.

Note:

[1] uPyxis is still evolving rapidly. Some features may only be available
on smartphone version. Check our website www.pyxis-lab.com for
latest information.

[2] Inline Bluetooth adapter (P/N: MA-WB) is required for CR-300

[3] CR-200 Does is Bluetooth Enabled and requires no adapter

CR-200 Dimensions
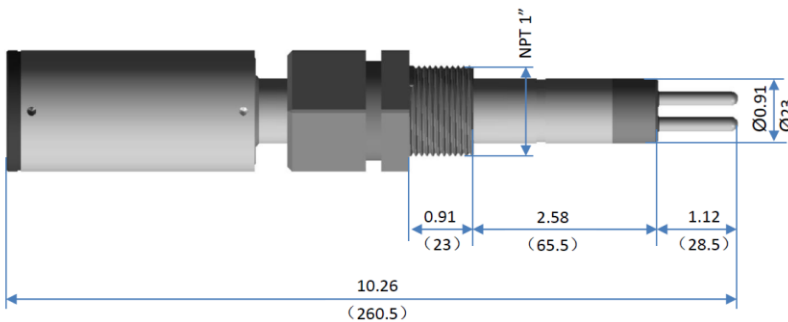
CR-300 Dimensions

CR-200/CR-300 Product & Accessories Selection Guide

Pyxis   PYXIS LPR CORROSION SENSOR PRODUCT LINE - SELECT*A*GUIDE   **Pyxis**

Functional Capability	CR-200	CR-300	BTA-100	BTA-400
Part #	51006	51007	50729	50751
General Corrosion (0.001 - 10mpy)	X	X		
Pitting Corrosion (0.001 - 100mpy)	X	X		
5' Connecting Cable Included 4-20mA/RS485		X		
Calibration Caps Included (2.0 & 0.1mpy) - 1each	X	X		
USB Adapter For CR300 Configuration		X		
Bluetooth Output / Lithium Battery Powered	X			
4-20mA/RS485 24V Powered / Wired To Controller or Display		X		
Single Channel Receiver / Display - Bluetooth IN / 4-20mA-RS485 OUT			X	
Four Channel Receiver / Display - Bluetooth IN / 4-20mA-RS485 OUT				X
NOTE - CR-200 bluetooth to BTA-100 or uPyxis APP / CR-300 wired to controller				

Pyxis   PYXIS LPR CORROSION SENSOR ACCESSORIES   **Pyxis**

Accessory Name / Description	Part #	Photo
MA-10CR - 10' Cable for CR300 LPR Sensor	50741	
MA-20CR - 20' Cable for CR300 LPR Sensor	50742	
MA-50CR - 50' Cable for CR300 LPR Sensor	50743	
MA-100CR - 100' Cable for CR300 LPR Sensor	50744	
MA-4.9CR - 4.9 ' Cable For CR300 LPR Sensor	50745	
MA-1.5CR - 1.5 Meter Connection Cable For CR300	50746	
CR-200 3.6V ER26500 Battery	50730	
2.0 MPY Calibration Cap	51010	
0.1 MPY Calibration Cap	51011	
BTA-100/400 Wall Mounting Bracket	50753	
CR-300 WiFi/Bluetooth Adapter	MA-WB	
CE-01 Mild Steel Electrode Pair	51002	
CE-02 Copper Electrode Pair	51003	
CE-03 304 Stainless Electrode Pair	51004	
CE-04 Admiralty Brass Electrode Pair	51005	
CE-05 Aluminum 6061 Electrode Pair	51006	