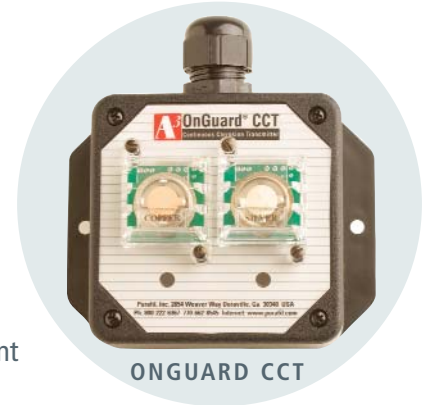


PRODUCT BULLETIN

4 THE ONGUARD® CONTINUOUS CORROSION TRANSMITTER




THE PURAFIL ONGUARD CONTINUOUS CORROSION TRANSMITTER (CCT) measures in real-time the amount of corrosion forming on copper and silver surfaces, and transmits this information to the control system via a 4-20 mA output signal. Cumulative or incremental data can be logged, allowing for the detection and measurement of isolated, corrosion-causing events. All OnGuard CCT measurements can be related to Instrumentation, Systems and Automation Society -Standard S71.04-1985, which defines an environment as either G1, G2, G3, or GX, based on the corrosion severity level and potential effects on equipment reliability.



PRODUCT APPLICATIONS STANDARD FEATURES:

- Real-time corrosion measurements
- Incremental and cumulative corrosion data
- Service life of 4000 Angstroms
- Patented technology specific to airborne corrosion
- Accurate within $\pm 0.5-1\%$ of full span
- Corresponds to ISA Standard S71.04-1985 for Classification of Environments
- 4-20 mA output signal

PRODUCT DESCRIPTION

The OnGuard CCT utilizes highly sensitive quartz crystal microbalance sensors to provide accurate and reliable corrosion monitoring within $\pm 0.5-1\%$ of full span. Ideal for control rooms, motor control centers, rack rooms, or other areas where corrosion is of concern, the OnGuard CCT allows for action to be taken before problems develop - increasing the reliability of electronic and electrical instrumentation, and reducing the cost of maintenance repairs.

PRINCIPLE OF OPERATION

The OnGuard CCT is the first monitor to transmit real-time data on the amount of corrosion forming on copper and silver surfaces. The quartz crystal microbalance sensor (QCM), the heart of the OnGuard CCT's patented technology, has a natural resonance frequency based on mass. The OnGuard CCT features two QCM sensors, one plated with copper and the other with silver, which accumulate corrosion films when acid gases react with the base metal. This process

results in an increase in sensor mass and a decrease in natural resonance frequency. By applying the proper conversion factors, the OnGuard CCT correlates the mass gain to corrosion thickness, expressed in angstroms (\AA). This measurement can then be related to ISA-Standard S71.04-1985 (see chart).

SYSTEM ADVANTAGES

MAINTENANCE: The only maintenance necessary of the OnGuard CCT is the replacement of the sensor(s), which is required at 4000 angstroms of cumulative corrosion growth, or if the sensor(s) has been damaged, causing the Red LED to blink.

INSTALLATION: Location: Select a clean, dry location free of excess vibration where the temperature will be between -10 and 75°C (14° and 167°F) and the relative humidity will be between 10% and 95% non-condensing.

PLACEMENT: When installing the OnGuard CCT special care should be given to its placement. It should be mechanically affixed to a structure at eye level within the protected space.

DIGITAL LOCAL READOUT: The OnGuard CCT can be read locally with a Palm™ handheld or laptop computer for direct output, verification, and troubleshooting. This can be done using a Communications Program, such as Terminal™ or Online™, set at 9600 baud. Simply plug the digital RS-232 cable into the OnGuard CCT's local RS-232 port to obtain cumulative and incremental corrosion data. Cables are available for laptop computers or Palm handhelds through Purafil.

TABLE 1

ISA STANDARD S71.04-1985	ONGUARD CCT CORRELATION	EFFECTS
Class G1: <300 \AA /30 days	Class G1: <10 \AA /24 hours	Mild: Corrosion is not a factor
Class G2: <1000 \AA /30 days	Class G2: <33 \AA /24 hours	Moderate: Corrosion is measureable
Class G3: <2000 \AA /30 days	Class G3: <66 \AA /24 hours	Harsh: High probability that corrosive attacks will occur
Class GX: >2000 \AA /30 days	Class GX: <67 \AA /24 hours	Severe: Electronic/electrical equipment not expected to survive

ONGUARD CCT

TABLE 2

RS-232 Data Output in Angstroms

MINUTES ON	COPPER CUMULATIVE	COPPER INCREMENTAL	SILVER CUMULATIVE	SILVER INCREMENTAL
0000, 0001,	0002, 0002,	0002, 0002,	0004, 0004,	0004 0004

SPECIFICATIONS

Two-channel copper and silver transmitter

Available outputs:

- Factory Default: Cumulative
0-4000 = 4-20 mA (Fig. 1), switch selectable
- Dip Switch Selectable: Incremental
0-127 = 4-20 mA (Fig. 2)

ELECTRICAL

Power Supply: 18 to 30VDC, unregulated
 Output Signal: Two 4-20 mA DC channels, two wire
 Current Consumption: <50mA locally powered
 Analog Output Interval: 60 minutes via current interval
 Digital Output Interval: 60 seconds, RS-232
 LED-Red Blink: Sensor failure
 LED-Green-Fast Blink:* 2 Hours - Sensor Initialization
 LED-Green-Slow Blink:** 24 Hours - Incremental Data Collection
 LED-Green-No Blink: Unit operating normally

- * One blink every 2 seconds.
- ** One blink every 4 seconds.

CONNECTIONS (Fig. 3)

Power & Current Output (18-20 Gauge):

- TB1 - Pin 1 - V - (GND)
- TB1 - Pin 2 - Current Output + (Channel #1 Copper)
- TB1 - Pin 3 - Current Output - (Channel #1 Copper)
- TB1 - Pin 4 - Current Output + (Channel #2 Silver)
- TB1 - Pin 5 - Current Output - (Channel #2 Silver)
- TB1 - Pin 6 - V+

OPERATIONS:

Output at zero: 4 mA
 Output at full span: 20 mA
 Accuracy: ± 0.5-1% of full span

MECHANICAL:

Dimensions (LxWxH): 3.25 x 4.24 x 1.37 in
 (8.20 x 10.80 x 3.50 cm)
 Weight: 0.3 lb (150 grams)
 Housing: Black Thermoplastic

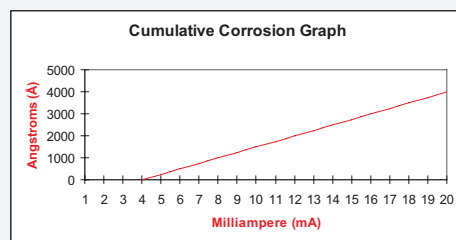


Figure 1: Cumulative: 0-4000 = 4-20 mA

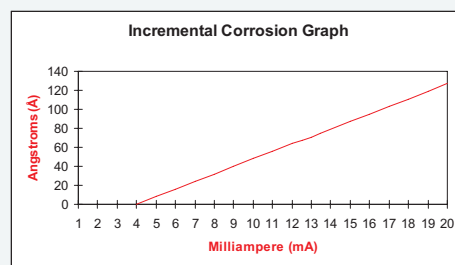


Figure 2: Incremental: 0-127 = 4-20 mA

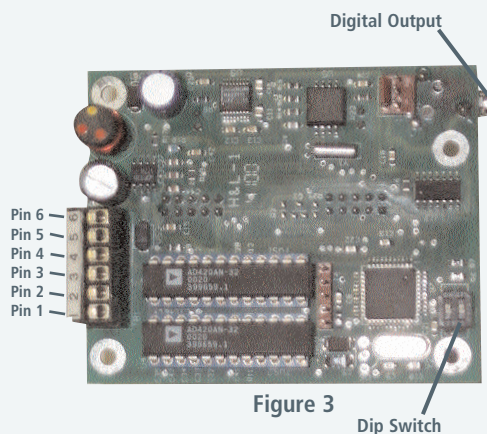


Figure 3