

# PRODUCT BULLETIN 4

## THE ONGUARD® 3000 FOR CLEANROOM APPLICATIONS




THE PURAFIL ONGUARD 3000 (OG3) measures in real-time the overall reactivity level of Airborne Molecular Contaminants (AMC) present in the local environment as well as temperature and relative humidity. This data can either be logged by an internal data logger or can be transmitted directly to the facility monitoring system via a 4-20 mA output signal. Reactivity monitoring is an accurate and reliable method of evaluating the quality of makeup and recirculation air, developing an AMC baseline or "fingerprint" and evaluating the effectiveness of an AMC control program.



ONGUARD OG3

### FEATURES & BENEFITS

- Internal temperature and relative humidity sensors
- Incremental and cumulative corrosion data
- Service life of 4000 Angstroms
- Battery-operated, no wiring necessary
- Patented technology specific to airborne corrosion
- Accurate within  $\pm 0.5-1\%$  of full span
- Corresponds to guidelines proposed for advanced semiconductor manufacturing
- 4-20 mA output signal
- Four 4-20mA outputs: Copper, Silver, Temperature, RH
- LCD display (on battery operation, display and backlight activated by any button press)
- PC based software program to interface with the unit
- Serial or USB interface to PC
- Data logging possibilities

### PRODUCT DESCRIPTION

The OnGuard OG3 utilizes highly sensitive quartz crystal microbalance sensors to provide accurate and reliable corrosion monitoring within  $\pm 0.5-1\%$  of full span. Ideal for use in critical process areas where AMC is a concern, the OnGuard OG3 allows for action to be taken before problems develop - decreasing the likelihood of AMC-related problems and defects, leading to increased productivity and yield.

### PRINCIPLE OF OPERATION

The OnGuard OG3 is the first reactivity monitor to provide real-time data on the level of AMC present in the local environment. A quartz crystal microbalance (QCM) is plated with copper or silver and used to measure the mass accumulation of the corrosive film that results from the reaction of contaminants with the metals. The mass increase is described in terms of the corrosion film thickness measured in Angstroms ( $\text{\AA}$ ). This highly sensitive method of measurement will indicate the reactivity level of an environment

with contaminant levels at or less than one part per billion (1 ppb). This measurement can then be related to air quality classifications for microelectronics cleanroom environments (see chart)

### SYSTEM ADVANTAGES

**MAINTENANCE:** The only maintenance necessary of the OnGuard OG3 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  $75^{\circ}\text{C}$  ( $14^{\circ}$  and  $167^{\circ}\text{F}$ ) and the relative humidity will be between 10% and 95% non-condensing.

**PLACEMENT:** When installing the OnGuard OG3 special care should be given to its placement. It should be mechanically affixed to a structure at eye level within the protected space.

### PC BASED SOFTWARE PROGRAM:

The OnGuard OG3 can be connected to any PC to view retrieved data via a software program included with the monitor. This software package can be downloaded to your PC and is used for communication and graphing of data stored within the monitor.

TABLE 1

COPPER CORROSION			SILVER CORROSION		
CLASS	AIR QUALITY CLASSIFICATION	REACTIVITY RATE*	CLASS	AIR QUALITY CLASSIFICATION	REACTIVITY RATE*
C1	Pure	$<90 \text{ \AA}/30$ days	S1	Pure	$<40 \text{ \AA}/30$ days
C2	Clean	$<150 \text{ \AA}/30$ days	S2	Clean	$<100 \text{ \AA}/30$ days
C3	Moderate	$<250 \text{ \AA}/30$ days	S3	Moderate	$<200 \text{ \AA}/30$ days
C4	Harsh	$<350 \text{ \AA}/30$ days	S4	Harsh	$<300 \text{ \AA}/30$ days
C5	Severe	$\geq 350 \text{ \AA}/30$ days	S5	Severe	$\geq 300 \text{ \AA}/30$ days

\*  $\text{\AA}$  = angstroms