

SAAFShield®

Detecting Unit Real-Time Reactivity Monitor

INSTALLATION, OPERATION, AND MAINTENANCE INSTRUCTIONS

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Read and Save These Instructions!

- Note:**
1. Read and understand all operating instructions before installing and using the SAAFShield Detecting Unit Real-Time Reactivity Monitor.
 2. Save this manual for future reference.

This instruction manual provides important information on the installation and operation of the SAAFShield Detecting Unit Real-Time Reactivity Monitor. These instructions must be carefully followed in order to operate the unit safely and correctly. If there are any questions regarding the use or care of this unit, please contact AAF at 888-223-2003 or by email at SAAFShield@aafintl.com for assistance.

1.0 Principles of Operation

The SAAFShield Detecting Unit is the non-powered, sensing side of the SAAFShield system that utilizes Quartz Crystal Microbalance (QCM) technology to measure metal corrosion due to reactions with the environment. The SAAFShield Detecting Unit works in combination with the SAAFShield Reading Unit as part of a system that monitors atmospheric corrosion in real time or on a periodic basis.

The SAAFShield Detecting Unit's oscillator Printed Circuit Board (PCB) consists of specially marked tracking where electromagnetic induction effects are significantly reduced in order to produce the most stable and accurate frequency reading. As the metal-coated QCM corrodes, the frequency of oscillation changes. The Detecting Unit has built-in non-offgassing Ethylene Vinyl Acetate (EVA) foam spacers to prevent unwanted movement of the QCMs within the enclosure.



2.0 Components

Figure 1 shows the SAAFShield Detecting Unit with the internal components labeled.

The SAAFShield Detecting Unit Real-Time Reactivity Monitor includes the following components:

- (1) Oscillator Printed Circuit Board (PCB)
- (3) Connector slots for Quartz Crystal Microbalance (QCM) PCBs
- (1) Black plastic thermoplastic case with airflow zones and protective cage
- (1) Connector slot for interfacing with the SAAFShield Reading Unit
- (3) QCM PCBs (packaged separately)

IMPORTANT: To open the QCM PCB package prior to installation, please carefully follow the instructions supplied below. Mishandling the QCM PCB can cause irreparable damage.

3.0 Installing QCM

Tools Required:

- Phillips head screwdriver
- Scissors, exacto knife, or razor blade

Instructions:

- 1) Ensure that the Electrostatic Discharge (ESD) protected bag contains the appropriate QCM (Gold, Silver, Copper) that you would like to install. See Figure 2.
- 2) Carefully cut open the ESD bag and remove any protective packaging around the QCM PCB.
- 3) The QCM-PCB has a protective black foam backing—do not remove this foam.
- 4) You will need to remove the plastic protective banding from the QCM to expose the reactive elements on the QCM. Carefully cut one end of the plastic protective banding as shown in Figure 3 with a razor blade or exacto knife.

CAUTION: In some instances, the plastic band material may be tightly adhered to the metal cap. This is done to provide a tight seal on the cap and ensure complete protection of the QCM reactive element during shipment. Please do not force open the metal cap. Doing so may cause irreparable damage to the QCM's reactive element within, making the device non-operational. It is advised that the metal cap be gently removed from the QCM and handled carefully at all times.

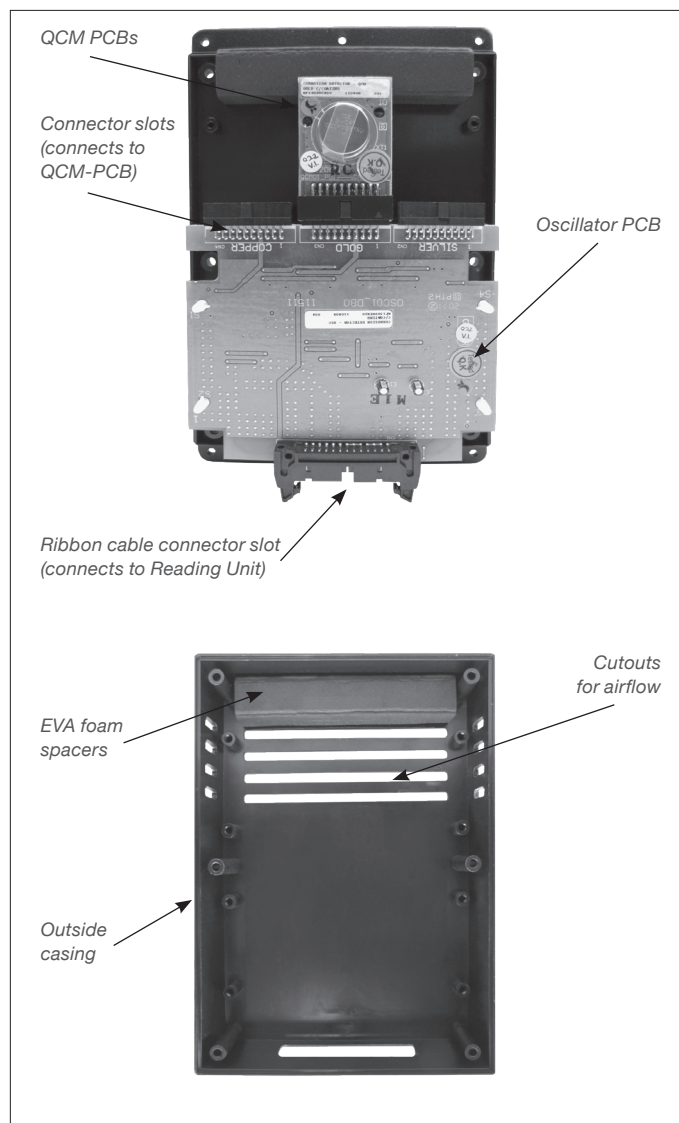


Figure 1 – SAAFShield™ Detecting Unit with internal components labeled



Figure 2

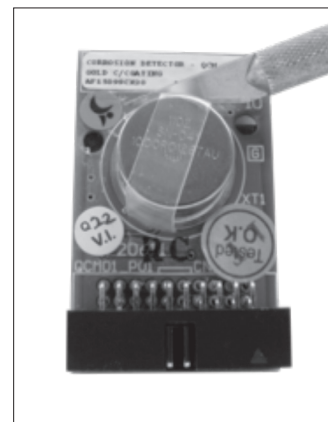


Figure 3



Figure 4

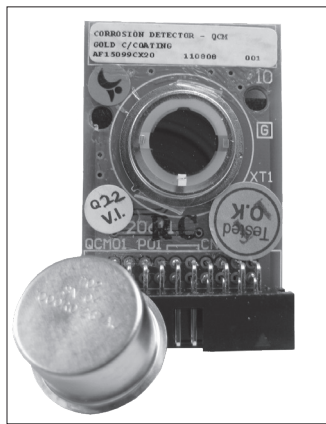


Figure 5

- 5) Carefully cut the other end of the plastic band off with a razor blade, exacto knife, or scissors. It is not necessary to remove all the plastic band material from the PCB. It is sufficient if the cap is removable to expose the QCM reactive element. See Figure 4.
- 6) The metal cap for the QCM can now be removed as shown in Figure 5.
- 7) Insert the QCM-PCB in the appropriate slot as marked on the Oscillator PCB of the SAAFShield Detecting Unit. See Figure 8.
- 8) Repeat steps 1–7 for each QCM-PCB.
- 9) Once all 3 QCM-PCBs have been installed, verify that they are installed in the appropriately marked slot.
- 10) Install the outside casing using the 6 screws provided. See figures 7.

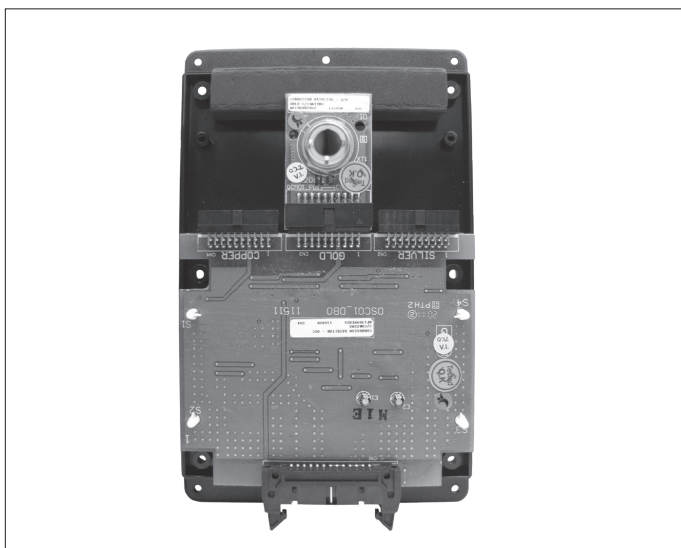


Figure 6 – SAAFShield™ Detecting Unit with Gold QCM installed



Figure 7 – SAAFShield™ Detecting Unit with QCMs and cover installed

4.0 Installing Detecting Units

When determining the reactivity of a room or space within a building, the SAAFShield Detecting Unit should be placed in a location representative of the air that contacts the electronics or materials being protected. This will depend on the setup of the room. If the protected items are spread out within the space, then an approach similar to a thermostat should be used. If the protected items are concentrated in one area inside the space, then a location as close as possible to them is preferred.

The number of locations inside the control room will depend on the airflow properties in the space. If the HVAC system mixes the air in the space very well and it is a small space, then one unit may be acceptable. If the room has poor air mixing, with one location getting hot while others stay cool, then more than one will be needed. Find a location which represents the average condition of the air that contacts the electronics or materials being protected.

When determining the condition downstream of a gas-phase filter or scrubber to evaluate media performance and life, the SAAFShield Detecting Unit should be placed after the final particulate filter.

5.0 Troubleshooting

When is it time to replace the QCMs?

Check the sensor life remaining of the QCMs using the SAAFShield Reading Unit in order to determine the remaining life for each sensor.

What if a connector slot breaks or is not connecting?

In the event that a connector slot breaks or is not connecting, please contact your AAF sales representative immediately.

What if the sensors break?

In the event that a QCM sensor breaks, please contact your AAF sales representative. If there is physical damage on the QCM sensor, the SAAFShield units will not function.

SAAFShield® Detecting Unit

6.0 Connecting to the Reading Unit (RU)

When inserting QCMs for the first time, the RU will automatically default to the “Edit QCM Info” window and force the user to enter information regarding QCM parameters. Be prepared to enter this information when installing a new QCM. See brochure GPF-3-117.

The Information that will be needed when initializing the Gold, Silver, and Copper QCMs is:

- Site ID
- Room ID
- Detecting Unit ID
- Detecting Unit installation location information (upstream, downstream, or in-room)

The Initialization frequency and install date and time will be automatically recorded by the RU.



SAAFShield® Reading Unit

7.0 Spare Parts List

It is recommended that the following spare parts be stored at the installation site for replacement purposes. Consult with your AAF representative to determine actual quantities required. Minimum recommended quantities are provided in the table below.

AAF Part Number	Description	Recommended Spares
392-803-010	Silver Crystal QCM	One full replacement set of each type included in the system.
392-803-011	Gold Crystal QCM	One full replacement set of each type included in the system.
392-803-012	Copper Crystal QCM	One full replacement set of each type included in the system.

To order replacement parts call: **1-800-223-2003**.



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