



TOTALFLOW

Technical Bulletin 94

Analog Measurement Unit (AMU) Product Improvement

Totalflow Technical Bulletin

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1. Background

The Analog Measurement Unit (AMU) is used in the 6400, 6700, XFC6400, XFC6700 Flow Computer Units. This device includes the following components:

Differential Pressure Cell – Responsible for sampling differential pressure across an orifice plate in inches of water

Static Pressure Cell- Responsible for sampling meter run line pressure in pounds per square inch absolute (PSIA).

Analog Measurement Electronic Circuit Board- Responsible for sampling all analog values including DP, SP, T, AI's, Battery voltage, Charger voltage, etc. and converting these analog signals to digital data and transmitting the data to the Flow Computer Electronic Circuit Board.

This particular product improvement involves the AMU's electronic circuit board. All of our electronic boards are coated with an acrylic based protective coating designed to protect sensitive integrated circuits and analog components. The coating protects the electronics from hazards including static discharge and airborne contaminants, including moisture.

2. Description

Moisture is an enemy of electronic components. These components have metallic connections that when combined with moisture can result in electrolysis and corrosion to the point of damaging the electronics board. As a result of some recent testing, we have discovered that a small number of the AMU boards did not receive sufficient coating on the legs of some of the sensitive analog components. When this insufficient coating is combined with both moisture and contaminants it can produce erratic reading that will go away once the moisture is gone. Testing of a large number of meters indicates that this is an extremely rare occurrence but does result in a difficult to diagnose problem that comes and goes. As a part of determining a permanent fix for this problem, the decision was made to change coating types on the AMU board that contains the sensitive, low-level analog section. In the future all new and refurbished AMU boards will be coated with a silicone based conformal coating that provides additional protection against contaminants including moisture.

We have determined this extra level of protection is only required on the more sensitive analog section found on the AMU's electronic board. The acrylic based coating will continue to be used on the primary digital electronic board.

3. Symptoms

Erratic analog readings can occur if excessive amounts of moisture combined with airborne contaminants condense on the AMU's electronic board. These erratic readings can cause Temperature error (TE), Absolute error (AE), and Differential error (DE) alarms to appear in the Flow Computer's log record. When these alarms are seen together during the same log record, we suggest that site be visited to determine if moisture has entered the enclosure. It is possible that these three alarm conditions may be caused by other normal operating



conditions. A person who knows the specifics about a particular sites' operating conditions should assist in determining the cause.

Moisture can be caused by the following:

- Condensation inside the enclosure – This can be caused by poor circulation or severe day/night temperature swings. Make sure the drain screw (located in the bottom of the enclosure) has been removed to ensure air movement and reducing the potential of condensation. Also, routinely inspect and replace desiccant bags.
- Leaking enclosure – This could be caused by a poor gasket seal or rivets not sealing (see technical bulletin #49 for details) on older Chatham designed enclosures. Inspect the inside of the enclosure to determine if the enclosure has been leaking. Specifically look for watermarks and residue left behind where water may have entered the enclosure.

4. Conclusion

ABB began coating the AMU's electronic board using a silicone based material in June 2002. AMUs with serial numbers **77272** or higher will have the new improved coating. Also, any refurbished AMUs produced during or after July 2002 will have the new silicone based material.

If you have specific locations where alarms TE, AE, and DE show up during the same log period then that particular site should be investigated. We suggest consulting one of our Service Specialists to determine the correct action to resolve the situation.

If you have questions about this bulletin please call our customer service department at (800) 442-3097 option 1,2.