



Customer Bulletin

Bulletin No: 23-1011
Date: October 11, 2023
Attn: Airmar Customers
Subject: Voltage Spikes
Damaging Smart Sensors
Effective: Immediately

Airmar Smart™ Sensor Advisory: Voltage Spikes Damaging Smart™ Sensors

Airmar Smart™ Sensor Advisory:

Airmar has observed a rise in failures of Smart™ Sensors with a depth output that occurred in units manufactured between February 2022 and June 2023. These failures manifest as a lack of depth reporting, a loss of network visibility, device malfunction, or complete transducer failure.

Airmar Smart Transducers are designed to operate within the NMEA2000 input voltage specification of 9-16VDC. After a thorough investigation, we have determined that the root cause of the reported failures is voltage spikes exceeding 16 volts on the sensor's power input. These spikes exceed the voltage rating of a mosfet in the sensor's power amplifier circuit.

During 2022 and early 2023, Airmar experienced a severe supply chain shortage from the mosfet manufacturer that we had used for many years. This necessitated using a second supplier with a mosfet having the same published specification as the primary supplier. This alternate part does meet its maximum input voltage specification. However, unbeknown to Airmar, the original component had a voltage spec far in excess of its published spec. In summary, alternate mosfet is less tolerant to voltage spikes exceeding the NMEA2000 specification.

Although Airmar's Smart sensors meet the NMEA specification, once the root cause of the failure was understood, Airmar issued two firmware updates to improve tolerance of voltage spikes. The first update was released in July 2022, followed by a second one in April 2023. These firmware updates do provide additional protection for boats vulnerable to voltage spikes or operating on unregulated NMEA2000 networks. Once the primary supplier's mosfet became available again, production reverted to it. As of June 1, 2023, all sensor shipments now incorporate the primary supplier's mosfet.

We acknowledge that notifying our valued customers about this issue was delayed, as identifying the root cause required an extensive investigation. Going forward, Airmar is

developing new hardware and software that will dramatically increase tolerance of voltage spikes and other overvoltage conditions. Further firmware enhancements will be implemented in the coming months as a continuous improvement. Please note that updating firmware in the field is not feasible.