

LITTON MARINE SYSTEMS UK
Service Bulletin No.7

Product: BridgeMaster E Series Radars

Subject: Azimuth Error Message (AZI Error)

'AZI Error' alarm message is generated when the Display Processor detects either too many or not enough azimuth pulses are counted between each Heading Marker pulse. The correct number is 4096 pulses per revolution of the Antenna. The tolerance is + - 5 pulses.

The Azimuth pulses are produced by the Pulse Bearing PCB named AZI PULSES. This same PCB also produces the Heading Marker pulse. These pulses then become an integral part of the TX Data Serial Message which is processed by the Trigger PCB.

The problem can be: Incorrect links in the Pulse Bearing PCB or the Trigger PCB or one of the following items :

Pulse Bearing PCB

Cable from Pulse Bearing PCB to Input Panel (in TU)

Input Panel (in TU)

Cable from Input Panel (in TU) to Input Panel (in Tx/Rx)

Input Panel (in Tx/Rx)

} (Bulkhead
variant)

Cable from Input panel (in TU or TX/Rx) to Trigger PCB

Trigger PCB

If the fault is permanent (a constant alarm), try to isolate the area to the Turning Unit or the Transceiver Unit. On the Trigger PCB, put the links LK5 and LK6 to position 2-3 (test mode). This will use internally generated Azimuth and Heading Marker pulses. If the alarm goes out then the problem is in the TU side. Remember to restore these links to 1-2.

As the AZI pulses are an integral part of the Tx Data message and if there is NO 'Tx Comms' error reported, it's unlikely the fault is with the cables.

Links

Check LK1 on the Pulse bearing PCB:

Fit in 1-2 for normal speed, 2-3 for high speed.

Check the links on the Trigger PCB:

LK1 Fitted, LK 2,3,4 Not Fitted, LK5, LK6 fit in the 1-2 position.

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General

To carry out the following checks it will be necessary to rotate the Antenna by hand.

Check the 'fins' on the main gear. These cut through the opto-coupler on the Pulse PCB to produce the initial Azi pulses. There must be 128 fins. Make sure that one is not broken off or that there is no grease/dirt between the fins.

Check the single fin about 20mm mounted below the little fins. This is the Heading Marker fin which cuts through another opto-coupler on the Pulse PCB. This fin appears about 10° before the Antenna faces dead ahead. Make sure that it is also clean and free from grease etc.

Ensure **all fins** do not foul the Opto couplers for 360° rotation. Check and make sure the fins and the Pulse Bearing PCB are securely fitted. Vibration may cause intermittent fouling.

RF leakage

There is the possibility that RF leakage can interfere with the production of the 4096 pulses and/or the Heading Marker pulse.

Check the security/tightness of the Magnetron and ensure there is no foreign matter between it and the microwave face. Make sure the leads are not too long.

Check the fitting and alignment of the Transceiver to the Transition face.

Check the condition of the RF feeder. Kinks or excessive bending can cause leakage.

In the case of an S Band system, check the security/tightness of the coaxial feeder to the Rotary Joint.

If the problem is reduced or goes away completely when the Transceiver cover is removed (bulkhead or masthead variants), then this is strong evidence that RF leakage is present.