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Antenna Sense Under-Current Indication with M12+ and M12 Oncore GPS Receivers

The M12+ and M12 receivers are fitted with antenna sense circuit similar to the ones used in the earlier GT+ and UT+ receivers. Since many of the newer 3V active antennas draw so little current, the receivers may report an under-current condition even though everything is working fine.

What Does the Antenna Sense Circuit Do?

Under-Current - As noted in Paragraph 9.4 of the *M12 Oncore User's Guide Supplement*, the undercurrent threshold for the receiver is 8 mA. This was true for very early M12 receivers, but newer M12's and all M12+'s have an undercurrent threshold of 15mA. So long as the current drawn by the antenna is between approximately 15 and 80mA, the Antenna Sense circuit reports that everything is fine. If the current drawn is less than 15mA, the Under-current flags are raised in the @@Ha, @@Hb, and @@Ia messages. **The receiver will continue to operate just fine, it is merely reporting that the current drawn is less than the 15mA trip point.** In fact, if you are supplying the bias current to the antenna externally through a Bias-T or other arrangement, this flag will **ALWAYS** be high.

Over-Current - In the case of an over-current condition (>80mA) the Over-current flag is set and the antenna bias circuit on the receiver is disabled, protecting the receiver and any external circuitry from damage.

No Voltage – A third error condition that the receiver checks for (one that is not detailed in Paragraph 9.4) is the "No Voltage" or "NV" condition. Since antenna bias for the receiver is externally supplied by the user through Pin 9 of the 10 Pin Data Header, having this flag go high is a good indication that you have not hooked up your bias source.

What is the Caveat?

As noted above, the under-current trip point on the antenna sense circuit is about 15mA. Newer 3-5V antennas are much more efficient than the previous active antennas (drawing as little as 4-5mA), resulting in possible Under-Current flags, especially when biased at 3V. Again, this does not necessarily mean you have an antenna problem. If you are tracking satellites and everything else is operating normally, you should simply ignore this warning and continue on your way.

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