A12 Frequently Asked Questions [FAQs]

1. Is the A12 board a direct replacement to the Ashtech G8?
   Yes, A12 has the same dimensions as the G8 board. It also has the same I/O connector as G8 version 1. The only exception is the RF connector: the A12 has an SMB connector while the G8 had a Hirose connector. The A12 also uses the same commands and interface as the G8 with a few exceptions. The following G8 commands are not available on the A12.

   KFP – Enable Kalman Filter
   ITA - Enable ITA data message
   PWR – Set Sleep mode

   The other minor differences between G8 and A12 are:
   A12 does not output any messages by default, whereas, G8 outputs GGA and VTG messages. A12 does not accept RTCM input on port A.

2. Why is the RF connector different on the A12?
   We decided to change the connector as a lot of customers complained that they were not able to find mating connectors and cable assemblies for the Hirose connector.

3. How many different versions of the A12 board are available? Are these versions similar to the G8 versions?
   There are two versions of the A12 board. Version 1 is enclosed in a shield case and features I/O connector suitable for cable interface. This is similar to the G8 version 1, the only difference is the RF connector. A12 version 2 is the same as version 1 but without the mechanical shield case, it only has the small RF shield.

4. How is the A12 better than G8?
   A12 offers most powerful combination of accuracy, low-power consumption in a low-cost board. A12 can track Satellite Based Augmentation System (WAAS/EGNOS/MSAS) satellites to provide precise DGPS solutions for many applications such as fleet management, mobile data terminals, vehicle navigation, telematics, handheld computing, etc. It provides much better accuracy and lower power consumption than its predecessor, the Ashtech G8 board.

5. What should be the input voltage to the A12 board?
   The input voltage can be anywhere in the range of 3.3 to 5.0 VDC.

6. What is the power consumption?
   Typical power consumption is 230 – 250 mW. Maximum power consumption is 350 mW.

7. Can A12 output 1PPS? What is the signal level?

Yes, the signal levels are 3.3 V compatible.

8. What is the accuracy of the 1PPS signal?
   Currently the 1PPS accuracy is only 1 msec. However, there are plans to improve the accuracy to 1 usec.

9. What type of RF connector is on A12? What are the mfg part numbers for these connectors?
   The RF connector on A12 is SMB right angle. AMP or Radiall connectors will be used and the MFG part numbers are 1060464-1 and R114.665.130 respectively.

10. How many serial ports are available on the A12? Are these RS-232 ports?
    Two serial ports are available on the A12 board. Port A can be used to communicate to the board and output messages, and Port B is solely for RTCM input. The serial ports are not RS-232 ports; the signals are only TTL compatible.

11. What are the I/O levels on the A12? Is it the same as G8?

    The I/O signal levels on the A12 are TTL compatible. However, there is a difference in signal levels between G8 and A12. A12 uses 2.7 V to power the CMOS output buffers and the signal levels are <0.8V for a valid low and >2.4V for a valid high. The signals on the G8 board were 5V CMOS level outputs.

12. Is there an A12 Sensor available similar to the G8 Sensor? Does it support RS-232 ports?

    Yes, the A12 board is available in a rugged sensor housing for easy evaluation. The A12 Sensor supports RS-232 ports.

13. What kind of antennas should be used with the A12? Can it support passive antennas like the G8?

    The A12 board is capable of using active and passive antennas. If an active antenna is used, antenna power should be connected to pin 2 on the I/O connector (same as G8). Input voltage to the antenna is limited to 5 VDC or less. The other restriction for an active antenna is LNA gain – cable loss > 10 dB. A passive antenna can also be used provided the antenna gain is 5 dBic at zenith and the cable length is 6 inches or less.

14. Can G8 accessories be used with A12?

    Yes, most of the G8 accessories can be used with A12. The only exception is the antenna, as the A12 board uses a different RF connector. The same magnetic mount antenna with a mating SMB connector is offered as an accessory for the A12 board. An SMB to SMA cable is also available as an accessory.

15. What data is maintained in the battery-backed memory? What voltage is required for standby?
    GPS almanac, ephemeris, position and time are maintained in the back-up memory for quick start times. The SBAS ionospheric corrections are also saved in the back-up memory and only used if not older than 1.5 hours. The voltage required for back-up memory is 2.7 to 3.6 VDC.

16. Does A12 support Kalman filter commands as in G8? Can A12 predict position in the absence of GPS signals?
    The A12 does not have a Kalman filter, and so it cannot predict position. However, the receiver has a proprietary filter that can provide good accuracy in dynamic and static environments. No commands are available to control this filter.

17. What accessories are available with the A12 product?
   See pictures and description below.

    A12 Sensor Accessories:

    1. *Cigarette plug cable assembly with fuse (10 feet)*
        Part number: 110030

2. Auxiliary cable (12 inch) for RTCM input and 1PPS output signals
        Part number: 110032
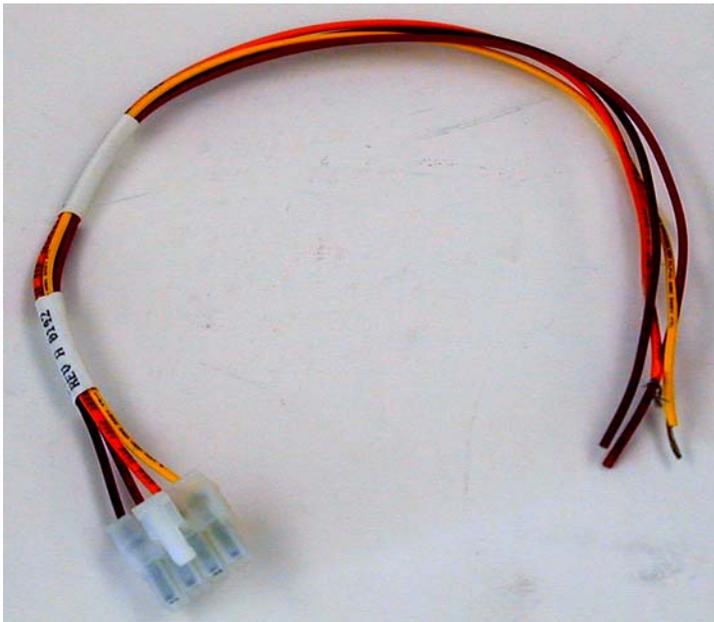
3. DB9 to DB9 cable assembly for communications
        Part number: 110031
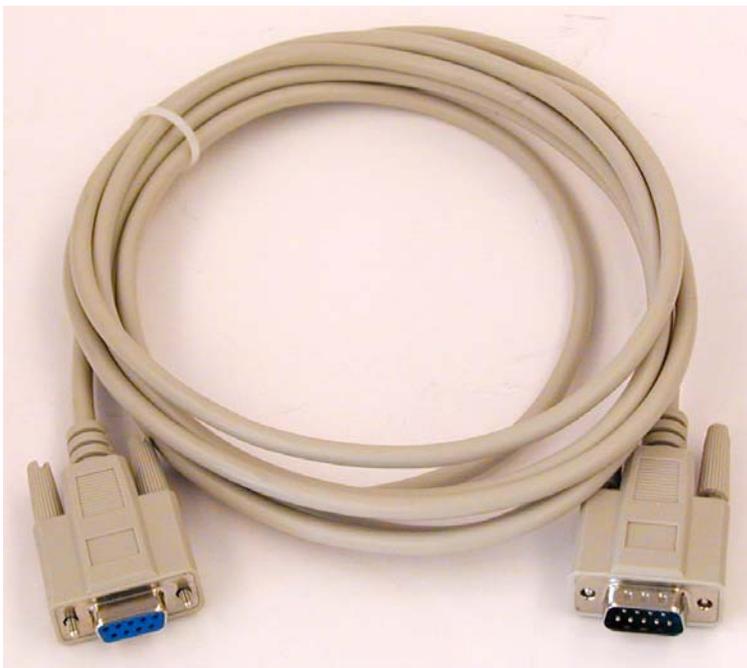
4. Magnetic mount antenna with SMA connector
   Part number: 109600

5. 120V power supply with cable
   Part number: 110029

A12 Board Accessories:

1. *Magnetic mount antenna with SMB connector*
   Part number: 110862

2. *Magnetic mount antenna with SMA connector*
   Part number: 109600

3. Molex header for PCBA integration.
Part number: 105089

4. Molex to Molex cable assembly for system integration (2.2 inches).
Part number: 730174
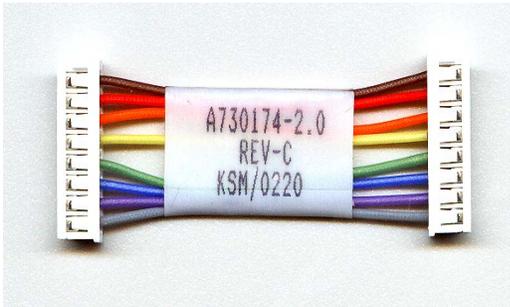
5. SMB to SMA cable for system integration
Part number: 730466

Picture not available for this part. This is a simple SMA bulkhead to SMB cable assembly for system integration. The total length of the cable is 4.25 inches.