
General Information

Overview

This chapter presents a hardware description of the B12 GPS OEM board, defines the RF interface and the power/input/output signal parameters, and lists power requirements and environmental specifications. The B12 board has the same firmware as the A12, and supports all commands and messages described for the A12.

The B12 GPS board, Figure 0.1, is identical to the A12 in functionality and operation. It differs only in dimensions and hardware specifications.

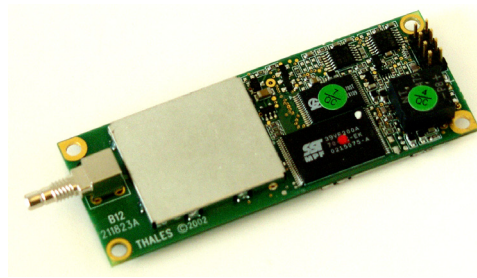


Figure 0.1: B12 OEM Board

Physical Configuration

The B12 GPS board has an 8-pin I/O connector (0.1 inch header) and supports CMOS/ TTL level signals. Table 0.1 describes I/O connector pin-out. The B12 board has a standard SMB RF connector to connect to a GPS antenna. A right-angle bulk-head mount male SMB is used for easy integration. The center conductor supplies power to the low noise amplifier (LNA) of an active antenna. The power supplied to the antenna is the same as the power input to the board on

I/O pin 2. The antenna open/short status information is available in the PAR query response message (see page xxx).

Table 0.1 Connector Pinout

Pin	Function	Description
1	TXD 2	Port 2 transmit, CMOS/TTL
2	VCC	5VDC \pm 5%, 55-70 mA typical
3	TXD 1	Port 1 transmit, CMOS/TTL
4	V _{backup}	Battery back-up power (BBU) +2.7 VDC to +3.6VDC, 6 μ A typical
5	RXD 1	Port 1 receive, CMOS/TTL
6	1 PPS	1PPS (pulse-per-second), CMOS/TTL
7	RXD 2	Port 2 receive, CMOS/TTL
8	GND	Ground, power and signal

The B12 board provides four 0.125 inch mounting holes that will accept 3/16 inch round or hex standoffs with 3/8 inch height, and # 2-56 or M2 mounting screws. Space constrained environments may require different stand-offs. Low profile RF shields are used to enclose the RF circuitry. These shields reduce emissions and provide some degree of ESD protection while handling. Refer to the mechanical drawing (figure 1.2) for dimensions and clearances.

Interface Connector and Power Requirements

The I/O connector is an 8-pin header that uses 0.230 inch (5.84 mm) pins on a 0.100 inch (2.54 mm) spacing. The B12 board requires +5 VDC \pm 5% on pin 2. The current consumption is typically 55 - 70 mA, excluding the antenna. The B12 board also requires a 2.7 – 3.6 VDC for battery back-up (BBU) power to keep the receiver's RAM memory alive during power off. However, the design allows you to apply 5VDC to the backup power (pin 4) when the board is powered. Care should be taken not to apply more than 3.6 VDC when the unit is powered off. The RAM memory is used to store the setup parameters, GPS time, almanac, ephemeris and the last position fix for faster acquisition and better start times. The current consumption for battery back-

up is typically 6 μ A. Table 2.2 below lists all the power specifications for the B12 board.

Table 0.2 Power Requirements

Signal	Voltage	Current	Pin No.
V _{CC}	+4.75 to +5.25	70 mA	2
Battery backup	+2.7 to +3.6	0 μ A with prime power 6 μ A @ 3.3V, 25°C without prime power	4
Ground	0	-	8

Serial Interface and Signal Levels

The B12 board has 2 serial ports. Port A supports communications with the B12 board using I/O commands. The B12 has the same serial interface and supports all commands and messages listed in this manual. However, the signal levels on the serial ports are CMOS/TTL compatible. Output signal high is equal to V_{CC}. Output signal low is equal to 0 V.

Port 2 is input only for receiving DGPS corrections. For DGPS input, the board will accept the standard RTCM-SC-104 V2.2, type 1, 3, and 9 messages in the 6 of 8 bits rolled format.

The data configuration on both ports is the standard 8 data bits, 1 start bit, 1 stop bit, no parity. The baud rates supported are: 1200, 4800, 9600, 19200, 57600 and 115200. Please refer to the command SPD on page xxx to change baud of the serial ports. Default baud rate for port A is 9600.

The 1PPS pulse is output on I/O pin 6 and is also CMOS/TTL compatible. The accuracy of the 1PPS signal is the same as in A12, please refer to page xxx for more details on 1PPS operation.

Environmental Specifications

The environmental specifications and other limitations for the B12 board are listed in the table 1.3 below.

Table 0.3 Environmental Limitations

Condition	Specification
Operating Temperature	-30°C to +80°C
Storage Temperature	-40°C to +85°C

Table 0.3 Environmental Limitations

Condition	Specification
Humidity	95% RH non-condensing @ +60°C
Vibration	0.008 g 2 /Hz 5 to 20 Hz 0.05 g 2 /Hz 20 to 100 Hz 3 dB/octave 100 to 900 Hz
Speed limitations	1000 knots (514 m/sec)*
Altitude limitations	60,000 feet (18,288 m)*
* The B12 produces no valid position information beyond these limits.	

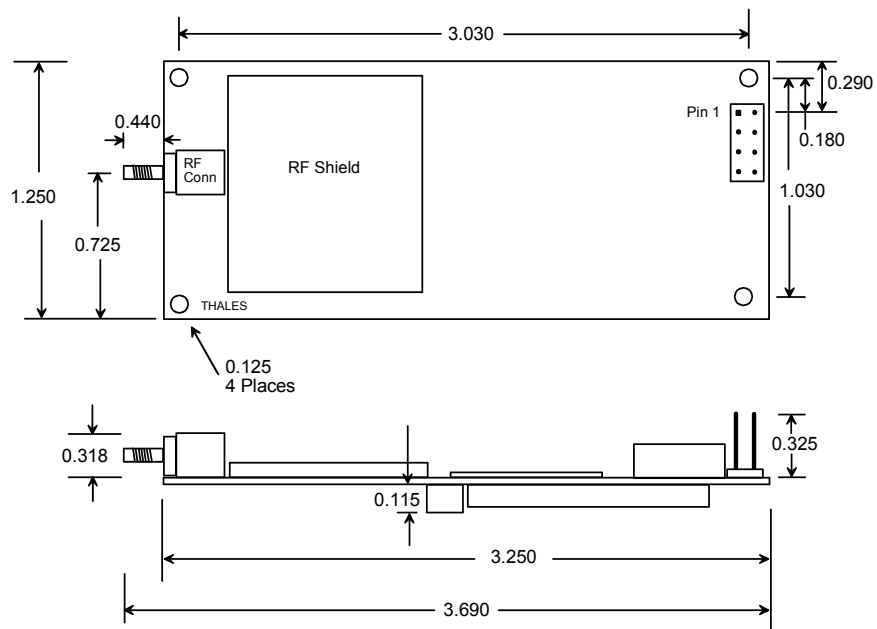


Figure 0.2: B12 Dimensions and Mounting Configuration