
# GPS Synchronization Module

# User Manual



Rev: 2.0

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# 1 Introduction

## 1.1 Overview

The GPS Module evaluation kit includes a  GPS module with an evaluation board. The evaluation board is intended for use in evaluating the module. It allows for easy connection to the appropriate inputs and outputs. Section 2 of the guide identifies the various connections.

## 1.2 General Precautions

The module is designed for 3.3 volt operation. If 5.0 volt is required, please contact factory for this option. The power supply for the evaluation board is 5.0V The maximum current is 0.2 a. Do not exceed the maximum Vcc voltage as this could damage the unit. Proper grounding and ESD precautions should be maintained when handling this and all electronic components.

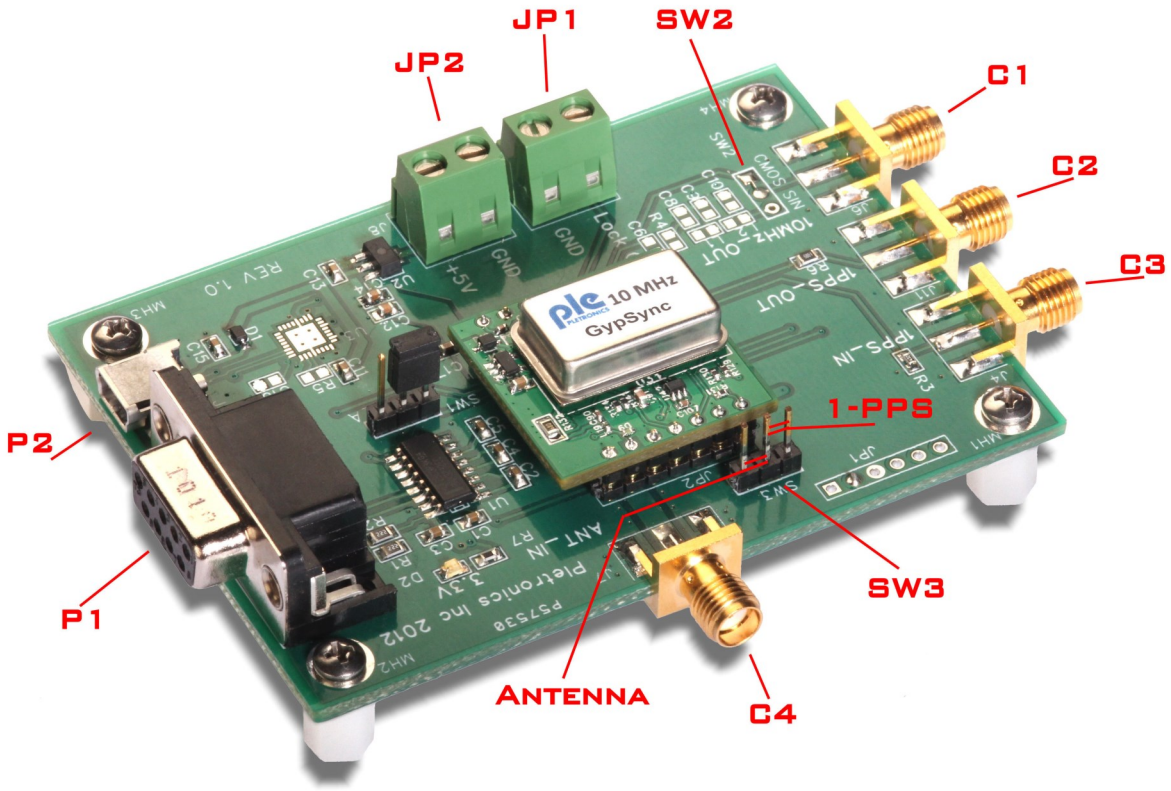
## 1.4 GPS Module Series Pin-out

The GPS module pin-out is in table 1-1. This defines the pin-out of the module. The pin-out for the test board is defined in section 2. The pads on the module and connections on the test board are not aligned.

| Pad | Function |
|---|---|
| 1 | Ground |
| 2 | 10 MHz Out |
| 3 | Lock OK |
| 4 | 1 PPS Output |
| 5 | 1 PPS Input |
| 6 | + 5V Output |
| 7 | Ground |
| 8 | +3.3V VDO In |
| 9 | Ground |
| 10 | Antenna Input |
| 11 | Ground |
| 12 | NMEA Transmit |
| 13 | 1PPS Enable |
| 14 | N/C |
| 15 | N/C |

# 2 Evaluation Board Instructions

## 2.0 Evaluation Board Connections




Connection C1

Connection C1 is the frequency output of the device. It will reflect the frequency the device was ordered at. This would be 10.0 MHz, 16.384 MHZ, or 20.0 MHz. The output will be either CMOS or sine wave depending on the setting of SW2. The sine wave output is recommended due to the effects of the 50 ohm cable length on CMOS square waves.

Connection C2

Connection C2 will be the 1 pulse per second output. This will be 1pps regardless of the module frequency and will be a standard CMOS output.

Connection C3

Connection C3 is for a 1 pulse per second input. This is used in conjunction with SW3 to lock to an external 1pps signal instead of the antenna.

Connection C4

Connection C4 is for the GPS antenna input. An antenna is supplied with the evaluation kit. The GPS module provides 5.0 VDC supply to the antenna with up to 30 mA of current through a 68 ohm resistor.

Switch SW2

This jumper can be set to select the frequency output as CMOS or sine wave. Sine wave is recommended due to the effects of the SMA connector on CMOS square waves.

Switch SW3

This jumper sets the option for locking to an external 1pps signal or using the antenna signal for locking. The graphic in section 2 of the evaluation board instructions shows the appropriate setting for the options.

Connection JP1

This connection provides a logic output showing the lock status of the device. A high logic indicates a locked condition, a low status indicates an unlocked condition.

Connection JP2

Connection JP2 is one possible option for powering the test board and module. This will require a 5.0 VDC supply and ground. The board is marked appropriately to for the +5V and GND connection. An alternative option is to use P2, the USB port. The USB port is used strictly as a power supply to the unit. ONLY ONE of these options should be used to power the device. Applying power from both could damage the device.

Connection P1

Connection P1 is used to read back scrolling information. A memory stick is included in the package with the software to read back the positioning data. The Software can also be downloaded from u-blocs at http://www.u-blox.com/en/evaluation-tools-a-software/u-center/u-center.htm. To receive NMEA messages, open u-center software. Connect appropriate Com port (Menu Receiver/Port) and set baud rate to 38,400 (Menu Receiver/Baud rate)

**Note:** Output frequency stability is degraded by GPS EVA M8 module 1PPS signal drift and jitter. To eliminate the jitter, the GPS module provides quantization error compensation. To avoid degradation due to multipath effects choose an outdoor antenna that primarily receives satellites with high elevation angles. Additional environmental isolation helps to improve short term stability.

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