

## 2 Hardware Integration

---

The integration of the *SVEE*Eight Plus GPS receiver is discussed in two sections: Hardware Integration and Software Interface. This chapter, Hardware Integration, includes instructions for physically connecting the receiver to the antenna, the host processor, and the power source. Chapter 3, Software Interface, provides guidelines for configuring the *SVEE*Eight Plus GPS receiver to communicate with the host processor.

## 2.1 Power Requirement

The SVeeEight Plus GPS receiver requires 9-32 VDC. At 9 volts, the receiver draws 105 mA, and at 32 VDC, it draws 38 mA. Both figures are with the antenna attached. The SVeeEight Plus GPS receiver draws less current than its predecessor, the SVeeSix Plus GPS receiver.

The receiver does not require any special power up or down sequencing. Power is supplied through the 3-pin Conxall connector.

The SVeeEight Plus GPS receiver provides an input for battery back-up (BBU) power to keep the receiver's RAM memory alive and to power the real-time clock when the receiver's prime power is turned off. RAM memory stores the GPS almanac, ephemeris, and last position.

User configuration data, including port parameters and receiver processing options, can be stored in non-volatile EEROM which does not require back-up power. This is done by issuing the appropriate TSIP or TAIP command. By using battery back-up, time to first fix is reduced to 20 seconds (typical when ephemeris is available). Though not required, providing BBU power can reduce power-on time. The BBU is attached using the yellow wire on the three-wire power connector.



---

**Note** – 3.5 V is the minimum allowable voltage for battery backup. When the power output drops below 3.5 V, the real-time clock may not operate over the specified full temperature range. This can significantly extend the time to first fix.

---

Power requirements are listed in Table 2-1.

**Table 2-1 Power Requirements**

Signal	Voltage	Current
Battery Backup	+3.2 to 12	0 $\mu$ A with prime power; 2 $\mu$ A @ 3.5V, 25°C without prime power
Ground	0	-
VCC	9 to 32	105 mA at 9 VDC



---

**Caution** – Do not use batteries above 5 volts for battery backup. Voltages above 5 volts are shunted to ground through a 10 k resistor and a 5-volt zener diode.

---

## 2.2 Pulse Per Second

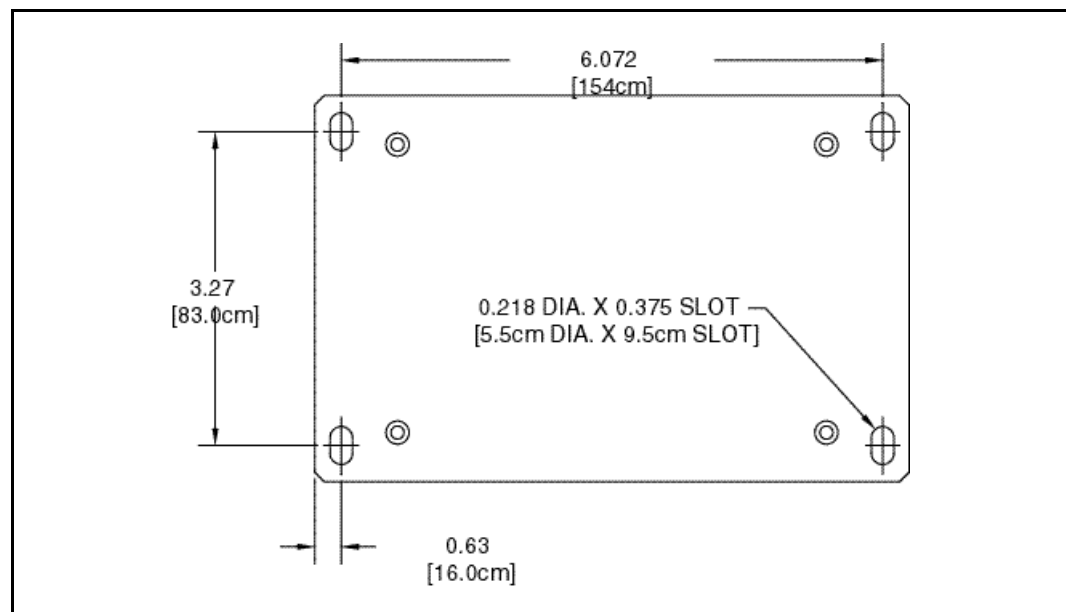
A ten microsecond wide, open collector negative going pulse synchronized UTC is available on Pin 9 of ports 1 and 2. This pulse is issued once per second with the falling edge of the pulse synchronized with UTC. The falling edge is typically less than 20 nSec.

The timing accuracy is  $\pm 100$  nanosecond ( $1\sigma$ ) and is available only when valid position fixes are being reported. Repeatability checks of 10 sets of 100 one second samples taken over a period of 20 minutes showed an average variation of approximately 100 nanoseconds (not allowing for SA).

## 2.3 Mounting

The SVeeEight Plus GPS receiver is packaged in an anodized aluminum casing. When mounting, consider vibrations. If the vibration is within the design specifications (see Appendix F, SVeeEight Plus GPS Specifications and Mechanical Drawings) for dimensions and clearances, then the receiver can be hard-mounted. If not, select a mount that dampens the vibration enough to bring the receiver back into specification.

The dimensions provided for mounting in Figure 2-1 assume that machine screws are used. Select a screw length which extends a safe distance beyond the mounting surface and secure these screws with nuts and lock washers. Trimble recommends that you use four number 8 pin-head machine screws.



**Figure 2-1 SVeeEight Plus GPS Receiver Mounting Dimensions**

