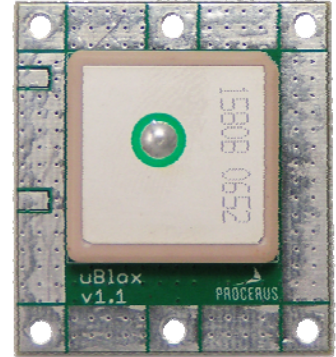


## UBlox GPS Module



- 50 Channels
- Small Size: 1.660" x 1.474" x 0.313"
- Light Weight: 17g
- Receives GPS and Galileo signals
- High immunity to jamming
- Acquisition and Tracking Sensitivity: -160dBm
- Max Navigation Update Rate: 4 Hz
- Cold Start: 29 s
- Hot Start: <1 s
- Horizontal Position Accuracy: <2.5 m
- Quadrifilar Helix Antenna Option (VTOL applications)

### APPLICATION

- Global Positioning of UAV and Ground Station

### DESCRIPTION

The u-Blox GPS module is global positioning receiver with custom interface board. It was designed to easily interface with the Kestrel autopilot onboard small UAVs. With a weight less than 17g and size less than 1.7in square, the u-Blox GPS module is ideal for small UAV applications.

The Quadrifilar Helix antenna or Sarantel antenna option, shown in Figure 3, provides improved GPS reception during unusual aircraft attitudes (ideal for VTOL type applications).

➤ Kestrel is a trademark of Procerus Technologies.

### TYPICAL APPLICATION

Figure 1 demonstrates how the u-Blox GPS module is connected to the Kestrel autopilot. The GPS is powered through the Kestrel Autopilot. A copper ground plane can be placed under the GPS unit to improve satellite reception. The copper plane does not need to be grounded to the GPS.

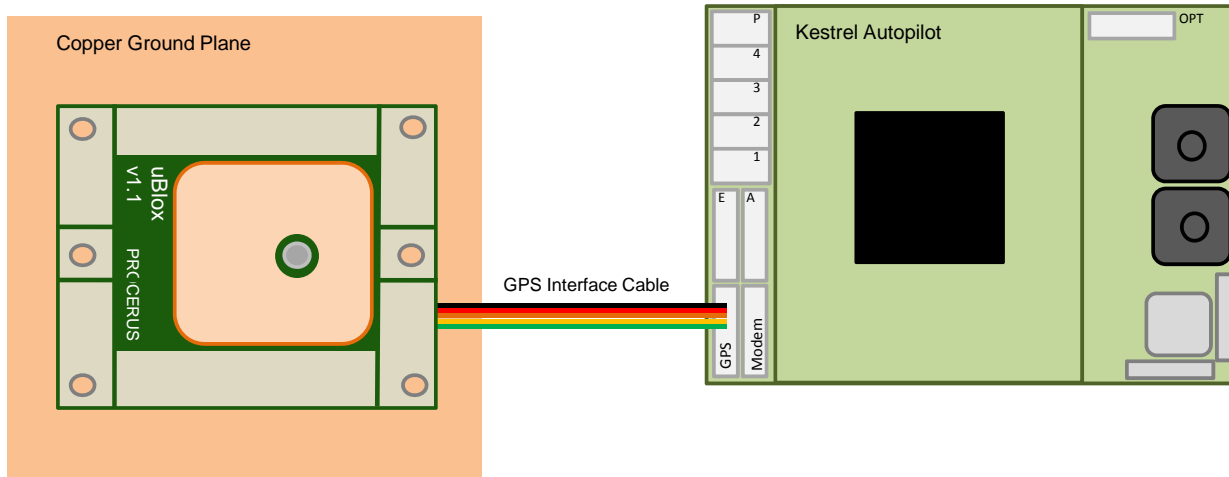


Figure 1 - Typical Use of the u-Blox GPS module.

## ABSOLUTE MAXIMUM RATINGS

Input Supply Voltage .....	-0.5 to 3.6 V
Onboard Backup Battery Voltage.....	-0.5 to 4.8 V
Operating Temperature Range .....	-40°C to 85°C
Storage Temperature Range.....	-40°C to 85°C
Vibration .....	500Hz
Humidity .....	5% to 95%, no condensing

Stresses above those listed under the Absolute Maximum Ratings may cause permanent damage to this device. This is a stress rating only; functional operation of this device at these or any other conditions above those indicated in the operational section of this specification are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

## ELECTRICAL CHARACTERISTICS

Parameter	Conditions	Min	Typ	Max	Units
<b>Input Supply Voltage (Vcc)</b>		2.7	3.3	3.6	V
<b>Input LOGIC Levels</b>					
LOW Voltage			0	0.2*Vcc	V
HIGH Voltage		0.7*Vcc	3.3		V
<b>Output LOGIC Levels</b>					
LOW Voltage	Iout = 4mA			0.4	V
HIGH Voltage	Iout = -4mA	Vcc-0.4			V
<b>Sustained supply current (Icc)</b>			40		mA
<b>Peak supply current (Iccp)</b>			150		mA

## PHYSICAL CHARACTERISTICS

Parameter	Conditions	Typ	Units
<b>Dimensions</b>		1.660" x 1.474" x 0.313"	Inches
<b>Weight</b>		17	Grams

## RELATED PARTS

Part Number	Manufacturer	Description	Comments
MOLEX5POS-L12	Procerus Technologies	5 PIN 1.25MM 12" WIRE PIGTAIL CONNECTOR	5 pin pigtails for video or channel select connection
51021-0500	Molex/Walden	5 pin Molex connector housing.	CONN HOUSING 5POS 1.25MM
50058-8000	Molex/Walden	CONN TERM FEMALE 28-32AWG TIN	Crimp Terminal (Used For Hand Crimping)

## PORT DESCRIPTIONS

This section describes the associated input and output connection points on the u-Blox GPS module. Figure 2 shows the connection points on the bottom surface of the u-Blox GPS module.

**Serial Port (H1):** A five wire GPS cable connects GPS serial port (H1) to the GPS port of the Kestrel autopilot. This cable is made by splicing two 5 wire Molex “pigtailed” together (available from Procerus). Pigtail wire colors should match between spliced wires. A description of the GPS serial port pinout is shown in Table 1. Pin 1 is identified in Figure 2 with label “1” of header H1.

Pin	Data Direction	Description
1	Supply	GND
2	Supply	VCC (+3.3V)
3	In	GPS Rx
4	Out	GPS Tx
5	Out	Timing Sync Pulse

Table 1 - Serial Port Pinout

**Antenna Power Jumper (ANT\_PWR):** If a Sarantel antenna is to be used, the antenna power jumper, labeled ANT\_PWR in Figure 2, should be soldered in the ON position. If using the integrated patch antenna, the jumper should be soldered in the OFF position.

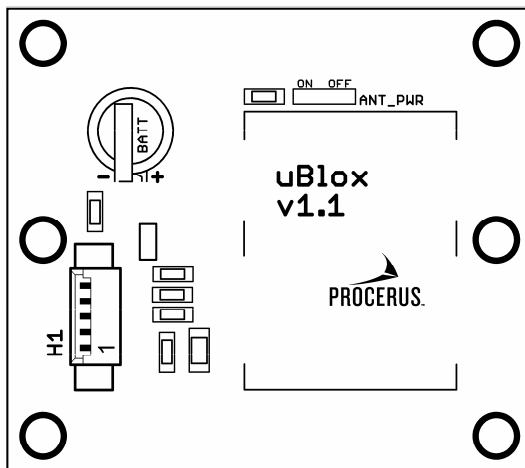


Figure 2 – Connection Points On Bottom Surface

**Connectors:** Machine crimped five pin 1.25mm Molex pigtailed with 12” wire lengths are available for sale from Procerus Technologies. These machine crimped pigtailed are recommended for use as they are generally more reliable than hand crimped pigtailed. See the Related Parts section for part numbers.



Figure 3 u-Blox GPS Module with Sarantel Antenna