

Spider 6 Pilot Manual

Applicable for the Spider 6.

spidertracks

Real-time aircraft tracking. **Made easy.**

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1. Installing your Spider 6

1.1. Positioning the Spider 6

Correct positioning of the Spider is critical in achieving effective performance from the Spidertracks system as a whole, in this case the Spider should be mounted up on top of the instrument panel in the aircraft, as far forward under the glare shield as possible to maximise visibility with the sky, and free from any obstructions.

In order to function nominally, the Spider is required to receive GPS signal and then transmit that information, along with other flight data, to the Iridium satellite network. The GPS antenna is able to receive GPS information at any angle, as long as it is not obstructed by metallic material, such as the centre windshield pillar, however, the Iridium antenna must have an unobstructed, horizon-horizon view of the sky in all directions to function nominally (Figure1). Obstructions consist of any metallic or carbon composite object, but also electrically heated windshield filaments that act as an RF shield whether they are turned on or not (Faraday Cage effect). The Spider is able to transmit through glass, fiberglass, or plastic. Please see [installation examples](#) on our support website.

NB: If you are attempting to fit your Spider 6 into an aircraft with electrically heated windshields please stop and contact your distributor for advice.

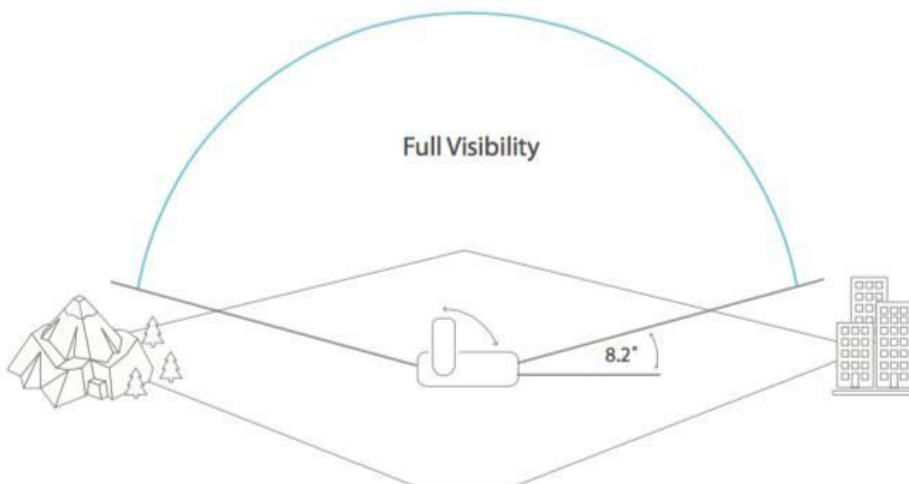


Figure 1: Visibility of the sky requirements for an Iridium transmitting product



The Spider is not subject to Specific Absorption Rate testing, however, it is recommended to have separation of at least 200mm between the device and a person.

Secure the Spider to the airframe using the bracket supplied. Please allow 12 hours for the VHB tape to cure.

1.2. Power

The Spider can be powered using the supplied power lead - just plug into your aircraft's 10VDC to 28 VDC (cigarette lighter) power supply. The power supply must be capable of delivering up to 1.5 A peak current. An alternative option to using the cigarette lighter, would be to hard-wire the power supply in your aircraft. Hardwiring the power lead and keeping the Spider portable would normally be done as a minor modification by a Licensed Aircraft Maintenance Engineer or technician.

Power supply must be stable in the range of 10-28 VDC and capable of delivering at least 1.5 A peak current. The Spider must be fuse protected, in which case we recommend using a 3A in-line fuse.

The power lead supplied has three wires. Brown is positive, black is earth, and blue is not required (see Appendix (D) Wiring Diagram - Power Lead).



2. Getting started

Figure 2 provides a visual reference for content discussed within Sections 2 and 3 of this document.

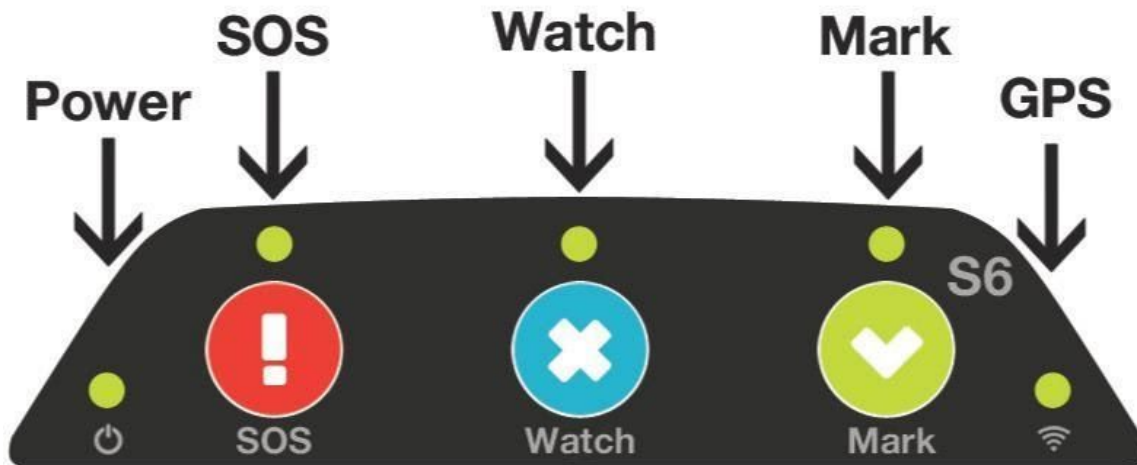


Figure 2: Spider 6 Keypad

2.1. Start Up

When the Spider is first powered the LEDs will cycle through a start-up sequence and should then display a solid Power LED indicator only.

2.2. GPS Signal

In order to acquire a GPS lock, the aircraft will need to be outside and in full view of the sky (refer to 1.1) with the power on. Once a GPS signal is obtained the Signal LED indicator (bottom right) will turn orange. A GPS lock should be acquired within 1 minute in the general case.

2.3. Iridium Connectivity

Once a GPS lock has been attained the Spider will immediately attempt to send the first position report to the Iridium satellites. Once a connection has been made with the Iridium network the Signal LED indicator will turn from orange to green and should remain green throughout the duration of the flight.

Under normal operating conditions the time taken from start-up through GPS lock and connection with the Iridium network should be less than 2 minutes.



3. Operation

Tracking, communication and other flight data transmitted via the Spider can be viewed on the Spidertracks website and mobile application, however, this will first need to be configured at app.spidertracks.io. For setting up your account, please refer to the [User Guide for the Spidertracks website](#).

Reporting parameters are configured within the website and not on the Spider itself. When such parameters are initialised, or changed, the Spidertracks system queues a configuration message for delivery to the Spider. This sits on the gateway until the next subsequent 'session' that the Spider establishes, at which point the message is delivered and the Spider's operating system is updated accordingly. Configuration updates can be made in real time while the aircraft is in flight.

When powered and in full view of the sky, the Spider will begin to send position reports consistent with how it has been configured without any interaction required by the pilot. The purpose of the keypad is to provide visual indication on the state of the Spider as well as additional functionality but is not required for the Spider to report aircraft position.

3.1. System Attributes

There are many features of the Spidertracks system that are delivered through software services and are not specific to any of the Spider product variants. The full range of these are beyond the scope of this document, however, the following two sub-sections summarise cornerstone attributes and provide context for Spider functions discussed in this section.

3.1.1. Tracking Modes

Spidertracks provides both *passive* and *active* tracking capabilities (referred to as *normal* and *watch* modes respectively).

Under normal tracking conditions, the Spider will report positional information and flight events in real time, however, if the aircraft were to encounter an emergency situation in flight, ground personnel would not be alerted to this unless there was a conscious SOS button press by the crew.

In watch mode, the Spidertracks system is actively monitoring the status of the flight. If communication with the aircraft is lost for a period of ten minutes a tier one alert will be pushed through to the emergency management framework.



Watch mode can be activated either manually or automatically (by speed trigger). In either case, the watch button must be pressed to disable the watch system - there is no auto-off. Please check with your account administrator if you will need to switch off Watch at the end of each flight.

3.1.2. Emergency Management Framework

The Spidertracks system comes with a two tiered emergency management framework, which are aligned with the ICAO definitions of *uncertainty* and *alert*. Recipients of these alert notifications are fully customisable within the Organisational Settings of the website. Only an administrator or owner have access to these settings.

3.2. Watch Button

The Watch button has two purposes:

1. To manually activate/deactivate the watch system at any stage of flight when operating in normal reporting mode; or,
2. To turn the Watch system off when operating under automated watch mode. Note that the aircraft must be below the configured speed threshold in order to disable the watch system when operating in automated watch mode.

The watch button will toggle on/off - do not press and hold the button. When disabling the system the LED indicator will begin to flash once toggled. The Spider has now sent a watch-off message. Until the message has been sent successfully the Spider's Watch LED will continue to flash. It is normal operation for this to take up to 60 seconds. While this is in process the aircraft must remain in full view of the sky. If the Spider is powered off before sending the watch-off message, a tier one alert will be raised.

3.3. Mark Button

Up to four pre-programmed macro messages can be delivered by way of toggling the Mark button the corresponding number of times, i.e. a single toggle will trigger Mark 1 message to be sent, toggling twice will trigger Mark 2 message to be sent. Each message is geo-stamped and includes all other parameters of a standard position report.

Configuration of macro messages, recipients and delivery mechanism are configured within the Organisational Settings of the website.

3.4. SOS Function

A tier-one alert can be initiated immediately by pressing the SOS button. When the SOS function has been toggled all LEDs across the top of the keypad will flash simultaneously and the Spider will default to a rapid reporting state (8-10s intervals in the general case).

NB: The SOS state can not be disabled any other way than to power-cycle the Spider.

3.5. Adjusting the LED Brightness

You can adjust the LED brightness on the keypad by pressing and holding the Mark button. The LED will cycle through the levels of brightness. Release the Mark button when your desired brightness is reached.

3.6. Spidertxt 2.0

The Spider 6 is equipped with Low Energy Bluetooth (BLE) technology and is compatible with Spidertxt 2.0. This enables two-way freeform messaging to/from the cockpit using a mobile device connected to the Spider.

For more information on Spidertxt 2.0 please refer to How to use Spidetxt or contact support@spidertracks.com.



4. Troubleshooting

4.1. Spider won't power up

Can you please check that the power cable and connectors are secure at both ends and serviceable, if you are using the cigar plug please unscrew this unit and check the internal fuse is intact and check the unit for corrosion.

4.2. Lost GPS

If the GPS signal is lost, the GPS LED on the Spider will turn off. It is not uncommon to drop a GPS lock but occurrences should be infrequent and not last for periods of more than a few seconds.

4.3. Lost Iridium Connectivity

If the Spider can not connect to an Iridium Satellite for a short period of time there will be a transmission delay. If the delay exceeds 120 seconds, the GPS LED on the Spider 6 will turn orange.

The Spider uses a queue and can store a maximum of 10 points, therefore even if the Spider is struggling to send position points, it can still add points to the queue as long as there is a GPS lock. Once the Satellite connection is re-established, the Satellite LED on the Spider will turn back on and the Signal LED on the keypad will turn green.

Flying through canyons or valleys, you might experience loss of the Iridium connection. Once you start flying over the mountains and out of the valley, the connection will be re-established and the signal LED will turn green again.

4.4. Blue LED stays on

This means your Spider is stuck in programming mode and a [firmware](#) restoration will be required.

