# Flightcell Iridium Extreme Cradle



# Installation and Operation Manual

MAN_CR5_001

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*www.flightcell.com*

# Contents

# 1 Introduction

The Flightcell Iridium Extreme Cradle is used to install an Iridium Extreme satellite phone in an aircraft or vehicle. The phone cradle provides secure mounting for the Iridium handset and interfaces all necessary antenna, power, voice and data connections.

The cradle also contains noise suppression technology to reduce intrusion of aircraft power supply noise into the audio system.

The cradle has been designed for use with the Flightcell DZMx voice, data and tracking system. The DZMx integrates the Extreme phone into the aircraft communications system.

The cradle may also be used to connect an Iridium Extreme phone direct to an aircraft audio panel.

This manual is intended for use by engineers installing and maintaining the Flightcell Iridium Extreme Cradle. It describes the physical, mechanical and electrical characteristics and installation requirements for the product.

For further information or support, contact your Flightcell reseller or contact Flightcell International Ltd direct.

Contact details are provided at the end of this document.

# 2 Specifications

| | | | |
|---|---|---|---|
| Part number | | CRP_05001 | |
| Material | | Machined from aluminium 6061-T6 Powder coated finish | |
| Input voltage | | 12-32V DC (28V Nominal) | |
| Power supply current | | Operating current 250mA max (@28V) | |
| Phone charge voltage | | 5.0V | |
| Microphone bias voltage | | 5.0V via 2.2kΩ | |
| Mic audio | Input Levels | 20mVrms to 1.15Vrms, adjustable | |
| | | 775mVRMS nominal | |
| | Input impedance | 600Ω | |
| SPKR audio | Output levels | Up to 3Vrms into 150Ω, adjustable | |
| | | 775mVRMS nominal | |
| | Output impedance | 150Ω | |
| Satphone data | | RS-232 levels, 9600bps | |
| Dimensions | Width | | |
| | Overall | 70mm | 2.76" |
| | Depth with or without phone | 65mm | 2.58" |
| | Height: including satphone | 236mm | 9.30" |
| | excluding satphone | 222mm | 8.74" |
| Weight | Including satphone | 956g | 33.7oz |
| | Excluding satphone | 680g | 24.0oz |
| Main connector on cradle | | DB25 male (8FTM25P-30N1-FEC) | |
| Antenna connector | | TNC | |

# 3  Installing your Flightcell Iridium Extreme Cradle

## 3.1  Mounting the phone cradle in your aircraft or vehicle

Dimensions and mounting points are provided in drawing *DRW_CR5_010_9575CradleMechanicalAssembly_1.0*, included on the USB drive supplied with your cradle or available from the support pages the Flightcell website. ( [www.flightcell.com/support.aspx](www.flightcell.com/support.aspx) )

Use 4 x M5 bolts at the four mounting points on the back of the cradle. These bolts are fastened into the back of the cradle through a bulkhead or other similar mounting point.

The length of the bolts should be the thickness of the mounting surface plus a maximum of10mm.

## 3.2  Wiring the cradle

The following guidelines should be followed when constructing wiring looms:

- Power cables should be 22AWG stranded. For example, M22759/34-22-9
- Other cables may be 22 or 24AWG stranded, screened where indicated. For example, M27500/-24SB2T14
- Screened pairs should be used for:
    - MIC +/-
    - SPK +/-
    - RS232 Tx/Rx
- The other flow control lines RTS, CTS, DSR, DTR, RI, DCD can utilise either screened or unscreened cables in any groupings. Where screened cable is used, we recommend that it be grounded at one end only to minimize ground loops
- Where the GPO signal is used we recommend using a single screened cable, with GPO GND connected to the screen and GPO connected to the core.

## 3.3  The main connector

The D25 main connector contains all required I/O connections to charge the satellite phone and access the serial port and audio connection.

**Cradle main connector (D25 male) part number -** TE Connectivity 1-1634582-2 (or equivalent)

**Mating connector (D25 female) part number -** M24308/2-3F (or equivalent).

| Pin | Function | Input to/output from phone cradle | Notes |
|-----|----------|-----------------------------------|-------|
| 1 | Do not connect | | |
| 2 | Do not connect | | |
| 3 | Do not connect | | |
| 4 | Do not connect | | |
| 5 | RI | Output | |
| 6 | Power - | Input | |
| 7 | GND | | Signal GND |
| 8 | Data RX | Input | |
| 9 | DTR | Input | Flow control |
| 10 | RTS | Input | Flow control |
| 11 | GND GPO | Output | |
| 12 | MIC + | Input | |
| 13 | SPK + | Output | |
| 14 | Do not connect | | |

| 15 | Do not connect | | |
| 16 | DCD | Output | RS232 flow control |
| 17 | Do not connect | | |
| 18 | DSR | Output | RS232 flow control |
| 19 | PWR + | Input | |
| 20 | GND DATA | | |
| 21 | SAT TX | Output | |
| 22 | CTS | Output | |
| 23 | GPO | | General Purpose Output for custom applications |
| 24 | MIC | Input | |
| 25 | SPK - | Output | |
| Shell | Chassis ground | | |

## 3.4 Audio connection

Audio is passed between phone cradle and phone using the digital audio connection in the base of the phone. The headset audio jack on the side of the phone is NOT used.

### 3.4.1 Connection to the audio panel using a Flightcell DZMx

If the cradle is used to connect an Iridium Extreme handset to a Flightcell DZMx, refer to the installation manual and interconnect drawings for the DZMx.

These documents are supplied with the DZMx or can be downloaded from the Flightcell support page at http://www.flightcell.com/support.aspx.

### 3.4.2 Direct connection to the audio panel without using a Flightcell DZMx

The cradle can be interfaced directly to an audio panel, provided that audio levels are compatible.

If connected to an audio panel, the cradle always provides mic bias and sidetone.

## 3.5 Antenna connection

The Flightcell Iridium Extreme Cradle has a single TNC antenna connector to connect the phone to an approved Iridium antenna. Please contact Flightcell International or your Flightcell supplier for information on antenna options.

Iridium antenna cables must be selected to keep signal loss within accepted levels. Total signal loss on the Iridium connection between the cradle and the antenna should not exceed 3dB at 1626MHz.

The maximum length recommended for different common antenna cable types is:

| Cable Length | Cable Specification | Notes |
| --- | --- | --- |
| Up to 4m | RG58C/U | |
| Up to 6m | LMR200/U-9006 cellfoil | |
| Up to 8m | RG213 | It is recommended that the antenna cable be reduced to RG58 for the last 300mm next to the cradle to assist with installation. |
| Up to 15m | LMR400 | |
| Up to 23m | LMR600 | |

## 3.6  Data connection

The main connector on the phone cradle is wired for an RS232 serial data connection.  The serial data connection is configured for 9600 baud.

## 3.7  Power supply to the Iridium phone

The Iridium phone cradle contains a power supply that manages the voltage supplied to the phone to levels required to safely charge and operate the phone. Power is supplied via the connector on the base of the Iridium phone.

# 4 Using the Iridium phone with the Flightcell Iridium Extreme Cradle

## 4.1 Installing and releasing your Iridium satellite phone

The Iridium Extreme has a hinged rubber bung on its base, covering the data connector.

Unplug the bung and swing around so it clips in behind the two retaining lugs on the back of the phone



Retaining lug

Next, to mount the phone in the cradle:

1. Locate the base of the phone on the locating pins on the cradle data connector
2. Depress the latch on the top of the cradle
3. While pressing the phone down against the locating pins, rotate it backwards until it is hard against the back of the cradle (note that it is necessary to press the phone downwards against the resistance of the rubber cushioning around the phone)
4. Release the latch.

To release the phone, depress the latch and rotate the phone out of the cradle.



Retaining pins

## 4.2 Automated power on and off

The Iridium phone cradle is designed to power the Iridium phone on and off when the aircraft or vehicle is powered up or down. This is done to ensure the phone is always on when the aircraft is operating, and the phone is always off (and batteries are not being run down) when no power is being supplied from the aircraft.

# 5 Warranty and contact details

## 5.1 Limited warranty for your Flightcell Iridium Extreme cradle

Flightcell International Ltd's quality products are proudly designed and manufactured to the highest standards in New Zealand.

Your Flightcell Iridium Extreme Cradle is warranted for 2 years from date of sale.

The warranty is void if any labels are removed or if it is determined that your Flightcell DZM has been:

- Connected to a power supply delivering more than 32 Volts;
- Connected with reverse polarity;
- Installed in direct contravention to the guidelines outlined in the technical installation manual;
- Physically damaged, or a fault has occurred due to the product being used beyond what is considered normal use, causing unusual deterioration of the product.

If the product is deemed to be faulty or in need of repair, please contact Flightcell International Ltd to obtain a Returned Materials Authorization.

## 5.2 Flightcell International contact details

**Flightcell International Ltd**

PO Box 1481
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Nelson 7040
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# 6  Version history

| Release version | Date | Author | Change note number | Description |
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| Issue 1 | 5 November 2014 | J Mace | FCN0646 | Document created. |