Flightcell Iridium 9505/9505A Phone Cradle

Installation Manual

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9.0
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www.flightcell.com

1.VERSION HISTORY

Issue	Date	Author	Description
Issue 1	11 Nov 2006	J. Glasgow	Document created.
Issue 2	22 Nov 2006	J. McKirdy	
Issue 3	21 Feb 2007	J. Glasgow	
Issue 4	22 Feb 2008	A. Whitlock	General update.
Issue 5	22 Jul 2009	A. Whitlock	General update.
Issue 6	08 Sep 2009	A. Whitlock	General update and terminology changes.
Issue 7	05 May 2010	J. Mace	FCN0074 Update specification Insert drawings and part number for FC9505AGPSM3 version of cradle
Issue 8	13 February 2012	J Mace	General revision Section numbering Provision for ring alert output FCN0320
Issue 9.0	03 April 2013	J. Glasgow	Corrected D38999 Cradle RX/TX pinout FCN

2.CONTENTS

3. INTRODUCING THE FLIGHTCELL IRIDIUM PHONE CRADLE

The Flightcell Iridium Phone Cradle is used to install an Iridium 9505 or 9505A satellite phone in an aircraft or vehicle. The phone cradle provides secure mounting for the Iridium handset and interfaces all necessary electrical, antenna, voice and data connections.

Flightcell has designed this product to enable integration of the phone into existing voice systems, or as part of the built-in Flightcell DZM or DZM2 voice, data and tracking system.

Installed with the Flightcell DZM, your Iridium satellite phone can be mounted anywhere on the aircraft or vehicle, as it is controlled remotely from the Flightcell DZM user interface.

4. OPTIONAL ACCESSORIES

4.1. Retaining bracket

The Flightcell Iridium Phone Cradle can be supplied with an optional retaining bracket which rotates down over the phone. As this is factory fitted, it must be specified at time of order.

4.2. RAM mount

The phone cradle is normally fastened to a bulkhead or other flat surface in an aircraft of vehicle. However, if it is to be installed in a non-flat or angled location, an optional RAM mount can be supplied. This uses the same mounting points on the phone cradle, so may be ordered separately from Flightcell International or your Flightcell supplier.

4.3. Conformally Coated Circuit Boards

The phone cradle can be supplied with its circuit boards conformally coated. This is a special build option for cradles to be used in installations where harsh environmental conditions are expected. Please contact Flightcell International for ordering details of this option.

5. ABOUT THIS INSTALLATION MANUAL

This manual is intended for use by engineers installing and maintaining the Flightcell Iridium 9505/9505A Phone Cradle. It describes the physical, mechanical and electrical characteristics and installation requirements for this product.

For further assistance, please contact Flightcell International Ltd.

6.OTHER USEFUL RESOURCES

Find further information on installing and operating all Flightcell products from the Flightcell website at http://www.flightcell.com/support.aspx, or contact Flightcell International Ltd directly. Contact details are provided at the end of this document.

7. TECHNICAL SPECIFICATIONS

Part number	Flightcell Iridium 9505/9505A MK3 Cradle D25	CRP_03001
	Flightcell Iridium 9505/9505A MK3 Cradle D38999	CRP_03002
	Flightcell Iridium 9505/9505A MK3 Cradle D25 with GPS Module	CRP_03003
Material	Machined from aluminium 6061 T6	
Input voltage	12-32 V DC	
Power supply current	1ms inrush <=10.0A	
	100ms inrush <=250mA	
	Operating current 250mA max	
Output voltage (to Iridium Phone)	4.2-4.6V, firmware controlled	
MIC audio	Sensitivity as per satellite phone	
SPKR audio	Level as per satellite phone	
Satellite phone data	RS-232 levels, 9600bps	

Width	Excluding retaining clamp	72.3mm	2.85”
	Including retaining clamp	83.0mm	3.27”
	Including audio lead	92.5mm	3.64”
Depth	Excluding retaining clamp and phone	61.5mm	2.42”
	Excluding retaining clamp	66.2mm	2.61”
	Including retaining clamp	68.3mm	2.69”
Height		206.5mm	8.13”
Weight		700grams	24.69oz

Main connector on cradle	DB25 male (8FTM25P-30N1-FEC)
	D38999 (D38999/20WD35PN)
Iridium connector	TNC

8. INSTALLING YOUR FLIGHTCELL IRIDIUM PHONE CRADLE

8.1. Mounting the phone cradle within your aircraft or vehicle

Attaching the phone cradle:

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

The length of the bolts should be the thickness of the mounting surface plus 10-15mm.

Refer to the mechanical drawings referenced in Appendix A for outline dimensions and locations of mounting points for each connector type.

8.2. Audio connection

The Flightcell Iridium Phone Cradle uses a digital audio connection to pass audio between the satellite phone handset and cradle. This connection works with most 9505A handsets.

All 9505 and some early 9505A satellite phones do not support digital audio, and so the analogue audio connection is still available on the cradle in case a phone of this type needs to be used.

The cradle will automatically switch a digital-capable satellite phone over to use the digital port – no user configuration is required.

If the satellite phone is of a type that doesn't support digital audio then the audio flylead will need to be connected between the 3.5mm socket on the side of the cradle and the 2.5mm socket on the side of the satellite phone.

Replacement leads are available from Flightcell International Ltd or your Flightcell supplier.

8.3. Electronic connections

The Flightcell Iridium Phone Cradle has integrated electronics that supply aircraft power to the phone and provide all necessary voice and data connections.

The phone cradle also contains isolating transformers to reduce intrusion of aircraft power supply noise into the audio system.

The phone cradle comes in several versions with either a D25 main connector or a milspec D38999 connector.

8.3.1. D25 connector

The main and antenna connectors are recessed into the base of the phone cradle.

The D25 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 - Multicomp 8FTM25P-30N1-FEC (or equivalent)

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

Pin numbering for D25 female connector:

Connector pinouts:

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	Output	
9	DTR	Input	Flow control
10	RTS	Input	Flow control
11	GND GPO		
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	Input	
22	CTS	Output	
23	GPO	Output	General Purpose Output - Used for ring alert or off-hook alert - Used for other custom applications.
24	MIC	Input	
25	SPK -	Output	
Shell	Chassis ground		

8.3.3. D38999 connector

A phone cradle with D38999 connector is available for applications where a military specification connector is required.

Connector specifications:

Cradle main connector part number -
D38999/20WD35PN

Mating connector part number - D38999/26WD35SN

Connector pinouts:

Pin	Function	Input to/output from phone cradle	Notes
1	Power ground		
2	MIC +	Input	
3	DZM RI	Output	Flow control
4	SPK +	Output	
5	Speaker shield		
6	DSR	Output	Flow control
7	Do not connect		
8	Data Tx	Output	RS232 data transmit
9	Data Rx	Input	RS232 data receive
10	DCD	Output	Flow control
11	RTS	Input	Flow control
12	CTS	Output	Flow control
13	DTR	Input	Flow control
14	GPO shield		
15	Do not connect		
16	Spare GND		
17	Do not connect		
18	PWR +	Input	
19	MIC -	Input	
20	SPK -	Output	
21	Debug Data Rx	Input	
22	Debug Data Tx	Output	
23	Debug Data GND		
24	Data GND		
25	Data Shield		
26	Chassis GND		
27	Do not connect		
28	Do not connect		
29	Do not connect		
30	Do not connect		
31	MIC Shield		
32	Do not connect		
33	GPO GND		
34	GPO		General Purpose Output - Used for ring alert or off-hook alert Used for other custom applications.
35	Do not connect		
36	Do not connect		
37	Do not connect		

8.4. Wiring to the phone cradle

When installing the cradle with a Flightcell DZM2, a Flightcell prefabricated wiring harness may be used.

For installations where the standard harness is unsuitable, the following guidelines should be followed:

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.

8.5. Antenna connector

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

8.6. Power supply to the Iridium phone

The Iridium Phone Cradle contains a power supply that manages voltage and current 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.

This power supply can operate and charge either 9505 or 9505A Iridium satellite phone models.

The Iridium 9505A phone was designed to be powered and charged via a power jack on the left side. However, the Flightcell Iridium Phone Cradle charges the phone via its main connector instead of the charging jack. This removes the requirement for a power lead from phone mount to handset.

NOTE! When an Iridium 9505A handset is in the cradle, the phone display will not show charging status, even though the battery is being charged.

8.7. 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 not being run down) when no power is being supplied from the aircraft.

8.8. General Purpose Output

The Iridium phone cradle has a general purpose output which can be configured via the DZM to provide an indication when the sat phone is ringing or off hook. See the Flightcell DZM2 Operation Manual for details on configuring this output.

The output is an open collector output which closes to ground when activated. The rating of the output is as follows:
Maximum voltage – 32VDC
Maximum current – 100mA

The output can also be configured to provide functionality for other custom applications. Please contact Flightcell International for more information.

9. USING THE IRIDIUM PHONE WITH THE FLIGHTCELL IRIDIUM PHONE CRADLE

9.1. Placing your Iridium satellite phone into the phone cradle

Installing the satellite phone into the phone cradle:

Rotate the retaining clamp (if fitted) on the phone cradle upwards to allow the satellite phone to fit into the phone cradle.

Slide the satellite phone downwards into the phone cradle, aligning the two electrical connector lugs on the phone cradle with the slots on the satellite phone base.

While pressing the antenna release button (on the top of the phone handset), rotate the satellite phone back onto the antenna connector until it is firmly mated. Then release the antenna release button.

Rotate the retaining clamp (if fitted) on the phone cradle downwards.

Note: Do not plug in the audio cable between the satellite phone and cradle unless you have a 9505 handset (which does not support digital audio).

Releasing your satellite phone from the phone cradle:

Rotate the retaining clamp (if fitted) on the phone cradle upwards to allow the satellite phone to be removed from the phone cradle.

Push the antenna release button (on the top of the phone handset) while rotating the satellite phone outwards from the phone cradle.

9.2. Overriding antenna lock

Some early versions of the 9505 satellite phone will not operate unless the antenna is locked in the 10 o'clock or 2 o'clock position. If you receive an antenna alert when the handset is installed in the Iridium phone cradle, you will need to override this setting.

Overriding the 9505 antenna lock:

Enter the code ***#92#** into the satellite phone. "ANTENNA ALERT OFF" displays.

Power the satellite phone off and re-start for the override code to take effect. Once the satellite phone has been powered-on again it will not require the antenna to be rotated.

NOTE! For the 9505 satellite phone, the override code function operates in handsets operating firmware version LAC0307. For the 9505A satellite phone, the override code function operates in handsets operating firmware versions LAC0307, ISO5004 or ISO6004. Enter the code ***#91#** to identify the firmware version of your handset.

If your 9505 phone is using firmware versions earlier than LAC0307, you will need to return the phone to an approved Iridium service center for a firmware upgrade.

9.3. Controlling satellite phone audio volume

Altering the satellite phone audio volume on the handset:

For best performance, set the volume on the satellite phone handset to 3.

NOTE! Undesirable echo may occur when volume on the handset is set to above halfway.

10. WARRANTY AND CONTACT DETAILS

10.1. Limited Warranty for your Flightcell Iridium Phone Cradle

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

Your Flightcell Iridium Phone 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.

10.2. Flightcell International contact details

Flightcell International Ltd

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Nelson 7010

New Zealand

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11. APPENDICES

11.1. Appendix A: Associated documents

The following documents are referred to in this manual. These documents are supplied on the USB drive supplied with your Iridium Phone Cradle. The supplied documents will be up to date as at time of shipping. However, Flightcell recommends installers check the Flightcell website (http://www.flightcell.com/support.aspx) for any document updates.

11.1.1. Interconnect Drawings

WRL_CRP_001_D25StandaloneICD_1.1.pdf
WRL_CRP_002_D38999StandaloneICD_1.1.pdf
WRL_CRP_003_CradleFlashD38999FirmwareUpgradeCableDrawing_2.1.pdf
WRL_CRP_004_CradleFlashD25FirmwareUpgradeCableDrawing_2.1.pdf

11.1.2. Mechanical Assembly Drawings

DRW_CRP_03_004_D25MechanicalAssembly_1.0.pdf
DRW_CRP_03_003_D38999MechanicalAssembly_2.0.pdf
DRW_CRP_03_002_GPSMechanicalAssembly_2.0.pdf.pdf
DRW_CRP_03_001_D25WithPhoneRetainerMechanicalAssembly_6.0.pdf

12. USER NOTES