

The logo for Flightcell™ is displayed in a stylized, italicized font. The word "Flightcell" is in white with a blue shadow, and the trademark symbol "TM" is in white. The logo is set against a dark blue rectangular background.

# *Flightcell*<sup>TM</sup>

## Operating Guide



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**Introduction**

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Please read these instructions before using Flightcell in an operational aircraft.

It is suggested you practice using your new Flightcell without it plugged into an aircraft to familiarise yourself with using your phone with Flightcell.

Before your first flight with Flightcell, we suggest you plug it into your intercom and adjust the settings. Flightcell is designed to work with most cellphone models and some Iridium satellite phones but adjustment of audio volumes may be required for some phone types.

**Features**

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Flightcell is a totally portable interface primarily but not exclusively for the connection of cellular and satellite phones to aviation headsets either in conjunction with or independent of aircraft systems. Flightcell

- can be used either in conjunction with or independent of aircraft systems;
- can be used with most types of cellular phones. Some models may require an adaptor plug;
- can be used with the Motorola 9505 satellite phone;
- is portable, so no certification required;
- enables the user to interface simultaneously cellular phones, satellite phones, receive audio input from devices such as Discman/MP3 player, non-aviation transceivers and output audio to devices such as video cameras or cockpit voice recorders (CVRs);
- can be powered directly from an aircraft or from its own internal rechargeable batteries;
- has built in basic intercom that together with an optional accessory (not supplied) headset lead allows connection of a second user of the unit;
- can output audio to recording devices such as cockpit voice recorders (CVRs) or video cameras with adaptor lead (not supplied);
- has LED indicators for quick identification of mode and battery states.

**Limitations**

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Due to the large array of cellular phones, headsets and aircraft radio/intercom systems it is impossible to guarantee a perfect hook-up of the Flightcell. If you experience problems it could be due to one of the connected components not operating within the ranges required.

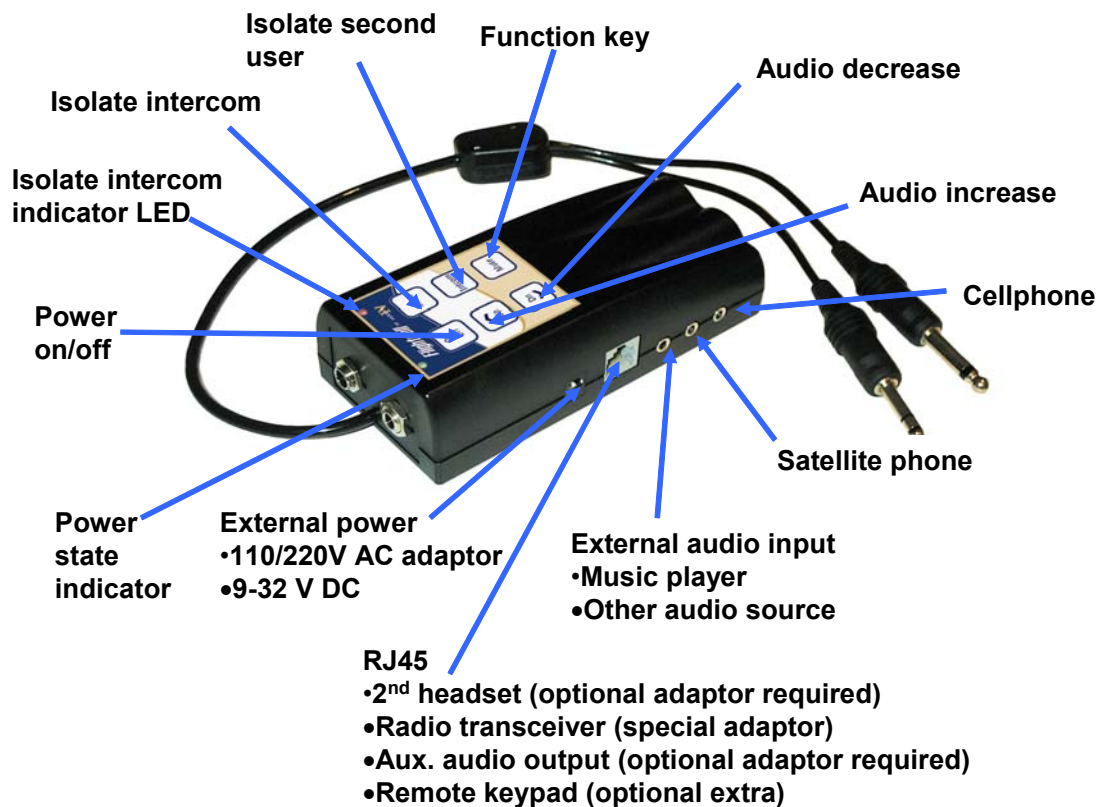
Some cellular phone operating systems create electronic interference, which is picked up by the sensitive components within the Flightcell. It is possible to reduce or eliminate this in the majority of cases. It is important to understand that this interference is not normally transmitted to other users and can only be heard by the person plugged directly into the Flightcell.

Please check your local laws with regards to the use of Cellular Phones once airborne. Aviation laws in most countries allow the airborne use of a cellular phone provided the pilot has approved its use and has deemed it to not be detrimental to the safe operation of the aircraft.

In some states it is against local communications laws to use a cellular phone, when airborne however this is not to do with aircraft safety but concerns over multiple triggering of land based cell phone towers. In reality this has not proven to be a significant problem. If this should happen the worst result is a dropped call.

**Disclaimer:** Flightcell International Ltd does not accept any liability for any injury or damage to persons or property which may or may not be a result of a cellphone being operated within an aircraft or any vehicle, whether operating or not.

## Flightcell Map



## Flightcell Operation

Your Flightcell is fitted with a membrane switch pad. Some functions are activated by pressing a single button. Others are activated by holding down one or two buttons then pressing the Up or Down buttons.

Flightcell is fitted with two LEDs to indicate power state (green) and isolate state (red).

Cables are supplied with Flightcell to connect your cellphone or satellite phone (coiled cable) and for auxiliary audio input (straight cable).

A special adaptor is available from your Flightcell dealer to connect a second headset via the RJ45 port.

This port also provides audio output, and can be used to connect other audio devices such as handheld transceivers. Adaptors for some common devices may be available from your Flightcell dealer or you can make up your own adaptor using the connection information in Appendix 1.

**Keypad Commands**

Item	Action	Key Sequence	Remarks
<b>Power</b>	On	+	Hold down for 5 seconds single audible beep Green LED flashes -(battery power) Green Led continuous - (aircraft power)
	Off		Hold down for 0.5 seconds double audible beep Headset works as if Flightcell not connected
<b>Isolate mic</b>	On	 [Remember to reverse]	Isolates user's mic from aircraft for private phone conversation. Inputs from aircraft and aux audio inputs reduced 50%. Iso function will auto off after 5 minutes
	Off		
<b>Phone Receive Volume</b>	Up	+  →	Make sure phone volume is a maximum level first
	Down	+  →	
<b>Phone Send Volume (Mic)</b>	Up	+  →	Adjust this if your called party says you sound muffled
	Down	+  →	
<b>Master Volume</b>	Up		Increases all volumes
	Down		Decreases all volumes
<b>Activate 2<sup>nd</sup> Headset</b>	On		Red LED blinks; Activates 2 <sup>nd</sup> headset extension
	Off		Deactivates 2 <sup>nd</sup> headset extension Red LED off
<b>Auxiliary Audio Input Volume</b>	Up	+	Make sure CD player is at maximum volume level first
	Down	+	
<b>Factory Defaults</b>	Restore	→  →	Restores factory default setting; Unit must be on first

**LED Indicator States**

LED	State	Indication
<b>POWER</b>	Off	Unit Off
	On continuous	Charging or External Power On
	Blink	Unit On (Internal Battery)
	Double Blink	Unit On (Low Battery)
	Triple Blink + Audio Tone	Unit On (Very Low Battery)
<b>ISOLATE</b>	Off	All Isolates Off
	On	Mic Isolate On
	Blink	Internal Intercom On
	Occult	Mic Isolate On; Internal Intercom On

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**Setting up Flightcell**

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It is important that you adjust all input volumes correctly to get the best performance. Use the yellow start card as a check list.

- Start with Flightcell plugged in but turned off, then adjust the radio and then aircraft intercom volumes in the normal way.
- **Turn the Flightcell on by holding down the Function button and the Power button simultaneously for 5 seconds (green light will illuminate).**
- Plug your cellphone or satphone into the correct socket in the Flightcell using the coiled cable. It must be plugged in correctly as failure to do so will lead to feedback or failure to connect to your cell phone. The larger 3.5mm end plugs into the Flightcell, and the smaller 2.5mm end goes into the PHF socket in your phone. Please consult your cellphone instructions if you are unsure where to plug it in.
- Some cellphones have a built in 2.5mm personal Headset socket (PHF) others may need an adaptor to go on the bottom of the phone (Nokia, Erickson, some Qualcom) this adaptor has a 2.5mm socket. These adaptors are available from your Flightcell supplier, cell phone accessory dealer or Radio Shack Stores.
- If phone transmit or receive volumes are too high or too low, adjust using the keypad commands as shown on page 5.

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**Power Supplies**

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**Internal Power Supply**

Flightcell has internal batteries which will provide up to 50 hours continuous operation on a single charge. Before using your Flightcell for the first time you will need to charge it using the charger provided. Flightcell is fitted with high quality NIMH batteries, as these resist memory problems associated with NiCad type batteries. It will take 5-7 full cycles for the battery to reach optimum performance.

**Charging**

The Green LED on the top of the switch pad will illuminate constantly to indicate the battery is charging. When fully charged the light will flash slowly. Do not leave unit on charge more than 18 hours as this can overheat the internal batteries resulting in reduced performance. The internal NIMH battery will provide up to 50 hours of use between charges depending on volume settings.

**Note:** Your battery may reach full charge in less than 6 hours.

**Periodic Battery Maintenance**

It is a good idea to cycle the battery periodically. To do this just leave the unit switched on after use until flat. Then recharge as normal. This should be carried out every month.

**External Power Supplies**

Flightcell can be powered directly from an aircraft supply and will run on any voltage from 9-32 volts. This should not exceed 32 volts. If powering the unit from the aircraft you will need to obtain a power plug to fit the unit's power socket (2.1x5mm short shaft DC centre positive plug). A cigarette lighter type cord is included for this.

When powered from an aircraft supply the Green LED will illuminate constantly when the unit is turned off. When the Flightcell is turned on the Green LED will flash slowly.

A tone will be heard when EXT power is turned on or off.

If you have a Bose X version of Flightcell, it will draw its power from the aircraft via the aviation input lead.

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### **Using Your Flightcell**

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You are now ready to go flying. It is suggested that you do not use your phone during critical flight phases and turn it off during approach and landing, except if needed for emergency communications. Remember a GSM/GPRS phone could affect VHF/GPS navigation devices. If in doubt turn you phone off and see if you get any change in indication.

Just use your Radio and Intercom in the normal way. When a call comes in your phone will ring normally, or in the case of some models (Motorola & some later Nokia and Ericsson models) ring through the headset. If your phone is one of the models that does not ring through the headset, it may mean you need to set your phone up on "auto answer mode" (Check your phone instructions). Also a "vibralert" function may help to alert you to calls.

Answer your phone in the normal way, there is no need to switch anything on the Flightcell (please read your cellphone instructions, as your phone will sense that the Headset jack is in use and there may be other ways of answering your phone). If your phone has the capability, answer calls using the phone in "auto answer" mode. To make an outgoing call, just dial out in the normal way.

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### **Cellular Phones**

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#### **Common Cellular Phone Systems & Problems**

Aviation is best suited to **Analogue & CDMA** type cell phones. Dual mode and GSM/GPRS digital phones will work however, but special care is required.

To get the best from the phone and to eliminate as much interference created by the phone as possible to the headset and aircraft radios, the following suggestions are made.

If using a dual mode (**TDMA**) phone. You should switch it to analogue only using the phone's menu, if this service is available in your area. See your phone user guide, Network Services. Otherwise treat as GSM.

If using **GSM** Digital phones it will be necessary to keep the phone as far away as possible from all electronic equipment including your headset and the Flightcell unit itself. Flightcell is very sensitive and will amplify RF to your headset. To reduce this the following suggestions are made.

The best position is to hold the phone cupped in your hand so as to shield the antenna from avionics including Flightcell. Against your chest also works as your body being mostly water soaks up unwanted noise very well. You may need to experiment with this until you find the best position for your situation and phone. The amount of interference noise will vary depending on phone make and model and distance from Flightcell to the phone's antenna.

#### **External Antennas**

Some phones have a socket to allow an external antenna to be fitted. These antennas and cables are available from you cellphone dealer. External antennas completely eliminate problems associated with RF noise from the phone as well as increasing coverage.

**Note:** Care must be taken fitting antennas to aircraft. Do not use "glass mount" type antennas. Depending on your aircraft category modification certification may be required.

## **Headsets**

Electric Noise Cancelling type microphones work best with cellular phones as they cut down background noise, however you may use Dynamic microphones as well. ANR headsets work just as any other. You may find volume levels differ with different headsets plugged in, this is unavoidable. ANR headsets are also susceptible to GSM noise.

Mono and stereo versions of Flightcell are available to suit your headset.

**Note:** Mono headsets cannot be used with stereo Flightcells without an adaptor.

### **Bose Panel Mount Headsets**

These high performance headsets have a special Flightcell model. See Appendix 2 for details.

### **David Clark Panel Mount Headsets**

See Appendix 2 for details.

## **Advanced Operations**

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### **ICS ISO Button**

Your Flightcell is fitted with a microphone (aircraft intercom) mute switch. This stops your outgoing telephone conversation being heard by others in the cockpit, and reduces all radio and intercom volume input to your headset by 50%. To stop your phone conversation triggering the intercom, turn this Mute On (red LED steady on).

Other aircraft and control are never able to hear your phone conversation.

Be sure to turn mute back Off (No Red LED) again before using the radio or intercom as your microphone will only work for the phone until you do. This can result in some embarrassment when you finally realise why the tower cannot hear you.

As a failsafe measure, ICS/ISO will auto reset after 5 minutes.

### **Auxiliary Input**

On the side of the unit is the auxiliary input (Walkman/Discman/MP3). A cable for Walkman/Discman is supplied with your Flightcell.

To adjust the input volume from an auxiliary device plugged to the Flightcell. Hold down the function button while simultaneously pushing the up or down buttons.

### **The EXT ISO Button**

This function is only used in conjunction with the optional extra second user headset jack

### **Phone Isolate**

The On/Off switch can also be used as an isolate switch. If you are on a phone call and wish to temporarily disconnect from the caller but not lose the call, or disconnect your auxiliary sound input from the walkman while you talk to the tower, then just switch the unit off, and when you turn it back on they will still be there. There is, however, no need in normal circumstances to turn the unit off as you can talk to the tower without doing so. You should not need to turn the unit off until you have shut down your aircraft. Should the unit fail for any reason turning the unit off will reconnect your headset to the radio.

## **Optional Extras**

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The following accessories are available to expand the versatility of your Flightcell interface and use the RJ45 EXT connect port.

**Second User Headset Jack GA**

Allows a second headset to be used. The second user can access all functions. Allows a simple intercom to operate between 2 connected headsets. When this adaptor is plugged into the RJ45 port the second headset is automatically live. Operating the EXT ISO button will turn this headset on, which is indicated by a flashing Red LED.

**Second User Headset Jack Nato (U174/U plug, single helicopter plug)**

Allows a second headset to be used, second user can access all functions. Allows simple intercom to operate between 2 connected headsets. When this adaptor is plugged into the RJ45 port the second headset is automatically live. Operating the EXT ISO button will turn this headset on, which is indicated by a flashing Red LED.

**Additional Non Aviation Transceiver Connector**

Allows the connection of a second radio transceiver for simultaneous use of either aviation or non aviation, CB, Fire/Police radios without the need for permanent installation.

These are not supplied by Flightcell and must be made to order.

**Auxiliary Audio Output Adaptor**

This optional adaptor is available from Flightcell if you wish to record audio from your Flightcell to a video camera or recorder.

**Limited Warranty**

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Your unit is warranted for 24 months from date of sale.

The warranty is void if any labels are removed or if it is determined that more than 32 volts or reverse polarity has been put into the charge socket.

Please contact Flightcell International Ltd to obtain a Returned Materials Authorisation (RMA) prior to shipping any products for repair.

**Trouble Shooting**

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**GSM and TDMA noise**

GSM phones are not well suited to aviation environments due to the way in which they operate. This will mean you need to experiment with the phone to find the best location to reduce to a comfortable level the RF experienced in your headset.

Some phones have a socket to allow an external antenna to be fitted. These antennas and cables are available from you cellphone dealer. External antennas completely eliminate problems associated with RF noise from the phone as well as increasing coverage.

**Note:** Care must be taken fitting antennas to aircraft. Do not use "glass mount" type antennas. Depending on your aircraft category modification certification may be required.

**Stereo headsets**

Stereo headsets need to be switched to mono mode before using through a mono Flightcell. If this cannot be done then an adaptor will be required. Stereo Flightcells are available.

**Stereo aircraft systems**

In an aircraft with a stereo intercom system, stereo Flightcells should be used in conjunction with stereo headsets.

### Microphone will not transmit

Ensure Mute is off; no red lights.

Aircraft with military radios require a military Flightcell™ as the system is low impedance.

### Factory reset

Press and hold in order: **Func + ICS ICO + EXT ISO = restore factory defaults**. When this is pressed, you should hear a number of beeps.

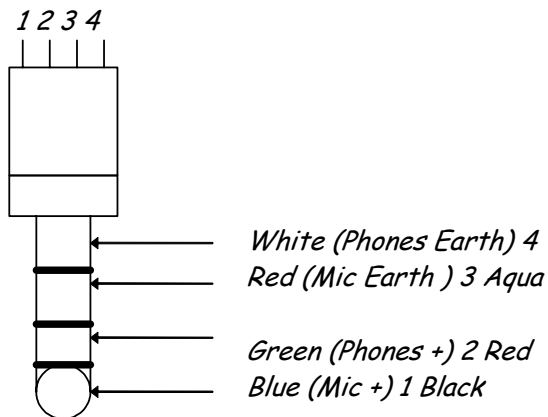
## Appendix 1: Connections

### RJ45 Pins

Pin	Function
1	GND
2	Data Out
3	Battery +
4	Data In
5	+5V
6	NC (GND for low impedance variants)
7	Mic
8	Phones

Pin 1 is nearest the charger input; Pin 8 is nearest the aux input

### Flightcell Nato Plug Wiring Diagram



1. Pin 1 = Blue wire, Microphone Positive (Yellow)
2. Pin 2 = Green wire, Headphones Positive (Green)
3. Pin 3 = Red wire, Microphone Earth (White)
4. Pin 4 = White wire, Headphone Earth (Black)

**Appendix 2: Panel Mount Headsets****Bose X and Series II Headsets**

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Flightcell manufacture a Flightcell specifically for these high performance headsets. This Flightcell model is tuned so you get the best audio quality possible.

Bose model Flightcells retain a battery for emergency backup use but are normally powered automatically from aircraft Bose panel mount socket. Therefore it is not necessary to power your unit separately however initial charge will be necessary to allow for setup and use when not connected to an aircraft.

Bose model Flightcells will not power Bose ANR systems in the event of aircraft power failure. However, you can power the Bose headset from an external power source via the power input socket on the Flightcell.

David Clark (DC) panel mount ENC headsets.

Flightcell manufacture a Flightcell specifically for these headsets.

DC ENC model Flightcells retain a battery for emergency backup use but are normally powered automatically from aircraft DC panel mount socket. Therefore, it is not necessary to power your unit separately however, initial charge will be necessary to allow for setup and use when not connected to an aircraft.

DC ENC model Flightcells will not power Bose ANR systems in the event of aircraft power failure. However, you can power the DC ENC headset from an external power source via the power input socket on the Flightcell.

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