



Flightcell® DZM

The world's most advanced all-in-one communications and tracking system

Global communications over the

Iridium satellite network

Cellular network

GPS flight following

Audio/MP3 integration



Operation Manual

www.flightcell.com



Registered in U.S. Patent and Trademark Office

VERSION HISTORY (STANDARD OPERATION MANUAL)

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Contents

Version History (Standard Operation Manual).....	2
Contents	3
Flightcell® DZM features	6
Your Flightcell® DZM at a glance.....	7
Flightcell® DZM specifications.....	7
Getting to know your Flightcell® DZM.....	8
Switching the Flightcell® DZM on and off	9
The LCD display	10
The keypad.....	14
Using the Flightcell® DZM menu	16
<i>Menu overview.....</i>	<i>16</i>
<i>Accessing the menu.....</i>	<i>17</i>
<i>Navigating the menu</i>	<i>17</i>
<i>Selecting a menu option</i>	<i>17</i>
<i>Returning to the previous screen</i>	<i>17</i>
<i>Altering a menu setting</i>	<i>18</i>
<i>Saving a menu setting</i>	<i>18</i>
<i>Aborting a menu setting</i>	<i>18</i>
<i>Exiting the menu</i>	<i>18</i>
Flightcell® DZM operator's guide.....	19
Making and answering calls.....	20
<i>Making a call using manual dial.....</i>	<i>20</i>
<i>Making a call using the DZM phonebook</i>	<i>21</i>
<i>Making a call using speed dial.....</i>	<i>23</i>
<i>Answering an incoming call.....</i>	<i>24</i>
<i>Using touch-tone dialing (DTMF) during a call</i>	<i>25</i>
Editing phonebook entries.....	26
<i>Adding, editing or moving a phonebook entry</i>	<i>26</i>
<i>Deleting a phonebook entry.....</i>	<i>28</i>
Using text messaging	29
<i>Receiving a text message</i>	<i>29</i>
<i>Using the Received Messages screen</i>	<i>29</i>
<i>Canceling unsent text messages</i>	<i>30</i>
Using GPS tracking.....	31
<i>Accessing the Tracking Menu.....</i>	<i>31</i>
<i>Manually transmitting GPS position</i>	<i>31</i>
<i>Automatically transmitting GPS position</i>	<i>32</i>
<i>Enabling, disabling and suspending automated GPS tracking</i>	<i>32</i>
<i>Setting automatic GPS transmission based on time interval.....</i>	<i>34</i>

<i>Setting automatic GPS transmission based on heading change</i>	<i>35</i>
<i>Heading Timer</i>	<i>36</i>
<i>Setting GPS display options</i>	<i>37</i>
Using automated flight following (AFF)	38
<i>Registering AFF mission start and end points</i>	<i>38</i>
Controlling audio settings	40
<i>Accessing the Audio Menu</i>	<i>40</i>
<i>Setting satellite phone audio volume.....</i>	<i>41</i>
<i>Setting cell modem audio volume</i>	<i>41</i>
<i>Isolating (muting) phones.....</i>	<i>42</i>
<i>Setting auxiliary device audio volume.....</i>	<i>43</i>
<i>Muting auxiliary devices.....</i>	<i>44</i>
Using Flightcell® DZM common setup features	45
<i>Accessing the Setup Menu</i>	<i>45</i>
<i>Using Auto Power On</i>	<i>45</i>
<i>Setting backlight brightness.....</i>	<i>46</i>
<i>Setting backlight mode.....</i>	<i>46</i>
<i>Setting LCD contrast.....</i>	<i>47</i>
<i>Identifying firmware version and serial number.....</i>	<i>48</i>
Emergency procedures.....	49
<i>Sending a distress signal</i>	<i>49</i>
Flightcell® advanced setup guide	50
Configuring your Iridium satellite phone	51
<i>Configuring satellite phone service center number.....</i>	<i>51</i>
<i>Overriding satellite phone antenna lock.....</i>	<i>51</i>
Configuring GPS tracking.....	52
Using the Installation Settings Menu to access advanced settings.....	54
Configuring Advanced Tracking Settings	55
<i>Enabling manual GPS tracking</i>	<i>55</i>
<i>Using GPS antenna diagnostics.....</i>	<i>56</i>
<i>Setting automatic GPS transmission based on low speed limit.....</i>	<i>57</i>
<i>Setting automatic GPS transmission for takeoff and landing based on collective switch position.....</i>	<i>58</i>
<i>Setting automatic GPS transmission for takeoff and landing based on squat switch position</i>	<i>60</i>
<i>Configuring oil pressure switch to record aircraft operating time.....</i>	<i>60</i>
<i>Finding messaging destination addresses</i>	<i>62</i>
<i>Configuring satellite messaging destination</i>	<i>62</i>
<i>Configuring cellular messaging destination.....</i>	<i>64</i>
<i>Configuring position report transmission options</i>	<i>65</i>
<i>Setting preferred messaging device</i>	<i>66</i>
<i>Enabling Iridium SBD transmission.....</i>	<i>66</i>
<i>Setting satellite message size</i>	<i>67</i>
<i>Sending GPS location upon power up.....</i>	<i>67</i>
<i>Enabling and disabling automated flight following (AFF)</i>	<i>68</i>

Configuring advanced audio settings.....	69
<i>Controlling which microphones connect to the Flightcell® DZM</i>	<i>69</i>
<i>Altering microphone selection settings</i>	<i>69</i>
<i>Setting satellite phone MIC gain.....</i>	<i>70</i>
<i>Setting cell modem MIC gain</i>	<i>71</i>
<i>Setting DZM to ICS audio level.....</i>	<i>72</i>
<i>Setting ICS to DZM audio level.....</i>	<i>73</i>
<i>Setting Flightcell® DZM Sidetone.....</i>	<i>73</i>
<i>Switching GPS/SMS confirm tones on and off</i>	<i>74</i>
<i>Switching keypad tones on and off.....</i>	<i>75</i>
<i>Muting DZM audio when phones are not in use</i>	<i>75</i>
Configuring other Flightcell® DZM advanced setup features.....	76
<i>Setting satellite phone type</i>	<i>76</i>
<i>Setting cellular modem type</i>	<i>77</i>
<i>Specifying keypad type.....</i>	<i>78</i>
<i>Inverting LCD color display</i>	<i>78</i>
<i>Restoring factory default settings.....</i>	<i>79</i>
APPENDIX A: Upgrading Flightcell® DZM firmware.....	80
APPENDIX B: Installing and using Flightcell® SMS text messaging software	82
About Flightcell® SMS Console software.....	82
System requirements for using Flightcell® SMS Console software	82
Installing Flightcell® SMS Console software.....	83
Using Flightcell® SMS Console software	83
APPENDIX C: Sending SMS text messages to a Flightcell® DZM	86
Warranty and contact details	87
Limited warranty for your Flightcell® DZM.....	87
Flightcell® International contact details.....	87
User notes	88

FLIGHTCELL® DZM FEATURES

Integrated voice communications

The DZM connects an Iridium satellite phone and/or cell modem to the aircraft or vehicle intercom/interphone system (ICS).

Connected devices can be used at all ICS positions, providing crew and passengers with global point-to-point communications.

Remote dialing and operation

The DZM provides remote dialing and operation of Iridium 9505, 9505A and 9555 portable satellite phones, the Iridium 9522A L Band Transceiver (LBT), and cellular modules.

GPS flight tracking

The DZM has a sophisticated Adaptive Tracking System. It transmits aircraft or vehicle data on demand, or according to operator configured rules. Several tracking providers support DZM tracking data. Contact your Flightcell® supplier or Flightcell® International Ltd for details of available service providers.

Automatic flight following

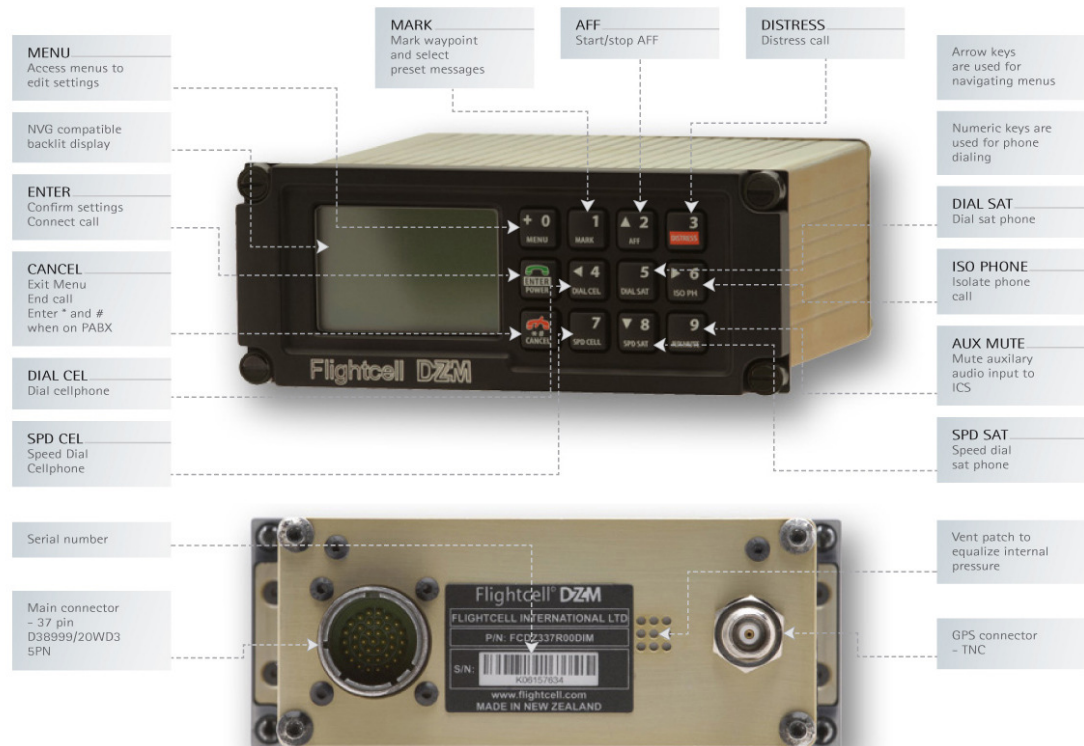
The DZM has Automated Flight Following capabilities. If supported by your tracking service provider, this provides surveillance over an aircraft or vehicle and automatically raises alerts if regular position data are not received for any reason, within a specified time period.

Auxiliary audio input

The DZM also allows connection of an external audio device (e.g. music player) into the ICS.

NOTE! If you are using earlier firmware than specified on page 2, some features might differ to those described in this manual.



YOUR FLIGHTCELL® DZM AT A GLANCE



The serial number is used to identify the aircraft or vehicle when position data is transmitted from the DZM. You will also need to know the serial number when contacting Flightcell® International about your DZM product.

Refer to "Identifying firmware version and serial number" on page 47 for further information about how to identify the serial number of your DZM.

Flightcell® DZM specifications

Power supply voltage: 24-30 V DC Power supply current: Up to 250mA ICS transmit audio: Input: 6mVrms to 5Vrms Adjustable gain Input impedance: 2k7 ICS receive audio: Output: 53mVrms to 5Vrms into 150Ω Sat phone input: 23mVrms to 1.75Vrms Adjustable gain Sat phone output: Typical electret mic levels Adjustable gain Cell phone input: 23mVrms to 1.75Vrms Adjustable gain Cell phone output: Typical electret mic levels Adjustable gain	Auxiliary audio input: 6mVrms to 5Vrms Adjustable gain Left input impedance: 1kΩ Right input impedance: 1kΩ Sat phone data connection: RS-232 levels. Settings adjustable for different phone types. Cell phone data connection: RS-232 levels. Settings adjustable for different phone types. PC data connection: RS-232 levels Backlighting control: 0-28V DC or 0-5V AC Fixed control: Off, Low, Med, High Backlight colour: Green 540nm. Designed for NVIS B compliance. GPS: TTFS (Time to first fix): Typ 44s	Max Velocity: 500m/s Max Acceleration: 4G Max Altitude: 18000m Ext Antenna: <ul style="list-style-type: none">• Connector: TNC• Bias Voltage: 3V• Antenna Current: 6-70mA• Typical gain: 21dB Dimensions: <table><tr><td>Width: 5.75" (146 mm)</td><td>Height: 2.25" (57 mm)</td></tr><tr><td>Depth: 5.1" (130 mm)</td><td>Weight: 17.6oz (500g)</td></tr></table> Mounting fasteners: DZUS Main connector: D38999/20WD35PN GPS connector: TNC Compliance: FAA (RTCA-D0160E), STC	Width: 5.75" (146 mm)	Height: 2.25" (57 mm)	Depth: 5.1" (130 mm)	Weight: 17.6oz (500g)	 
Width: 5.75" (146 mm)	Height: 2.25" (57 mm)						
Depth: 5.1" (130 mm)	Weight: 17.6oz (500g)						

DZM conforms and is tested to FAA DO160E. A supplementary Type Certificate (STC) has been issued for specific airframes. The full Flightcell® part number of the DZM is FCDZ337R00DIC.

GETTING TO KNOW YOUR FLIGHTCELL® DZM

Learn how to:

Switch your DZM on and off

Read the DZM LCD display


Use the DZM keypad

Use the DZM menu

Switching the Flightcell® DZM on and off


Switching the DZM on:

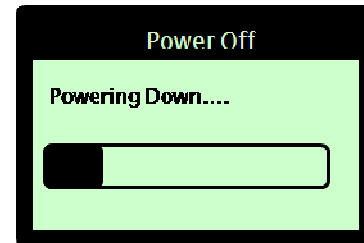
If 'Auto Power On' is enabled, the DZM will automatically switch on when power supply is connected.

OR to switch on manually, press and hold the  POWER key.

Refer to "Using Auto Power On" on page 45 for further information about 'Auto Power On'.

Switching the DZM off:

Press and hold the  POWER key until the progress bar on the LCD display screen reaches the end.



The LCD display

The LCD display screen on the DZM has **Main Screen** and **Menu Screen** modes:

The 'Main Screen' displays the operating status of the DZM:

The satellite phone status displays on the 'Main Screen'.

SAT: Powering Up displays when the DZM has powered up and is attempting to connect to the satellite phone. The satellite phone is not available for use at this time.

SAT: Initialising displays when the DZM is attempting to initialize the satellite phone. The phone is not available for use at this time.

If the DZM can't detect a satellite phone (either because a phone is not installed in the cradle, or the phone is turned off, a warning message displays advising that "Sat phone/LBT is not responding...".

SAT: Ready displays when the satellite phone is powered on, but not in use.

SAT: Calling displays when the satellite phone is dialing a number before connection is made.

SAT: On Call displays when the satellite phone is connected on a call.

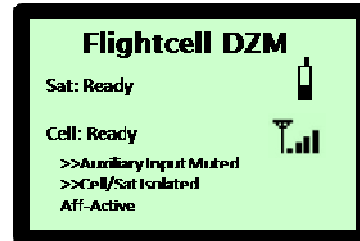
SAT: Disconnecting displays when a call using the satellite phone is terminated by the user, if the user doesn't answer an incoming call, or if the called party doesn't pick up the call within a minute.

Refer to "Making and answering calls" on page 20 for further information about using the satellite phone to make and receive calls.

SAT: Sending Data displays when the DZM is attempting to send an SBD or SMS message over the Iridium network.

SMS Sent or **SBD Sent** shows when a message has been successfully transmitted.

SMS Failed or **SBD Failed** display if an SMS or SBD transmission has failed (usually due to low signal strength). In this case the DZM will retain the message in the queue and attempt to resend.



The cell modem status displays on the 'Main Screen'.

CELL: Initialising displays when the cell modem is attempting to power on. The cell modem is not available for use at this time

CELL: Ready displays when the cell modem is powered on, but not in use.

CELL: Calling displays when the cell modem is dialing a number before connection is made.

CELL: On Call displays when the cell modem is connected on a call.

CELL: Disconnecting displays when a call using the cell modem is terminated by the user, if the user doesn't answer an incoming call, or if the called party doesn't pick up the call within a minute.

Refer to "Making and answering calls" on page 20 for further information about using the cell modem to make and receive calls.

CELL: Sending Data displays when the DZM is attempting to send an SMS message over the cellular network.

SMS Sent displays when a message has been successfully transmitted.

SMS Failed displays if an SMS transmission has failed (usually due to low signal strength). In this case the DZM will retain the message in the queue and attempt to resend. If the message has not been sent after several retries, the DZM will resend via Iridium SBD or SMS (depending on DZM configuration).

Refer to page 64 for more information on configuring DZM message transmission options.

Satellite phone activity indicators display on the right of the 'Main Screen'.



displays when the satellite phone is powered on and Ready for use.



displays when the satellite phone is offline or still attempting to power on.

Cell modem signal strength indicators display on the right of the 'Main Screen'.



A minimum of three bars must be shown on the signal strength indicator to attempt transmission.

Low Signal displays if the cell signal strength is too low to send an SMS message

>>Auxiliary Input Muted displays at the bottom of the 'Main Screen' when audio from auxiliary devices is muted.

Refer to "Muting auxiliary devices" on page 42 for further information about auxiliary mute.

>>Cell/Sat Isolated displays at the bottom of the 'Main Screen' when satellite or cell modems are isolated (muted).

Refer to "Isolating (muting) phones" on page 42 for further information about muting phones.

Automated Flight Following (AFF) status information displays at the bottom of the 'Main Screen' when AFF is switched on.

AFF - Requesting displays when AFF is switched on and confirmation of AFF activation is requested from the receiving server.

AFF – Active displays when the receiving server confirms AFF is operating.

AFF - Cancelling displays when AFF is switched off and confirmation of AFF termination is requested from the receiving server.

AFF - Terminated displays briefly when the receiving server confirms AFF has been terminated.

No Response – Retry? displays when AFF operation or termination confirmation has not been received after several

attempts. Press the  ENTER key to keep re-trying.

No AFF Server Response displays to advise AFF operation or termination confirmation has not been received. No further automated attempts are made.

Refer to "Using automated flight following (AFF)" on page 38 for further information about AFF.

Distress Mode! flashes at the bottom of the 'Main Screen' when in distress mode.

Refer to "Sending a distress signal" on page 49 for further information about distress mode.

The bottom line of the DZM display also shows status messages for the tracking system, including:

Not Tracking: No GPS if there is a GPS fault

Not tracking: Disabled if tracking has been disabled or suspended

No Tracking: On Ground if the DZM is configured to only send tracking data when the aircraft is in the air

Tracking: On Ground if the DZM is configured to send tracking data when the aircraft is still on the ground (see page 32 for further information)

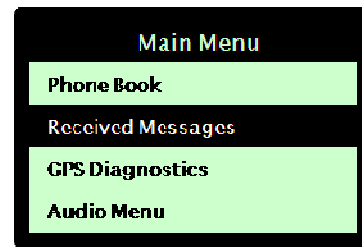
Tracking: Takeoff and **Tracking: Landed** after the DZM has sent takeoff and landing reports

Engine Start and **Engine Stop** if the DZM is configured to record these events.

The 'Menu Screen' displays when you are accessing the DZM menu system:

The menu system is used to view and configure DZM settings.













Refer to "Using the DZM menu" on page 16 for further information about using the menu.












The keypad

The keypad on the DZM has various modes as described below. Refer to the page number in brackets for further information about each key's function.


When the 'Main Screen' displays, each key has a quick key function:

	MENU key	Press to enter the menu system to configure DZM settings (page 16)
	MARK key	Press to send current GPS position data (page 31)
	AFF key	Press to start and stop Automated Flight Following (AFF) (page 38)
	DISTRESS key	Press and hold for 15 seconds to send a distress signal (page 49)
	ENTER and POWER key	Press to call a phone number that has been entered (page 20) Press to answer an incoming call (page 22) Press and hold to switch the DZM off or on (page 9)
	DIAL CEL key	Press to enter a phone number to dial from the cell modem (page 20)
	DIAL SAT key	Press to enter a phone number to dial from the satellite phone (page 20)
	ISO PH key	Press to isolate (mute) audio between the DZM and the cell and satellite phones (page 42)
	CANCEL key	Press to terminate a call, undo last action or delete text or numbers entered on the display
	SPD CELL key	Press to select a speed dial number to call from the cell modem (page 22)
	SPD SAT key	Press to select a speed dial number to call from the satellite phone (page 22)
	AUX MUTE key	Press to mute any auxiliary audio devices (page 43)

When the 'Menu Screen' displays, the following key functions are available:

		ARROW keys	Press the arrow keys to navigate through the menu options Use the arrow keys to increase or decrease audio volume during a call
			
		QUICK keys	Press the 3 key to move directly to the first item in a menu list Press the 9 key to move directly to the last item in a menu list
		ENTER key	Press to select a menu item Press to save modified settings for a selected menu item
		CANCEL key	Press to exit the menu system and return to the 'Main Screen'
		MENU key	Press to deselect a menu option, cancel any unsaved settings and return to the previous screen

When dialing calls, the following key functions are available:

	DIGIT keys	Press the 0 to 9 digit keys to dial a phone number
	+ key	Press and hold for the international dialing prefix "+" (for GSM and Iridium networks only)
	ENTER key	Press to dial a phone number that has been entered (page 20)
	CANCEL key	Press to end a call, undo last action or delete Use to enter * or # symbols when using touch-tone dialing (page 24)

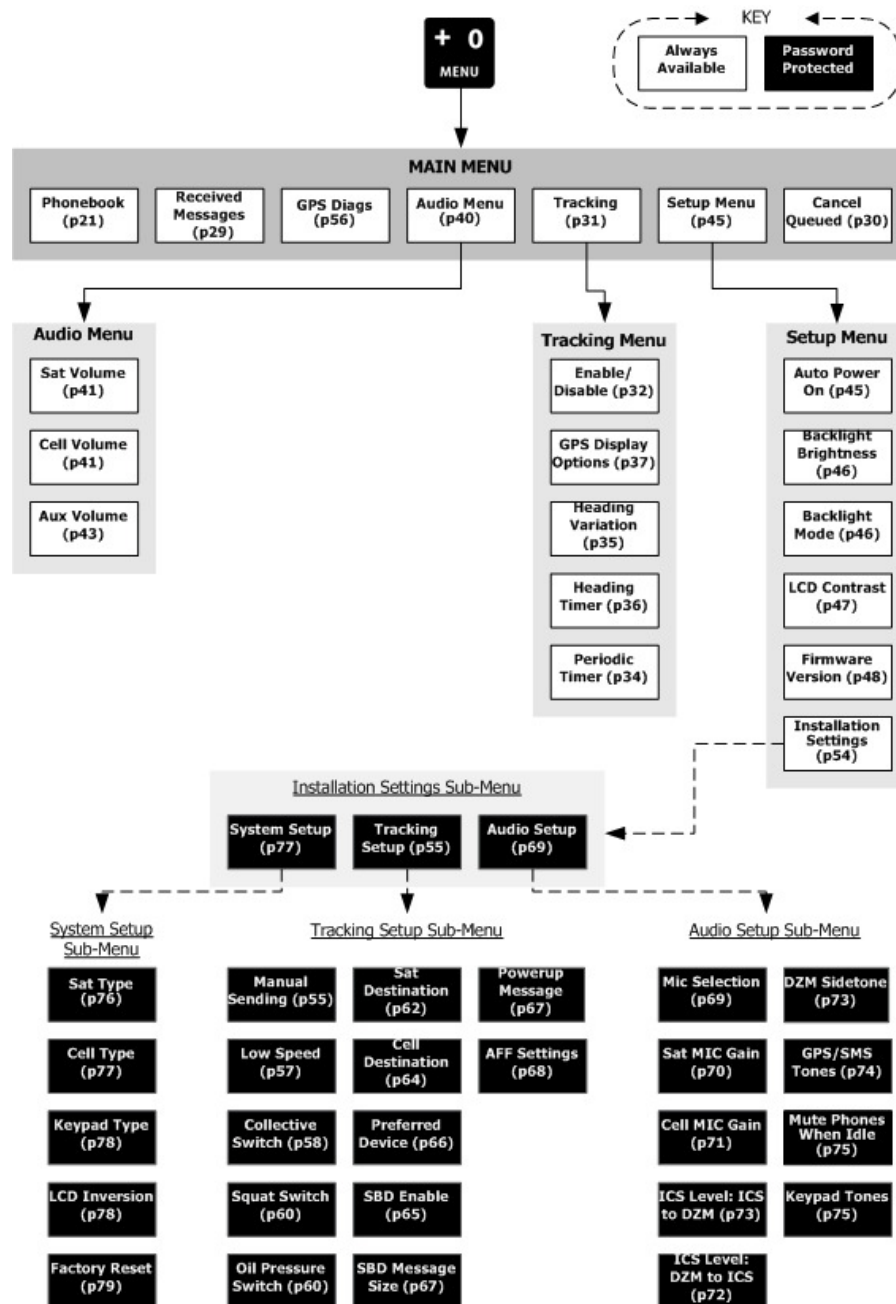
Using the Flightcell® DZM menu

The menu system is used to access and configure a wide range of DZM settings.

Menu overview

The DZM menu layout is shown in the diagram below. Refer to the page number displayed in brackets for more detailed information about each menu option.

For information on accessing password protected settings in the Installation Settings menu, see page 54.

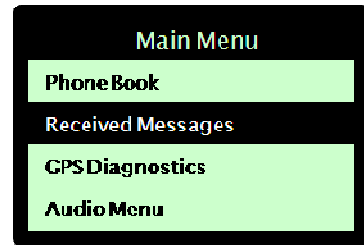


Accessing the menu



Press the MENU key to enter the menu system.

When in the menu system, the DZM will automatically return to the 'Main Screen' after 20 seconds unless another key is pressed.



Navigating the menu



In the menu system, press the arrow keys to move up and down the menu options.



Press the DISTRESS quick key to move directly to the first item in the menu list.

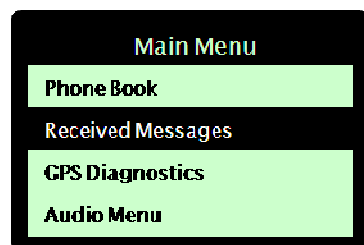


Press the AUX MUTE quick key to move directly to the last item in the menu list.

Selecting a menu option



Press the ENTER key to select a highlighted menu option.







Returning to the previous screen

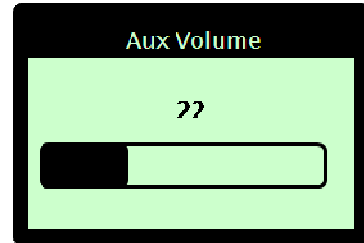


Press the MENU key to deselect a menu option and return to the previous screen.

Altering a menu setting

Press the  or  arrow keys to increase a setting (e.g. a volume or level setting).

Press the  or  arrow keys to decrease a setting (e.g. a volume or level setting).





Saving a menu setting

Press the  ENTER key to save modified settings for a selected menu item.

Aborting a menu setting

If a menu setting has not been saved:

Press the  MENU key to abort the change and return to the previous screen.

OR press the  CANCEL key to abort the change and exit the menu system.

Exiting the menu

Press the  CANCEL key to exit the menu system and return to the 'Main Screen'.

When in the menu system, the DZM will automatically return to the Main Screen after 20 seconds unless another key is pressed.

FLIGHTCELL[®] DZM OPERATOR'S GUIDE

Learn how to:

Use the DZM functions that are often required by the pilot during flight.


Refer to "Flightcell[®] advanced setup guide" on page 50 for further information about how to configure advanced DZM settings.


Making and answering calls

Making a call using manual dial

You may manually enter phone numbers into the DZM to make a call.


STEP 1 - Selecting cell modem or satellite phone:


From the 'Main Screen', press the  DIAL CEL key to make a manual call from the cell modem. The 'Dial Cell modem' screen displays.

OR press the  DIAL SAT key to make a manual call from the satellite phone. The 'Dial Sat Phone' screen displays.

STEP 2 - Entering the phone number:

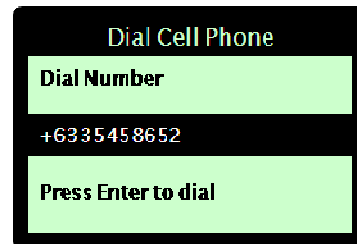
Using the 0 to 9 keys, enter the phone number.

Press and hold the  MENU key to enter the international dialing prefix "+" (for GSM and Iridium networks).


Use the  CANCEL key to delete the last digit entered if required.

The phone number entered will display.

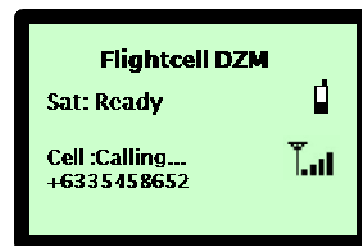
Press and hold the CANCEL key to abort the call completely.




STEP 3 - Calling the number:

Press the  ENTER key to call the number displayed. The phone status on the 'Main Screen' displays **Calling**. When the call is connected the phone status displays **On Call**. If the DZM matches the phone number dialed to an existing number in the phonebook, then the contact's name will appear underneath the phone status instead of the number.

NOTE! It may take up to 30 seconds for the satellite phone to respond.



STEP 4 - Terminating the call:

Press the  CANCEL key to terminate a call at any time. The phone status shows **Disconnecting** then returns to **Ready**.




Making a call using the DZM phonebook

The DZM phonebook stores up to 50 phone numbers for quick dialing and caller identification (where supported). Entries stored in the phonebook may be used to make calls using the satellite phone or cell modem (i.e. the same set of speed dial entries is used for both devices).


Entries in the phonebook are stored within the DZM. This means that the phonebook entries may be used by any satellite or cell modem connected to the DZM.

The first 9 numbers stored in the phonebook are also available as speed dial numbers. Refer to 'Making a call using speed dial' on page 23 for information about how to use the speed dial function.

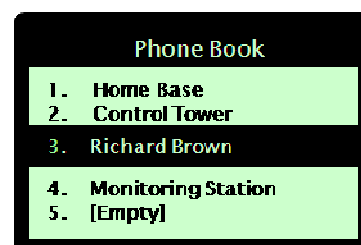
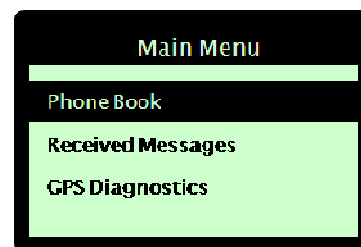
STEP 1: Accessing the phonebook

Press the  MENU key to enter the menu system. The 'Main Menu' displays.

Using the arrow keys, navigate to Phone Book.

Press the  ENTER key to select. Your phonebook entries are displayed.


"Empty" will display next to a listing where no entry has been saved.

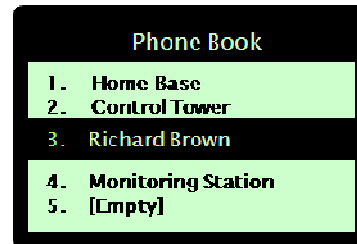


STEP 2 - Selecting a phonebook entry to call:

From the phonebook entries, use the arrow keys to navigate to the entry to call.



Press the  ENTER key to select. The phonebook select action screen displays.




STEP 3 – Calling the selected entry:

Using the arrow keys, navigate to "Dial via SAT" to make the call using your satellite phone

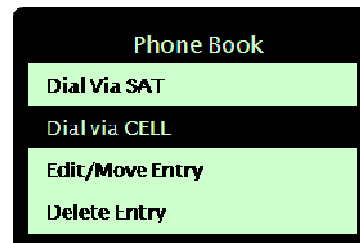
OR navigate to "Dial via CELL" to make the call using your cell modem.

SAT and CELL options only display where these devices are connected to your DZM.



Press the  ENTER key to dial the number. The phone status on the 'Main Screen' displays **Calling**. When the call is connected the phone status displays **On Call**.

It may take up to 30 seconds for the satellite phone to respond.





Making a call using speed dial

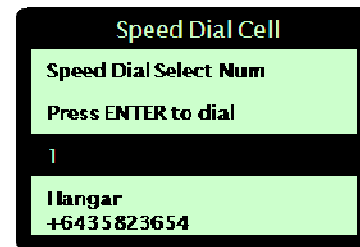
The speed dial function enables you to dial any of the first 9 numbers stored in the phonebook quickly from the DZM keypad.

Refer to "Using the phonebook" on page 26 for further information about the DZM phonebook.

STEP 1 - Selecting the cell modem or satellite phone:

From the 'Main Screen', press the  SPD CELL key to make a speed dial call from the cell modem. The 'Speed Dial Cell' screen displays.

OR press the  SPD SAT key to make a speed dial call from the satellite phone. The 'Speed Dial Sat' screen displays.




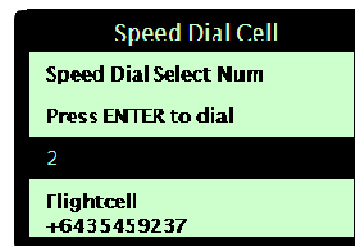
STEP 2 - Selecting the speed dial number:

Using the 1 to 9 keys, select a speed dial entry from the phonebook to dial.


When a speed dial number is selected, the name and number details will display. **Entry Empty** will display if the speed dial entry is blank.

If the wrong number is selected, another entry can be selected by pressing the appropriate key.

OR press the  MENU key for the last manually dialed number.




STEP 3 - Dialing the number:

Press the  ENTER key to dial the number. The phone status on the 'Main Screen' displays **Calling**. When the call is connected the phone status displays **On Call**.

It may take up to 30 seconds for the satellite phone to respond.



STEP 4 - Terminating the call:

Press the  CANCEL key to terminate a call at any time. The phone status will show **Disconnected** then return to **Ready**.

The call will also be terminated if the party at the other end of the call hangs up.




Answering an incoming call

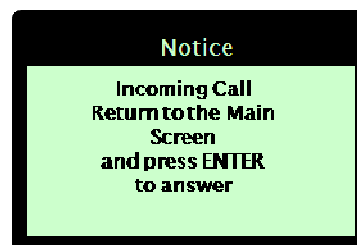
The DZM can receive incoming calls through the satellite phone or the cell modem.

STEP 1 - Incoming call detected:

When the DZM detects an incoming call on the satellite phone or cell modem, an alert displays on the LCD screen for a few seconds before displaying the 'Main Screen' again. The phone status on the 'Main Screen' will display **Incoming Call**. If the network provides the caller ID, and the DZM finds the caller's number in the phonebook, then the caller's name will flash beneath the phone status line. If the caller cannot be identified, then the phone number will flash beneath the status line instead. No name or number will appear below the status line in cases where the network does not provide the information.

If you are in a menu screen, a message will flash reminding you


to return to the main screen. Press the  CANCEL key to return to the 'Main Screen' before attempting to answer the incoming call.



STEP 2 - Answering the call:

Incoming calls are answered from the 'Main Screen'.

The phone status on the 'Main Screen' displays **Incoming Call**.

From the 'Main Screen', press the  ENTER key to answer the incoming call. The phone status displays **On Call**.


In the unlikely event that calls are received on both the satellite and cell modems simultaneously, both will be answered when the



ENTER key is pressed.



STEP 3 - Terminating the call:

Press the  CANCEL key to terminate a call at any time. The phone status returns to **Ready**.




Using touch-tone dialing (DTMF) during a call


Dual-tone multi-frequency (DTMF) signaling, commonly known as touch-tone dialing, uses key tones to signal to automated operator services and some PABX systems. Common examples of where DTMF signaling is used are when selecting choices from telephone menus of call centres, using phone banking, etc.



The DZM can send DTMF tones during a call when required.

STEP 1 - Selecting DTMF mode:

During a call, when DTMF is available, **Press ENTER for DTMF** flashes on the LCD display.

Press the  ENTER key to select DTMF mode.

When in DTMF mode, all keys (except the  ENTER key) represent tones.

Press the  CANCEL key for the * character if required. Press and hold the  CANCEL key for the # character if required.

STEP 2 - Returning to normal key mode:

Press the  ENTER key when in DTMF mode to return to normal key mode.


Editing phonebook entries

Using the DZM keypad, new entries can be added to the phonebook, or existing entries can be edited or their position in the list can be changed.


Adding, editing or moving a phonebook entry

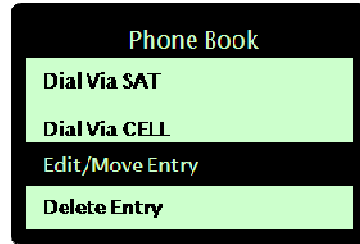
STEP 1 - Selecting an entry to add/edit/move:

In the phonebook, use the arrow keys to navigate to the entry to be changed.

Press the  ENTER key. The phonebook options screen displays.



Using the arrow keys, navigate down to 'Edit/Move Entry'.


Press the  ENTER key to select. The Edit/Move Entry screen displays.




STEP 2 - Moving position (changing the list order) of an entry:

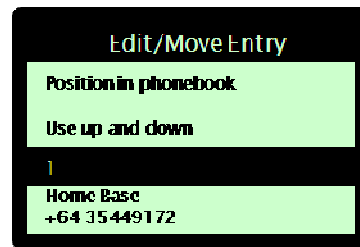
From the Edit/Move Entry screen:

Use the  arrow key or the  arrow key to move that entry to a different position in the listing. The position of the two entries will be exchanged, e.g. if the entry in position 2 is moved to position 4 in the phone book, then the number originally in position 4 will be moved to position 2.

Press the  ENTER key to save the phonebook position. The name field will now be selected.


Continue to press the  ENTER key to move through the remaining lines until you are returned to the original screen showing your phonebook entries, at which point your changes will be saved.


At any time, press the  CANCEL key to cancel the change.




STEP 3 - Adding/editing the name of an entry:


From the Edit/Move Entry screen:


Use the  ENTER key to move to the name field


Use the  arrow key to delete the last letter displayed or

the  arrow key to save the last letter displayed and add another letter of the name.

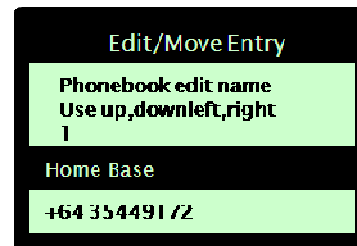
Use the  arrow key to scroll down through the alphabet.

OR use the  arrow key to scroll up through the alphabet.

Press the  ENTER key to save. The edit entry name screen displays.


Continue to press the  ENTER key to move through the remaining lines until you are returned to the original screen showing your phonebook entries, at which point your changes will be saved.


At any time, press the  CANCEL key to cancel the change.



STEP 4 - Adding/editing the phone number stored for an entry:


From the Edit/Move Entry screen:


Use the  ENTER key twice to move to the phone number field

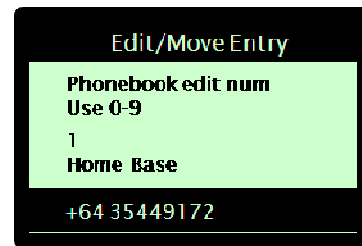
Press and hold the  key to enter the + international dialing prefix

Use the 0 to 9 keys to enter the phone number

Use the  CANCEL key to delete the last digit.

Press the  ENTER key to save. You will be returned to the main 'Phone Book' screen showing your saved entries.


Press the  CANCEL to exit the menu system and return to the main screen.




Deleting a phonebook entry

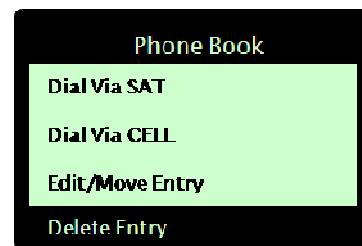
Deleting an entry:

From listing of your saved entries, use the arrow keys to navigate to the entry to be deleted.

Press the  ENTER key to select. The phonebook select action screen displays.

Using the arrow keys, navigate to 'Delete Entry'.

Press the  ENTER key to select. The entry selected is deleted.



Using text messaging

The DZM uses text messaging functionality to:

Receive text messages sent via the Iridium satellite network from another satellite or cell modem or by email.

Refer to "APPENDIX C: Sending SMS text messages to a DZM" on page 86 for further information about how messages can be sent to your DZM.


Transmit GPS position data. Refer to "Using GPS tracking" on page 31 for further information about transmitting GPS position data.

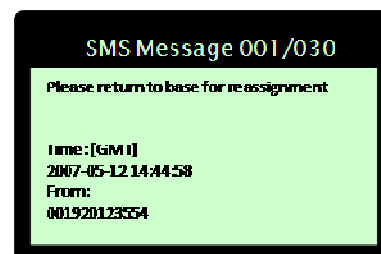
Text messages may be received or transmitted using a laptop computer connected to the DZM. The laptop computer must have specialized Flightcell® SMS Console software installed. Refer to "APPENDIX B: Installing and using Flightcell® SMS text messaging software" on page 82 for further information about installing and using this text messaging software.

Receiving a text message

When a new text message is received:

The message will display on the LCD screen of the DZM.

Press the  CANCEL key to return to the 'Main Screen'.




Using the Received Messages screen

The last 30 text messages received will remain in the 'Received Messages' memory. The most recent message will have the lowest message number.


The oldest message (i.e. message number 30) will be replaced when a new message is received. Messages cannot be deleted manually.

NOTE! All received messages are deleted when the DZM is powered off.



STEP 1 - Accessing the Received Messages screen:


Press the  MENU key to enter the menu system. The 'Main Menu' displays.



Using the arrow keys, navigate to 'Received Messages'.

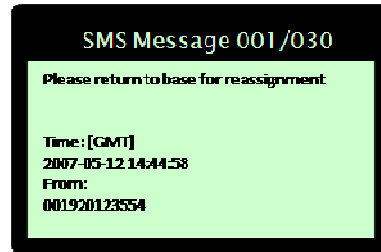
Press the  ENTER key to select. The 'Received Messages' screen displays.

STEP 2 - Viewing received messages:

From the 'Received Messages' screen, use the  and  arrow keys, navigate to the required message (the newest message being message number 1 and the oldest message being message number 30)

Press the  ENTER key to select. The message displays.


Use the  and  arrow keys as required to scroll through the complete message.




Canceling unsent text messages

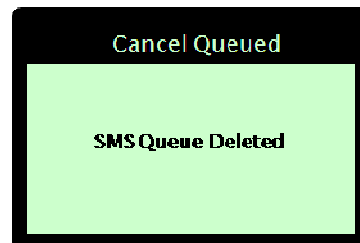
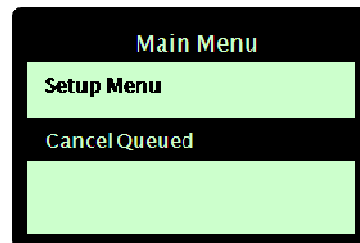
A queue of unsent text messages may build up due to low satellite or cellular network levels, or because a lot of text messages were generated in a short time. Unsent text messages may be deleted from the queue if required.

The number of queued text messages displays on the 'Main Screen'.

Press the  MENU key to enter the menu system. The 'Main Menu' displays.

Using the arrow keys, navigate to 'Cancel Queued'.

Press the  ENTER key to select. The 'Cancel Queued' screen displays briefly, confirming the queued messages have been deleted, before returning to the 'Main Screen'.



Using GPS tracking

The DZM can transmit GPS position data to an authorized recipient destination using a satellite phone and/or a cell modem. The operator may manually transmit GPS position data, or configure the DZM to transmit automatically based on predefined rules.


Refer to "Configuring GPS tracking" on page 52 for further information about important settings that need to be configured before GPS data will be transmitted.

NOTE! GPS tracking is not a comprehensive surveillance and alert system. Refer to "Using automated flight following (AFF)" on page 38 for further information about automatic surveillance and alerting.


Accessing the Tracking Menu

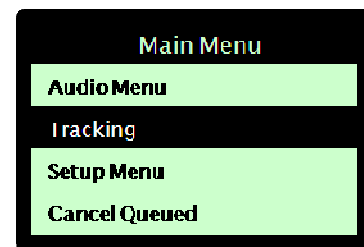
The main DZM tracking settings are configured using the 'Tracking Menu'.

Accessing the Tracking Menu:

Press the  MENU key to enter the menu system. The 'Main Menu' displays.

Using the arrow keys, navigate to 'Tracking'.

Press the  ENTER key to select. The 'Tracking Menu' displays.



Manually transmitting GPS position

Using the DZM, your current GPS position may be manually transmitted to an authorized recipient destination.

STEP 1 - Enabling manual transmission of GPS data:

Manual GPS tracking must be enabled before any manual GPS data can be transmitted.

Refer to "Enabling manual GPS tracking" on page 55 for further information about configuring manual GPS tracking before data will be transmitted.

STEP 2 - Manually transmitting GPS data:

From the 'Main Screen', press the  MARK quick key to send current GPS position data to an authorized recipient destination.

The 'Position Marked' screen displays, before returning to the 'Main Screen'. A notification message will display confirming the network (satellite or cellular) the GPS data was transmitted on.



Automatically transmitting GPS position

Using the DZM, your current GPS position may be automatically transmitted to an authorized recipient. Automatic transmissions may be based on one or many of the factors below:

A specified time interval

Changes in heading

Aircraft takeoff and landing, based on aircraft speed or, for a helicopter, lifting and lowering the collective combined with takeoff and landing speed

NOTE! The DZM requires a valid GPS lock in order to automatically transmit GPS position data. Refer to "Using GPS antenna diagnostics" on page 55 for further information on GPS lock.



The following GPS settings have a dramatic effect on the way your Flightcell DZM operates. Adjust GPS settings only with extreme caution.


Enabling, disabling and suspending automated GPS tracking

You may determine whether or not automated GPS tracking is activated on the aircraft or vehicle. By default, GPS tracking is enabled unless manually overridden.

Enabling, disabling or suspending GPS tracking:

From the 'Tracking Menu', use the arrow keys to navigate to 'Enable/Disable'.



Press the  ENTER key to select. The 'Enable/Disable' screen displays.

Using the arrow keys, navigate to the GPS tracking setting required:

Always Track enables GPS tracking so that the DZM will automatically send tracking messages at the configured rate as long as it has a valid GPS lock and periodic messages are enabled and the aircraft is in the air. When on the ground, the DZM will switch from the configured periodic reporting rate to sending position messages at a fixed 20 minute interval.

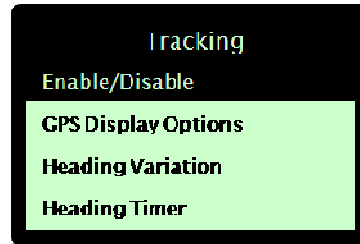
Track in Flight enables GPS tracking so that the DZM will produce tracking messages only while the aircraft is in flight, has a valid GPS lock and periodic messages are enabled. Periodic messages will be disabled while the aircraft is on the ground.

The DZM can be configured to determine whether an aircraft is airborne based on speed and/or a digital input connected to a squat or collective switch. If none of these settings are configured, the unit will operate as if in a permanent 'airborne' state, in which case, both the **Always Tracking** and **Track in Flight** settings will have the same effect of permanently enabling GPS Tracking.

Tracking Suspend disables GPS tracking for the current flight only. GPS tracking will automatically be re-enabled when the DZM is next powered up. On power-up, tracking will recommence according to the preconfigured settings.



If a user selects **Tracking Suspend** and the previous setting was **Tracking Off**, then on power-up, the GPS Tracking setting will be set to **Track in Flight**.

Tracking Off disables GPS tracking until it is manually re-enabled.



Press the  ENTER key to save




OR press the  MENU or  CANCEL key to abort the change.



Setting automatic GPS transmission based on time interval

The DZM can be set to automatically transmit current GPS position to an authorized recipient destination at specified time intervals.

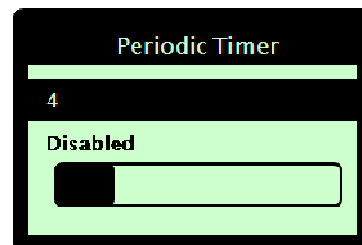
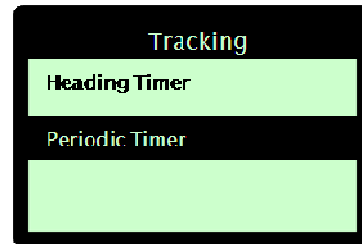
Enabling automated transmission of GPS data based on periodic time interval:

From the 'Tracking Menu', use the arrow keys to navigate to Periodic Timer'.


Press the  ENTER key to select. The 'Periodic Timer' screen displays.

Press the  **2** or  **6** arrow keys to increase the time interval.

OR press the  **8** or  **4** arrow keys to decrease the time interval.



The 'Periodic Timer' may be set between 0 to 60 minutes. The default is 4 minutes. To disable automatic GPS transmission, decrease the time interval to 0. This will default to 'Disabled'. When disabled, the DZM will not automatically transmit GPS data.

Press the  ENTER key to save. You are returned to the 'Tracking Setup' sub-menu.

Automatic GPS transmission occurs the defined number of minutes after the last GPS transmission. If the last transmission was sent using manual transmission, the next automated transmission will occur the defined number of minutes after the manual transmission was sent.

Setting automatic GPS transmission based on heading change


The DZM can be set to automatically transmit current GPS position to an authorized recipient destination whenever a change in heading is identified.



Heading Variation Angle



The 'Heading Variation' defines the angle by which the aircraft's heading direction must change in order to trigger an automated GPS transmission. For example, if the 'Heading Variation' is set to 10 degrees, changing heading by fewer than 10 degrees will not generate an automated GPS transmission.


Setting the Heading Variation:

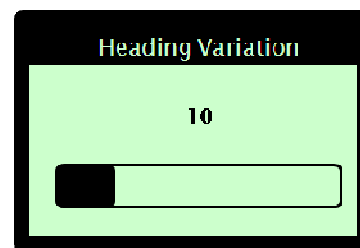
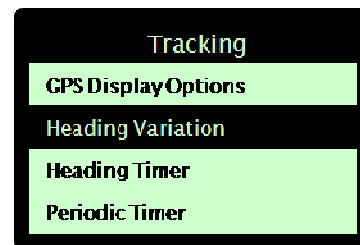
From the 'Tracking Menu', use the arrow keys to navigate to 'Heading Variation'.

Press the  ENTER key to select. The 'Heading Variation' screen displays.

Press the  2 or  6 arrow keys to increase the heading variation angle.

OR press the  8 or  4 arrow keys to decrease the heading variation angle. 'Heading Variation' may be set between 2 and 90 degrees. The default is 10 degrees.

Press the  ENTER key to select and save. You are returned to the 'Tracking Setup' sub-menu.






Heading Timer



The 'Heading Timer' defines how soon after the last position report the next GPS position transmission triggered by a heading change will be automatically transmitted. For example, an aircraft that is circling is constantly changing heading, so the time period between automated GPS transmissions will be determined according to the 'Heading Timer'.

Setting the Heading Timer:

From the 'Tracking Menu', use the arrow keys to navigate to Heading Timer'.

Press the  ENTER key to select. The 'Heading Timer' screen displays.


Press the  or  arrow keys to increase the automated heading variation time interval.

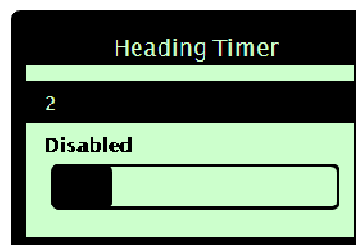
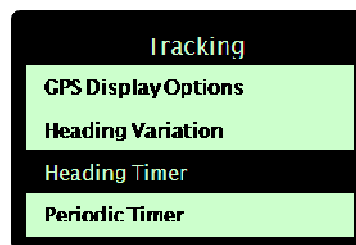
OR press the  or  arrow keys to decrease the automated heading variation time interval.



CRITICAL NOTE! The 'Heading Timer' must be set to a lower value than the 'Periodic Timer' to function successfully. The heading timer will never expire and trigger a heading change message if periodic messages are being sent more frequently.

The 'Heading Timer' may be set between 0 to 60 minutes. The default is 2 minutes. To disable automatic heading change GPS transmission, decrease the heading variation time interval to 0. This will default to 'Disabled'. When disabled, the DZM will not automatically transmit GPS data on heading change.

Press the  ENTER key to select and save. You are returned to the 'Tracking Setup' sub-menu.



Setting GPS display options

You may set your current GPS position to display at all times at the top of the DZM 'Main Screen'. By default, onscreen GPS position is switched off unless manually overridden.

Setting GPS display options:

From the 'Tracking Menu', use the arrow keys to navigate to 'GPS Display Options'.



Press the ENTER key to select. The 'GPS Display Options' screen displays.

Using the arrow keys, navigate to the GPS display option required:

Off switches onscreen GPS position display off.

dddmm.mmmm sets onscreen GPS position display to degrees and minutes (to 4 decimal points).

dd°mm'ss.s" sets onscreen GPS position display to degrees, minutes and seconds.

Speed and Heading sets onscreen GPS position display to knots and degrees relative to true north (rather than magnetic north) format.

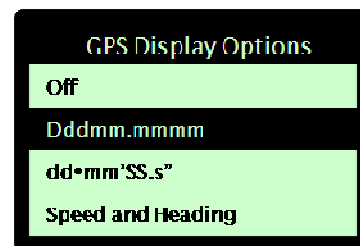
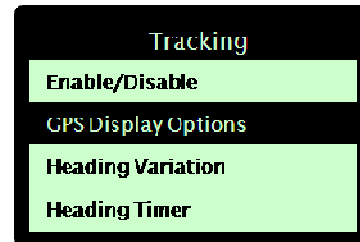
No GPS Lock will display on the 'Main Screen' if the DZM does not have a valid GPS lock.



Press the ENTER key to save



OR press the MENU or CANCEL keys to abort the change.



Using automated flight following (AFF)

In addition to GPS flight tracking, the DZM also has Automated Flight Following (AFF) capabilities. This is also known as Automated Rescue Monitoring (ARM). Used in conjunction with an appropriately configured receiving server and compatible computer mapping system, AFF provides automatic surveillance over an aircraft or vehicle's mission. Registering the start and end of a flight mission, AFF tracks all points in between and automatically raises alerts if no position data is received from the aircraft for a specified time period (set on the receiving server).

Refer to "Enabling and disabling automated flight following (AFF)" on page 68 for further information about enabling AFF for use in your aircraft.

This AFF feature is only available with some mapping systems. Please contact your mapping service provider about availability of the AFF service on their network and to register for this service.

A manual distress signal may be sent from the aircraft or vehicle even when AFF is switched off. Refer to "Sending a distress signal" on page 49 for further information about sending a distress signal.


Using AFF does not affect GPS tracking configuration and all position transmissions will be sent as normal. Refer to "Using GPS tracking" on page 31 for further information about using GPS tracking.

Registering AFF mission start and end points

Automated flight following (AFF) must be activated and deactivated at the start and end of the flight mission.

To operate, the AFF function must be enabled for use. Refer to "Enabling and disabling automated flight following (AFF)" on page 68 for further information on how to do this. By default the AFF function is enabled unless it has been manually overridden.

STEP 1 - Registering AFF start point at commencement of flight mission:

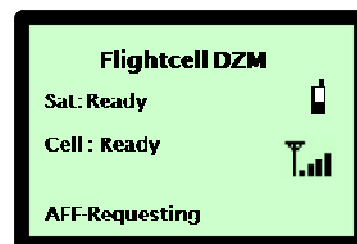
From the 'Main Screen', press the  AFF key. A message is immediately sent to the receiving server.

AFF-Requesting displays at the bottom of the screen when AFF is activated. Confirmation of AFF operation is being requested from the receiving server.


AFF-Active displays at the bottom of the screen when the receiving server confirms AFF is operating.

No Response. Retry? displays when AFF operation confirmation has not been received after several attempts.

Press the  ENTER key to re-try.




STEP 2 - Registering AFF end point at completion of flight mission:

From the 'Main Screen', press the  AFF key. A message is immediately sent to the receiving server.

AFF-Cancelling displays at the bottom of the screen when AFF is terminated. Confirmation of AFF termination is being requested from the receiving server.

AFF-Terminated displays at the bottom of the screen when the receiving server confirms AFF has been terminated.

displays when AFF termination confirmation has not been

received after several attempts. Press the  ENTER key to re-try.

No AFF server response! displays to confirm AFF termination confirmation has not been received. No further automated attempts are made.

NOTE! It is essential to register the AFF end point at termination of flight mission, or an emergency alert will be raised and acted upon when the DZM is powered down (i.e. when the aircraft is switched off). If the bottom line of the display continues to show **AFF-Cancelling** or

No AFF server response!, it is recommended that you make a radio or phone call to the appropriate personnel to advise completion of your mission.

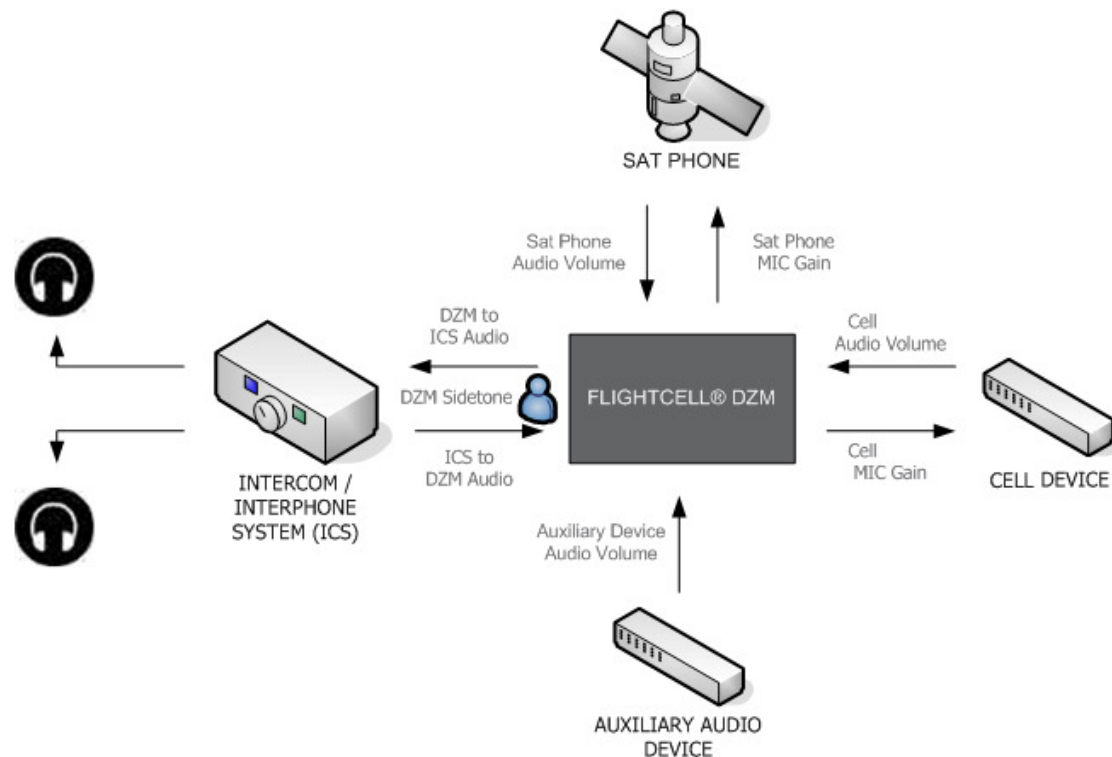
NOTE! If AFF is not terminated after the aircraft has landed, a reminder beep sounds over the ICS every 10 seconds. If the aircraft takes off again, this beep stops.



Controlling audio settings

Various audio settings may be adjusted for the DZM and connected devices. These are shown in the diagram below and further described in the following sub-sections.


Refer to "Configuring advanced audio settings" on page 69 for further information about configuring more advanced audio settings.



Accessing the Audio Menu

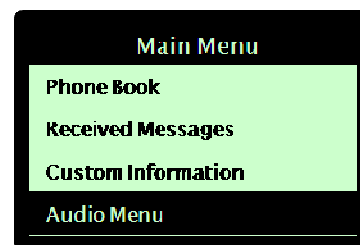
Audio settings are configured using the 'Audio Menu'.

Accessing the Audio Menu:

Press the  MENU key to enter the menu system. The 'Main Menu' displays.

Using the arrow keys, navigate to 'Audio Menu'.

Press the  ENTER key to select. The 'Audio Menu' displays




Setting satellite phone audio volume


Satellite phone audio is audio from the satellite phone to the DZM. Satellite phone audio may be adjusted on both the DZM and the connected satellite phone.

NOTE! Do not adjust volume on the satellite phone handset to above halfway or an undesirable echo will be heard by the party on the other end of the phone link.


STEP 1 - Altering satellite phone audio volume on the DZM:

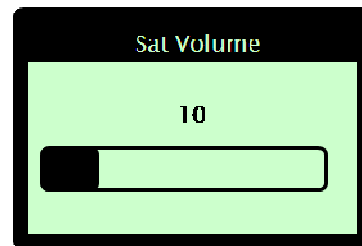
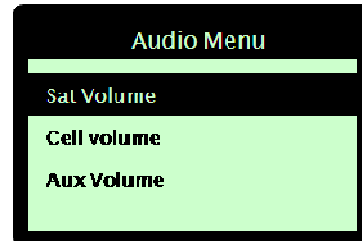
From the 'Audio Menu', use the arrow keys to navigate to 'Sat Volume'.

Press the  ENTER key to select. The 'Sat Volume' screens displays.

Press the  or  arrow keys to increase sat phone volume.

OR press the  or  arrow keys to decrease sat phone volume. 0 is the lowest volume. 100 is the highest volume. 10 is the default volume.

Press the  ENTER key to save. You are returned to the 'Audio Menu'.



STEP 2 - Altering satellite phone audio volume on the handset:

Adjust audio volume using the 'Up' and 'Down' buttons to the left of the LCD display on the Iridium 9505/A or 9555 handset.

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

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





Setting cell modem audio volume

Cell modem audio is audio from the cell modem to the DZM. Cell modem audio volume may be adjusted on the DZM.


Altering the cell modem audio volume on the DZM:

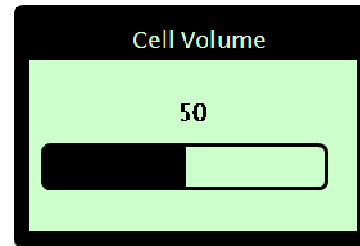
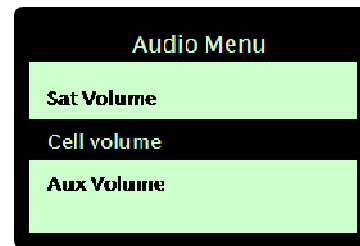
From the 'Audio Menu', use the arrow keys to navigate to 'Cell Volume'.

Press the  ENTER key to select. The 'Cell Volume' screen displays.

Press the  or  arrow keys to increase cell modem volume.

OR press the  or  arrow keys to decrease cell modem volume. 0 is the lowest volume. 100 is the highest volume. 50 is the default volume

Press the  ENTER key to save. You are returned to the 'Audio Menu'.



Isolating (muting) phones

Mute the audio between the DZM and connected cell and satellite phones using the Isolate Phones function.

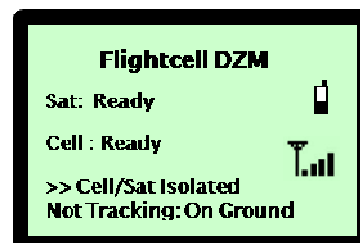
When isolated, there is no audio from the DZM to the phones and incoming audio volume from the phones is reduced. This means the crew can hold a private discussion, while still being able to hear the party on the other end of the phone call.

Keypad tones (if enabled) and incoming audio from auxiliary audio devices are still audible.

Refer to "Switching keypad tones on and off" on page 75 for further information about keypad tones. Refer to "Setting auxiliary device audio volume" on page 43 for further information about auxiliary audio devices.

STEP 1 - Isolating (muting) phones:

When in the 'Main Screen', press the  ISO PH key. **Cell/Sat Isolated** displays on the 'Main Screen' when phones are isolated.



STEP 2 - Reinstating full phone audio:


From the 'Main Screen', press the  ISO PH quick key to reinstate full phone audio.



Setting auxiliary device audio volume

External audio devices (e.g. music players) may be connected to the aircraft or vehicle's intercom/interphone system (ICS) via the DZM. This is dependent on provision being made for the connection of an external audio device by your engineers.


Altering the auxiliary volume:

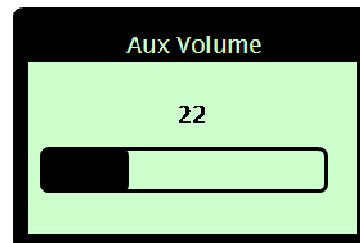
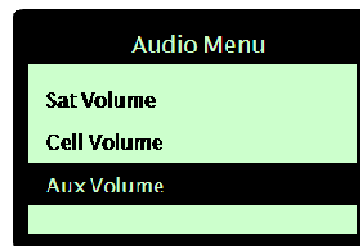
From the 'Audio Menu', use the arrow keys to navigate to 'Aux Volume'.

Press the  ENTER key to select. The 'Aux Volume' screen displays.

From the 'Aux Volume' screen, use the  or  arrow keys to increase the auxiliary volume;

OR press the  or  arrow keys to decrease the auxiliary volume. 0 is the lowest volume. 100 is the highest volume. 22 is the default.


Press the  ENTER key to save. You are returned to the 'Audio Menu'.



Muting auxiliary devices

You may mute the incoming audio of any auxiliary audio device connected to the DZM.

STEP 1 - Muting an auxiliary audio device:

When in the 'Main Screen', press the  AUX MUTE quick key.
Auxiliary Input Muted displays on the 'Main Screen'.



STEP 2 - Reinstating full auxiliary device audio:

From the 'Main Screen', press the  AUX MUTE quick key to reinstate full auxiliary device audio.


Using Flightcell® DZM common setup features

This section describes how common DZM settings may be configured using the 'Setup Menu'.


Refer to "Configuring other DZM advanced setup features" on page 76 for further information about configuring other advanced setup features.

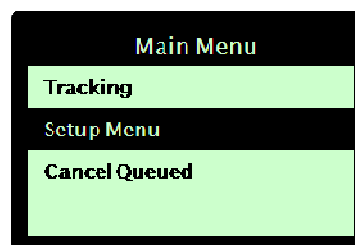
Accessing the Setup Menu

Accessing the Setup Menu:

Press the  MENU key to enter the menu system. The 'Main Menu' displays.

Using the arrow keys, navigate to 'Setup Menu'.

Press the  ENTER key to select. The 'Setup Menu' displays.




Using Auto Power On

When Auto Power On is enabled, the DZM switches on automatically when aircraft power is switched on.


The default setting for Auto Power On is 'On'.

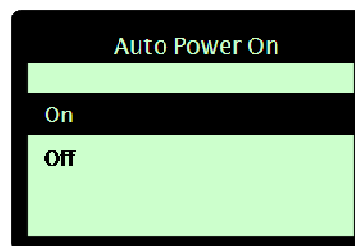
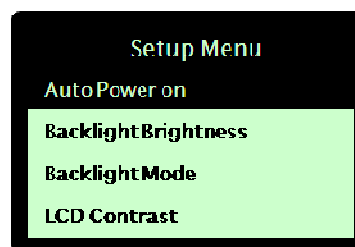
Switching Auto Power on or off:

From the 'Setup Menu', use the arrow keys to navigate to 'Auto Power On'.

Press the  ENTER key to select. The 'Auto Power On' screen displays.

Using the arrow keys, navigate to the auto power mode required (e.g. 'On').

Press the  ENTER key to save. You are returned to the 'Setup Menu'.




Setting backlight brightness

The DZM LCD display backlight brightness may be adjusted. Set a specific brightness level, or use an external signal from the aircraft's instrument light control.


The DZM supports 0-5VAC and 0-28VDC external control signals.

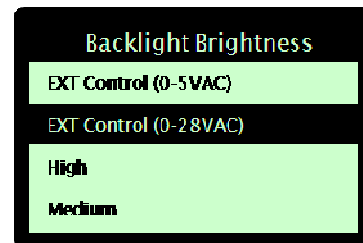
Setting the backlight brightness:

From the 'Setup Menu', use the arrow keys to navigate to 'Backlight Brightness'.

Press the  ENTER key to select. The 'Backlight Brightness' screen displays.

Using the arrow keys, navigate to the mode required (e.g. 'Ext Control[0-28 VDC]').

Press the  ENTER key to save. You are returned to the 'Setup Menu'.



Setting backlight mode

The DZM LCD display backlight mode may be customized.

Backlight mode options:

The following LCD display backlight mode options are available:


Always On - The backlight will remain on at all times when the DZM is on.

Keypad Timeout - The backlight will switch on only when a key is pressed. It will remain on for 15 seconds.

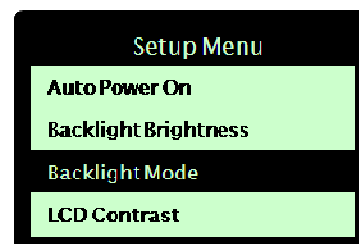
Always Off - The backlight will remain off at all times.


Setting the backlight mode:

From the 'Setup Menu', use the arrow keys to navigate to 'Backlight Mode'.

Press the  ENTER key to select. The 'Backlight Mode' screen displays.

Using the arrow keys, navigate to the mode required (e.g. 'Keypad Timeout').



Press the  ENTER key to save. You are returned to the 'Setup Menu'.






Setting LCD contrast



DZM LCD display contrast may be adjusted.


Setting LCD contrast:

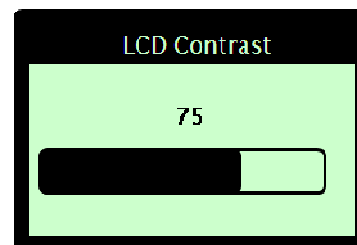
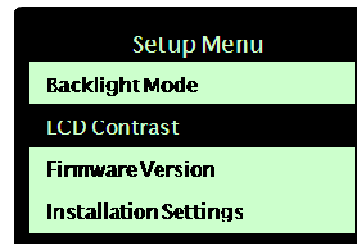
From the 'Setup Menu, use the arrow keys to navigate to 'LCD Contrast'.

Press the  ENTER key to select. The 'LCD Contrast' screen displays.

Press the  or  arrow keys to increase the contrast level.

OR press the  or  arrow keys to decrease the contrast level. 0 is the lowest level. 100 is the highest level. 75 is the default level.

Press the  ENTER key to save. You are returned to the 'Setup Menu'.

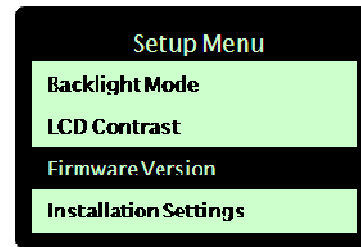



Identifying firmware version and serial number

The DZM firmware version and serial number may be identified. Refer to "APPENDIX A: Upgrading DZM firmware" on page 80 for further information on installing a firmware upgrade.

Viewing firmware version and serial number:

From the 'Setup Menu, use the arrow keys to navigate to 'Firmware Version'.



Press the  ENTER key to select. The 'Firmware Version' screen displays, showing model, firmware version and serial number information.

On the second line of the firmware version screen:

'MK3' indicates that this firmware version is compatible with 9505 and 9505A satellite phones.

'MK4' indicates that this firmware version is compatible with 9555 satellite phones.

'WC' indicates that this firmware version is compatible with Wavecom Wizmo, Supreme and Xtend modems when fitted.

'MT' indicate that this firmware version is compatible with a Multitech modem when fitted.

'FP' indicates that this firmware version has the Flight Plan message menu option enabled.



Emergency procedures


Sending a distress signal

In emergency, a distress signal may be transmitted using the DZM. In distress mode, the DZM transmits position data every 60 seconds with a distress tag attached. The receiving server identifies the distress signal and automatically raises an alarm, alerting nominated parties by text message, pager or email (if supported by your tracking service provider).

If the pilot terminates distress mode, a Distress Cancelled message is sent by the Flightcell DZM to indicate that distress mode has been deliberately cancelled.

An appropriately configured receiving server is required to receive distress signals and alert nominated parties.

STEP 1 - Transmitting a distress signal:

From the 'Main Screen', press and hold the  DISTRESS quick key for 1.5 seconds to send a distress signal. **DISTRESS MODE!** flashes at the bottom of the LCD 'Main Screen' when in distress mode.

STEP 2 - Reinstating normal mode:

From the 'Main Screen', press and hold the  DISTRESS quick key for 1.5 seconds to return to normal mode.

FLIGHTCELL[®] ADVANCED SETUP GUIDE

Learn how to:

Configure your Iridium satellite phone handset

Configure advanced DZM settings not commonly requiring change by the pilot during flight.

Refer to "DZM operator's guide" on page 19 for further information about common DZM functions used by the pilot during flight.

Configuring your Iridium satellite phone

This section describes how to carry out initial configuration of your Iridium satellite phone handset.

Configuring satellite phone service center number

The service center must be set up on your Iridium satellite phone before you can send SMS messages.

NOTE! The service center number is set up only once, after which it is permanently stored in the satellite phone.

Refer to "Configuring GPS tracking" on page 52 for further information about important settings that need to be configured before GPS data will be transmitted.

Setting the service center number on the satellite phone handset:

Press the 'Envelope' key on the keypad of the Iridium satellite phone.

Scroll to 'Message Settings' and press 'OK'.

Scroll to 'Service Center' and press 'OK'.

Enter 00881662900005 or +881662900005

Press 'OK'.

Overriding satellite phone antenna lock

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

Overriding the 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.

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

Configuring GPS tracking

Whether you plan to use the DZM to transmit GPS data manually or automatically, you need to do the following:

Setting up your tracking service

Notify your tracking service provider of:

The **serial number** of your DZM. Refer to "Identifying firmware version and serial number" on page 47 for further information about how to identify the serial number of your DZM

The **IMEI identification number** of your satellite phone handset. This is a 16 digit number located on a sticker under the Iridium battery

Request from your tracking service provider:

The **satellite phone SMS destination address**

The **satellite phone SBD destination address**

The **cellular SMS destination address**

Refer to "Finding messaging destination addresses" on page 62 for messaging destination addresses for some known tracking providers.

Setting up your satellite network service

If you will be using SBD messaging to transmit GPS position data:

Notify your satellite network service provider of the **IMEI identification number** of your satellite phone handset. This is a 16 digit number located on a sticker under the Iridium battery

Notify your satellite network service provider of the **satellite phone SBD destination address**. This should be provided by your tracking service provider or refer to "Finding messaging destination addresses" on page 62.

You will also need to agree a contract for the SBD service with your satellite network service provider

If you will be using SMS messaging to transmit GPS position data:

Check your satellite network service provider supports SMS messaging

You will also need to agree a bulk SMS message plan with your satellite network service provider

Setting up your cellular network service

If you will be using a cellular modem to transmit GPS position data:

Notify your cellular service provider of the **phone number** of your cellular modem

You will also need to agree a bulk SMS message plan with your cellular network provider

Setting up your Iridium satellite phone handset

If you will be using a satellite phone to transmit GPS position data:

Enter the **satellite phone service center number** into your satellite phone handset. Refer to "Configuring satellite phone service center number" on page 51 for further information about configuring the satellite phone service center number.

Ensure the **antenna override** is activated on your satellite phone handset. Refer to "Overriding satellite phone antenna lock" on page 51 for further information about how to override the antenna lock.

Setting up your DZM:


Set satellite phone type	To send audio or data over the satellite network, the type of satellite phone connected to the DZM must be specified (page 76)
Set satellite messaging destination	To send data over the satellite network, the recipient destination must be specified (page 62)
Set cellular modem type	To send audio or data over the cellular network, the type of cellular modem connected to the DZM must be specified (page 76)
Set cellular messaging destination	To send data over the cellular network, the recipient destination must be specified (page 64)
Set preferred messaging device	Where both satellite and cellular devices are configured, you may specify a preferred device to be used by the DZM (page 66)
Set messaging mode	GPS data may be transmitted using different messaging modes. A messaging mode needs to be configured to send GPS data (page 65)
Set message size	When transmitting GPS position data using SBD messaging mode, the level of detail included within each message may be defined (page 66)

Refer to "Using GPS tracking" on page 31 for further information about how to use GPS Tracking during flight.


Using the Installation Settings Menu to access advanced settings

Advanced settings are found in the Installation Settings Menu, which is a sub-menu of the Setup Menu. The Installation Settings Menu is password protected.


Accessing the 'Installation Settings' sub-menu:


Press the  MENU key to enter the menu system. The 'Main Menu' displays.

Using the arrow keys, navigate to 'Setup Menu'.

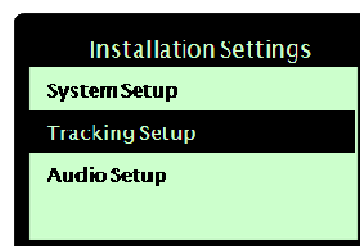
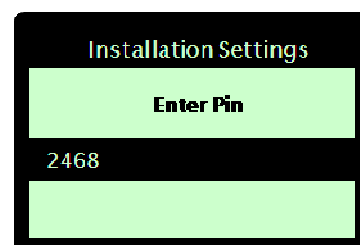
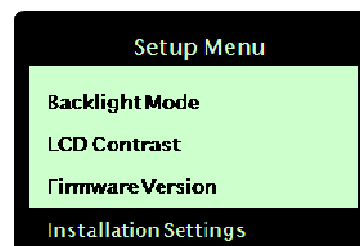
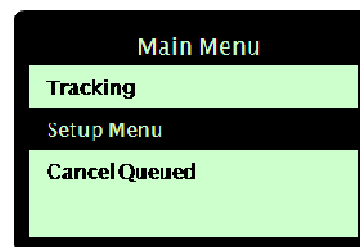
Press the  ENTER key to select. The 'Setup Menu' displays.

Using the arrow keys, navigate to 'Installation Settings'.

Press the  ENTER key to select. The security pin screen displays.

Enter the security pin number "2468" and press the  ENTER key.

The 'Installation Settings' screen displays, showing the three installation settings sub-menus.



Configuring Advanced Tracking Settings

Navigate to the Tracking Setup sub-menu following the steps on page 54.


Enabling manual GPS tracking

Manual GPS tracking must be enabled before positions can be manually transmitted using the Mark key.


Refer to “Manually transmitting GPS position” on page 31 for further information about manually transmitting current GPS to an authorized recipient destination.

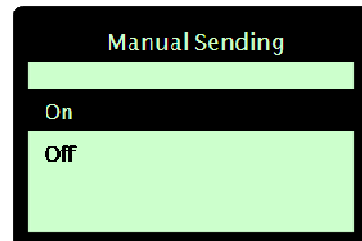
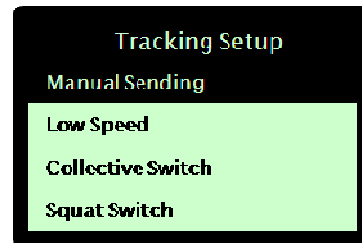
Enabling manual transmission of GPS data:

From the 'Tracking Setup' sub-menu, use the arrow keys to navigate to 'Manual Sending'.

Press the  ENTER key to select. The 'Manual Sending' screen displays.

Using the arrow keys, navigate to the manual sending mode required (e.g. 'On').

Press the  ENTER key to select and save.




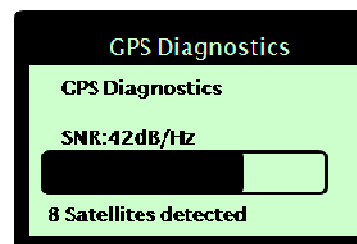
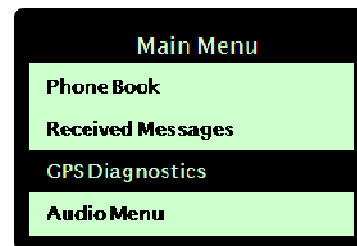
Using GPS antenna diagnostics

Use the DZM antenna diagnostics function to view information about GPS antenna and signal quality.

Viewing GPS diagnostics information:

On the main menu, use the arrow keys to navigate to 'GPS Diags'.

Press the  ENTER key to select. The 'GPS Diags' screen displays, showing antenna/GPS status, signal to noise ratio and satellite information.



What does the GPS diagnostics information mean?

Antenna/GPS status information is shown on line one of the display.

GPS Lock displays when there is a good GPS signal providing positioning information;

Waiting For Lock displays after the DZM has recently been re-powered and is calculating, or waiting for sufficient signal before providing position information. Even under good conditions, it may take up to 2 minutes to acquire a GPS lock (or 15 minutes the first time the DZM is used in a different hemisphere);

No Antenna displays when no GPS antenna is connected, or if there is an antenna cable fault;

Antenna Fault displays when the GPS antenna and/or cable has a low impedance short. This message is also displayed when using an active antenna where the energy consumption on power-up is too high.

Signal to noise ratio (SNR) shows on line two of the display in numerical and graphical form. This provides the average strength of the five best incoming satellite signals (or an average of all visible satellites if there are fewer than five).

Normal SNR value is around 40db/Hz. A minimum of 30db/Hz is usually required to obtain a GPS lock.

Low values are usually due to weak signals from satellites which can be caused by some sort of physical obstruction. Low values can also be caused by excessive electrical noise being imposed on a strong signal, such as nearby arc welding equipment or variable speed drives.

It is possible that the SNR may be high but a GPS lock cannot be achieved. This may be due to a low number of visible satellites (a minimum of 4 satellites is required) or satellites not in suitable strategic locations to acquire a GPS lock (i.e. they may be close to the horizon).

Number of satellites currently visible shows on line three of the display.

Satellites Used displays when you have a GPS lock. The greater number of satellites being used to calculate your position, the more accurate the position.

Satellites Detected displays when the DZM is attempting to acquire a GPS lock. This defines how many satellite signals are being received.

Setting automatic GPS transmission based on low speed limit

The DZM uses the 'Low Speed' setting to transmit GPS information on takeoff and landing, providing good start and end points to flight paths.

When aircraft speed increases above this limit it transmits as a takeoff event message. When aircraft speed decreases below this limit it transmits as a landing event message.

For helicopters, the 'Low Speed' setting should be set as low as possible to ensure automated GPS transmissions continue to occur when there are small changes in speed while hovering. Alternatively, use the DZM 'Collective Switch' function to transmit helicopter takeoff and landing information. Refer to "Setting automatic GPS transmission based on collective switch position" on page 58 for further information about using the 'Collective Switch' function.


'Low Speed', 'Collective Switch' or 'Squat Switch' settings, when enabled, are used to detect when an aircraft is airborne. This 'in flight' state is used in conjunction with the GPS Tracking setting. Automated GPS position reports will either stop or switch to the lower rate of every 20 minutes after the aircraft is considered 'on the ground' and will revert to their configured rate again after the aircraft is considered 'in flight'.



Manual GPS data will be transmitted regardless of the 'Low Speed' setting and the GPS Tracking setting. This allows positions to be marked while on the ground or hovering in a helicopter.

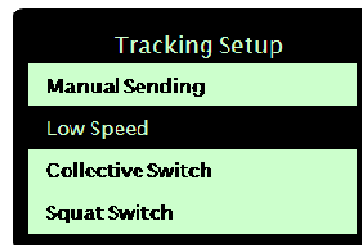
Refer to "Configuring GPS tracking" on page 52 for further information about important settings that need to be configured before GPS data will be transmitted.



Setting the Low Speed Limit:

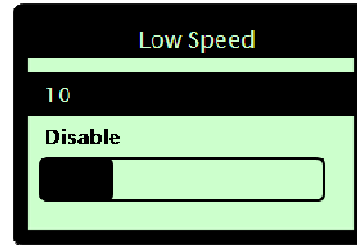
From the 'Tracking Setup' sub-menu, use the arrow keys to navigate to 'Low Speed'.

Press the  ENTER key to select. The 'Low Speed' screen displays.

Press the  or  arrow keys to increase the low speed limit.



OR press the  or  arrow keys to decrease the low speed limit. The 'Low Speed' limit may be set between 5 and 100 knots. The default is 10 knots. To disable, decrease the 'Low Speed' setting to 0. This will default to 'Disabled'. When disabled, the DZM will transmit GPS data even when stationary and will not register takeoff and landings.



If the 'Collective Switch' is used to trigger takeoff and landing information, the 'Low Speed' setting will be automatically set and cannot be disabled.

Press the  ENTER key to save.

Setting automatic GPS transmission for takeoff and landing based on collective switch position

The DZM 'Collective Switch' feature is used as an alternative to the 'Low Speed' setting for helicopters. As helicopters are used for hovering, using just the 'Low Speed' setting, takeoffs and landings may be recorded when the helicopter is still flying.

With a connection to the helicopter's collective switch, the DZM instead records takeoff and landing events based on the lifting and lowering of the collective plus the helicopter's speed.

The DZM's collective switch configuration is set based on the normal status of the switch during flight. For example, if the collective switch is normally open (when the collective is off the floor) during flight, the DZM will not transmit GPS positions, or will transmit GPS positions at the lower rate (depending on the GPS Tracking setting), when the switch is closed (collective on the floor). GPS positions will only be transmitted at their configured rate when the switch is open and the helicopter deemed to be in flight.

If the 'Collective Switch' is used to record takeoff and landing information, the 'Low Speed' setting will be automatically set and cannot be disabled. Refer to "Setting automatic GPS transmission based on low speed limit" on page 57 for further information about using the 'Low Speed' setting.




Collective switch settings are usually configured upon initial installation only.
Adjust collective switch settings only with extreme caution.

Setting the Collective Switch:

From the 'Tracking Setup' sub-menu, use the arrow keys to navigate to 'Collective Switch'.



Press the  ENTER key to select. The 'Collective Switch' screen displays.

Using the arrow keys, navigate to the collective switch mode required.

Select **Normally Closed** if the collective switch is closed when the helicopter is in flight (check that the message at the bottom of the screen reflects the current position of the collective, i.e. down for down and up for up).

Select **Normally Open** if the collective switch is open when the helicopter is in flight. This is the most common configuration of a collective switch (check that the message at the bottom of the screen reflects the current position of the collective, i.e. down for down and up for up).

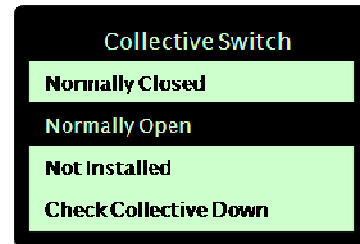
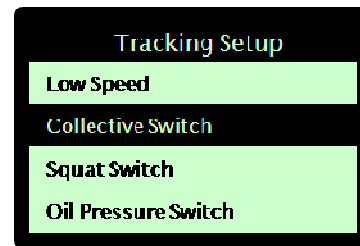
Select **Not Installed** if the DZM collective switch hardware is not connected to a collective switch.

The bottom line of the 'Collective Switch' screen enables you to check that the collective switch mode is configured correctly - the "Check Collective..." message enables you to check that the collective switch setting is correct.



Press the  ENTER key to save.

Manual GPS data will be transmitted regardless of 'Collective Switch' settings. This allows positions to be marked while on the ground or hovering.




Setting automatic GPS transmission for takeoff and landing based on squat switch position

The DZM squat switch input is used as an alternative to the collective switch to indicate takeoff and landing of either a helicopter or fixed wing aircraft. This is also sometimes known as the wheels on ground (WOG) switch.

Setting the squat switch:

From the 'Tracking Setup' sub-menu, use the arrow keys to navigate to 'Squat Switch'.

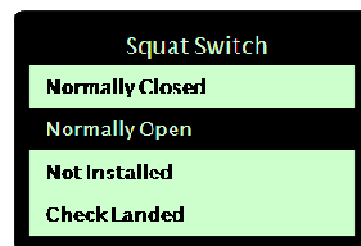
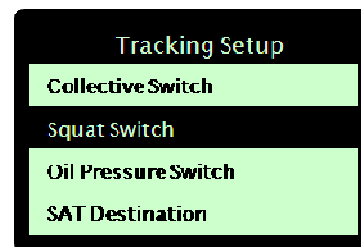
Press the  ENTER key to select. The 'Squat Switch' screen displays.

Using the arrow keys, navigate to the squat switch mode required (Normally Closed/Normally Open/Not Installed).

This screen should indicate **Check LANDED** when the aircraft is on the ground.

This screen should indicate **Check AIRBORNE** when the aircraft is in flight.

Press the  ENTER key to save.



Configuring oil pressure switch to record aircraft operating time

The DZM oil pressure switch feature may be used to report engine start and engine stop to enable engine operating time to be calculated (e.g. for the purpose of billing customers for aircraft use) in the following ways:

Upon engine start up oil pressure increases significantly. This increase in oil pressure prompts the DZM to automatically transmit GPS position data, identifying engine start time.

Upon engine shut down oil pressure decreases significantly. This decrease in oil pressure prompts the DZM to automatically transmit GPS position data, identifying engine stop time.

If this function is enabled, a position report and timestamp is sent when the engine starts and stops.


Some GPS tracking providers further support this function by providing automated information for billing purposes. Contact Flightcell® International Ltd should you require further information.

NOTE! In order for this function work correctly, power to the DZM must not be interrupted until after engine shutdown. Flightcell® International Ltd recommends that the DZM be wired to the emergency bus.

If the Flightcell DZM does not have a GPS fix when the engine is started, transmission of the message will be delayed until a fix is obtained, but the timestamp in the position report will report the actual engine start up time.

Setting the oil pressure switch:

From the 'Tracking Setup' sub-menu, use the arrow keys to navigate to 'Oil Pressure Switch'.

Press the  ENTER key to select. The 'Oil Pressure Switch' screen displays.

Using the arrow keys, navigate to the oil pressure switch mode required.

Select **Analogue Normally Hi** if the oil pressure sensor is connected to the DZM's analogue input, and the analogue sensor receives a high voltage when the engine is operating

Select **Analogue Normally Low** if the oil pressure sensor is connected to the DZM's analogue input, and the analogue sensor receives a low voltage when the engine is operating

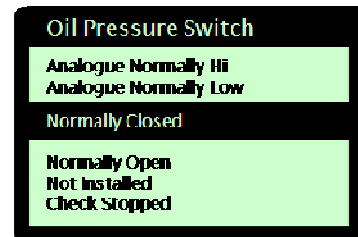
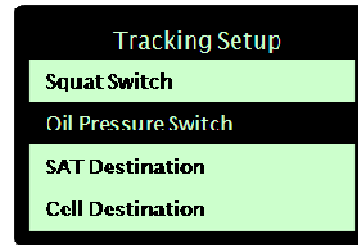
Select **Normally Closed** if the oil pressure switch is connected to one of the DZM's digital inputs and is closed when the helicopter is in flight.

Select **Normally Open** if the oil pressure switch is open when the helicopter is in flight. This is the most common configuration of an oil pressure switch.

Select **Not Installed** if the DZM oil pressure switch hardware is not connected to the physical switch in the aircraft.

The bottom line of the 'Oil Pressure Switch' screen enables you to check that the oil pressure switch mode is configured correctly - the "Check..." message enables you to check that the setting is correct.

Press the  ENTER key to save.



Finding messaging destination addresses

The messaging destination addresses for some commonly known tracking providers are detailed below. If your tracking service provider is not listed here, contact your provider directly to request the appropriate messaging destination addresses.

<u>Tracking Provider</u>	<u>Cellular Network</u>	<u>Satellite Network</u>	
		SMS Destination	SBD Destination
Guardian MapTracks	Not available	fc@bo.gways1.com	tcp.gways1.com:9100
TracPlus	New Zealand Telecom: - 027 222 1169 Australia: - +61 427 767958	in@dzm.daestra.com	202.191.51.6:11001 202.191.51.158:11002
Flight Explorer (using SatCom Direct 3PDI)	Not available	fc@fdmail.com	63.144.240.225:10800


Configuring satellite messaging destination

The recipient destination for messages sent over the satellite network must be specified. This is critical to the delivery of tracking, mapping and other data to appropriate parties. Messages are usually sent to a central ground data server, which follows pre-configured rules to distribute any received data appropriately.


Your Iridium satellite phone can use 2 different transmission modes to send data; Short Burst Data (SBD) and Short Message System (SMS). Only the recipient destination for SMS messages may be specified from the DZM. Contact your satellite network service provider to configure the recipient destination for SBD messages.


Configuring satellite phone messaging destination (SMS only):


From the 'Tracking Setup' sub-menu, use the arrow keys to navigate to 'Sat Destination'.


Press the  ENTER key to select. The 'Sat Destination' screen displays.

Use the arrow keys to enter the destination email address or phone number:

Use the  arrow key to scroll up letters, numbers and other characters in ascending order.

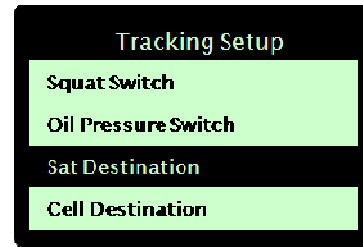
Use the  arrow key to scroll down letters, numbers and other characters in descending order.

Use the  arrow key to accept the last character and begin entering the next character.

Use the  arrow key to delete the last character when required.

The maximum length of a destination email address is 21 characters. Email addresses are not case sensitive so may be entered using uppercase letters.

Press the  ENTER key to save.




Configuring cellular messaging destination

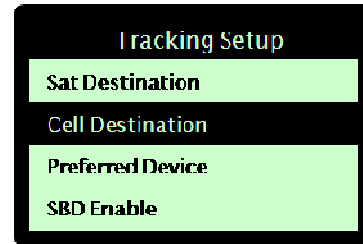
The recipient destination for messages sent over the cellular network must be specified. This is critical to the delivery of tracking, mapping and other data to appropriate parties. Messages are usually sent to a central ground data server, which follows pre-configured rules to distribute any received data appropriately.

The DZM currently supports WaveCom GSM, Wavecom 3G and MultiTech CDMA cell modems.


Configuring cellular messaging destination:


From the 'Tracking Setup' sub-menu, use the arrow keys to navigate to 'Cell Destination'.


Press the  ENTER key to select. The 'Cell Destination' screen displays.



Use the number keys to enter the destination phone number.

Press and hold the  0 key to enter the international dialing prefix +

Use the  Cancel key to backspace one digit

Use the  Enter key to confirm the number entered.



The cellular messaging destination can also be set using the DZM firmware upload utility. Refer to "APPENDIX A: Upgrading DZM firmware" on page 80 for further information about this utility.

Configuring position report transmission options

The DZM can transmit GPS positions using three different options:

SMS over the cellular network

SMS or SBD over the Iridium satellite network.

NOTE! Messaging via the cellular network is currently only supported by TracPlus Global in New Zealand and Australia. In other countries or with other tracking providers, position reports may only be sent via the Iridium satellite network.

The cost of messaging differs between these three options:

If messaging via the cellular network is available, this is usually the cheapest option.

When using the Iridium network, SBD is the default mode as it is usually faster and more economic than SMS. However, if you are only flying a small number of hours, SMS may be more economic.

Your tracking service provider will be able to recommend the most economic option based on your operation.

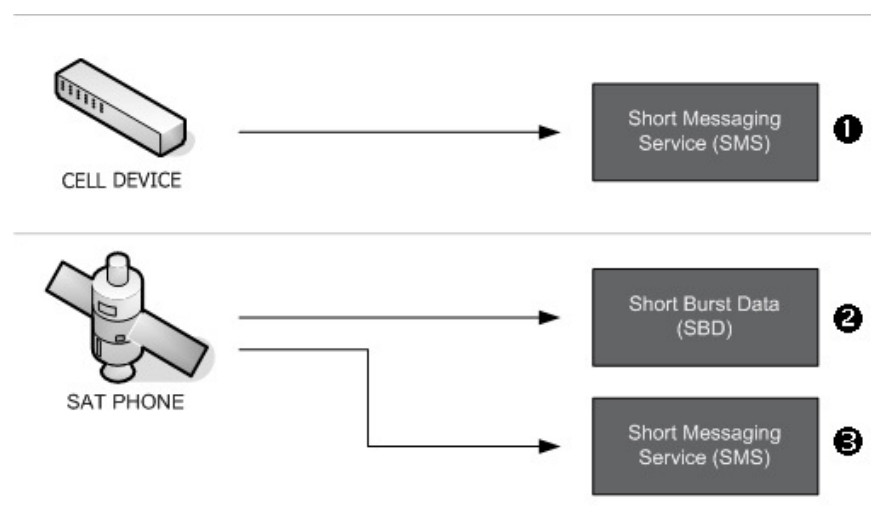
The DZM is designed to switch between these three options depending on network availability, as shown in the following drawing, and on the preferences programmed into the DZM.

If the DZM has a cell modem connected, **and** Cell Phone is selected as the preferred device (see page 66), **and** the cell modem has a network lock, then the DZM will first attempt to transmit via cellular SMS

If a message can't be transmitted via the cellular network, the DZM will send the message via Iridium

If the Iridium SBD service is enabled on the DZM (see page 66), the DZM will first attempt to send the message via SBD

If the message can't be sent via SBD (because the Iridium phone is being used for a voice call), the DZM will send the message via Iridium SMS (messages reports can be sent via SMS even when the phone is in use for a voice call).




Setting preferred messaging device


If you have a cellular modem installed and your tracking service provider can support data sent via the cellular network, set the cell modem as the preferred device. Setting the preferred device to Cell Phone will instruct the DZM to use the cell modem in preference for sending position reports, but it will also use the sat device when there is low or no cell signal. If the preferred device is set to Sat Phone, the DZM will only ever use the Sat phone and will never use the cell modem to send a position report.

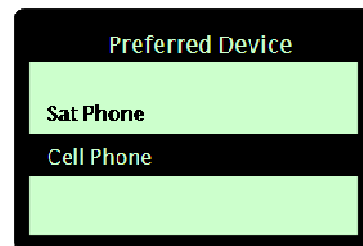
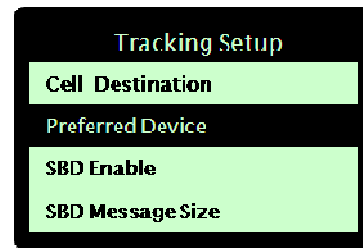
Specifying the preferred messaging device:

From the 'Tracking Setup' sub-menu, use the arrow keys to navigate to 'Preferred Device'.

Press the  ENTER key to select. The 'Preferred Device' screen displays.

Using the arrow keys, navigate to the preferred device required (e.g. 'Cell modem').


Press the  ENTER key to save. You are returned to the 'Setup Menu'.



Enabling Iridium SBD transmission

Setting up transmission via the satellite network:

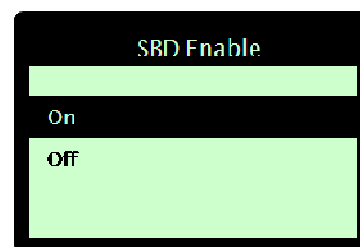
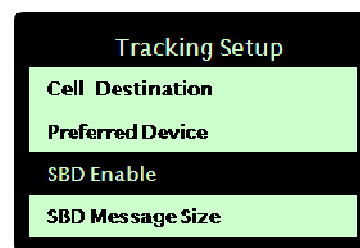
From the 'Tracking Setup' sub-menu, use the arrow keys to navigate to 'SBD Enable'.

Press the  ENTER key to select. The 'SBD Enable' screen displays.

Using the arrow keys, navigate to the mode required (e.g. 'On').

Press the  ENTER key to save.

If SBD transmission is disabled, all position data sent via your satellite phone will be transmitted by SMS.



Setting satellite message size

When transmitting GPS positions over the satellite network using Short Burst Data (SBD) mode, you may define the level of detail included within each message.

The DZM sends full position reports at programmed intervals. Between each position report it also records intermediate positions (known as breadcrumbs or True Path) that provide additional course information. Breadcrumbs are transmitted with the next position report.

SBD message size options:

The following SBD message size options are available:


Minimum Information – The current GPS position plus the previous 2 breadcrumbs will be transmitted.

Maximum Information – The current GPS position plus the previous 3 breadcrumbs will be transmitted.

By selecting 'Minimum Information' you should only be charged for the 30 byte minimum message charge by your satellite network provider. By selecting 'Maximum Information', each message will be approximately 32 bytes so will cost around 10% more to transmit.

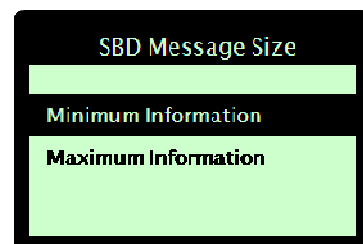
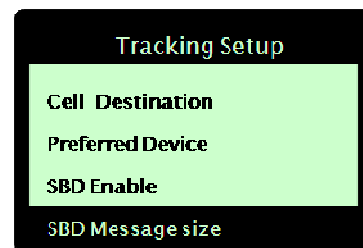
Specifying SBD message size:

From the 'Tracking Setup' sub-menu, use the arrow keys to navigate to 'SBD Message Size'.

Press the  ENTER key to select. The 'SBD Message Size' screen displays.

Using the arrow keys, navigate to the mode required (e.g. 'Minimum Information').

Press the  ENTER key to save




Sending GPS location upon power up

When Power up messaging is switched on, the DZM will send the current GPS location of the aircraft as soon as it powers up and the unit has a GPS lock. If power up messaging is switched off, GPS transmissions will not begin until aircraft takeoff.

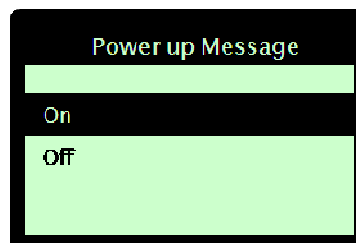
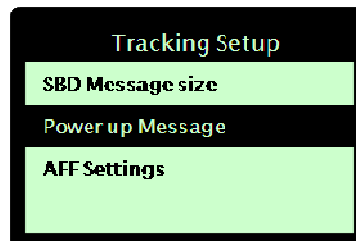
Switching power up messaging on or off:

From the 'Tracking Setup' sub-menu, use the arrow keys to navigate to 'Power up Message'.

Press the  ENTER key to select. The Power up Message' screen displays.

Using the arrow keys, navigate to the power up mode required (e.g. 'On').

Press the  ENTER key to save.




Enabling and disabling automated flight following (AFF)

You may define whether or not the automated flight following (AFF) function may be used on the aircraft or vehicle. By default the AFF function is disabled.

NOTE! To use AFF, the keypad type in use on your DZM must be specified as civilian and must have AFF displayed on key 2. Refer to "Specifying keypad type" on page 77 for further information about keypad selection.



Enabling and disabling AFF use:

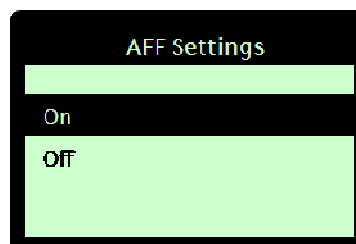
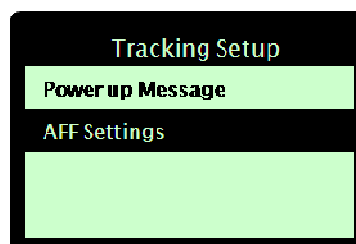
From the 'Tracking Setup' sub-menu, use the arrow keys to navigate to 'AFF Settings'.

Press the  ENTER key to select. The 'AFF Settings' screen displays.

Using the arrow keys, navigate to the AFF setting required (e.g. 'On').

Press the  ENTER key to save

OR press the  MENU or  CANCEL keys to abort the change.



Configuring advanced audio settings

Various advanced audio settings may be adjusted for the DZM and connected devices. These are described in the following sub-sections.

Refer to "Controlling audio settings" on page 40 for further information about controlling basic audio settings during flight.

All advanced audio settings are configured from the 'Audio Setup' sub-menu. Navigate to the 'Audio Setup' sub-menu following the steps on page 54.

Controlling which microphones connect to the Flightcell® DZM

If the DZM Microphone Controller is installed, the DZM can control which microphones within the aircraft or vehicle intercom/interphone system (ICS) are mixed together. Each microphone selection mode specifies who from within the aircraft or vehicle can be heard by the party at the other end of a phone or radio link.

The DZM Microphone Controller is a separate auxiliary device that may be installed with the DZM. Contact Flightcell® International for further information about the DZM Microphone Controller.

Microphone selection settings do not alter who hears the incoming audio from the DZM. This is normally controlled from the ICS.

Technical setup notes:


When using the DZM Microphone Controller, the DZM sends a command to the Microphone Controller instructing which ICS microphone lines provide audio to the DZM.

Altering microphone selection settings


DZM microphone audio output settings are configured using the 'Mic Selection' screen.

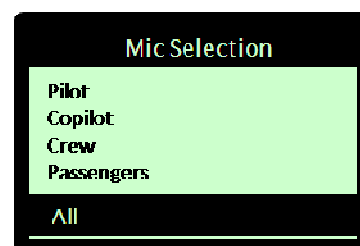
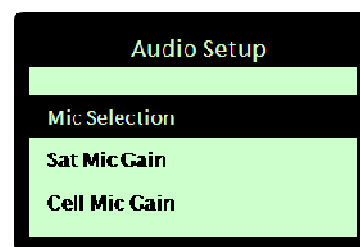
Altering the Mic Selection settings:

From the 'Audio Setup' sub-menu, use the arrow keys to navigate to 'Mic Selection'.

Press the  ENTER key to select. The 'Mic Selection' screen displays.

Using the arrow keys, navigate to the mic selection mode required (e.g. 'All').

Press the  ENTER key to select and save.



Setting satellite phone MIC gain


Satellite phone MIC gain is audio from the DZM going out to the connected satellite phone. The satellite phone MIC gain may be adjusted on the DZM.





The following MIC gain settings have a dramatic effect on the way your Flightcell DZM operates. Adjust MIC gain settings only with extreme caution.

Altering the satellite phone MIC gain on the DZM:

From the 'Audio Setup' sub-menu, use the arrow keys to navigate to 'Sat MIC Gain'.

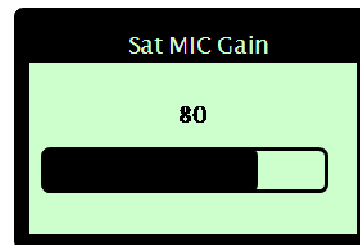
Press the  ENTER key to select. The 'Sat MIC Gain' screen displays.

Press the  or  arrow keys to increase the sat phone MIC gain.

OR press the  or  arrow keys to decrease the sat phone MIC gain.

0 is the lowest volume. 100 is the highest volume. 80 is the default volume.

Press the  ENTER key to save.



Setting cell modem MIC gain

Cellular MIC gain is audio from the DZM going out to the connected cell modem. The cell modem MIC gain may be adjusted on the DZM.




The following MIC gain settings have a dramatic effect on the way your Flightcell DZM operates. Adjust MIC gain settings only with extreme caution.



Altering the cell modem MIC gain on the DZM:

From the 'Audio Setup' sub-menu, use the arrow keys to navigate to 'Cell MIC Gain'.




Press the  ENTER key to select. The 'Cell MIC Gain' screen displays.



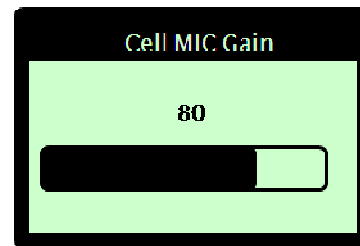
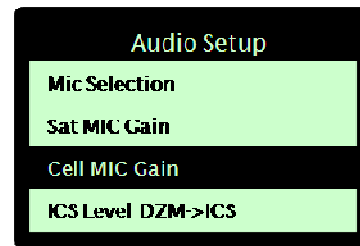
Press the  or  arrow keys to increase the cell modem MIC gain.



OR press the  or  arrow keys to decrease the cell modem MIC gain. 0 is the lowest volume. 100 is the highest volume. 80 is the default volume.



Press the  ENTER key to save.



Setting DZM to ICS audio level


The audio level from the DZM being received into the intercom/interphone system (ICS) may be adjusted on the DZM.







The following ICS audio settings have a dramatic effect on the way your Flightcell DZM operates. Adjust ICS audio settings only with extreme caution.

Altering the DZM to ICS audio level on the DZM:

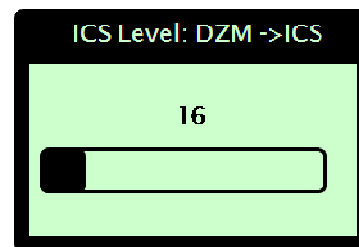
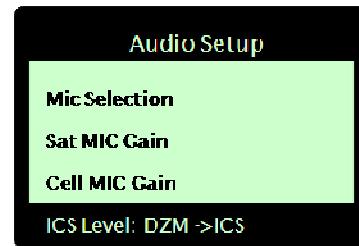
From the 'Audio Setup' sub-menu, use the arrow keys to navigate to 'ICS Level DZM --> ICS'.

Press the  ENTER key to select. The 'ICS Level DZM --> ICS' screen displays.

Press the  2 or  6 arrow keys to increase the audio level.

OR press the  8 or  4 arrow keys to decrease the audio level. 0 is the lowest volume. 100 is the highest volume. 16 is the default volume.

Press the  ENTER key to save.



Setting ICS to DZM audio level


The audio level from the intercom/interphone system (ICS) going out to the DZM may be adjusted on the DZM.







The following ICS audio settings have a dramatic effect on the way your Flightcell DZM operates. Adjust ICS audio settings only with extreme caution.

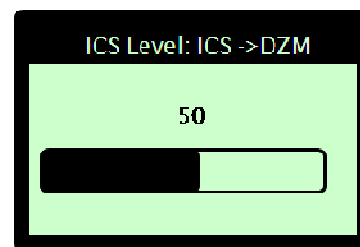
Altering the ICS to DZM audio level on the DZM:

From the 'Audio Setup' sub-menu, use the arrow keys to navigate to 'ICS Level ICS --> DZM'.

Press the  ENTER key to select. The 'ICS Level ICS --> DZM' screen displays.

Press the  2 or  6 arrow keys to increase the audio level.

OR press the  8 or  4 arrow keys to decrease the audio level. 0 is the lowest volume. 100 is the highest volume. 50 is the default volume.



This value should never be set to 0. Setting to 0 prevents all audio going out to the ICS from being heard.

Press the  ENTER key to save.


Setting Flightcell® DZM Sidetone

When users wear a headset, they can hear their own voice in their headphones. The audio from their microphone is amplified and sent to the headphones. This is called sidetone.

Some installation configurations may require the DZM to provide sidetone. The intercom/interphone (ICS) sidetone setting is used to enable or disable the DZM's sidetone. When ICS sidetone is 'On', audio received from the ICS into the DZM is passed back out to the ICS. ICS sidetone is required to be activated where no sidetone is provided by an ICS, or if there is no ICS.

Switching DZM side tone on or off:

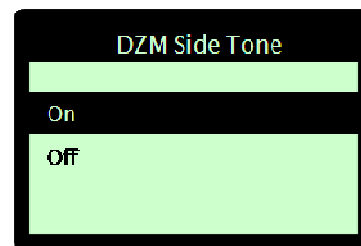
From the 'Audio Setup' sub-menu, use the arrow keys to navigate to 'DZM Side tone'.

Press the  ENTER key to select. The 'DZM Side tone' screen displays.

Use the arrow keys to navigate to the DZM side tone option required (e.g. 'On' or 'Off').

Press the  ENTER key to select and save.

The DZM side tone is switched 'On' by default. This may cause excessive noise in some systems, so if side tone is provided by the aircraft ICS during calls, DZM side tone should be switched to 'Off'.



Switching GPS/SMS confirm tones on and off

DZM GPS/SMS tones may be switched on or off as required. GPS/SMS tones are sounds that are emitted when an alert condition is raised by the DZM's tracking system:


When there is no GPS lock when the aircraft takes off.

When the DZM cannot send position reports after several retries due to low signal strength.

When the DZM has a full message queue (usually due to low signal or the sat phone not present in the cradle) and the oldest message has been deleted to make room for a newly created position report.

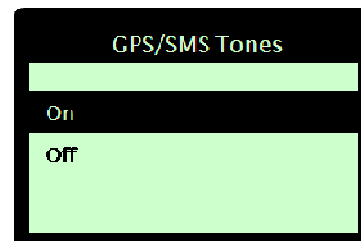
Switching GPS/SMS confirm tones on and off:

From the 'Audio Setup' sub-menu, use the arrow keys to navigate to 'GPS/SMS Tones'.

Press the  ENTER key to select. The 'GPS/SMS Tones' screen displays.

Using the arrow keys, navigate to the keypad mode required (e.g. 'On').

Press the  ENTER key to save.




Switching keypad tones on and off

DZM keypad tones may be switched on or off as required. Keypad tones are the sounds that are emitted when keys on the DZM are pressed.

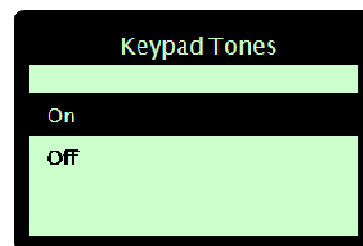
Turning keypad tones on and off:

From the 'Audio Setup' sub-menu, use the arrow keys to navigate to 'Keypad Tones'.

Press the  ENTER key to select. The 'Keypad Tones' screen displays.

Using the arrow keys, navigate to the keypad mode required (e.g. 'On').

Press the  ENTER key to save.




Muting DZM audio when phones are not in use

DZM audio to the ICS may be switched off when the phones are not on a call. This is used to avoid noise from the satellite phone or cell modem breaking into the ICS.

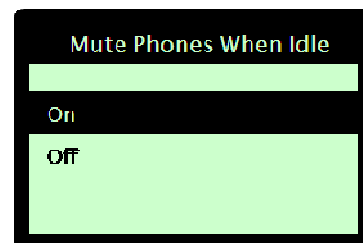
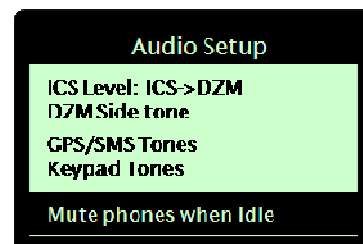
Muting DZM audio when phones are Ready:

From the 'Audio Setup' sub-menu, use the arrow keys to navigate to 'Mute Phones When Ready'.

Press the  ENTER key to select. The 'Mute Phones When Ready' screen displays.

Using the arrow keys, navigate to the keypad mode required (e.g. 'On').

Press the  ENTER key to save.



Configuring other Flightcell® DZM advanced setup features

This section describes how more advanced DZM settings may be configured using the 'Setup Menu'.

Refer to "Using DZM common setup features" on page 45 for further information about configuring common setup features using the 'Setup Menu'.


Advanced system settings are configured from the 'System Setup' sub-menu. Navigate to the 'System Setup' sub-menu following the steps on page 54.

Setting satellite phone type

To send audio and data over the satellite network, the DZM must be set up so that it knows a satellite phone is connected and the type of satellite phone connected to the DZM must be specified. Note that the type of satellite phone connected to the DZM cannot be specified via the menu system. This can only be configured by installing the correct DZM firmware for the type of phone that will be used in your installation. DZM Firmware versions available include support for Iridium 9505 and 9505A, and 9555 satellite phones with the latest firmware releases. Ensure the Iridium phone type listed in the Sat Type menu matches your phone type. If not, a DZM firmware upgrade will be required. Refer to Appendix A for information related to upgrading your DZM.

Specifying satellite phone type (or no satellite connection):

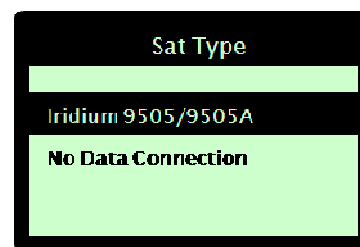
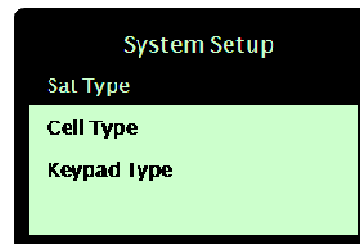
From the 'System Setup' sub-menu, use the arrow keys to navigate to 'Sat Type'.

Press the  ENTER key to select. The 'Sat Type' screen displays.

Using the arrow keys, navigate to the connection type required (e.g. 'Iridium 9505/9505A').

If the DZM is not connected to a supported satellite phone, select **No Data Connection**.

Press the  ENTER key to save.



NOTE: For the 9505 model phone, the latest phone firmware version is LAC0307. For the 9505A model phone, the phone firmware versions operating may be LAC0307, ISO5004 or ISO6004. To check the firmware version of Iridium satellite phones, type ***#91#** into the phone. Compatible satellite phones can be supplied by Flightcell® International.

Setting cellular modem type


To send audio and data over the cellular network, the DZM must be set up so that it knows a cell modem is connected and the type of cell modem connected to the DZM must be specified.

Note that the type of modem connected to the DZM cannot be specified via the menu system. This can only be configured by installing the correct DZM firmware for the type of modem that will be used in your installation. The DZM firmware versions available currently support WaveCom GSM, Wavecom 3G and MultiTech CDMA cellular modems. There is a single Wavecom version that supports all Wavecom Wizmo, Wavecom Supreme and Wavecom Xtend modem types. Compatible cell modems can be supplied by Flightcell® International.

Ensure the modem type that can be selected in the Cell Type menu matches your modem type. If not, a DZM firmware upgrade will be required..

Specifying cell modem type (or no cellular connection):

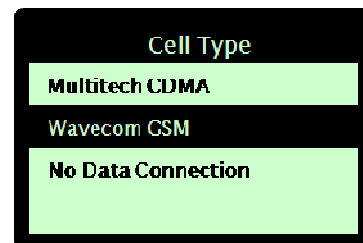
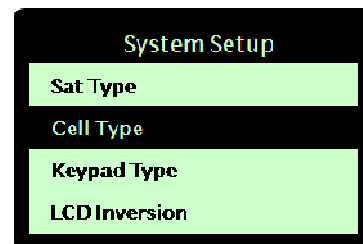
From the 'System Setup' sub-menu, use the arrow keys to navigate to 'Cell Type'.

Press the  ENTER key to select. The 'Cell Type' screen displays.

Using the arrow keys, navigate to the connection type required (e.g. 'WaveCom GSM').

If the DZM is not connected to a supported cell modem, select **No Data Connection**.

Press the  ENTER key to save.




Specifying keypad type

There are different keypad types used with the DZM. The keypad type currently in use may be identified.

Specifying the keypad type in use:

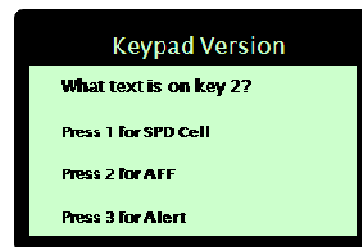
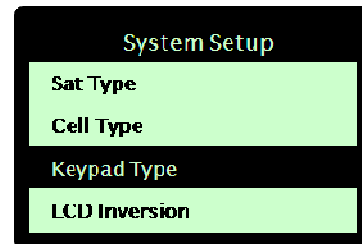
From the 'System Setup' sub-menu, use the arrow keys to navigate to 'Keypad Type'.



Press the  ENTER key to select. The 'Keypad Type' screen displays.

Press the appropriate digit key to identify the keypad version in use on your DZM.

NOTE! Keypad type 1 is installed on early DZM models only. Keypad type 2 is fitted to DZMs used in commercial or private aircraft. Keypad type 3 is usually fitted to military aircraft.



Inverting LCD color display

DZM LCD display colors may be inverted, so that coloured lettering is shown on a black background.

NOTE! Inverting LCD color display does not work as well on early versions of the DZM.

LCD display color options:


The following LCD display color options are available:

On - Displays colored lettering

Off - Displays black lettering

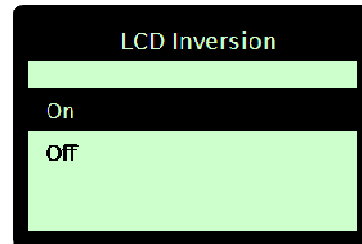
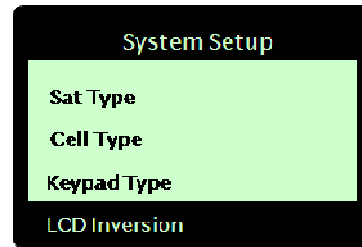
Inverting LCD display color:

From the 'System Setup' sub-menu, use the arrow keys to navigate to 'LCD Inversion'.

Press the  ENTER key to select. The 'LCD Inversion' screen displays.

Using the arrow keys, navigate to the mode required (e.g. 'On').

Press the  ENTER key to save.





Restoring factory default settings


The DZM factory default settings may be restored if required.

Restoring to factory default settings:

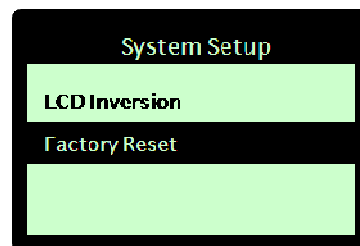
From the 'System Setup' sub-menu, use the arrow keys to navigate to 'Factory Reset'.

Press the  ENTER key to select. The 'Factory Reset' screen displays.

Press the  ENTER key to reset factory settings.

OR press the  MENU key to leave settings unchanged.

You are returned to the 'Setup Menu'.



APPENDIX A: UPGRADING FLIGHTCELL® DZM FIRMWARE

Firmware upgrades are released periodically to keep your DZM updated with the latest features.

The latest firmware upgrade is provided on the CD-ROM provided with your DZM, or may be downloaded from the Flightcell® International website at <http://flightcell.net/advancedcustomerdownloads.aspx>.

To download firmware upgrades from the Flightcell® International website you require a valid login and password. Contact Flightcell® International to obtain these details.

Refer to "Identifying firmware version and serial number" on page 47 for information on identifying the firmware version required for your DZM installation.

STEP 1 - Installing the DZM Firmware Download Utility:

The DZM Firmware Download Utility program needs to be installed onto your computer in order to upgrade your DZM with the latest firmware version. The utility is made available on the CD-ROM at the time you receive your DZM, or may also be downloaded from the Flightcell® International website at <http://flightcell.net/advancedcustomerdownloads.aspx>.

Save the DZM Firmware Download Utility files to your computer (as these are provided in a zip file, all files will need to be extracted to an appropriate location on your computer).

Double-click the **Setup.exe** file and follow instructions to install the DZM Firmware Download Utility. The message "DZM download setup was completed successfully" will display when installation is complete.

STEP 2 - Preparing to perform a firmware upgrade:

From the CD-ROM or Flightcell® International website, save the latest firmware file to an appropriate location on your computer. (If this is provided in a zip file, the file will need to be extracted to an appropriate location on your computer).

Connect your computer to the DZM data connection.

STEP 3 - Opening and preparing the DZM Download Utility:

Open the DZM Download Utility. This may be found in the programs list on your laptop computer by Selecting Start and All Programs (and may be labeled as DZM Download).

Using the drop-down menu in the 'COM port' field, select a COM port. You may have to try several ports until you locate one that is available. The 'DZM Information' window will display information when the DZM is connected through an available port.

If you are using a serial port on your computer you will normally select **COM1**. If you are using a USB connection on your computer, you will usually use the highest numbered COM port.

STEP 4 - Performing the firmware upgrade:

Click and drag the latest firmware upgrade file (from where it was saved in Step 2 above) into the large white 'Firmware Loaded' box.

Click the **START FIRMWARE UPGRADE** button to the left of the 'Firmware Loaded' box.

Follow the instructions that display on the top of the DZM Programmer. This will also advise when the firmware upgrade is complete.

Follow any further instructions that display on the DZM LCD screen.



STEP 5 - Setting SMS destination:

The DZM Firmware Download Utility may also be used to check or change the satellite or cellular modem SMS destinations.

Click the **Query** button to check SMS destinations.

To change an SMS destination, enter the new destination into the **Cellular SMS Destination** or **Satellite SMS Destination** field. Click the **Set** button alongside the amended field to confirm the change.

APPENDIX B: INSTALLING AND USING FLIGHTCELL[®] SMS TEXT MESSAGING SOFTWARE

The DZM can receive and transmit SMS text messages:

Incoming messages are displayed on the LCD screen of the DZM. They may also be viewed via laptop computer connected to the DZM. The laptop computer must have Flightcell[®] SMS Console software installed.

Specific types of outgoing messages may be transmitted directly from the DZM. However, most SMS text messages need to be created and transmitted using a laptop computer connected to the DZM. The laptop computer must have specialized Flightcell[®] SMS Console software installed.

Refer to "Using text messaging" on page 29 for further information on receiving and sending SMS text messages directly from the DZM.

About Flightcell[®] SMS Console software

The Flightcell[®] SMS Console software is installed on a laptop computer. When the laptop computer is connected to the DZM it may be used to create, transmit and receive text messages via the Iridium satellite phone's Short Message Service (SMS).

Use Flightcell[®] SMS Console software to:

Receive SMS text messages sent from the Iridium satellite network or by email. Refer to "APPENDIX C: Sending SMS text messages to a DZM" on page 86 for further information about how messages can be sent to your DZM.

Transmit SMS text messages to another Iridium satellite phone, any email address, or cell modems on some US cellular networks.

Note that not all cellular networks currently support SMS transmission to and from Iridium phones.

System requirements for using Flightcell[®] SMS Console software

To install and operate Flightcell[®] SMS Console software, you will need:

A laptop computer installed with MS Windows 2000 or above.

A data connection to the DZM.

Firmware versions 1.79 to 2.20, and 2.24 or above installed on your DZM.

Installing Flightcell® SMS Console software

Flightcell® SMS Console software must be installed on your laptop computer before use.

Refer to "System requirements for using Flightcell® SMS Console software" on page 82 for further information about important system requirements for using Flightcell® SMS Console software.

If you have received the Flightcell® SMS Console software on a CD-ROM, go directly to **Step 2** below.

Installing Flightcell® SMS Console software files:

The Flightcell® SMS Console Software files need to be installed onto your computer. This utility is made available on the CD-ROM supplied with your DZM, or may also be downloaded from the Flightcell® International website at <http://flightcell.net/advancedcustomerdownloads.aspx>.

To download from the Flightcell® International website you require a valid login and password. Contact Flightcell® International to obtain these details.

Save the **Flightcell SMS Software** files to your computer (as these are provided in a zip file, all files will need to be extracted to an appropriate location on your computer).

Double-click the **Setup.exe** file and follow instructions to install the Flightcell SMS Software. The message "Flightcell SMS Software setup was completed successfully" will display when installation is complete.

Using Flightcell® SMS Console software


Using a laptop computer installed with Flightcell® SMS Console software you may create, transmit and receive SMS text messages via the DZM.

Refer to "Using text messaging" on page 29 for further information on receiving and sending SMS text messages directly from the DZM.

STEP 1 - Connecting your laptop computer to the DZM:

Connect your laptop computer to your DZM using the data connection.


STEP 2 - Opening and preparing the Flightcell® SMS Console program:

Once your laptop computer is connected to the DZM, from the bottom of your computer screen click the  button.

Select **All Programs --> Flightcell --> Flightcell SMS Console**. The **Flightcell SMS Console** displays.

Using the drop-down menu in the **COM port** field, select a COM port. You may have to try several ports until you locate an appropriate port.

If you are using a serial port on your computer you will normally select **COM1**. If you are using a USB connection on your computer, you will usually use the highest numbered COM port.

Click the  button. The yellow text displaying at the top of the program window advises when you are connected.



STEP 3 - Creating and transmitting an SMS text message:

Once the SMS Console program is connected (refer **Step 2** above), enter your message text in the 'Message' field of the Flightcell® SMS Console.

The maximum message length is 160 characters. Messages longer than 160 characters will be truncated.

In the 'Destination Phone Number or Email Address' field, enter either:

Another Iridium satellite phone number. Enter the full phone number (e.g. +88 162 XXX XXXX);

An email address;

A cell modem number connected to your US cellular network.


Only limited cellular networks are currently serviced. Connections to further US networks and other selected countries will be available during early 2009).

Click the **SEND** button. The message text will display in the 'Last Sent' field of the Flightcell® SMS Console.



STEP 4 - Receiving an SMS text message:

Once the SMS Console program is connected (refer **Step 2** above), incoming SMS text messages will display in the 'Last Received' field.

If the sender has requested confirmation that the message has been received, a pop-up box displays on the screen. Click the  button to send an acknowledgement.

SMS messages will not be received on your laptop computer when the Flightcell® SMS Console is not active.



APPENDIX C: SENDING SMS TEXT MESSAGES TO A FLIGHTCELL® DZM

SMS text messages can be sent to an aircraft or vehicle equipped with a DZM. Messages may be sent using the different methods outlined below.

Incoming text messages will display on the DZM LCD screen when received. If a computer with Flightcell® SMS Console software is connected to the DZM, the incoming text message will also display on the computer screen when received.

Sending an SMS text message from another Iridium satellite phone:

SMS text messages may be sent from an Iridium satellite phone in the usual manner.

Sending an SMS text message from the Iridium network website:

Iridium provides a quick utility for sending SMS text messages via their website.

Using an internet browser, go to the Iridium website at **<http://www.iridium.com>**. This is also accessible from the left column of the Flightcell® International homepage at **<http://www.flightcell.net>**.

From the top-right of the page, click on 'Send a Satellite Message'. The 'Send a Satellite Message' window displays.

Enter the destination phone number of the Iridium satellite phone in the 'To' field.

Enter your message in the 'Message' field.

Click 'Send Message'. The message will be sent.

Sending an SMS text message from another cell modem:

SMS text messages may be sent from most cell modems.

Some cellular networks may not send messages to Iridium phones. It is suggested that you send a test transmission to determine whether this service is available on your cellular network.

Sending an SMS text message from an email program:

SMS text messages may be sent from any email program (e.g. Microsoft Outlook) in the usual manner.

Use the destination phone number in the 'To' field of the email (e.g. 8816XXXXXX@msg.iridium.com).

Requesting SMS text message delivery confirmation:

When sending an SMS text message, you may request confirmation that the recipient has received and read the message. To request acknowledgement:

Enter #AR# anywhere in the body of the message. This activates a pop-up box on the connected laptop computer of the aircraft receiving the message requesting the recipient to acknowledge receipt.

Refer to "Using Flightcell® SMS Console software" on page 83 for further information about how to acknowledge receipt of an SMS text message if you are the recipient.

WARRANTY AND CONTACT DETAILS

Limited warranty for your Flightcell® DZM

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

Your DZM is warranted for 12 months from date of sale. This warranty covers Flightcell® manufactured items only. Any ancillary items may be covered by individual manufacturer warranties.

The warranty is void if any labels are removed or if it is determined that your 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.

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USER NOTES