



Flightcell DZMx

Global satellite and cellular communications

Users' Guide for Flightcell DZMx and Flightcell DZMx Remote Head



Flightcell DZMx Users' Guide
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1 Flightcell DZMx Quick Start Guide

This **Quick Start Guide** explains how to use the main DZMx functions. More detailed instructions are provided in the later sections of this users' guide.

Using the satellite or cellular networks

The DZMx may be configured to use the Iridium satellite phone network or the cellular network, or both. The DZMx display shows which networks are available, the status of the network connection, and signal strength.

The soft keys **A**  or **B**  next to the network name are used to select that network when making a call or sending a message.

The **UP**  and **DOWN**  arrow keys are used to scroll through lists or messages.

Switching the DZMx on and off

The DZMx will switch on automatically when aircraft power is turned on and switch off when aircraft power is turned off.

To turn off manually, press and hold **POWER**  for 1.5 seconds.

To turn on manually, press and release **POWER**.

Making a phone call

To key in a phone number: Press the key **A**  or **B**  next to the name of the network you wish to use. For cell phone calls, dial the local number.

For Iridium calls, press and hold the 0 key for the international dialling prefix +, then country code, area code and number.

Press **CALL** .

To call a number stored in the DZMx phone book: Press **DIR**  to open the phone book. Scroll to the number to be called.

Press **A** or **B** to select the network and complete the call.

To call using DZMx speed dial keys: The **SPD1** , **SPD2**  and **SPD3**  keys access the first three numbers in the DZMx phone directory.

Press the speed dial key for the required number.

Press **A** or **B** to select the network and complete the call.

To end a call: Press **END** .

To redial the last number called: Press key **A** or **B** to select the network to be used, then press **ENTER** to display the last number called.

Press **CALL**  to complete the call.

Answering an incoming voice call

Your headset rings and the DZMx displays the phone number or name of the caller.

To answer a call: Press **CALL**.

To reject or end a call: Press **END**.

Using an installed cabin phone

To make a call using the cabin phone: lift the cabin phone, press **1** to select the satellite phone or **2** to select the cell phone (if a cellular connection is installed), key in the phone number, then press #.

To transfer a call: When a call is underway on the cabin phone, press **hook/flash** to transfer the call to the cockpit, then hang up.

When a call is active in the cockpit, press **CALL** to transfer the call to the cabin phone, then press **END**.

To make a three way call:

When a call is underway on the cabin phone, press **hook/flash** to invite the cockpit into the call

When a call is active in the cockpit, press **CALL** to invite the cabin phone to the call.

Either party can leave a three-way call by pressing **END** or hanging up.

Answering an incoming call: Answer an incoming call on the cabin phone by picking up the phone (if using a cordless phone, then press the **Call** button).

To make an intercom call between cabin phone and cockpit: From the cockpit, press **CALL**

From the cabin phone, press **PILOT** or **hook/flash**

Sending position reports and distress reports

The DZMx is normally configured to send position reports automatically.

To send a manual position report: Press **MARK**  to send current GPS position.

To send a manual position report with attached message: Press and hold **MARK** to open the message library, scroll to the required message, then press **ENTER** to display the message; press **ENTER** again to send the selected message.

To send a distress report: Press and hold **EMER**  for 1.5 seconds. When the DZMx display flashes "Distress Mode", distress reports are sent at pre-programmed intervals.

To cancel distress reports: Press and hold **EMER** for 1.5 seconds until the display ceases flashing.

Sending and receiving text messages

Pre-configured messages can be sent to any cell phone or Iridium phone.

To send a pre-configured text message:

If the number is in the DZMx phone book - press **MSG** , scroll to the required message

Press **ENTER** to display the message

Press **DIR**  then scroll to the required phone number, or press one of the speed dial keys

Press **A** or **B** to select the network and send the message.

If the number is not in the DZMx phone book - press **A** or **B** to select the network and open the Enter Phone Number screen

Enter the destination phone number

Press **Call** to send.

To read an incoming text message: The DZMx display flashes and announces that a message has been received. Press **ENTER** to open the message

Use **Up** and **Down** to scroll through the message.

To read a saved message: Press and hold **MSG** until the message list opens.

Scroll to the required message, then press **ENTER** to open the selected message.

To send a pre-configured message in reply to a received message: Open the received message, then press **MSG** to open the message library

Scroll to the selected reply, then press **A** or **B** to select the network and send the message.

To call the sender of a message: Open the message, then press **A** or **B** to select the network and initiate the call.

To exit the message screen: Press **END**.

Activating and deactivating Automated Rescue Monitoring (A.R.M.)

Press and hold the **A.R.M.** key  for 2 seconds then release. The DZMx will show **A.R.M. Requesting**, then **A.R.M. Active** when A.R.M. is activated.

When landing at the end of the flight, press and hold the **A.R.M.** key for 2 seconds then release. The DZMx will show **A.R.M. Cancelling** then **A.R.M. Terminated**.

2 Introduction

This manual provides users with instructions on the operation of the Flightcell DZMx and, if installed, the Flightcell DZMx Remote Head and cabin phone.

2.1 Overview of DZMx Functions

The Flightcell DZMx is a powerful communications system that uses the Iridium satellite and/or 3G cellular networks to provide:

2.1.1 Voice calling

- The DZMx provides a global phone service, enabling calls to virtually any phone in the world
- The DZMx is interfaced to the aircraft audio system, providing all crew connected to the audio system with access to the available phone networks
- A cabin phone may also be installed for passengers' use
- Calls are dialed from the DZMx keypad, or by using the phone directory or speed dial keys to retrieve and call stored phone numbers
- Other parties can call the aircraft by dialling the aircraft's satellite or cell phone numbers.

2.1.2 Two-way messaging

- SMS text messages can be sent to the DZMx over either the satellite or cellular network, from any SMS-capable phone (a cell phone or another satellite phone)
- SMS messages can also be sent to the DZMx over the Iridium network from an Iridium web application or any email program
- Messages from the DZMx's message library can be sent either to another satellite phone or cell phone, or to your tracking service provider.

2.1.3 Aircraft tracking

The DZMx can send periodic position reports automatically and manually triggered position reports to one of a number of tracking service providers. Additionally, the DZMx can be configured to send position reports that mark specific events, including:

- Start-up
- Engine start and stop
- Take-off and landing
- Course change
- Manual position
- Emergency (mayday)
- Other special purpose events.

In addition to GPS flight tracking, the DZM also has Automated Rescue Monitoring (ARM, also known as Automated Flight Following, AFF) capabilities. Used in conjunction with an appropriately configured receiving server and a compatible computer mapping system, ARM provides automatic surveillance over an aircraft or vehicle's mission. While activated, ARM monitors position reports and automatically raises alerts if no position data has been received from the aircraft for a specified time period (set on the receiving server). This ARM feature is only available with some mapping systems, for example TracWatch, Automated Monitoring Service by TracPlus. Please contact your mapping service provider about availability of the ARM/AFF service on their network and to register for this service.

2.2 DZMx Hardware Configurations

The DZMx can be supplied in different hardware configurations to suit the type of aircraft and the operator's requirements. A range of software applications provide additional functionality for specific types of operations. The features available on the DZMx will depend on the hardware and software configuration.

2.2.1 Transceivers

The DZMx has a modular design which allows installation of different transceivers, enabling use of the Iridium satellite and/or cellular phone networks.

Any one or two of the following transceivers can be installed in the DZMx's internal transceiver slots:

- A Flightcell Iridium transceiver card
- A Flightcell cellular transceiver card.

The following external transceiver options may also be installed:

- A Flightcell Iridium module
- A Flightcell cellular module
- An Iridium phone in a Flightcell Iridium phone cradle; cradles are available for the Iridium 9505/A, 9555 and Extreme handsets.

2.2.2 Remote access configurations

The DZMx is usually installed in the pilot's panel or pedestal, where it can be operated only by the pilot(s).

The DZMx may also be connected to additional equipment to enable other crew members to make and receive calls and messages:

- A Flightcell DZMx Remote Head; installation of one or more remote heads allows crew or passengers in the cabin to access all the functions of the DZMx
- A cabin phone; installation of a cordless or corded phone allows passengers to make and receive calls without needing a headset. The cabin phone can also be used with the DZMx to provide an intercom between cockpit and cabin.

3 Using the DZMx

The DZMx keypad is designed to provide the most common functions via the least number of key presses. Within one or two key presses, the DZMx can initiate phone calls, answer calls, access the phone book, mark a position, toggle Automated Rescue Monitoring, send text messages, view received messages and activate emergency mode.

Other less commonly used functions are available via the menu system, which also provides for configuration of the DZMx.

If a DZMx Remote Head is fitted, either the DZMx or the remote head can be used to carry out all available keypad functions, and all screens will show the same information.

3.1 The DZMx keypad

The keys on the DZMx 16-key keypad are used for dialling calls, sending messages and accessing a number of other functions.

The DZMx keys have different functions depending on what screen is currently being displayed, and whether the DZMx is in a call or not.

Due to the limited number of keys, and the many functions available, some keys on the keypad have more than one function. For example, pressing a key can have a different function to pressing and holding a key.



The following describes the functions of the different keys. The “Key Name” lists the names used in the text when referring to this key.

3.1.1 Soft Key Functions

Soft Key	Key name	Key function	Context
	TRANSCEIVER A	Enables entry of manually-keyed number to be called using transceiver A or B	From the Main screen; will open Enter Phone Number prompt screen
		Initiate call via transceiver A or B to a number selected from the DZMx phone book	From displayed number in phone book or displayed speed dial number
		Send a text message to a number in DZMx phone book via transceiver A or B	When the required message has been selected and opened
		Call sender of a text message	From an open text message; initiates a call to the sender
	TRANSCEIVER B	Send text message using transceiver A or B to a keyed-in phone number	When viewing text message list or send message screen; will open Enter Phone Number prompt screen
		Send text message as a reply to a received message using selected transceiver A	After highlighting a message in the received message list, then selecting the text message to be sent in reply

For systems fitted with three transceivers, two transceivers will be shown beside a soft key, for example, a system with two satellite devices will show the status of the two devices on the main screen next to soft key A. When making a call or sending a message, the DZMx will always check if the internal device is available first, then, if it is busy, disabled for voice calls and/or messages, or has no good signal, the DZMx will then check if the external device is available. If a transceiver has no signal, or has not been configured for a particular operation, when the user attempts an operation, they will be informed via a pop-up that the transceiver is offline or the operation is unavailable.

3.1.2 Keypad Functions – calls, tracking, list navigation

Key	Key name	Key function	Context
	CALL	Answer an incoming call	When the DZMx is ringing
		Display the last dialed number	From the Main Screen; press to display the Enter Phone Number prompt screen then again to display the last dialed number
		Complete call to a manually keyed number	From the Enter Phone Number prompt screen
		Complete call to a selected number if only one transceiver fitted	From a phone book entry, received message screen or speed-dial screen if system has only one transceiver fitted
		Call a cabin phone (if installed)	From the Main Screen
		Transfer an active call to a cabin phone (if installed).	When a call is in progress on the DZMx
	END	Reject incoming call	When the DZMx is ringing
		Hang up	Hang up an external call
			Leave a three-way call between cockpit, cabin phone and external caller
		Leave menu system	Exit from anywhere in the DZMx menus and return to main screen; this will abort a setting change if editing a setting
	1 MARK	Send a manual position report	From the Main Screen (press and hold for this function while a call is in progress)
		Send a manual position report with an attached message	Press and hold from the Main Screen (not available while a call is in progress)
		Enter number 1	From Enter Phone Number prompt screen From the Main Screen, will send DTMF tone while a call is in progress
	2 A.R.M. UP	Initiate and terminate Automatic Rescue Monitoring (if enabled)	Press and hold from the Main Screen
		Scroll up	While viewing lists or navigating the menu system
		Enter number 2	From Enter Phone Number prompt screen From the Main Screen, will send DTMF tone while a call is in progress
	3 EMERGENCY	Initiate and terminate emergency (distress) messaging	Press and hold from the Main Screen
		Enter number 3	From Enter Phone Number prompt screen From the Main Screen, will send DTMF tone while a call is in progress

3.1.3 Keypad Functions – speed dial, phone book and text messages

Key	Key name	Key function	Context
	4 SPEED DIAL 1 LEFT	Select speed dial number 1	From the Main Screen
		Scroll to the left	While modifying any setting value displaying a slider
		Enter number 4	From Enter Phone Number prompt screen From the Main Screen, will send DTMF tone while a call is in progress
	5 SPEED DIAL 2	Select speed dial number 2	From the Main Screen
		Enter number 5	From Enter Phone Number prompt screen From the Main Screen, will send DTMF tone while a call is in progress
	6 SPEED DIAL 3 RIGHT	Select speed dial number 3	From the Main Screen
		Scroll to the right	While modifying any setting value displaying a slider
		Enter number 6	From Enter Phone Number prompt screen From the Main Screen, will send DTMF tone while a call is in progress
		Move to next letter	Used to move to next letter when entering the name for an entry in the phone directory
	7 MSG	Display list of preconfigured text messages	From the Main Screen From phone book list, to select a text message to send to selected phone number When viewing a received message, to select a message to reply
		Open list of received messages	Press and hold from the Main Screen
		Enter number 7	From Enter Phone Number prompt screen From the Main Screen, will send DTMF tone while a call is in progress
			8 DIR DOWN
Scroll down	While viewing lists or navigating menu system		
Enter number 8	From Enter Phone Number prompt screen From the Main Screen, will send DTMF tone while a call is in progress		
	9 MODE		
		Isolate pilot audio	When in call, will mute audio system volume, effectively putting a caller on hold
		Enter number 9	From Enter Phone Number prompt screen From the Main Screen, will send DTMF tone while a call is in progress

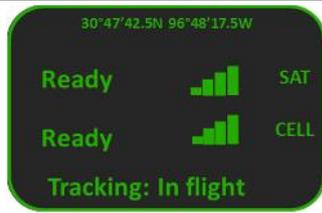
3.1.4 Keypad Functions - menu navigation

Key	Key name	Key function	Context
	*	Navigate up a level in the DZMx menu system	In Menu system. Will also exit from modifying a setting without saving changes
	DELETE BACK	Delete one character/number	From Enter Phone Number prompt screen
		Access local DZMx display settings or remote head display settings. These settings are local to the head being modified. Press this key again to exit display menu	From the Main Screen, press and hold and release to access settings such as backlight and display brightness
		Transmit * DTMF tone	From the Main Screen, will send DTMF tone while a call is in progress
	0 MENU	Open menu system	From the Main Screen (press and hold for this function while a call is in progress)
		Enter + character	Press and hold from Enter Phone Number prompt screen
		Enter number 0	From the Main Screen, will send DTMF tone while a call is in progress From Enter Phone Number prompt screen
	POWER # KEY ENTER	Select a highlighted option	From any menu list, phone book list or message list
		Save a setting	From any setting modification screen
		Enter # key	From the Main Screen, will send DTMF tone while a call is in progress
		Power DZMx down or power on again	From the Main Screen, press and hold and release to power off DZMx Press and release to power the DZMx up

4 The DZMx display

The DZMx LCD display can show several different views.

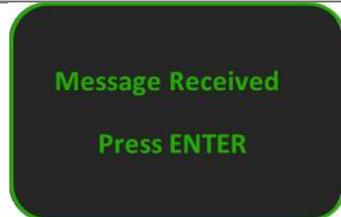
The Main Screen



After the DZMx has booted up and initialised, the display will show the main screen. This shows:

- GPS information (at the top of the screen)
- Phone networks designated to the two soft keys
- Network connection status and signal strength for the installed transceiver(s)
- Other status messages (on the bottom of the screen).

Pop-up Screens

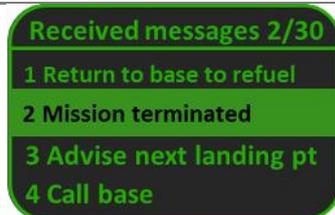


Pop-up screens are used to announce events such as incoming calls and messages.

Some pop-up screens will be accompanied by an audible alert (e.g. for an incoming call or text message) or warning (e.g. if Automated Rescue Monitoring remains active after landing).

Most Pop-up screens will have a time-out and will automatically disappear, but all can be cleared from the display at any time by pressing the Enter key.

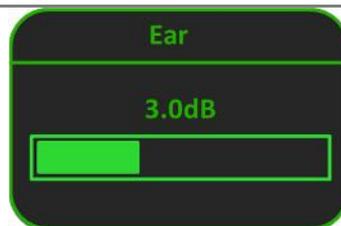
Menu and list views



These show either:

- Available menu options, or
- A list of items, e.g. messages, phone book entries.
- The currently selected item will be highlighted. The user can navigate the list using the **UP** and **DOWN** keys (**2** and **8**) and select the item using the Enter key.
- Next to the title of the list will appear two numbers, the first one is the index of the current item selected, the second one is the total number of items in the list.

Setting levels views



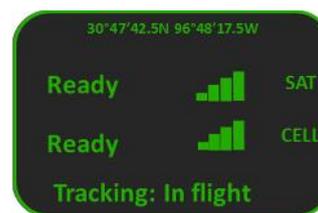
These show the current value when adjusting or viewing settings such as audio volumes or backlight brightness.

The slider bar shows the setting as a percentage of the maximum available value and can be adjusted using **LEFT** and **RIGHT**. Changes can be confirmed by using **ENTER**, or aborted by using **BACK** or **END**.

4.1 Understanding the information on the DZMx Display

During normal operation, the DZMx LCD display shows the Main Screen. This displays:

- On the top line, current GPS position
- In the centre of the display, transceiver information:
 - Transceivers installed in each position in the DZMx
 - Status of each of the installed transceivers; this changes depending on the operation currently being performed
 - Signal strength (up to four bars); if the phone doesn't have a connection, it shows 
- Above the transceiver information, additional information on:
 - Messaging activity, including number of queued messages
 - Phone number or name of the other party to an active phone call
- On the bottom line
 - Tracking status; if the DZMx is not tracking, it shows the reason
 - A.R.M status (if A.R.M. is activated).



4.1.1 Transceiver connection status

The transceiver status message will change as the DZMx establishes a connection to the network:

- **Powering Up** is displayed when the DZMx is waiting to connect to the or satellite or cellular transceiver
- **Initialising** is displayed when the DZMx has established a connection to the transceiver and is in the process of initialising the device
- **Ready** is displayed when the transceiver is powered on, has been successfully initialised by the DZM, is registered on the network and is reporting a good signal strength, but it is not in use
- **No Signal** is displayed when the transceiver is not registered on a network and has no signal. This can happen during a flight as the aircraft passes in and out of coverage. The device cannot be used for calls or messaging
- **Low Signal** is displayed when signal strength is low. A low signal may cause the DZMx to use the alternative device for tracking if configured to do so. The device is still available for incoming and outgoing calls, but be aware it is possible that the call may be dropped due the poor connection.

The display will show an error message if the DZMx can't be connected for some reason:

- **No Device** is displayed when there is either no external satellite phone in the phone cradle or the external phone or modem is powered off. If after a minute or two the DZMx has not established a connection with the device, the DZMx will display a warning screen and beep advising that the device is not responding and alerting the pilot to check it is in the cradle/connected
- **No SIM** is displayed if there is no SIM card in the connected transceiver. This is also displayed if the SIM is present, but is unregistered. If the SIM is locked, blocked or requires a PIN, the DZMx will notify the user of the appropriate status
- **Incorrect SIM** is displayed if the DZMx detects a SIM but it does not have the correct service centre number, which would normally indicate that the incorrect SIM has been inserted.

4.1.2 Device status during a call

While you are making a phone call, the transceiver status lines will show you which device is currently being used for the call, and on the line above, who you are calling, or being called by. If the other party is listed in the DZMx's phone book, then the information line will display their name.

The phone or modem status message changes as the DZMx establishes a connection with the other party:

- **Calling...** is displayed when the DZMx has dialled the number but a connection has not yet been established
- **On Call** is displayed when the DZMx has established a connection and the other party has accepted the call

- **Incoming Call** will flash on the DZMx display, an audible ringing tone will sound over the audio system and the call annunciator light (if installed) will flash if there is an incoming call
- **Disconnecting** is displayed when a phone call is terminated at either end of the call or the phone or modem loses the connection.

4.1.3 Messaging activity

The transceiver status lines will briefly show information on transmission of tracking messages:

- **Sending Data...** when an SMS or SBD message is being transmitted
- **SMS failed!** or **SBD Failed!** if transmission has failed, usually because of a low signal; in this case the DZMx will attempt to resend the message
- **SMS Sent** or **SBD sent** when an SMS or SBD message has been successfully transmitted.

The line above will also show the number of untransmitted messages in the message queue.

4.1.4 Tracking Status

The tracking status line on the bottom of the display will show aircraft and tracking status:

- **Tracking: Queuing** is displayed if there are more than two messages in the message queue. This indicates poor cellular and/or Iridium signal strength or that position reports are not being sent or are being sent at a slower rate than they are being queued
- **Tracking: Queue Full!** is displayed if messages have not been transmitted for quite some time due to poor signal strength and now the queue is full. Any new position reports will be added to the queued and the oldest one removed from the queue
- **Not Tracking: No GPS** is displayed when the GPS does not have a fix. Position reports will not be generated if there is no GPS signal fix
- **Not Tracking: Disabled** is displayed when tracking has been disabled
- **Not Tracking: Suspended** is displayed when tracking has been suspended
- **Not Tracking: On Ground** is displayed when the DZMx is configured to only send tracking data when the aircraft is in the air
- **Tracking: On Ground** is displayed when the aircraft is on the ground and the DZMx is configured to send on-ground position reports
- **Tracking: Takeoff** and **Tracking: Landed** is displayed after the DZMx has sent take-off and landing reports, if the DZMx is configured to record these events
- **Tracking: Hovering** is displayed if hovering messages are enabled and the aircraft is flying at less than 15 knots
- **Engine Start** and **Engine Stop** is displayed after the DZMx has sent engine start and stop reports, if the DZMx is configured to record these events
- **Geofence Active: nn NM** is displayed if Geofence Suspend mode has been activated. nn is the distance, in nautical miles, of the aircraft from the centre of the geofence area. Tracking will be suspended for as long as the DZMx detects that the aircraft is within the geofence radius (see the Flightcell DZMx Installation and Configuration manual for details of how to configure the DZMx Geofence settings).

4.1.5 Automated Rescue Monitoring (A.R.M.) status

Automated Rescue Monitoring status information is displayed on tracking status line when **A.R.M.** is active. Enabling and disabling A.R.M. mode causes the DZMx to send an activate or deactivate message to the tracking server followed by the DZMx receiving an acknowledgement. The status of this process is displayed on the status line:

A.R.M. – Requesting is displayed when **A.R.M.** mode is activated by the user and indicates that confirmation of **A.R.M.** operation has been requested from the tracking server

A.R.M. – Active is displayed when the tracking server has responded and confirmed that **A.R.M.** is active; the current aircraft status is shown appended to this message: **...: On Ground, ...: Takeoff, ...: In Flight** or **...: Landed**

A.R.M. – Cancelling is displayed when **A.R.M.** mode has been disabled by the user and a termination acknowledgement has been requested from the tracking server

A.R.M. – Terminated is displayed briefly when the tracking server has responded confirming **A.R.M.** has been deactivated

No Response. Retry? is displayed when **A.R.M.** mode activation or termination confirmation has not been received from the tracking server after several attempts; press **ENTER** to keep re-trying

No AFF Server Response! Is displayed to advise that confirmation of **A.R.M.** activation or deactivation has not been received. No further automated attempts are made.

4.1.6 Emergency mode

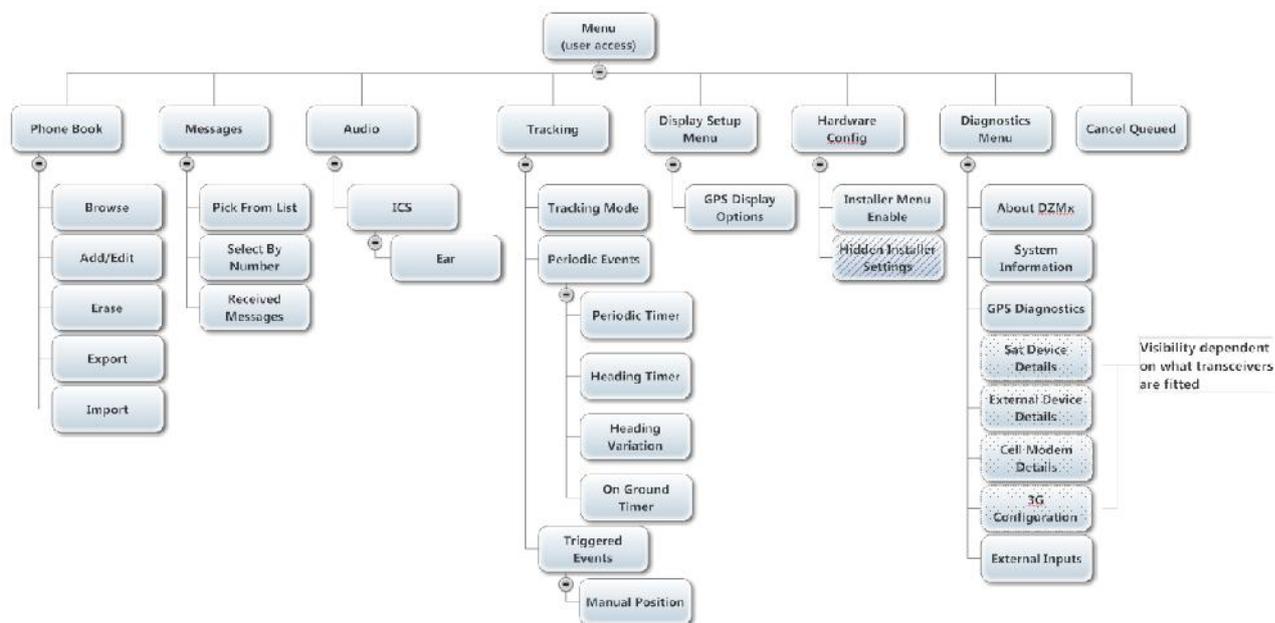
When in Distress (Emergency) mode has been activated by the user, **Emergency Mode!** will flash in the tracking display line to indicate emergency messages are being transmitted to the tracking provider at programmed intervals.

5 Accessing additional features and settings using the DZMx menus

The DZMx has an extensive menu system providing access to a range of functions, settings and diagnostic information.

The menu system provides access to user level settings, such as tracking timers, basic audio configuration, GPS display options and phone book management.

A number of settings are used to configure the DZMx for a specific operation or application; these are normally hidden from the user and an installer password is required to access and change them.



See the Flightcell DZMx Installation and Configuration Manual for further information on configuration of the DZMx.

To access the menu system:

- Press **MENU**. If the DZMx is on a phone call, press and hold **MENU** for 1.5 seconds to access the menus
- Use **UP** and **DOWN** to navigate between menu options
- Press **ENTER** to select the highlighted item
- Press **BACK** to cancel a setting change and to move back up a menu level
- Press **ENTER** to confirm a setting change
- Press **END** to cancel a setting change and exit the menu system.

6 Making phone calls

The DZMx can be configured with up to two internal transceivers, and one external transceiver. These may be Iridium and/or cellular transceivers. The available networks and current signal strength are shown on the main screen.

Calls can be made to virtually any phone number in the world over the Iridium satellite or cellular networks. Calls may be made from the DZMx or an installed remote head, or from a cabin phone (if installed).

Numbers can be dialled manually or recalled from the 50-number phone book. The DZMx also has three speed dial keys that call the first three numbers in the phone book.

You can also initiate a call from a received text message if the caller's number is shown with the message.

The DZMx supports caller ID on the Iridium network and on most cellular networks.

6.1 Initiating calls on the DZMx or remote head

6.1.1 Dialling a phone number

- Select the transceiver to be used for the call by pressing **A** or **B** to display the *Enter Phone Number* screen
- Enter the number using the 0 to 9 keys. For international calls requiring the dialling prefix "+", press and hold the **0** key. Press **BACK** to backspace
- Press **CALL** or **ENTER** to initiate the call
- Press **END** to terminate the call at any time.

6.1.2 Calling a number in the phone book

- Press **DIR** to display the phone book
- Scroll through the phone book to the required contact using **UP** and **DOWN**
- Press **A** or **B** to select the transceiver and initiate the call
- Press **END** to terminate the call at any time.

6.1.3 Calling using the three Speed Dial keys

- Press **SPD1**, **SPD2** or **SPD3** as appropriate; the contact name and number will be displayed
- Press **A** or **B** to select the transceiver and initiate the call
- Press **END** to terminate the call at any time.

6.1.4 Redialling the last called number

- Select the transceiver to be used for the call by pressing **A** or **B** to display *Enter Phone Number* screen
- Instead of entering a number, just press **CALL**; the contact name (if in the phone book) and number of the last number dialled will be displayed
- Press **CALL** or **ENTER** to initiate the call
- Press **END** to terminate the call at any time.

6.1.5 Calling the sender of a text message

- Open the message so it is displayed on the screen
- Press **A** or **B** to select the transceiver and initiate the call.

6.2 Answering calls from the DZMx or remote head

When the DZMx detects an incoming call, and the pilot is not already in a call, an *Incoming call* pop-up will flash on the DZMx. If caller ID is supported by the network, the caller's phone number, or name, if the number matches any in the phone book, will also be displayed. A ringing tone will be produced over the audio system and a call annunciator light (if installed) will flash. If a cabin phone is connected, and is not already in a call, this will also ring.

- Press **CALL** to answer an incoming call, or press **END** to reject the call
- Press **END** to hang up.

6.3 Other functions during a call

6.3.1 Using touch tone dialling (DTMF) during a call

When calling through a switchboard or call centre, you may be asked to press a number or the star (*) or hash/pound (#) key. This is called touch-tone or DTMF dialling.

The DZMx provides touch tone dialling when in a call. Simply press the 0 to 9 or * or # keys when prompted during a call.

6.3.2 Using other DZMx keypad functions when on a call

To use the **MARK**, **A.R.M.**, **EMER**, **MSG**, or **MENU** keys during a call, press and hold the applicable key for 1.5 seconds to override DTMF dialling on that key.

6.3.3 Adjusting DZMx audio levels

Only the level of audio from the DZMx to the ICS (ear volume) can be adjusted by the user. An installer will have access more audio settings, such as keypad beep volume, mic volume, warning tone volume etc, within the menu system and via the DZMx Manager utility.

Once these are set up correctly, the pilot will only need to adjust the ear volume occasionally to allow for differing incoming audio levels, or to adjust for different headsets or for ambient noise conditions.

To adjust incoming audio level:

- Go to **MENU>Audio>ICS>Ear**; the DZMx will display the setting
- Use **LEFT** or **RIGHT** to adjust the audio level
- Press **ENTER** to confirm the setting change and return the the audio menu
- Press **BACK** to abort the change and return to the audio menu.

7 Making phone calls using the DZMx cabin phone

A corded or cordless phone may be installed in the cabin and connected to the DZMx to provide passengers with access to the DZMx Iridium sat phone and/or cell phone connections.

Calls are private to the connected party (cockpit or cabin) unless a three-way call is established.

If the DZMx has two transceivers (e.g. one Iridium and one cellular, or two Iridium), the cockpit and cabin may each use a transceiver to make simultaneous calls.

The cabin phone can also be used with the DZMx as an intercom between cockpit and cabin.

If the cabin phone is in use, the call status is shown on the bottom line of the DZMx display.

The dialling method is similar to that on the DZMx keypad in that a transceiver must be selected first before dialling the phone number.

To make an internal call between the cabin phone and the pilot, or to transfer a call to the pilot, requires the use of either the 'hook/flash' or 'flash' key, or optionally programming of one of the speed-dial buttons on the cabin handset to '701#'. The best method used will depend on your handset type.

7.1 Dialling a phone number

- Pick up the handset and press the off hook button and wait until you hear the dial tone
- Select the desired transceiver by pressing either 1 for transceiver **A** or 2 for transceiver **B**
- Dial the phone number
- Press # after dialling your number to initiate the call immediately, or wait a few seconds for the DZMx to recognise no further numbers will be entered, after which it will initiate the call automatically.
- Hang up to end the call
- If the transceiver selected is already in a call, then the passenger will hear an engaged tone. If the transceiver selected has no signal, is unavailable (not fitted or not in cradle), or the other party has hung up, then the passenger will hear a busy tone. In either case, they will need to hang up and try again later, or try again using another transceiver.

7.2 Initiating an intercom call between the cabin and pilot

- Pick up the handset and press the off hook button and wait until you hear the dial tone
- Press 'hook flash', or the appropriate speed-dial key to initiate a call to the pilot. If the pilot is already busy on a call, then the passenger will hear an engaged tone. If the pilot is available, then a ring tone will be generated on the ICS until the pilot answers or until either party hangs up the call.
- The call will be terminated if either the cabin phone goes on hook, or the pilot presses **END**
- If the pilot hangs up, the passenger will hear the busy tone through the handset

7.3 Transferring a call from the cabin phone to the pilot

If the cabin phone is on a call using one of the transceivers, and the pilot is not busy on another call, it is possible to transfer the call to the pilot. During a call, the cabin phone can invite the pilot into a three-way call to initiate the call transfer, or once connected, maintain a three-way call between the cabin phone, transceiver and the pilot.

- While on a call, the cabin phone can invite the pilot into the call by pressing 'hook flash' or the appropriate speed-dial key. If the pilot is available, then a ring tone will be generated on the ICS until the pilot answers or the pilot can reject the invite by pressing **END**.
- Once the pilot has answered, a three-way call is established. The cabin phone party can choose to hang up at that point, or continue to have a three-way conversation.
- Once a three-way call is established, if either the pilot or the cabin phone hang up, the call will turn into a standard two-party call between the remaining parties. If the party at the transceiver end hangs-up, the call is terminated.

7.3.1 Transferring a call from the pilot to the cabin phone

If the pilot is on a call using one of the transceivers, and the cabin phone is not busy on another call, it is possible to transfer the call to the cabin-phone.

- While on a call, the pilot can invite the cabin phone into the call by pressing the **CALL** key. If the cabin phone is available, then the handset will ring until the cabin phone answers the call.
- Once the passenger has answered, a three-way call is established. The pilot can choose to hang up at that point, or continue to have a three-way conversation.

8 The Phone Book

The DZMx phone book can hold 50 phone numbers. Phone book entries can be added, edited or deleted by:

- Using the DZMx menu system via the DZMx keypad
- Using the DZMx Manager utility.

8.1 Managing the DZMx phone book using the menu

8.1.1 Adding a new entry to the phone book on the DZMx

- Go to **MENU>PhoneBook>Add/Edit**; the phone book will be displayed
- Scroll down to an empty entry and press **ENTER**; the DZMx will display *Enter number*
- Enter the number using the full international dialling string including country code and area code (e.g. +6435458659); press and hold the “0” key to get the “+” prefix
- Press **ENTER**; the DZMx will display *Enter name*
- Use **UP** and **DOWN** to scroll through the letters of the alphabet to the required letter, press **RIGHT** to move to the next character or **BACK** to backspace
- When the name has been entered, press **ENTER** to save the new entry.

8.1.2 Editing a phone book entry on the DZMx

To edit an existing number in the phone book:

- Go to **MENU>PhoneBook>Add/Edit**; the phone book will be displayed
- Scroll down to the entry to be changed and press **ENTER**; the DZMx will display the phone number
- Edit the number using the **BACK** key and the number keys
- When the phone number has been edited, press **ENTER**; the DZMx will then display the contact name
- Use **BACK** to remove characters, **UP** and **DOWN** to scroll through the letters of the alphabet to the required letter and **RIGHT** to move to the next character
- When the name has been entered, press **ENTER** to save the edited entry.

8.1.3 Deleting a phone book entry on the DZMx

- Go to **MENU>Phone Book>Erase**; the phone book will be displayed
- Use **UP** or **DOWN** to scroll to the entry to be deleted
- Press **ENTER** to delete the selected entry.

8.2 Editing the DZMx phone book using DZMx Manager

Instructions on use of the DZMx Manager utility are provided in the Installation and Configuration Manual, available on the Flightcell website or from Flightcell International.

9 Sending and receiving text messages

The DZMx has powerful text messaging capabilities. Text messages can be sent and received over cellular and satellite networks using any of the installed and connected transceivers.

The DZMx has a 50-entry library of pre-configured messages. Only these messages can be sent from the DZMx itself; there is no provision for keying in message text.

Note: Messages in the DZMx message library can only be entered or edited using the DZMx Manager application. See the Flightcell DZMx Installation and Configuration Manual for information on DZMx Manager.

9.1 Sending messages to the DZMx

SMS text messages can be sent to the DZMx in several ways:

- From a cell phone or satellite phone; send the message in the normal way to the DZMx's cell or satellite phone number
- By email (Iridium only); address the email to 8816xxxxxxx@msg.iridium.com (where 8816xxxxxxx is the Iridium phone number for the DZMx)
- From the Iridium website:
 - Go to the Iridium website at <http://messaging.iridium.com/>
 - Enter the satellite phone number of the DZMx
 - Fill in the subject line
 - Fill in the message
 - Click Send Message.

9.2 Viewing received messages

9.2.1 Viewing an incoming message

When a message is received on the DZMx, a pop-up window announces *Message received*. To open the message, press **CALL** or **ENTER**. Scroll through the message using **UP** and **DOWN**.

The bottom lines of the message show the sender and the time the message was sent.

9.2.2 Viewing messages in the DZMx inbox

Received messages are stored in the DZMx inbox. The inbox will hold up to 50 messages. Once full, the oldest message will be deleted each time a new message is received.

To read messages saved in the inbox:

- Either press and hold **MSG** until the message list is displayed or, using the menus, press **MENU>Messages>Received Messages**
- The received message list will show the first few words of the received message; use **UP** and **DOWN** to scroll to the message to be read
- Press **ENTER** to view the entire message, then **UP** and **DOWN** to scroll through the message
- Press **BACK** to return to the message list
- Press **END** to exit the menu system and return to the main screen.

9.3 Calling the sender of a received message

If a received message includes the sender's cell or satphone number, then a call can be made to that number:

- Open the received message
- Press **A** or **B** to call using the selected phone network.

9.4 Sending preconfigured plain text messages from the DZMx

9.4.1 Sending messages to numbers in the DZMx phonebook

- Press **MSG**, scroll to the required message and press **ENTER** to open the message
- Press the speed dial keys **SPD1, 2 or 3** or press **DIR** and scroll to the number, then press **ENTER**
- Press **A** or **B** to send via the selected network.

9.4.2 Sending messages to a number not in the phonebook

- Press **MSG**, scroll to the required message and press **ENTER** to open the message
- Press **A** or **B** to select the network
- When prompted, enter the destination phone number, then press **CALL**.

9.5 Sending preconfigured messages in reply to a received message

- Open the received message, then Press **MSG** to open the message library
- Scroll to the message to be sent in reply, and press **A** or **B** to send the message via the selected network.

9.6 Cancelling unsent messages

If for any reason you wish to remove all unsent messages (including position reports) from the outgoing message queue:

- Press **MENU>Cancel Queued** and then press **ENTER**
- A pop-up message will be displayed showing **Message Queue Deleted**

This command will remove all messages, both tracking and text messages, from the queue.

10 Using the DZMx cellular data connection

If a 3G cellular module is installed in the DZMx, and the user has data enabled on the cellular account, the DZMx can provide high speed 3G data service to a connected PC, laptop or Windows tablet via the DZMx Ethernet port.

The DZMx operates as an internet router, and acts as a DHCP server; when a PC or laptop is plugged into the DZMx's Ethernet port, the DZMx DHCP server will allocate an IP address in the range 192.168.4.xxx, and you will then be connected to the internet.

Note: It may take some time for the IP address to be allocated if your PC is connected to the DZMx while already operating; it is recommended you restart your PC after connecting to the DZMx.

11 Using GPS tracking

The DZMx can send position reports to a tracking system using the Iridium and/or cellular network. The DZMx has several configurable periodic tracking timers and triggered tracking events. These generate automatic position reports at appropriate intervals, or when triggered (e.g. a takeoff or landing report). The user can also manually trigger a position report.

In order to for periodic tracking to work correctly, the DZMx must have a valid GPS lock, tracking must be enabled and the DZMx must be correctly configured with the tracking gateway email address and phone number of your tracking provider. There are many settings available to allow you to customise your tracking setup. Please see the Flightcell DZMx Installation and Configuration Manual for details of how to configure your DZMx tracking system.

11.1 Automatically transmitting a position report

The DZMx can be configured to automatically send a range of routine position reports. These are:

- Aircraft power up – event triggered when power supplied to the DZMx
- Engine start and stop – event based on input
- Take-off and landing – event based on speed and/or input
- At periodic time intervals – based on time since last message sent
- When aircraft heading changes – based on change in track and time since last message sent.

11.2 Sending a manual position report

Position reports are usually sent automatically, but manual position reports may also be sent to mark a point of interest. You can send a position only, or a position with preconfigured message attached.

11.2.1 To send a manual position

- Press **MARK**
- The DZMx will display *Position marked*
- A tracking message will be added to the outgoing message queue.

11.2.2 To send a manual position report with message attached

The DZMx can send position reports with a preconfigured message) to your tracking system:

- Press and hold **MARK** until the message library opens
- Scroll down to the message to be sent
- Press **ENTER** to display the message then press **ENTER** to send; the DZMx will display *Position marked* and a tracking message will be added to the outgoing message queue.

The position and timestamp is taken when **MARK** is pressed, so this feature can be used to mark a point of interest on your tracking system.

Note: To send messages attached to position reports, this feature must be enabled in the DZMx configuration menus.

11.3 Sending distress messages

Distress messages may be sent from the DZMx in emergency. Your tracking provider will have a system for raising an alert or alarm when a distress message is received.

To send a distress message:

- Press and hold **EMER** until the DZMx beeps and flashes *DISTRESS queued*
- The DZMx will display *Position marked*
- A tracking message will be added to the front of the outgoing message queue
- Distress messages will continue to be sent at pre-programmed intervals (usually set at minute) until distress mode is terminated
- To terminate distress mode, press and hold **EMER** until the DZMx beeps and *Emergency Mode* is no longer displayed on the DZMx display; the DZMx will transmit a message that emergency mode has been terminated.

11.4 Tracking Settings

The DZMx tracking timers and operation of the mark button can be configured using the DZMx menu system. The tracking system can also be disabled or suspended if required operationally.

11.4.1 Periodic tracking timers

The time interval for sending tracking reports can be varied to suit operational requirements.

An automatic position report will be created at the specified number of minutes after the last position report. For example, if the last tracking position message was triggered by a take-off event, this will effectively reset the tracking timer and the next automated transmission will occur the specified number of minutes after the last transmission was sent.

Three timers can be adjusted by the user:

- **Periodic timer**; the tracking interval during flight. Minimum value is 1 minute.
- **On Ground timer**; the tracking interval on the ground. This setting can be disabled.
- **Heading Timer**; position reports are sent more frequently when the aircraft is changing heading; the **Heading Variation** setting configures the change (in degrees) by which the aircraft's heading must vary in order to trigger a course change position report.

11.4.2 Changing the tracking settings

- Go to **MENU>Tracking** and select the appropriate setting from the menu; the DZMx will display the setting
- Use **LEFT** or **RIGHT** to adjust the tracking timer or heading angle
- Press **ENTER** to confirm the setting change and return the Tracking menu
- Press **BACK** to abort the setting change and return to the Tracking menu or **END** to exit the menu system.

The On Ground timer can be set to **Disabled** if the slider is moved to the minimum value.

Note: Ensure that the periodic timer has a higher value than the heading timer.

11.4.3 Suspending or disabling tracking

Automatic tracking reports may be suspended temporarily, for example when an aircraft is working for a period at a known location, or disabled. If suspended, tracking is disabled for the current flight only, and will be automatically re-enabled when the DZMx is next powered up. If disabled, tracking will remain off until re-enabled.

To suspend or disable tracking:

- Go to MENU>Tracking>Tracking mode
- Scroll to **Suspend** or **Disable** as required and press **ENTER**.

To re-enable tracking:

- Go to MENU>Tracking>Tracking mode
- Scroll to **On** and press **ENTER**.

11.5 Using Automated Rescue Monitoring (A.R.M.)

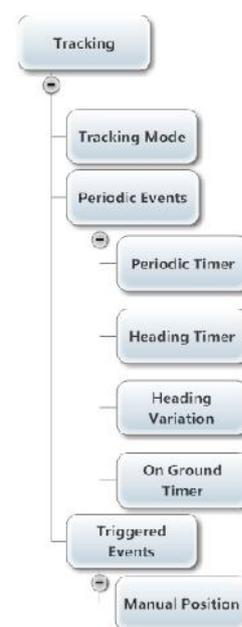
A.R.M. (also known as Automated Flight Following, or AFF) is an automated flight monitoring system. When A.R.M. is activated, your tracking service monitors position reports from the aircraft and raises an alert when reports are overdue by a specified period, or (optionally) if the aircraft is stationary for a specified period.

A.R.M. is only supported by some tracking services.

Your DZMx and your tracking service must be appropriately configured to use A.R.M. Instructions for activating and configuring the A.R.M. service are provided in the *Flightcell DZMx Installation and Configuration Manual*.

To activate A.R.M. before a flight commences:

- Press and hold the **A.R.M.** key for 2 seconds then release. This will trigger the DZMx to send an A.R.M. activation request message to the tracking server. The DZMx will show **A.R.M. Requesting** on the status line of the display



- When the DZMx receives and acknowledgment from the tracking server, **A.R.M.** mode is considered active and the status display will show **A.R.M. Active**.

To terminate A.R.M. at the end of a flight:

- Press and hold the **A.R.M.** key for 2 seconds then release. This will trigger the DZMx to send an A.R.M. cancellation request message to the tracking server. The DZMx will show **A.R.M. Cancelling** on the status line of the display
- When the DZMx receives and acknowledgment from the tracking server, **A.R.M.** mode is considered terminated and the status display will show **A.R.M. Terminated** for a few seconds before returning to displaying the tracking status.

If A.R.M. has been activated for a flight, it is essential to terminate A.R.M. at the end of the flight, otherwise your tracking system will send overdue alerts. If A.R.M. has not been terminated, beeps will sound in your headset on landing to remind you.

12 Display Setup

12.1 GPS display options

The GPS information shown in the top line of the DZMx display can be varied if desired. Available options are:

- Off: no information shown
- dddmm.mmmm: the aircraft's position is shown in degrees and minutes (to 4 decimal points)
- ddmmss: the aircraft's position is shown in degrees, minutes and seconds
- Speed and Heading: the aircraft's speed and heading is shown in knots and degrees relative to true north (rather than magnetic north)
- Clock: the current time and date is shown.

To set the GPS display:

- Go to MENU>Display Setup Menu>GPS Display Options
- Press **ENTER** to select and use **UP** or **DOWN** to the required GPS display option
- Press **ENTER** to save the setting or **BACK** to abort and return to the Display Setup Menu

12.2 Adjusting DZMx backlighting

The DZMx and DZMx Remote Head have a backlit keypad and LCD display. Backlight levels are adjusted separately for the DZMx and remote head.

The DZMx currently provides for two backlight levels, Day and Night. Day backlight is set at maximum brightness on both keypad and display. Night backlight can be adjusted separately for the keypad and LCD display.

12.2.1 Changing between Day and Night settings

On the DZMx or the remote head:

- Press and hold the * key on the remote head for 1.5 seconds, then release
- Scroll to Backlight Mode
- Use **RIGHT** and **LEFT** to change the setting, then press **END** to save.

12.2.2 Changing backlight levels

Backlight settings can be adjusted separately for the keypad and LCD display.

To configure backlight settings on the DZMx or a remote head:

- Press and hold the * key on the remote head for 1.5 seconds, then release
- Select the **Day** or **Night** setting as above
- Scroll down to Display Brightness or Keypad Brightness
- Use **RIGHT** and **LEFT** to change the setting, then press **END** to save the setting and exit the menu.

13 Using the DZMx diagnostics menu

The Diagnostics menu provides detailed information on your current system configuration and software version, as well as diagnostic information for transceivers and other components installed in your particular DZMx.

14 Warranty and contact details

14.1 Limited warranty for your Flightcell DZMx

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

Your DZMx is warranted for two years 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 DZMx 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 Flightcell DZMx Installation and Configuration 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 complete a Returned Materials Authorization form on <http://www.flightcell.com/support.aspx> or contact Flightcell International at the address below.

14.2 Flightcell International contact details

Flightcell International Limited

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Email info@flightcell.com

Website <http://www.flightcell.com>

15 Version history

Version	Date	Author	Change note number	Description
V 1.0	5 th August 2013	J Mace	FCN506	First draft of manual
V 2.0	19 th November 2013	J Mace	FCN0554	Redrafted for firmware releases 0.3.08 and 0.3.09
V2.1	22 nd November 2013	J Mace	FCN0556	Updated for firmware release 0.3.10
V4.0	19 December 2013	J Mace	FCN0563	Updated for firmware releases 0.4.2 to 0.4.5
V6.0	28 February 2014	J Mace	FCN0586	Updated for firmware release 1.1.1. Instructions for use of 3G data service.
V7.0	24 June 2014	J Mace	FCN0612	Updated for firmware release 1.3.1 Instructions for using <ul style="list-style-type: none">• DZMx messaging capability• DTMF (touch-tone) dialling• Last number redialling
V9.0	3 March 2015	H Twissell J Mace	FCN0664	Comprehensive revision to bring in line with current firmware. Changed document version to match firmware version. Last digit to reflect document modifications
V8.0	11 November 2014	J Mace	FCN0635	Updated lighting configuration on DZMx and remote heads Implementation of Automated Rescue Monitoring (A.R.M.) Implemented support for a cabin phone.
V9.1	11 March 2015	H Twissell J Mace	FCN0666	Corrected cabin phone description. Corrected menu drawings. Reformatted text and headings to match previous version. Reinserted A.R.M. section