

## DZMx & DZMx Plus Operator Manual

DZMx Product Revision 7.0, DZMx Plus Product Revision 4.0

Firmware Version 4.11.0



# Section 1: Revisions & Approvals

Revision	Effective Date	Approved By	Reasons for Change
1.0	04 Aug 2021	James Mace	DZMx & DZMx Plus Operator Manual re-issued with a new document number 117-00009 as per SOP-75 Design Configuration Management. The previous versions of this manual MAN_DZ4_002 with revisions 1.0 to 23.0 are still available on request.  DZMx Firmware Release 4.8.0 for DZP_04 Rev 5.x and 4.0, and DZP_07 Rev 1.3 and 2.0; and Firmware Release 3.8.0 for DZP_04 Rev 3.0
1.1	16 Nov 2021	James Mace	Reference to DZP_04 Flightcell DZMx Rev 6.0 release. No other changes to manual
1.2	25 Feb 2022	James Mace	Manual released for DZMx Firmware Release 4.8.1 for DZP_04 Rev 6.1 and DZP_07 Rev 2.0, and Firmware Release 3.8.1 for DZP_04 Rev 3.0. Minor editing to manual.
1.3	31 Mar 2022	James Mace	Manual released for DZMx Firmware Release 4.8.2 DZP_04 Rev 4.0, 5.0, and 6.x and Firmware Release 3.8.2 for DZP_04 Rev 3.0.
1.4	20 June 2022	James Mace	Manual released for DZMx Firmware Release 4.9.0 DZP_04 Rev 4.0, 5.0, and 6.x and Firmware Release 3.9.0 for DZP_04 Rev 3.0.
1.5	22 Aug 2022	James Mace	DZP_07 updated to 2.1 MDL release
1.6	6 Oct 2022	James Mace	Manual released for DZMx Firmware Release 4.9.1 DZP_04 Rev 4.0, 5.0, and 6.x and Firmware Release 3.9.1 for DZP_04 Rev 3.0
1.7	11 Oct 2022	Brodie Hemmings-Sykes	Minor correction to firmware revision
1.8	15 March 2023	James Mace	Manual released for DZMx Firmware Release 4.10.0 1 DZP_04 Rev 4.0, 5.0, and 6.x and DZP_07 Rev 2.1
1.9	22 May 2023	Brodie Hemmings-Sykes	Updated Product Revision of DZP_07
1.10	13 October 2023	Hannes Booyse	Updated Product Revision of DZP_07
1.11	25 January 2024	James Mace	Manual released for DZMx Firmware Release 4.11.0

Except as expressly provided below, no part of this document may be reproduced, copied, transmitted, disseminated, downloaded, or stored in any storage medium, for any purpose other than that which Flightcell International has provided this document for. Any electronic or printed copy of this document or any revision must contain the complete text of this copyright notice. Any unauthorised commercial distribution of this document or any revision hereto is strictly prohibited. Information in this document is subject to change. Document users are responsible for ensuring printed copies are valid prior to use.

© Copyright 2024 Flightcell International Ltd - All Rights Reserved

# CONTENTS

<b>SECTION 1: REVISIONS &amp; APPROVALS</b> .....	<b>2</b>
<b>SECTION 2: INTRODUCTION</b> .....	<b>5</b>
APPLICABILITY OF THIS MANUAL .....	5
OVERVIEW OF DZMX AND DZMX PLUS FUNCTIONS .....	5
<b>SECTION 3: DZMX CONNECT</b> .....	<b>7</b>
PERMISSION LEVELS .....	7
USING DZMX CONNECT .....	8
<b>SECTION 4: PHYSICAL INTERFACES</b> .....	<b>9</b>
DZMX KEYPAD REFERENCES .....	9
DZMX DISPLAY .....	10
UNDERSTANDING THE MAIN SCREEN .....	11
DZMX MENUS .....	12
STATUS MESSAGES .....	13
BACKLIGHTING .....	15
<b>SECTION 5: PHONE CALLS</b> .....	<b>16</b>
INITIATING A CALL .....	16
ANSWERING A CALL .....	16
EXTRA CALL FEATURES .....	17
AUDIO SETTINGS .....	18
PRIVACY .....	18
<b>SECTION 6: PUSH-TO-TALK (PTT) CALLING</b> .....	<b>19</b>
SWITCHING TO IRPTT MODE .....	19
JOINING A TALK GROUP .....	19
INITIATING AN IRPTT TRANSMISSION .....	19
<b>SECTION 7: MESSAGING</b> .....	<b>20</b>
INCOMING MESSAGES .....	20
OUTGOING MESSAGES .....	21
REPLYING TO A MESSAGE .....	21
CANCELLING UNSENT MESSAGES .....	21
<b>SECTION 8: PHONE BOOK</b> .....	<b>22</b>
ADDING A NEW CONTACT .....	22
EDITING AN EXISTING CONTACT .....	22
DELETING AN EXISTING CONTACT .....	22
<b>SECTION 9: DATA</b> .....	<b>23</b>
DATA CONNECTIONS .....	23
<b>SECTION 10: AIRCRAFT TRACKING</b> .....	<b>24</b>
ENABLING, SUSPENDING OR DISABLING TRACKING .....	24
PERIODIC POSITION REPORTS .....	24
GEOFENCE SUSPEND MODE .....	25
MANUAL POSITION REPORTS .....	25
<b>SECTION 11: WIFI</b> .....	<b>28</b>
WI-FI SETUP & OPERATION .....	28
USING DZMX CONNECT .....	28

<b>SECTION 12: BLUETOOTH™</b> .....	<b>29</b>
BLUETOOTH SETUP & OPERATION .....	29
PAIRING .....	29
MEDIA STREAMING .....	30
HANDS FREE CALLING .....	30
BLUETOOTH PHONEBOOK .....	30
<b>SECTION 13: FEATURES</b> .....	<b>32</b>
AUTOMATED RESCUE MONITORING (A.R.M.) .....	32
EMERGENCY AND DISTRESS MODE .....	33
ALERT MODE.....	34
CELLULAR FLIGHTMODE .....	34
FORMS.....	35
RECORDING AND TRANSMITTING MAINTENANCE DATA .....	37
SHORT BURST DATA (SBD) DOCUMENT TRANSFER .....	38
FLIGHTCELL REMOTE ASSISTANCE.....	39
<b>SECTION 14: DOCUMENTATION AND INFORMATION.....</b>	<b>40</b>
CONTACTDETAILS .....	40
<b>SECTION 15: ABBREVIATIONS</b> .....	<b>41</b>

## Section 2: Introduction

Thank you for selecting and purchasing a quality Flightcell product.

This manual has been prepared to guide you on operation of your DZP\_04 Flightcell DZMx and DZP\_07 Flightcell DZMx Plus.

For the DZP\_04 Flightcell DZMx refer to the 117-00008 Rev 3.7 DZMx Installation Manual for initial set up and configuration information, and for the DZP\_07 Flightcell DZMx Plus refer to 117-00010 Rev 1.6 DZMx Plus Installation Manual

References to “the DZMx” refer to both the DZMx and the DZMx Plus, unless otherwise stated.

**Note:** Previous revisions of this manual have the document number MAN\_DZ4\_002 and are still available on request.

### Applicability of this manual

This manual applies to DZP\_04 Flightcell DZMx revision 7.0 with firmware version 4.11.0, and DZP\_07 Flightcell DZMx Plus Rev 4.0 with firmware 4.11.0.

It also applies to earlier revisions of the DZMx and DZMx Plus with firmware upgraded to 4.11.0.

### Overview of DZMx and DZMx Plus Functions

The Flightcell DZMx and DZMx Plus provide voice and data communications and aircraft tracking. They are powerful communication systems that use the Iridium satellite and/or terrestrial cellular networks to provide the following:

#### Voice Calling and Data

- » A global phone service enabling calls to virtually any phone in the world.
- » An interface to the aircraft intercom system connecting crew audio to the available phone networks.
- » Call dialling from the keypad, smart device or computer using DZMx Connect. A phone directory or keypad speed dial keys are used to retrieve and call stored phone numbers.
- » Calls from third parties to the aircraft via satellite or cell phone.
- » Data connections from connected devices over satellite and cellular networks providing access to the internet and emails (cellular networks only).
- » Access to data via the ethernet port or wirelessly via WiFi.

## **Two-Way Messaging**

- » Send and receive SMS text messages from satellite or cellular networks.
- » Send SMS/SBD messages to the DZMx over the Iridium network using an Iridium web application or any email program.
- » Send DZMx pre-recorded messages to another satellite phone, cell phone, or tracking service provider.
- » Compose and read SMS messages using DZMx Connect.

## **Aircraft Tracking**

The DZMx automatically sends periodic position reports to tracking service providers. Manual positions may be configured and triggered by the user to send position reports to mark specific events such as:

- » Start-up
- » Engine start and stop
- » Take-off and landing
- » Course change
- » Manual position
- » Emergency (mayday)
- » Automated Rescue Monitoring (A.R.M.)
- » Firefighting events
- » Other special purpose events.

## Section 3: DZMx Connect

DZMx Connect is an application that can be used to configure and operate the DZMx. DZMx Connect is available as an app for Apple devices, or as a browser utility on Android and Windows devices.

It is recommended that DZMx Connect is used instead of the DZMx control head to configure and change settings as it is faster and provides a more intuitive interface.

There are three ways to configure the DZMx using DZMx Connect:

### Hardwired Computer Connection

- » Connect a computer to the DZMx Ethernet port.
- » Open a web browser, type in **192.168.4.1** in the address bar and press **ENTER**. The DZMx Connect home screen will open in the browser.

### Wireless Laptop Connection

- » Power up the DZMx and wait for it to fully initialise.
- » Check that Wi-Fi is enabled.
- » Look for a Wi-Fi icon at the top right-hand side of the DZMx display. If the Wi-Fi icon is not present, Wi-Fi can be enabled in one of three ways:
  - » Press and hold the keypad **MODE** key until “**Enabling WiFi**” is displayed on the DZMx screen. Wi-Fi can also be disabled with a subsequent press of the **MODE** key.
  - » Using the DZMx keypad, Go to *MENU > Hardware Config > Wireless and Networks > Wi-Fi Enable* and select **Yes**.
  - » Connect a PC or laptop to the DZMx via an Ethernet cable. Type **192.168.4.1** into a web browser and Go to *Connectivity > Wi-Fi* and toggle the switch to **ON**.
- » Open a web browser on the laptop and type in **192.168.2.1** then press **ENTER**. The home screen of DZMx Connect will open within the browser.

### Smart Device Connection

- » Connect the smart device to DZMx Wi-Fi:
  - » Default SSID: *DZMx WiFi*
  - » Default password: *flightcell* (all lower case)
- » Open DZMx Connect. The initial screen is a discovery screen and the DZMx should be discovered automatically. The **DISCOVER** key is only required if the process needs to be repeated.
- » Click on the discovered picture of the DZMx unit to open the navigation and settings options.

## Permission Levels

Permission levels allow users to have control over how the DZMx is configured. Three levels or roles are available within DZMx Connect.

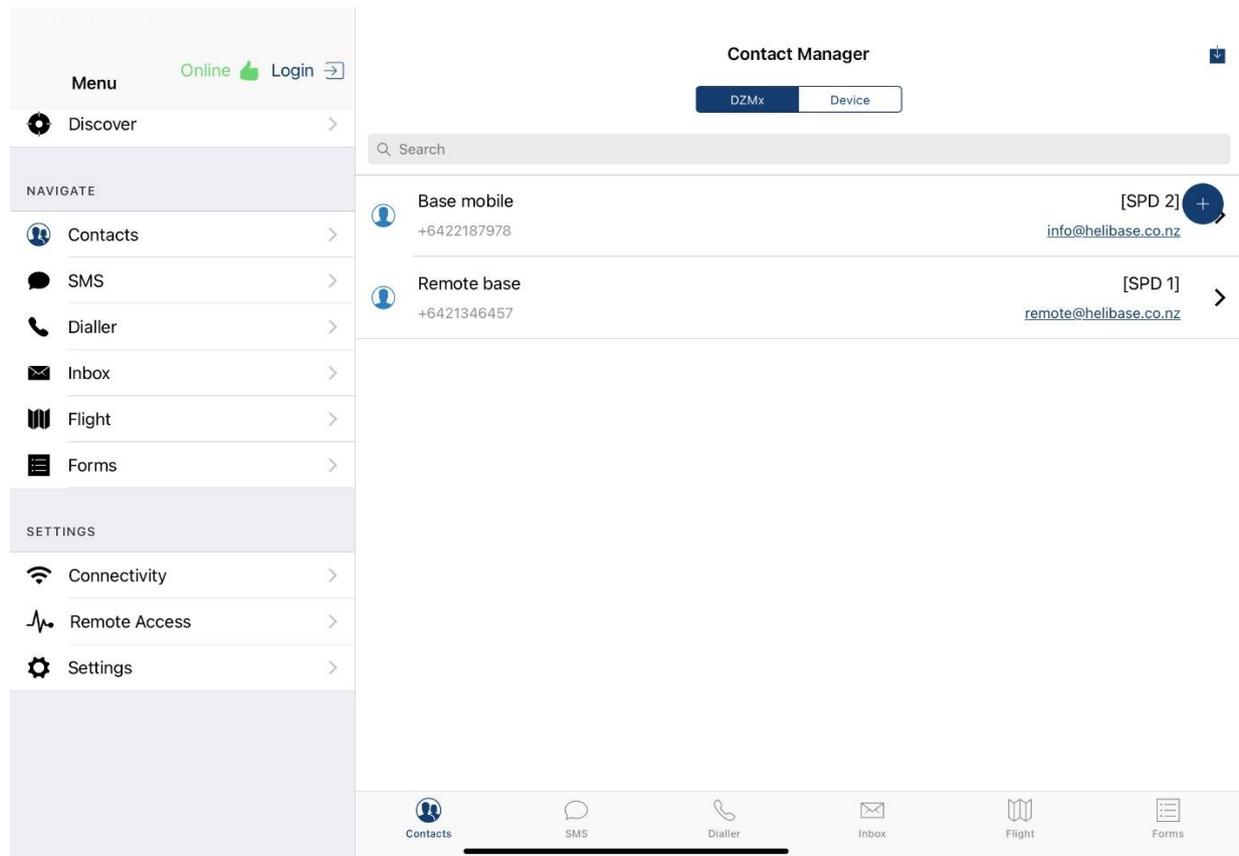
On power up, only the limited range of operational settings that may need to be adjusted by an operator will be available on the menus.

Additional configurations can only be accessed by an Installer and an Administrator and are password protected. Details are provided in the DZMx or DZMx Plus Installation Manuals.

## Using DZMx Connect

[Click here](#) to watch a short video explaining DZMx Connect capabilities.

Following is the DZMx Connect home screen.



- » **Contacts** enables contacts to be added or edited on the DZMx and contact groups to be edited. On a smart device, contacts on the device can also be accessed.
- » **SMS** allows SMS messages to be sent from the DZMx, or incoming messages to be read. Messages are organised in message strings.
- » **Dialler** allows calls to be dialled on the DZMx Iridium or cellular connection, to phone numbers in the DZMx phone directory, or (on smart devices) the device phone directory.
- » **Inbox** provides for messages to be sent or received using the DZMx SBD Inbox feature
- » **Flight** provides a moving map showing aircraft position (when a cellular data connection is available), and provides for
  - » Activation of the DZMx **MARK, A.R.M.** and **EMER** keys
  - » Access to the DZMx flight timers
  - » Access to the DZMx Flight Recorder.
- » **Forms** enables DZMx Forms to be added, edited or completed.
- » **Connectivity** enables the DZMx data, Wi-Fi and Bluetooth connections to be managed
- » **Remote Access** provides for Flightcell to provide remote support on the DZMx
- » **Settings** provides for various DZMx settings to be configured.

## Section 4: Physical Interfaces

This section explains the physical interfaces that are available to the user; interfaces such as the keypad, display and menu options.

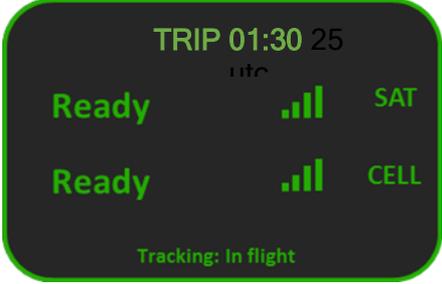
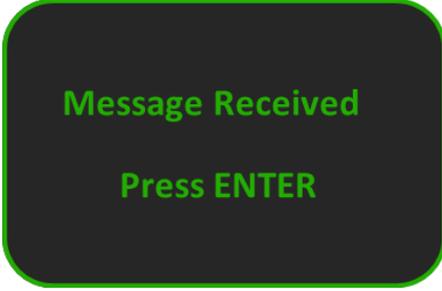
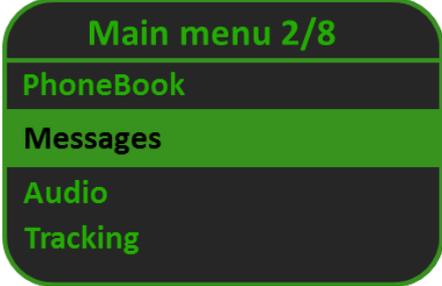
### DZMx Keypad References

Most keys on the DZMx keypad have more than one function. The following table outlines how the DZMx keys are referenced throughout the manual.

Icon	Manual Reference	Icon	Manual Reference
	CALL		5, SPD2
	END		6, RIGHT, SPD3
	A		7, MSG
	B		8, DOWN, DIR
	1, MARK		9, MODE
	2, UP, A.R.M., ALERT		0, +, MENU
	3, EMER		*, BACK
	4, LEFT, SPD1		#, POWER, ENTER,

## DZMx Display

The DZMx Control Head and Remote Head have a backlit LCD display. The LCD can show several different views:

<p><b>The Main Screen</b></p>		<p>After the DZMx has booted and initialised, the display will show the main screen. This shows:</p> <ul style="list-style-type: none"> <li>» Flight, trip, or date/time information (at the top of the screen). This information is configurable.</li> <li>» Phone networks designated for the two soft keys A and B.</li> <li>» Network connection status and strength for the installed modem(s).</li> <li>» Other status messages are displayed at the bottom of the screen.</li> </ul>
<p><b>Pop-up Screens</b></p>		<p>Pop-up screens are used to announce events such as incoming calls, messages, or warnings. Some pop-ups will be accompanied by an audible alert.</p> <p>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 <b>ENTER</b> key.</p>
<p><b>Menu and List Screens</b></p>		<p>Displays available menu options or a list of items. The current selected item will be highlighted. The user can navigate the list using the <b>UP</b> and <b>DOWN</b> key. Select the item by pressing <b>ENTER</b>.</p> <p>Main Menu 2/8. The first number (2) is the index of the current item selected (messages), the second number (8) is the total number of items in the list.</p>

<p><b>Settings Adjustment Screens</b></p>		<p>Displays the current value when adjusting or viewing settings such as audio volume or backlight brightness.</p> <p>The slider bar shows the setting as a percentage of the maximum available value and can be adjusted using the <b>LEFT</b> and <b>RIGHT</b> keys. Changes can be confirmed by using <b>ENTER</b> or aborted by using <b>BACK</b> or <b>END</b>.</p>
---	---	--

## Understanding the Main Screen

During normal operation, the LCD display shows the Main Screen.

One of six options can be displayed on the top line. This can be configured:

- » On DZMx Connect.
  - » Go to *Settings > Preferences > Main Screen Options*.
- » DZMx user interface:
  - » Go to *MENU > Display Setup Menu.> Top Line Options*.

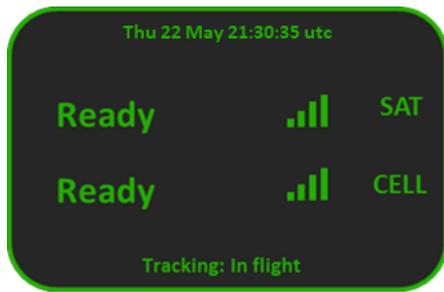
The options are:

- » Off
- » Speed and Heading
- » Clock
- » Total Time Airframe Hours (TTAF)
- » Daily Flight Timer (DFT)
- » Trip

**Note:** No GPS Lock will be displayed on the top line if the DZMx is unable to connect to the GPS network.

The centre of the display shows modem information:

- » Modems installed in each position in the DZMx.
- » Status of each of the installed modems. The status changes, depending on the operation being performed.
- » Signal strength (up to five bars). If there is no connection the symbol  will be displayed



Above the modem 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 of the screen, information for:

- » Tracking status (messages and events)
- » A.R.M status
- » Distress (Emergency) status

## DZMx Menus

The DZMx has an extensive menu system which provides access to a range of functions: settings and diagnostic information e.g.:

- » User level settings
- » Tracking timers
- » Basic audio configuration
- » GPS display options
- » Phone book management

Settings used to configure the DZMx for a specific operation or application are normally hidden from the user. An installer password will be required to access and change settings.

### Navigating the Menus

The keypad is used to access the menu system:

- » Press **MENU**. If the DZMx is on a phone call, press and hold **MENU** to access the menus.
- » Use **UP** and **DOWN** to navigate between the menu options.
- » Use **LEFT** and **RIGHT** to scroll left or right, to increase, decrease or navigate menus.
- » Press **ENTER** to select the highlighted item or to confirm a setting change.
- » Press **BACK** to cancel a setting or to move back a menu level.
- » Press **END** to cancel a setting change or to exit the menu and return to the main screen.

Instructions will be provided throughout the Manual in the format *MENU > Forms > Form Entry*.

The > indicates that you will need to select **ENTER** then scroll to a menu heading using the arrow keys.

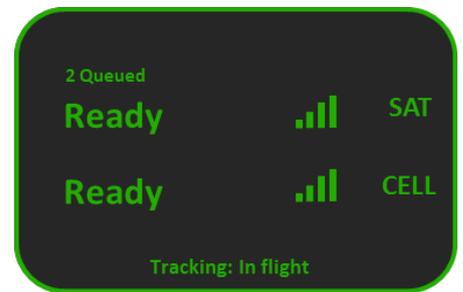
## Status Messages

There are four status message regions on the main display for date & time, the modems, queued messages, and tracking. The modem status lines are used for reporting to the user various messages including network status and call/messaging activity.

### Network Status Messages

The modem status message will change as the DZMx powers up and establishes a connection to the network:

- » **Initialising:** The DZMx is initialising the modem.
- » **Ready:** The modem is powered on, successfully initialised, registered on the network, and is reporting a good signal strength.
- » **Searching:** The modem is searching for a good signal.
- » **Disabled:** Flightmode has been activated. The modem is disabled until Flightmode is deactivated.
- » **Going Online:** The modem is establishing a data connection.
- » **Online:** Modem data connection has been established.



### Error Messages

The modem status lines will show error messages if the DZMx is unable to connect to the network for the following reasons:

- » **SIM Error:** No SIM is inserted, or it is not registered with the network provider.
- » **SIM PIN Required:** The SIM card is locked and requires a PIN.
- » **Not Inserted:** The DZMx cradle is reporting there is no phone in the cradle (external cradles only).
- » **Not Responding:** The modem is not responding to the DZMx. This occurs when the modem is not configured correctly.

### Calling Status

While making a phone call, the modem status lines show which device is currently being used for the call, who is being called, or who is calling. If the other party is listed in the DZMx's phone book their name will be displayed on the information line.

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

- » **Calling:** The DZMx has dialled the number but a connection has not yet been established.
- » **On Call:** The DZMx has established a connection and the other party has accepted the call.
- » **Incoming Call:** flashed 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.
- » **Call Queued:** The DZMx has queued the call and will start the call when the modem is next free.

- » **Disconnecting:** The phone call has been terminated at either end of the call or the modem loses the connection.

## Messaging Status

The modem status messages will briefly show the status of the transmitted messages:

- » **Receiving SMS:** An SMS is being received.
- » **Sending Data:** An SMS or SBD message is being transmitted.
- » **SMS Failed! or SBD Failed!** Transmission has failed, usually because of a low signal. The DZMx will attempt to resend the message.
- » **SMS Sent or SBD Sent:** An SMS or SBD message has been successfully transmitted.

The line above the messaging status will show the number of messages in the message queue that have not been transmitted.

## Data Status

The cell modem status messages will show the status of the data connections:

- » **No Service:** Not yet connected to the network.
- » **Ready:** The modem is connected to the network but does not yet have a data connection.
- » **Going Online:** The modem is connecting to the network for data.
- » **Online:** The modem has a data connection to the network.

## 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 queue 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 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: In Flight** is displayed when aircraft is tracking and currently in a flight.
- » **Tracking: Take off** 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 DZMx detects the flight speed has dropped below the hover speed threshold.

- » **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: xx NM** is displayed if Geofence Suspend mode has been activated. xx is the distance, in nautical miles (NM), 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 (refer to the Geofence Suspend Mode section for details on how to configure the Geofence application settings).

### Push to Talk (PTT) Status

If the DZMx is configured to use the Iridium PTT service, the modem status messages will show the status of the PTT modem:

- » **PTT: Initialising** is displayed when the modem is switching from normal satellite mode to PTT mode.
- » **PTT: Registering** is displayed when modem is registering with the network.
- » **PTT: (no tg)** is displayed when the user has not specified a Talk Group for the modem
- » **PTT. Requesting** is displayed when the user is requesting to talk.
- » **PTT: RX** is displayed when someone else is talking on the current Talk Group.
- » **PTT: TX** is displayed when the DZMx can talk on the current Talk Group.
- » **PTT: "Talkgroup Name"** is displayed when "Talkgroup Name" is the selected Talk Group and has been successfully joined.

Additional status messages can also be generated when using the Emergency and Distress Mode, or Automated Rescue Monitoring (A.R.M.).

### Backlighting

The DZMx and DZMx Remote Head have a backlit keypad and LCD display.

The display and keypad backlighting can be adjusted independently for both night and day levels from either:

- » The user interface using key presses.
- » An analogue discrete input for control externally by a cockpit dimmer or mission computer.

Where one or more remote heads are installed, the control head and remote head may be controlled independently, or the inputs may be coupled together for control by a single dimmer control.

Refer to the DZMx or DZMx Plus Installation Manual for details of how to configure variable lighting using a dimmer control.

### Backlight Control from the User Interface

- » To access the lighting settings press the **\*** key for 2 seconds then release.
- » Select the backlight mode (**Day** or **Night**) by highlighting **Backlight Mode** and using **LEFT** or **RIGHT** .
- » Scroll to **Display Brightness** and use **LEFT** or **RIGHT** to change the brightness level.
- » Scroll to **Keypad Brightness** and use **LEFT** or **RIGHT** to change the brightness level
- » Changes are stored and take effect immediately.
- » To exit the menu press **BACK** or **END**.

## Section 5: Phone Calls

This section describes the various options available for making calls from the DZMx or from the Remote Head. Calls using DZMx Connect are not described in this section.

The DZMx provides global call coverage enabling users to make calls to landlines, cell phones and satellite phones over the Iridium satellite and cellular networks.

### Initiating a Call

#### Dialling a Phone Number

- » Select the modem to be used for the call by pressing the key **A** or **B**. The **Enter Phone Number** screen will appear.
- » Enter the number using the **0** to **9** keys. For international calls requiring the prefix **+**, press and hold the **0** key.
- » Key in the country code, area code and number.
- » Press **CALL** or **ENTER** to initiate the call.
- » Press **END** to terminate the call.

#### Calling a Number in the Phone Book

The DZMx has a phonebook containing up to 50 numbers.

- » Press **DIR** to display the phone book.
- » Scroll through the phone book using the **UP** and **DOWN** arrow keys.
- » Press the **A** or **B** key to select the modem and press **CALL**.
- » Press **END** to terminate the call.

#### Calling using Speed Dial

The speed dial keys are automatically linked to the first three numbers in the phonebook.

- » Press the speed dial key for the required number. **SPD1**, **SPD2** or **SPD3**. The contact's name and number will be displayed.
- » Press the **A** or **B** key to select the modem and press **CALL**.
- » Press **END** to terminate the call.

#### Redialling the last number called

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

#### Calling the Sender of a Text Message

- » Open the message so that it displays on the screen.
- » Press **A** or **B** to select the modem and initiate the call.

### Answering a Call

When an incoming call is detected an **"Incoming Call"** pop-up will flash on the main screen.

- » Press **CALL** to answer the call.

- » Press **END** to reject or end the call.

If caller ID is supported by the network, the caller's phone number, or name, if in the phone book, will be displayed.

## Extra Call Features

### Call Forwarding

Incoming cellular voice calls can be redirected to a telephone number when the aircraft is powered down or when there is no cellular network connection.

To configure and enable call forwarding:

- » Go to *MENU > Call Forwarding > Enter Number* and manually enter the telephone number, press **ENTER**. Select **END** to return to the main screen.
- » Information will be sent to the cellular service provider and **"Updating Call Forward Information Over Cell Network"** will be displayed temporarily, followed by **"Call Forward Number Updated"**.
- » Alternatively, go to *MENU > Call Forwarding > Select from Phone Book* and select an existing contact number. Select **END** to return to the main screen.

To enable or disable call forwarding, go to *MENU > Call forwarding > Call Forward Enable*.

**"Updating Call Forward Information Over Cell Network"** will be displayed temporarily.

**Note:** A cellular connection must be available when configuring and enabling call forwarding.

Dual cellular modem configurations have the option to configure a call forwarding number for each modem.

Using DZMx Connect Navigate to: *Settings > Modem > Modem1* and/or *Modem2* and enable call forwarding.

### Touch Tone Dialling During a Call

When calling through a switchboard or call centre, you may be asked to press various keys. This is called touch-tone or Dual Tone Multiple-Frequency dialling. The DZMx provides touch tone dialling when on a call. Press the **0** to **9**, **\*** or **#** keys when prompted during a call.

### Simultaneous Calls

If more than one modem is installed, two calls can be made simultaneously. Making and receiving the first call works the same way as described above. However, to make the second call, use a long press on the speed dial, phonebook, or menu keys.

**Note:** While on two calls, both parties can hear you, but they are unable to hear each other.

To hang up an individual call:

- » Press **END**, a pop-up will display "Press A or B to hang up a call".
- » Press **A** or **B** to hang up.

### Using Other DZMx Features During a Call

To use the **MARK**, **A.R.M.**, **EMER**, **MSG**, or **MENU** keys during a call, press and hold the applicable key for 2 seconds to override DTMF dialling on that key.

To adjust the audio while on a call, press and hold either the **LEFT** or **RIGHT** key to display the **Ear audio** setting adjustment screen.

### Missed Calls

If a call is missed, a pop-up will flash on the main screen indicating a missed call. A missed call message will be added to the received message list with details on the caller and which modem the caller dialled. The missed call can be returned by:

- » Opening the message so that it displays on the screen.
- » Press the **A** or **B** key to select the modem and initiate the call.

### Audio Settings

Only the level of audio from the DZMx to the ICS (ear volume) can be adjusted by the user. An installer can access additional audio settings using the keypad or DZMx Connect e.g. keypad beep volume, mic volume, warning tone volume.

If the audio settings are set up correctly, the user will only need to adjust the ear volume for changes in the following:

- » Incoming call volume levels.
- » Switching headsets.
- » Ambient noise conditions.
- » Adjusting DZMx Audio Levels

To adjust incoming audio level:

- » Press *MENU* > *Audio* > *ICS1* > *Ear* and the DZMx will display a volume bar.
- » Use the **LEFT** and **RIGHT** or **UP** and **DOWN** arrow keys to adjust the audio level.
- » Press **ENTER** to confirm the setting change and return the audio menu.
- » Press **END** to return to the main screen.
- » If ICS2 is enabled; Repeat for *Audio* > *ICS2* > *Ear*.

**Note:** As a short-cut from the main screen, press and hold either **LEFT** or **RIGHT** while on a call to display the setting adjustment screen.

### Privacy

Users of an aircraft may want to clear call or message data at the end of a flight.

History can be cleared either manually or automatically.

The privacy setting is available under *MENU* > *Hardware Config* > *Privacy Controls*. If this option is not available, it may not have been configured by the installer. Please refer to the Installation Manual for configuration information or contact your installer.

The installer can also configure the DZMx to automatically clear the call log history whenever the unit powers up, so that manual intervention is not required.

## Section 6: Push-to-Talk (PTT) Calling

The DZMx and DZMx Plus allows users to use Iridium's PTT (IrPTT) service, providing global one-to-many calling. The DZMx and DZMx Plus can be switched between phone mode and IrPTT mode as required.

**Note:** To use Iridium PTT, you must subscribe to the IrTT service through your Iridium Service Provider, and the DZMx must have the IrPTT application licence activated.

Refer to the DZMx or DZMx Plus Installation Manual to configure IrPTT and initialise IrPTT automatically at start-up.

### Switching to IrPTT Mode

- » Press and hold the **A** or **B** key allocated to the Iridium modem.
- » **PTT Initialising** will appear on the display, then **PTT: Registering**.
- » When registered, the current Talk Group will be displayed.

To switch back to phone mode, press and hold the **A** or **B** key. The Iridium modem will reset.

### Joining a Talk Group

An IrPTT Talk Group is a group of IrPTT devices. Your device will be a member of one or more IrPTT Talk Groups. You can only be connected to one Talk Group at a time.

Normally, one Talk Group will be set as the default Talk Group on startup.

If a Talk Group is not set on startup, to change the Talk Group, or to change the default Talk Group:

- » Press *MENU > PTT Talk Groups*, scroll to the required Talk Group,
- » Press **CALL** to make it the Default Talk Group
- » Press **ENTER** to join.

If the IrPTT talkgroups are changed by your Iridium Service Provider, it is recommended to update talkgroups by going to *MENU > PTT Talk Groups > Refresh Talk Groups*.

### Initiating an IrPTT transmission

A IrPTT transmission can be started if the selected Talk Group is active and has no other participants currently talking. The maximum talk time is 40 seconds.

A call can be initiated using a PTT switch, or using the DZMx keypad.

#### Calling with a PTT switch

Depending on how the aircraft audio system is configured, the PTT switch may be wired to the pilots' PTT switch, or to a dedicated IrPTT switch.

To make a call:

- » Press and hold the PTT switch to start transmitting.
- » Release the key to stop transmitting.

#### IrPTT Calling with the Keypad

If a PTT switch is not provided for IrPTT, the DZMx keypad may be used:

- » Press and release **CALL** to start transmitting.
- » Press and release **CALL** to stop transmitting.

## Section 7: Messaging

Text messages can be sent and received over cellular and satellite networks using any of the installed and connected modems.

The DZMx provides a 50-entry library of pre-configured quick messages that can be sent using the keypad. SMS messages and quick messages can also be sent using DZMx Connect.

**Note:** Messages in the DZMx Quick Message Library can only be entered or edited using DZMx Connect and when logged in as an Installer.

### Incoming Messages

#### Viewing an Incoming Message

When a message is received a pop-up window displays “**Message received**”.

- » Press **CALL** or **ENTER**.
- » Scroll through the message using the **UP** and **DOWN** arrow keys.

The bottom line of the message shows the sender, the time the message was sent and the modem the call originated from.

#### Viewing Messages in the Inbox

Received messages are stored in the inbox. The inbox holds 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 the **MSG** key until the message list is displayed or alternatively press *MENU > Messages > Received Messages*.
- » The received message list will show the first few words of the received message; use the **UP** and **DOWN** keys to scroll to the message.
- » Press **ENTER** to view the entire message, then use the **UP** and **DOWN** keys 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.

The SMS section on the DZMx Connect home page shows SMS message threads and enables messages to be composed or quick messages to be sent.

#### Missed Call Notifications

Missed calls notifications will be added to the received message list. This message will contain details on the missed call, including the call date, caller ID and the modem the call originated from. A message can be sent to the caller, see [Replying to a Message](#).

#### Sending Messages to the DZMx

SMS text messages can be sent to the DZMx’s cell or satellite phone number. Messages can also be sent via Iridium's online services:

##### *By Email over Iridium*

Address the email to 8816xxxxxxx@msg.iridium.com (where 8816xxxxxx is the Iridium phone number for the DZMx).

##### *From the Iridium Website*

- » Go to the Iridium website: <http://messaging.iridium.com>.

- » Enter the satellite phone number of the DZMx or DZMx Plus.
- » Enter the reply email.
- » Fill in the message.
- » Click **Send Message**.

## Outgoing Messages

### Using a Number from the DZMx Phonebook.

- » Press the **MSG** key, scroll to the required message and press **ENTER** to open the message.
- » Press the speed dial keys **SPD1**, **SPD2** or **SPD3** or press **DIR** and scroll to the number, then press **ENTER**.
- » Press **A** or **B** to send via the selected network.

### Using a Number NOT in the DZMx 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 **ENTER** to send the message. For international calls requiring the dialling prefix "+" press and hold "0".

## Replying to a Message

- » Open the received message, then press the **MSG** key to open the Quick Message Library.
- » Scroll to the message to be sent and press **A** or **B** to send the message via the selected network.

## Cancelling Unsent Messages

To remove all unsent messages (including position reports) from the outgoing message tracking and text messages queue:

- » Press *MENU > Delete Queued Messages*.
- » A pop-up message will be displayed showing '**Message Queue Deleted**'.

## Section 8: Phone Book

Phone book entries can be added, edited, or deleted using the keypad or DZMx Connect. It is recommended that DZMx Connect is used for making multiple changes to the phone book.

**Note:** The phonebook stores a maximum of 50 contacts.

### Adding a New Contact

- » Press *MENU* > *PhoneBook* > *Add/Edit*.
- » Scroll down to a blank contact field 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 the **UP** and **DOWN** keys to scroll through the letters of the alphabet to select the required letter, press **RIGHT** to move to the next character or **BACK** to delete the last digit.
- » When the name has been entered, press **ENTER** to save the new contact. A pop-up message **Phone Book Entry Modified** will be displayed.

### Editing an Existing Contact

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

### Deleting an Existing Contact

Contacts can only be deleted using DZMx Connect.

## Section 9: Data

If the DZMx has a cellular modem, this provides a high speed data connection to the internet. This can be accessed using the DZMx Ethernet port or DZMx Wi-Fi.

If the DZMx has an Iridium Certus modem connected (the Guardian G6 or G6s), then an internet Certus 100 data connection is provided over the Iridium network. This is much slower than the cellular data connection, so its uses are limited to applications which do not require large bandwidth.

The DZMx has advanced routing system. If more than one data-capable modem is installed (cellular and/of Certus), the DZMx will use the connections in the order configured by your system administrator. Typically data will be connected to the cell modem first, falling back to Certus if cell is not available.

### Data connections

When the DZMx is successfully connected to a data service, the DZMx status line for the active route will display **"Online"** and the  icon.

## Section 10: Aircraft Tracking

Position reports can be sent to a tracking system using the Iridium and/or cellular network. Several configurable tracking timers produce periodic position reports, while various events generate automatic event reports, e.g. take-off or landing report. The user can also manually trigger a position report using **MARK**.

Changes in tracking status are displayed on the bottom line of the DZMx main screen.

For periodic tracking to work correctly, the DZMx must have:

- » A valid GPS lock.
- » Tracking enabled.
- » Be correctly configured according to the tracking provider's specifications. Refer to the DZMx Installation Manual for details on how to configure tracking.

**Note:** The tracking menu may be disabled when the DZMx is configured, to prevent unauthorised changes to tracking settings.

### Enabling, Suspending or Disabling Tracking

Tracking may be suspended or disabled.

Go to *MENU > Tracking > Tracking Mode* to:

- » Enable tracking
- » Disable tracking: tracking will remain off until re-enabled
- » Suspend tracking - tracking will be suspended for the current flight and will recommence when the DZMx is next started up.

### Periodic Position Reports

Periodic position reports can be sent in the following flight states:

- » In flight
- » Course change - when the aircraft is changing course
- » Hover (helicopter only)
- » On ground
- » Taxiing.

### Periodic and HD Tracking Timers

The time delay between sending tracking reports can be varied to suit operational requirements.

- » **Periodic Timers:** Configurable to be anywhere between 1 and 60 minutes.
- » **HD Tracking:** 15-seconds between position reports.

**Note:** HD tracking requires Tracking over IP (cell data) to be enabled. Please refer to the Installation Manual for configuration

To change periodic timer settings:

- » Go to *MENU > Tracking > Periodic Events*. Select the timer to be changed
- » Use the **LEFT**, **RIGHT** or **UP** and **DOWN** keys to adjust the time or heading variation.

For the heading timer, the course change (in degrees) that triggers the course change timer can be set by going to *MENU > Tracking > Periodic Events > Heading Variation*.

## Geofence Suspend Mode

Geofence Suspend function allows operators to suspend tracking while the aircraft remains within a specified geographical radius.

Moving outside the geofence perimeter will cause the geofence mode to be cancelled and normal tracking to resume. Whilst within the perimeter, periodic tracking is suspended depending on how the geofence suspend mode is configured. Triggered events such as a take-off and landing can also be suspended.

Geofence suspend mode can be activated, re-centred and cancelled via a single key press:

- » Press and hold the **MENU** key to activate.
- » The DZMx screen will momentarily display that tracking is now suspended and will also state the suspend radius. The geofence radius will be centred at your current position and the suspend radius set will be set to the Geofence Radius setting.
- » When inside the geofence perimeter, press and hold the **MENU** key to access the Geofence Options menu to re-centre or to deactivate geofence suspend mode.

Details on activation and configuration of Geofence Suspend mode are provided in the DZMx Installation Manual.

## Manual Position Reports

Manual position reports may be sent to mark a point of interest or to send specific information. The aircraft position and time are taken when **MARK** is pressed.

Several manual report options are available, as follows:

- » Short key press - press and release **MARK**; one of the following options will be configured:
  - » **Position Only** - a position report is sent to the tracking provider
  - » **Mission Mark** - a position report is sent to the tracking provider with a colour coded mission status and a numeric code; follow the prompts and press one of the four coloured keys (**CALL**, **A**, **B**, **END**) and enter a numeric code; your organisation will advise the meaning of the colour and numeric codes
  - » **Mark and text contacts** - send a position and message (from the DZMx Plus Quick Message Library) to one or more SMS recipients and the tracking service. This prompts the user to select one of the first 10 Quick Messages to send to the tracking service, along with the current position, and to also send a text message to any contacts in the phonebook that have also been subscribed to be notified of that particular message. Each of the first 10 Quick Messages are assigned an index 1-10, in the order as they appear in the Quick Message list page on DZMx Connect or in the Pick From List page on the DZMx. When prompted, select the appropriate index of the Quick Message required.
  - » **Text Contact List Only** - a message is sent by SMS to selected contacts; follow the prompt and enter a number corresponding to a specific message in the DZMx Quick Message Library (see below for details of how to configure the message recipients for this option).

- » Long key press - press and hold **MARK**; one of the following options will be configured:
  - » **Position Only** - a position report is sent
  - » **Position with Text Message** - a position report is sent with a message attached; select a message from the list shown.

The option allocated to the **MARK** key must be configured by an Installer on DZMx Connect, and this feature must be supported by the tracking provider.

### Configuring message recipients

The recipients for each message can be designated using DZMx Connect.

- » In DZMx Connect, go to *Contacts*
- » For the selected contact, swipe the arrow to the left and click *Edit*
- » Click *Quick Message Groups*
- » Tick the index numbers of the messages you want to be sent to this contact.
- » Repeat for additional contacts.

**Contact Editor**

Name  
**Nelson Base**

Number  
**+6421548019**

Email  
**Nelsonbase@nelsonaero.com**

▼ Quick Message Groups

1	2	3	4	5	6	7	8	9	10
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>						

Groups correspond to Quick Message numbers i.e. assigning this contact to a Quick Message group will ensure they receive that Quick Message when it is sent using the Mark key.

**SUBMIT** **CANCEL**

If both the number and email address are filled out for a contact, the message will be sent by both email and SMS. If only the phone number or the email address is filled out, the message will be sent only by SMS or email, respectively.

**Note:** If different messages are to be sent to the same recipient by email and SMS, it is necessary to create duplicate contacts for that recipient.

## Configuring transmission of event reports to selected recipients

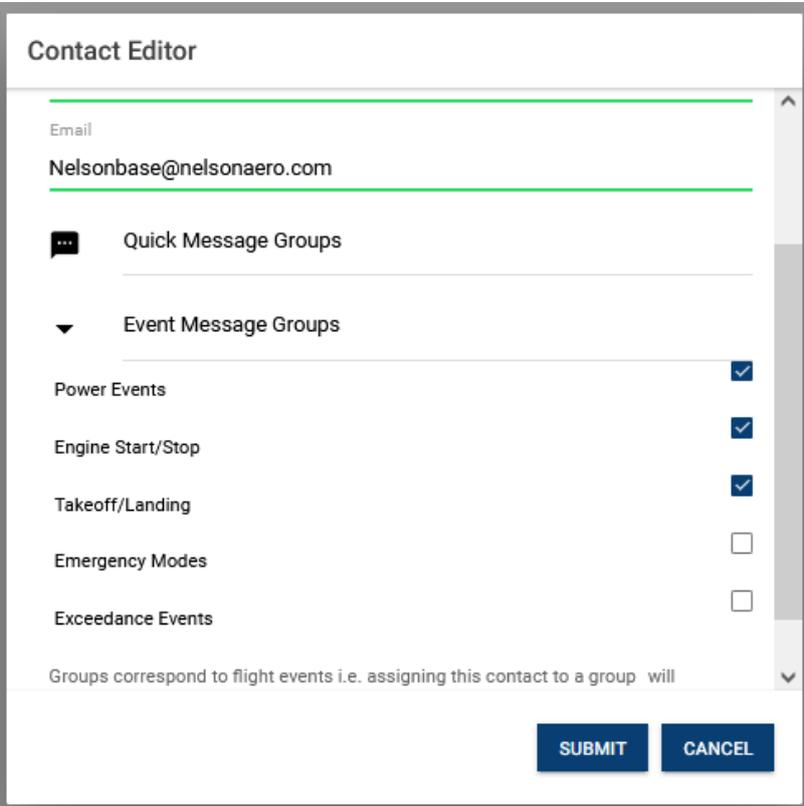
The DZMx sends automated event reports to the tracking service. It can also be configured to send event reports by SMS and/or email to selected recipients.

### *Configuring recipients for event reports*

One or more recipients for each event report can be designated using DZMx Connect.

- » In DZMx Connect, go to *Contacts*
- » For the selected contact, swipe the arrow to the left and click *Edit*
- » Click *Event Message Groups*
- » Tick the event reports to be sent to this contact.

Events that can optionally be sent are Power up and power down, engine start/stop, takeoff/landing, emergency events and exceedance events.



The screenshot shows a 'Contact Editor' window. At the top, there is a green horizontal line. Below it, the 'Email' field is filled with 'Nelsonbase@nelsonaero.com'. Underneath, there is a section for 'Quick Message Groups' with a three-dot menu icon. Below that is a section for 'Event Message Groups' with a downward arrow icon. This section contains a list of event types with checkboxes: 'Power Events' (checked), 'Engine Start/Stop' (checked), 'Takeoff/Landing' (checked), 'Emergency Modes' (unchecked), and 'Exceedance Events' (unchecked). At the bottom of the list, there is a note: 'Groups correspond to flight events i.e. assigning this contact to a group will'. At the very bottom of the window are two buttons: 'SUBMIT' and 'CANCEL'.

If both the number and email address are filled out for a contact, the event report will be sent by both email and SMS. If only the phone number or the email address is filled out, the event report will be sent only by SMS or email, respectively

**Note:** If different messages are to be sent to the same contact by email and SMS, it is necessary to create duplicate contacts.

# Section 11: WiFi

The DZMx may be built with inbuilt Wi-Fi. It provides an onboard hotspot for smart devices and connected equipment such as medical monitors aboard the aircraft. Wi-Fi also allows the user to use DZMx Connect.

Wi-Fi is a licensed application. If Wi-Fi menu options are not available, a licence will need to be purchased and then activated with a software key supplied by Flightcell International Ltd.

## Wi-Fi Setup & Operation

- » Power up the unit and wait for it to fully initialise.
- » Ensure the DZMx is running version 3.x.x or 4.x.x firmware. To check the version, use the keypad to navigate to: *Menu > Diagnostics Menu > About DZMx*.
- » Check that Wi-Fi is enabled. Look for a radiating Wi-Fi icon  located at the top right-hand side of the DZMx display. If the Wi-Fi icon is not present, WiFi can be checked and enabled in one of three ways:
  - » Press and hold the **MODE** key until “**Enabling WiFi**” is displayed on the screen. Wi-Fi can also be disabled with a press of the **MODE** key.
  - » Using the DZMx keypad, navigate to *Menu > Hardware Config > Wireless and Networks > WiFi Enable*.
  - » Connect a PC or laptop to the unit via an Ethernet cable. Type 192.168.4.1 into a web browser and navigate to **Connectivity > WiFi**. Toggle the switch to **On**.
- » Configure the mobile device or the connected device (e.g. medical monitor) to connect to the DZMx. Use the SSID and password set by your system administrator. If custom settings have not been implemented, the default settings are:
  - » Default SSID: *DZMx WiFi*.
  - » Default password: *flightcell* (all lower case).

## Using DZMx Connect

To use DZMx Connect on a mobile device, download it from the Apple App Store, or on Android or Windows devices connect using a browser using the address 192.168.2.1.

DZMx Connect lets you manage contacts, initiate telephone calls, send and receive text and SBD messages, and configure the DZMx.

- » Open DZMx Connect. The initial screen is a discovery screen and the DZMx should be discovered automatically. The discover key is only required if the process needs to be repeated.
- » Click on the discovered DZMx unit to open the DZMx Connect options.

## Section 12: Bluetooth™

Bluetooth is an in-built option that works with any DZMx that has a DZP\_04 or DZP\_07 part number ending with the letter W. It provides the ability to pair a mobile device, such as a mobile phone or tablet, to the aircraft ICS or headset.

This enables the user to:

- » Make and take calls on the mobile device and talk via the intercom system similar to hands-free in a motor vehicle.
- » Listen to streaming media via the intercom system.

Bluetooth is a licensed application. If Bluetooth menu options are not available, this functionality will need to be purchased and then activated with a software key supplied by Flightcell International Ltd.

**Note:** Cellphone and Bluetooth technologies are regularly changing. Autoconnection and maintenance of a reliable connection between cellphones and the DZMx via Bluetooth cannot be guaranteed.

A cellphone connected via Bluetooth to the DZMx should not be used for mission critical communication. Call forwarding to the DZMx cellular number is advised.

### Bluetooth Setup & Operation

- » Power up the unit and wait for it to fully initialise.
- » Ensure the DZMx is running version 3.x.x or 4.x.x firmware. To check the version, use the keypad to navigate to: *Menu > Diagnostics Menu > About DZMx*.
- » Bluetooth can be enabled:
  - » Using the DZMx keypad, navigate to: *Menu > Hardware Config > Wireless and Networks > Bluetooth Enable*.
  - » Using DZMx Connect: go to *Connectivity > Bluetooth*. Toggle the switch to **On**. This can only be done if the DZMx is Wi-Fi capable and Wi-Fi has been set up and enabled.

When Bluetooth is enabled, the Bluetooth icon will appear in the top right-hand corner of the DZMx display.

Make the DZMx discoverable (this is a temporary setting), so the mobile device can see it and pair with it. When discoverable, this icon will appear in the top right-hand side of the DZMx display.

The DZMx can be made discoverable:

- » Using the keypad Go to: *Menu > Hardware Config > Wireless and Networks > Bluetooth Discoverable*.
- » Using DZMx Connect: Go to *Connectivity > Bluetooth*. Toggle the Discoverable switch to **On**.

### Pairing

- » Check that these icons  are displayed on the DZMx display:
- » Enable Bluetooth on the mobile device settings and select the Bluetooth device.
- » A pairing notification message with a confirmation code will appear on both the DZMx and the mobile device. Ensure they are the same number.

- » Press **ENTER** on the DZMx keypad, then select **Pair** on the mobile device.

Apple devices select both phone audio and media audio automatically. Android devices select the settings icon on the paired device and select call audio, media audio, or both.

After pairing, the mobile device can be disconnected and re-connected using the mobile device's Bluetooth settings.

When a device is paired auto-connect functionality is available, allowing a user's mobile device to automatically connect to the DZMx. The auto-connect functionality may vary according to mobile devices and the level of support provided by their operating systems. Some devices may need to be connected manually.

Auto-connect can be enabled:

- » Using the keypad Go to *Menu > Hardware Config > Wireless and Networks > Bluetooth Auto-connect*.
- » Using DZMx Connect navigate to **Connectivity > Bluetooth** and toggle **On, Discoverable or Auto-connect**.

When enabled the DZMx will scan periodically for previously paired devices to connect with. If that device is not present, it will try to connect with the next most recently connected device.

## Media Streaming

The DZMx and DZMx Plus support a Bluetooth audio streaming protocol called A2DP. If a Bluetooth device is connected and pairing has been successful, a musical icon  will appear in the top left corner of its display.

When the user starts audio playing on the connected mobile device it will be audible through the ICS or Headset.

## Hands free Calling

The DZMx supports a Bluetooth audio Hands Free Profile (HFP). If a Bluetooth device is connected in this mode and pairing has been successful, the DZMx will display a mobile phone icon  in the top left corner of its display. If a user receives or initiates a call on the paired mobile device, the audio will be routed to/from the ICS/Headset.

## Bluetooth Phonebook

The DZMx offers a Bluetooth phonebook transfer function that copies contacts from a smart device to the DZMx phonebook. This is a separate phonebook to the one where normal DZMx contacts are stored. It is a temporary function, and the contacts are erased in the DZMx when the unit powers off. Refer to the Installer Manual for details on how to configure this for iPhone and Android.

**IMPORTANT NOTE:** To comply with FCC requirements, the BT800 must not be co-located or operating in conjunction with any other antenna or transmitter.

#### Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio/TV technician for help.

**FCC Caution:** Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

#### **IMPORTANT NOTE:** FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

# Section 13: Features

The DZMx currently supports the following features:

- » Automated Rescue Monitoring (A.R.M.)
- » Emergency and Distress Mode
- » Alert Mode
- » Cellular Flight Mode
- » Forms
- » Flight Timers
- » Flight Data Recorder for motion capture
- » SBD Document Transfer
- » Geofence Suspend Mode
- » Flightcell Remote Assistance
- » OpenVPN (Virtual Private Network) Connection

For enquiries about upcoming applications or to request new applications please contact Flightcell International Ltd.

## Automated Rescue Monitoring (A.R.M.)

A.R.M (also known as Automated Flight Following, or A.F.F.) is an optional automated flight monitoring system. When A.R.M. is activated, your tracking service provider 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.

The DZMx and your tracking service must be appropriately configured to use A.R.M. functions. Installation instructions for activating and configuring the A.R.M. service, are provided in the Installation Manual.

**Note:** A.R.M. is only supported by some tracking service providers.

### Activating A.R.M.

To activate A.R.M. before a flight commences using the DZMx keypad:

- » 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 an acknowledgement from the tracking server, A.R.M. mode is considered active, and the status display will show "**A.R.M. Active**".

### Deactivating A.R.M.

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 an acknowledgement 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.

**Note:** 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 the tracking system will send overdue alerts. If A.R.M. has not been terminated after landing, beeps will sound in your headset to remind you.

### A.R.M. Status Messages

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. Active** is displayed when the tracking server has responded and confirmed that A.R.M. is active; the current aircraft status is appended to the message.
- » **A.R.M. Terminated** is displayed briefly when the tracking server has responded confirming A.R.M. has been deactivated.
- » **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.
- » **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.
- » **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 Server Reply** is displayed to advise that confirmation of A.R.M. activation or deactivation has not been received. No further automated attempts are made.

### Emergency and Distress Mode

When 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.

#### Activating Emergency Mode

Distress messages may be sent from the DZMx in an 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:

- » Using the keypad press and hold the **EMER** key 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 until distress mode is terminated.

To terminate distress mode:

- » Using the keypad press and hold the **EMER** key until the DZMx makes an audible beep.
- » Emergency Mode will no longer be displayed on the DZMx screen.

- » The DZMx will transmit a message that emergency mode has been terminated.

## Alert Mode

The DZMx allows users to activate an "Alert" mode event to alert to a specified situation, e.g. Under Fire. It provides a lower level of alert than emergency mode.

Alert mode can be configured by the Installer using DZMx Connect.

### Activating Alert Mode

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

To send an alert message:

- » Press and hold the **A.R.M.** key until the DZMx beeps and flashes **Alert Queued!**
- » A tracking message will be added to the front of the outgoing message queue.
- » Alert messages will continue to be sent at pre-programmed intervals (usually set at minute) until the Alert mode is terminated.

To terminate Alert mode:

- » Press and hold the **A.R.M.** key until the DZMx beeps.

**Note:** A.R.M. and Alert mode cannot be enabled at the same time.

## Cellular Flightmode

The cellular modem can be set to Flightmode so that it does not transmit or operate in-flight. When Flightmode is enabled, the modem is put into a low-power state and cannot be used for incoming or outgoing calls, tracking, SMS or data.

### Flightmode

To turn Flightmode on or off:

- » Press and hold the modem key, **A** or **B** for the DZMx cell connection.
- » Flightmode on: a status message will show saying **Disabled**.
- » Flightmode off: a status message will show **Searching**, until a good signal is obtained.

## Forms

Forms is a feature developed to aid operators to collect data and analyse flight trends. Forms can be used to enter and report operational data. Data can be entered into forms on the DZMx keypad or on DZMx Connect.

**Note:** The Forms option in the menu will only appear when a form has been added by an Administrator or Installer. Installer and Administrator privileges are required to create forms. Refer to the relevant DZMx Installation Manual for details.

### To open a form

Go to *MENU > Forms* on the DZMx or *Forms* on DZMx Connect. If there are no form templates **Timers** will be the top item and **Forms** will not appear in the menu list.

By default, the forms list will show only enabled forms.

If there are any forms disabled a menu option **Show All Forms** will be displayed. Select **Show All Forms** to view the disabled forms in the list.

Forms in the forms list may be prefixed with a character.

#### *Disabled Tag*

Forms in the forms list prefixed with - (minus) character are disabled forms. An operator cannot fill in a disabled form and disabled forms will never be triggered. To enable the form on the DZMx Control head go to *MENU > Forms > Show all Forms > (select the disabled form) > Form Enabled*

#### *Triggered Tag*

Forms in the forms list prefixed with a \* (asterisk) character have been triggered and the tag indicates that the form is due to be filled in. The time between triggering a new prompt to complete a new form is between 0 (Disabled) and 1200 minutes. The tag will disappear once the form has been completed.

### Filling a Form

- » Go to *MENU > Forms*. The number of forms in the list is displayed at the top of the screen.
- » If a form has been triggered by an event (e.g. Start-up or flight time), the DZMx will beep and display the Form Field list. The name of the triggered form be highlighted and appear at the top of the list.
- » Press **ENTER** to access the field entry screen. Form fields will be one of the following types:
  - » No/Yes
  - » On/Off
  - » Number: Use the keypad to enter the number.
  - » **Text**: Select the **DOWN** key. The number **9** will appear on the screen. Use **UP** to scroll through the alphabet. Select the first letter, use **DOWN** to enter the next letter followed by **UP** to scroll through the alphabet. Repeat to complete the text. Select **ENTER** to complete the field entry.
- » At the bottom of the form fields, Select **Form Complete** to save the entry. The form will transmit to the email recipients as per the template settings.

- » The screen will return to the list of forms and the cursor will highlight the next form in the list to be completed.

### *Incomplete forms*

If a form has not been completed the data entered will remain and can be completed later. If however the unit is powered off the data will be lost.

### *Form Entry Required*

When a form requires completion, **Form Entry Required** will be displayed on the top of the DZMx main screen. It is not possible to complete a form if any mandatory fields have not been filled in.

- » Use the **MODE** key to access the triggered forms. Pressing the **Mode** key will cycle through each triggered form.
- » Complete each form then select the **MODE** key again to exit to the main menu screen.
- » If the DZMx is powered off before an actively prompted form has been completed the form will appear on the screen when the DZMx is next powered on.

### *Clear Form*

To remove data from a Form Entry field prior to selecting Form Complete.

- » Press *MENU* while on the Form Entry screen.
- » Press ENTER > Clear Form.
- » “**Form Fields Cleared**” will appear on the screen.

### *Form List Sub-menu*

To access the Forms sub menu go to *MENU > Forms > (name of form) > MENU*.

The following options are available in the sub menu:

- » **Form Configuration:** This is a read only screen.
- » **Form Enabled;** press **ENTER** to enable the form. **Note:** Disabling a form will cancel any active trigger on that form. It will also cause the flight hours to reset to 0 for that form. If the trigger type is set to Flight Time. Flight time will only start to accrue for the form when it is re-enabled.
- » **Export Form History:** Exports the data for the selected form to a USB stick. If no USB stick is inserted or if there is no data to export a “**Form error USB error**” message will appear.

## **Using DZMx Connect**

The forms list shows enabled and disabled forms. New data cannot be entered into disabled forms.

### *Filling Forms*

Go to **FORMS**. Select the required form. Sliding the arrow left will expose the following options:

- » **View Data** - shows any form data
- » The form data can be downloaded using the download key  located at the top right of the title bar.
- » **New Data** - This option will only be available if the form has been enabled and allows the user to fill in a form entry.

## Recording and Transmitting Maintenance Data

The DZMx supports maintenance timers (also known as a Hobbs Meter). The DZMx can record and transmit the following:

- » **TTAF** (Total Airframe Flight Time (hrs)). This records all flight time in hours and tenths of hours. The aircraft airframe hours are entered on installation, and this is incremented during every flight. A pin number or Hobbs password is required from Flightcell to change the flight hours after the initial set up.

**Note:** The TTAF reset should only be done once so it is important to set it correctly.

- » **DFT** (Daily Flight Time) This is a continuous timer that records flight time in hours and tenths of hours. It can be reset daily or reset periodically to allow the user to measure a flight or sequence of flights.
- » **Trip** (Trip time (hh:mm)) This is an hour and minute timer that resets every flight. It can also be reset mid-flight to ascertain certain operations or flight legs.
- » **Lands** (Landings)
- » **Starts** (Engine Starts)
- » **Check Due** - to record hours since the last maintenance check and alert when the next check is due.

Maintenance data can be accessed on the DZMx, and can be sent automatically to the tracking service, and emailed automatically to an address configured on the DZMx. The destination address for the maintenance data can be set in DZMx Connect.

The maintenance data can be accessed on the DZMx using either the:

- » DZMx or Remote Head User Interface (UI): Go to *MENU > Timers*
- » DZMx Connect. Go to *Flight > Flight Timers*.

### Daily Flight Reporting

DFT can be manually reset either each day, or at the end of a series of flights. It is not possible to reset any timers or counters while the aircraft is in flight.

The landing and start counters are reset automatically when the DFT is reset; they cannot be reset individually.

To reset the DFT and counters

- » On the DZMx: Go to *MENU > Timers > DFT > Reset DFT*. Selecting **YES** will reset the DFT timer and the landing and engine start counters.
- » Using DZMx Connect Go to *Flight > Flight Timers > RESET/SEND*

If a maintenance email address is specified, a maintenance email (or emails) will be sent automatically before the counters are reset.

### Check Due Counter

The DZMx can record hours since the last maintenance check and advise when a check is due. This can be configured in DZMx Connect by going to *Settings > Preferences > Hobbs and Maintenance*. Here you can set:

- » Hours till next check
- » Check due warning - hours advance warning that a check is due.

The DZMx maintains an 'hours since last check' timer and subtracts it from the **Check Due** hours and displays the result as **Check Due** on the DZMx UI **Timers** menu and/or the DZMx Connect **Flight Timers** page.

The DZMx will add new flight hours to the 'hours since last check' timer while in flight, resulting in the displayed **Check Due** counter decrementing when in flight.

If the hours since last check exceed the **Check Due** hours setting, then the **Check Due** will change to **Check Overdue** along with a negative value on the **Timers** menu on the DZMx UI or on DZMx Connect.

To set the 'hours since last check' counter

- » On the DZMx, select **Check Due**, then enter the number of hours flown since the last check. Hold down the +/0 key to enter part hours to one decimal place.
- » Using DZMx Connect, go to *Flight > Flight Timer > Check Due > SET* and enter the hours since last check.

## Short Burst Data (SBD) Document Transfer

### Sending Documents to the DZMx

It is possible to send plain text emails to the DZMx via satellite SBD. Received documents are viewed using DZMx Connect. NOTAM, weather, and passenger information can be transmitted.

#### *Prerequisites*

To use this feature, the DZMx must be registered with TracPlus. They will assign the unit a dedicated email address and ask for a list of nominated sender email addresses. Only nominated senders will be able to send plain text emails to the DZMx or DZMx Plus.

#### *Transmission*

The text must be in the body of the email, and it must be sent in plain text format. HTML formatted emails will be rejected. The email will be split by TracPlus into the required number of SBD messages and then transmitted via Iridium. The sender will receive an acknowledgement email saying that the document has been received by TracPlus and forwarded to the DZMx. This acknowledgement does not guarantee delivery, only that it has reached the Iridium gateway. If the DZMx is powered down when the email is sent, Iridium will queue the message at the gateway and send it when the DZMx next comes online. The DZMx will reassemble the separate SBD messages back into a single message and it can be viewed using DZMx Connect.

#### *Viewing the Email*

Received emails are viewed by selecting **SBD Inbox** in DZMx Connect home page. The SBD Inbox page will display a list of up to 10 received emails. For each email, the SBD Inbox will show if the email is partial or complete, the originator, and the date and time sent. Clicking on an email will display the email text. Partially received emails that have not yet received all their SBD message parts can be read. In marginal signal conditions, occasionally an SBD message will not be received by the DZMx. If an email is not received completely after a reasonable length of time, contact the sender, and ask them to resend the email.

**Note:** TracPlus is the only tracking provider that supports this application.

## Flightcell Remote Assistance

Flightcell Remote Assistance allows Flightcell support staff to diagnose issues remotely by connecting to a DZMx using a secure encrypted VPN. This requires either a cellular data connection or a wired Ethernet connection. It can be done on the ground or in-flight. There are three steps involved:

### Setting up a Connection

Please refer to the Flightcell Remote Assistance section in the Installation Manual for further details.

### Establish a Remote Assistance Connection

This provides a secure connection between the DZMx and Flightcell support team using the Flightcell Remote Assistance VPN. The support staff will receive a notification and they will be able to remotely access the DZMx configuration. The DZMx will operate normally throughout this process.

To establish a connection using DZMx Connect,

- » Go to *Settings > Remote Access > Connect* using the toggle switch. Auto Connect on Start-up can be selected if repeated sessions are required.
- » To establish a connection using the DZMx keypad:
- » Press *MENU > Remote Assistance > Connect VPN*.

If the connection is successful a "**VPN connection online**" message will be displayed.

If the connection is unsuccessful a "**Error: VPN connection has failed**" message will be displayed.

**Note:** An unsuccessful connection can occur when a data connection is unreliable, or the remote assistance server is unreachable.

### Disconnect the Remote Assistance Connection

Disconnection would normally be done once Flightcell support has finished assisting and has given the "all-clear" but it can be done at any time using the DZMx keypad or DZMx Connect.

- » To disconnect using DZMx Connect
  - » Go to *Settings > Remote Access*, de-select **Connect** using the toggle switch.
- » To disconnect using the DZMx keypad:
  - » Press *MENU > Remote Assistance > Disconnect VPN*.

### Other Menu Options

Other Remote Assistance menu options include **Reset Connection**. Please refer to the Flightcell Remote Assistance section in the Installer Manual for further details.

**Enable at Start-up** automatically establishes a VPN Remote Assistance connection on start-up.

**Note:** For more information on configuration, or for error and diagnostics, refer to the Flightcell Remote Assistance section in the DZMx Installation Manual.

## Section 14: Documentation and Information

The latest version of the documentation is available on the Flightcell website [www.flightcell.com/resources](http://www.flightcell.com/resources).

Documentation, user instructions and technical information can be ordered by contacting Flightcell.

### Contact Details

#### Technical support

Email [tech@flightcell.com](mailto:tech@flightcell.com)

#### Mailing Address

Flightcell International Limited

PO Box 1481

Nelson 7040 New Zealand

#### Physical Address

Flightcell International Limited

98 Vickerman Street

Nelson 7010 New Zealand

Telephone +64 3 545 8651

Fax +64 3 548 8091

Email [info@flightcell.com](mailto:info@flightcell.com)

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

## Section 15: Abbreviations

Abbreviation	Definition
A.R.M	Automated Rescue Monitoring
A2DP	Advanced Audio Distribution Profile
AFF	Automated Flight Following
AIS	Automatic Identification System
API	Application Programming Interface
AWTC	Automatic Water Tank Controller
Calib	Calibration
Config	Configuration
DFT	Daily Flight Timer
DTMF	Dual Tone Multiple Frequency
EMER	Emergency
Ext	External
GPS	Global Positioning System
HD Tracking	High-Definition Tracking
HFP	Hands Free
ICS	Internet Connection Sharing
IP	Internet Protocol address
LCD	Liquid Quartz Display
NOTAM	Notices to Airmen
IrPTT	Iridium Push to Talk
SATCOM	Satellite Communication
SBD	Iridium Short Burst Data
SIM	Subscriber Identity Module
SMS	Short Message Service
TTAF	Total Time Airframe Hours
VoIP	Voice over Internet protocol
VPN	Virtual Private Network