DZMx & DZMx Plus Operator Manual

DZMx Product Rev 4.0 &

DZMx Plus Product Rev 1.3

Section 1: Manual Revisions & Approvals

Revision	Effective Date	Approved By	Reasons for Change
1.0	5 Aug 2013	J Mace	New issue
2.0	19 Nov 2013	J Mace	Redrafted for firmware releases 0.3.08 and 0.3.09
2.1	22 Nov 2013	J Mace	Updated for firmware release 0.3.10
4.0	19 Dec 2013	J Mace	Updated for firmware releases 0.4.2 to 0.4.5
6.0	28 Feb 2014	J Mace	Updated for firmware release 1.1.1. Instructions for use of 3G data service.
7.0	24 Jun 2014	J Mace	Updated for firmware release 1.3.1. Instructions for using DZMx messaging capability. DTMF (touch-tone) dialing. Last number redialing
8.0	26 Sep 2014	J Mace	Updated for firmware release 1.6
9.0	3 Mar 2015	J Mace H Twissell	Comprehensive revision to bring in line with current firmware. Changed document version to match firmware version. Last digit to reflect document modifications
9.1	11 March 2015	H Twissell J Mace	Corrected cabin phone description. Corrected menu drawings. Reformatted text and headings to match previous version. Reinserted A.R.M. section
9.6	8 April 2015	L Bunn	Added an interim user guide for the external lighting before the next-gen user guides are released.
10.0	13 Oct 2015	J Mace	Firmware release 2.4.0
11.0	06 Jul 2016	J Mace	Firmware release 2.8.0
12.0	26 Jul 2016	J Mace	Firmware release 2.8.1
13.0	09 Dec 2016	J Mace	Firmware release 2.11.0
14.0	07 Mar 2017	J Mace	Firmware release 2.13.1
15.0	14 Jul 2017	J Mace	Firmware release 2.14.0
16.0	29 Nov 2017	J Mace	Firmware release 2.17.0
17.1	01 Jun 2018	J Mace	Firmware release 2.18.1
17.2	27 Jul 2018	J Mace	Firmware release 2.19.0
19.0	01 Dec 2018	J Mace	Firmware release 3.1.x
20.0	01 Apr 2019	J Mace	Firmware release 3.2.x
20.1	01 Jun 2019	J Mace	Minor changes to Firmware release 3.2.x
21.0	01 Jun 2020	J Mace	Firmware release 3.5.0
22.0	28 Jun 2021	J Mace	Firmware release 3.7.0/4.7.0. Addition of DZMx Plus information

CONTENTS

Section 2: Introduction

Thank you for selecting and purchasing a quality Flightcell product!

This manual has been prepared to guide you through the operation of your DZMx and DZMx Plus. Please read this manual carefully before using your DZMx and DZMx Plus for the first time. Keep this manual in a safe place and use it as your first point of reference.

Refer to the DZMx and DZMx Plus Installation Manuals for initial set up and configuration information.

When a section refers to the 'DZMx' it also refers to the DZMx Plus. The DZMx Plus has a transceiver unit that is housed in the avionics bay and a DZMx Plus Control Head unit in the cockpit or cabin.

Due to continual product development Flightcell reserves the right to alter specifications of the appearance of the device.

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 the DZMx Connect app. 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 to connected devices over satellite and cellular networks providing access to the internet and emails (cellular networks only).
- Access to data via the Ether port of wirelessly via WiFi.

Two-Way Messaging

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

Aircraft Tracking

The DZMx and DZMx Plus automatically send periodic position reports to tracking service providers. Manual positions may be configured and triggered by the user to send position reports that 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 is used to configure and operate the DZMx. The app is available from the Apple App Store and Google Play for use on smart devices over the DZMx WiFi. DZMx Connect can also be used as a browser utility on a PC.
It is recommended that the DZMx Connect app is used instead of the DZMx control head to configure and change settings as it is faster and provides a more intuitive interface.

Configure the DZMx

There are three ways to configure the DZMx Connect:

Hardwired Computer Connection

1. Connect a computer to the DZMx Ethernet port.
2. Select the power button. The DZMx display will say '**starting up'**, then '**initialising [modems]**'.
3. Open a web browser, type in **192.168.4.1** in the address bar and press **ENTER**. The home screen of DZMx Connect will open in the browser.

Wireless Laptop Connection

1. Power up the DZMx and wait for it to fully initialise.
2. Check that WiFi is enabled.
3. Look for a WiFi icon at the top right-hand side of the DZMx display. If the WiFi icon is not present it can be checked and enabled in one of three ways:
   i. Press and hold the keypad **MODE** button until "**Enabling WiFi** is displayed on the DZMx screen. WiFi can also be disabled with a subsequent press of the **MODE** button.
   ii. Using the DZMx keypad, select **MENU** > **Hardware Config** > **Wireless and Networks** > **WiFi Enable** and select **Yes**.
   iii. Connect a PC or laptop to the DZMx via an Ethernet cable. Type **192.168.4.1** into a web browser and select **Connectivity** > **WiFi** 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 the DZMx Connect app will open within the browser.

Smart Device Connection

1. Configure the smart device to connect to:

» Default SSID: **DZMx WiFi**

» Default password: **flightcell** (all lower case)

2. In your smart device settings ensure that your smart device is only connected to the current network **DZMx.**
3. Open the DZMx Connect app. The initial screen is a discovery screen and the DZMx should be discovered automatically. The **DISCOVER** button is only required if the process needs to be repeated.
4. Click on the discovered picture of the DZMx unit to open the navigation and settings options.

Click here to watch a short video explaining the DZMx Connect app capabilities.

Permission Levels

Permission levels allow users to have control over how the DZMx is configured. Three levels or roles with individually configurable passwords 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 the Installer and the Administrator and are password protected.

To access operator Permissions:

1. Select **LOGIN** at the top of the screen. The login screen will open.
2. Select Operator from the dropdown list to the right of Authenticate as:
3. Enter the **PIN** number 1234.

Note: Passwords can be changed by the Installer and the Administrator in "Settings".

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

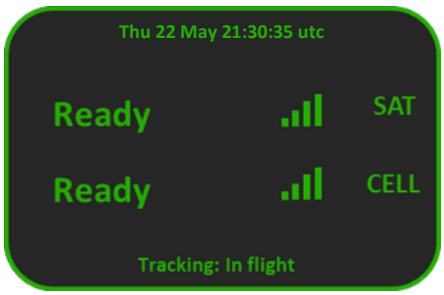
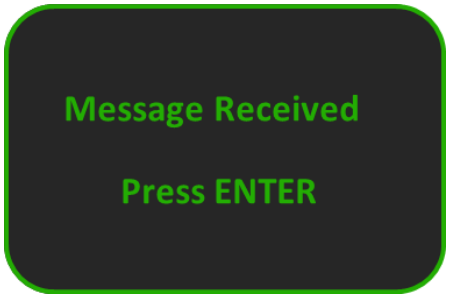
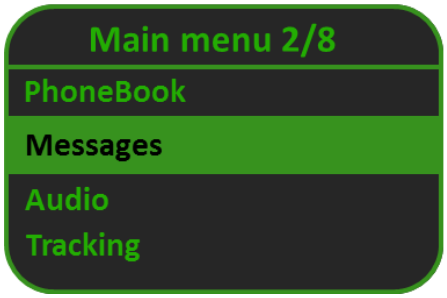
Most keys on the DZMx keypad have more than one function. The following table outlines how the DZMx keys are referenced throughout the manual.

Icon	Manual Reference
	CALL
	END
	A
	B
	1, MARK
	2, UP, A.R.M., ALERT
	3, EMER
	4, LEFT, SPD1

Icon	Manual Reference
	5, SPD2
	6, RIGHT, SPD3
	7, MSG
	8, DOWN, DIR
	9, MODE
	0, +, MENU
	*, BACK
	#, POWER, ENTER,

The DZMx Remote Head unit and the DZMx Plus Control Head unit are installed with an inbuilt LCD display to show timely and important information to users. The LCD can show several different views:

LCD Display

The Main Screen		After the DZMx has booted and initialised, the display will show the main screen. This shows: » Flight, trip, or date/time information (at the top of the screen). This information is configurable. » Phone networks designated for the two soft keys A and B. » Network connection status and strength for the installed modem(s). » Other status messages are displayed at the bottom of the screen.
Pop-up Screens		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. 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 Screens		Displays available menu options or a list of items. The current selected item will be highlighted. The user can navigate the list using the **UP** and **DOWN** key. Select the item by pressing **ENTER**. 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.
Settings Adjustment Screens		Displays the current value when adjusting or viewing settings such as audio volume or backlight brightness. The slider bar shows the setting as a percentage of the maximum available value and can be adjusted using the **LEFT** and **RIGHT** keys. Changes can be confirmed by using **ENTER** or aborted by using **BACK** or **END**.

Understanding the Main Screen

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

One of six display options can be selected using the:

1. DZMx Connect app.
2. Select **Settings > Preferences > Main Screen Options** Settings menu. Once you have made the selection select **END** to return to the main screen.

3. DZMx user interface:

» Press **MENU > Display Setup Menu.> Top Line Options** > Once you have made the selection select **END** to return to the main screen.

The options are:

1) Off
2) Speed and Heading
3) Clock
4) Total Time Airframe Hours (TTAF)
5) Daily Flight Timer (DFT)
6) Trip

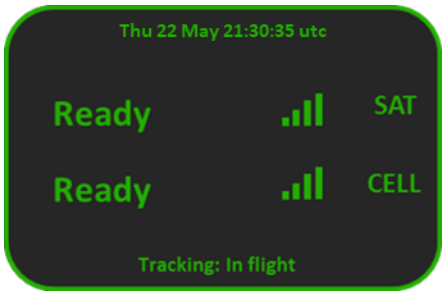
Note: 'No GPS Lock' will be displayed on the top line if the DZMx is unable to connect to the GPS network.

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:

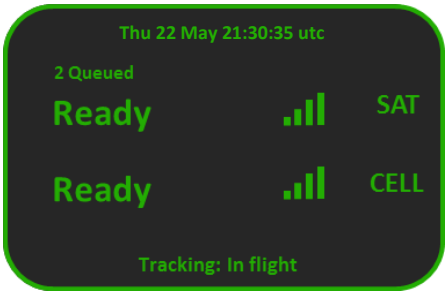
1. Press MENU. If the DZMx is on a phone call, press and hold MENU to access the menus.
2. Use the UP and DOWN arrow keys to navigate between the menu options.
3. Use the LEFT and RIGHT arrow keys to scroll left or right, to increase, decrease or navigate menus.
4. Press ENTER to select the highlighted item or to confirm a setting change.
5. Press BACK to cancel a setting or to move back a menu level.
6. 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** etc The > indicates that you will need to scroll to a menu heading using the arrow keys. The menu headings are **bolded**. To select the heading press the **ENTER** key then scroll to the next menu heading.

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 modem has established a connection to the modem and is in the process of initialising the device.
- **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: Inflight** 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 or DZMx Plus 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. Backlight levels are adjusted separately for the DZMx and the remote head. The DZMx can support variable lighting which can be controlled from the aircraft dimmer control. Aircraft without dimmer controls can manually set the brightness to Day and Night levels. Day backlight is set at maximum brightness for both the keypad and the display. Night backlight can be adjusted separately for the keypad and LCD display.

External lighting provides the user with the ability to dim or brighten the display by adjusting the lighting control input. External lighting is only available if the DZMx or DZMx Plus is connected to the cockpit dimmer control. Refer to the Installation Manual for external lighting installation options.

Switching Backlight Modes

To switch modes between Day, Night and External backlighting:

1. Press and hold the * key for 2 seconds.
2. Scroll to Backlight Mode.
3. Use the **LEFT** and **RIGHT** arrow keys to change the setting from day to night.
4. Press **END** to return to the main screen.

Altering Backlight Brightness Levels

Day and Night Modes

Backlight settings can be adjusted separately for the keypad and LCD display. To configure backlight settings on the DZMx or a remote head for Day and Night modes:

1. Press and hold the * key for 2 seconds.
2. Select the **Day** or **Night** setting as above.
3. Scroll to Keypad Brightness.
4. Use the **LEFT** and **RIGHT** arrow keys to decrease or increase the brightness.
5. Press **END** to return to the main screen.

External Lighting Mode

The DZMx and remote head can be connected to the cockpit lighting control, enabling lighting levels to be varied using the cockpit dimmer control.

The minimum and maximum brightness levels can be set individually for both the DZMx and any remote heads. To change the minimum brightness options for the external lighting on the DZMx or remote head:

1. Press and hold the * key for 2 seconds.

2. Scroll to **Advanced** and press **ENTER**.
3. Scroll to Ext Lighting Config Low and press ENTER.
4. Adjust the keypad and display minimum brightness using the **LEFT** and **RIGHT** arrow keys to match the cockpit lighting levels.
5. Scroll to **Input Calib**. then press **ENTER**.
6. Press **END** to return to the main screen.

To change the maximum brightness options for the external lighting on the DZMx or remote head:

1. Press and hold the * key for 2 seconds.
2. Scroll to **Advanced** and press **ENTER**.
3. Scroll to Ext Lighting Config High and press ENTER.
4. Set the dimmer control to the maximum position.
5. Adjust the keypad and display maximum brightness using the **LEFT** and **RIGHT** arrow keys to match the cockpit lighting levels.
6. Scroll to **Input Calib**. then press **ENTER**.
7. Press **END** to return to the main screen.

Note: When the lighting control input is reduced below the "minimum position", the brightness levels will switch to "Day" brightness.

Section 5: Phone Calls

This section describes the various options available for making calls from the DZMx or from the Remote Head keypads. 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

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

Calling a Number in the Phone Book

The DZMx has a phonebook containing up to 50 numbers.

1. Press **DIR** to display the phone book.
2. Scroll through the phone book using the **UP** and **DOWN** arrow keys.

3. Press the **A** or **B** key to select the modem and initiate the call using the call key.
4. 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.

1. Press the speed dial key for the required number. **SPD1**, **SPD2** or **SPD3**. The contact name and number will be displayed.
2. Press the **A** or **B** key to select the modem and initiate the call.
3. Press **END** to terminate the call.

Redialling the last number called

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

Calling the Sender of a Text Message

1. Open the message so that it displays on the screen.
2. 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.

1. Press **CALL** to answer the call.
2. 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:

1. Select **MENU** > **Call Forwarding > Enter Number** and manually enter the telephone number, press **ENTER**. Select **END** to return to the main screen.
2. 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"**.
3. Alternatively, select **MENU** > **Call Forwarding** > **Select from Phone Book** and select an existing contact number. Select **END** to return to the main screen.
4. Alternatively, select **MENU** > **Call Forward Enable** > **Yes**. Select **END** to return to the main screen.

“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 the DZMx Connect app 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:

1. Press END, a pop-up will display “Press A or B to hang up a call”.
2. 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:

1. Opening the message so that it displays on the screen.
2. 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 app 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:

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

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

Privacy

Privacy is available between multiple users of a shared aircraft e.g. a corporate jet or a charter plane. The user can manually clear the call log history using the DZMx keypad or the DZMX Plus control head keypad.

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 or DZMx Plus 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 service, providing global call coverage. The DZMx and DZMx Plus can be switched between phone mode and PTT mode as required.

Note: Iridium PTT is a licensed feature. If you wish to use Iridium PTT, you must subscribe to the PTT service through your Iridium service Provider, a licence can be purchased from Flightcell by contacting orders@flightcell.com.

Switching to PTT Mode

To switch to PTT mode on your satellite device:

1. Press and hold the **A** or **B** button on the keypad.
2. **PTT Initialising** will appear on the display.
3. **PTT: Registering** will appear on the display.
4. You will be able to join a PTT Talk-group or start a PTT call.

Note: Refer to the DZMx or DZMx Plus Installation Manual to configure PTT and initialise PTT automatically at start-up. This makes PTT the default mode for frequent users.

Joining a Talk-Group

To join or switch to an alternate Talk-group:

Press **MENU** > **PTT Talk-groups** >Scroll to the required Talk-group > **ENTER** to join it.

Optionally: Press **CALL** to make it the Default Talk-group. This talk-group will be automatically joined on start-up.

A PTT call can be started if the selected Talk-group is active and has no other participants currently talking. The maximum talk time is 40 seconds before the call will hang up. The PTT modem will automatically listen to other talkers in the talk-group. Other talkers can be temporarily silenced by pressing **END**.

PTT Calling with External Button

If the DZMx or DZMx Plus is externally wired to the pilots' PTT button:

1. Press and hold the aircraft PTT button to start transmitting.
2. Release the button to stop transmitting.

PTT Calling with the Keypad

If using the keypad to call using PTT:

1. Press and release CALL to start transmitting.
2. 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 and DZMx Plus 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 the DZMx Connect app.

Note: Messages in the DZMx message library can only be entered or edited using the DZMx Connect app 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"**.

1. Press **CALL** or **ENTER**.
2. 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:

1. Either press and hold the **MSG** key until the message list is displayed or alternatively press **MENU** > **Messages** > **Received Messages** > **ENTER**.
2. 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.
3. Press **ENTER** to view the entire message, then use the **UP** and **DOWN** keys to scroll through the message.
4. Press **BACK** to return to the message list.
5. 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

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

From the Iridium Website

1. Go to the Iridium website: http://messaging.iridium.com/.
2. Enter the satellite phone number of the DZMx or DZMx Plus.
3. Enter the reply email.
4. Fill in the message.
5. Click Send Message.

Outgoing Messages

Using a Number from the DZMx Phonebook.

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

Using a Number NOT in the DZMx Phonebook

1. Press **MSG**, scroll to the required message and press **ENTER** to open the message'.
2. Press **A** or **B** to select the network'.
3. 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

1. Open the received message, then press the **MSG** key to open the message library.
2. 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:

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

Privacy

Privacy is available between multiple users of a shared aircraft e.g. a corporate jet or a charter plane. The user can manually clear the call log history using the DZMx keypad or the DZMx Plus control head keypad.

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 or DZMx Plus to automatically clear the call log history whenever the unit powers up, so that manual intervention is not required.

Section 8: Phone Book

Phone book entries can be added, edited, or deleted using the keypad or the DZMx Connect app. 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

1. Press MENU > PhoneBook > Add/Edit.
2. Scroll down to a blank contact field and press **ENTER**; the DZMx will display "**Enter Number**".
3. 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.
4. Press **ENTER**; the DZMx will display "**Enter Name**".
5. 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.
6. 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

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

Deleting an Existing Contact

Existing contacts can only be deleted using the DZMx Connect app.

Section 9: Data

The DZMx cellular and satellite modems provide data connections to the internet using the DZMx Ethernet port as a router. When a PC or laptop is plugged into the units Ethernet port, the DZMx will allocate an IP address in the range 192.168.4.xxx.

Cellular Data

When the DZMx is successfully connected to the cellular data service, the DZMx status line for the modem will display **"Online"**.

Satellite Data

To start or end the satellite data connection, press and hold the corresponding modem key, **A** or **B**. The modem will display **"Going Online"**. When the data has successfully connected, the modem will display **"Data Online"**.

Note: To activate cellular or Iridium data the DZMx must be configured using the DZMx Connect app. Refer to the Installation Manual for further information.

Multiple Data Connections

Automatic data routing is not supported. Turning on both data connections simultaneously is not recommended. If the Cellular and Satellite data are both turned on, the connection used will be the last one turned on, which may not be the fastest or most economical connection.

Section 10: GPS Tracking

Position reports can be sent to a tracking system using the Iridium and/or cellular network. Several configurable tracking timers and tracking events generate automatic position reports periodically, or when triggered e.g. A take-off or landing report. The user can also manually trigger a position report using MARK. Changes in the tracking status are displayed on the bottom line of the DZMx main screen and the DZMx Plus control Head.

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.

Enabling Tracking

Press **MENU** > **Tracking** > **Tracking Mode > On > ENTER > END**

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 unit is next powered up. If disabled, tracking will remain off until re- enabled.

Press **MENU** > **Tracking** > **Tracking Mode > Suspend** or **Off** > **ENTER** > **END**.

Automatic Position Reports

The DZMx can be configured to automatically send the following routine position reports:

- **Aircraft power up** – triggered when power is supplied to the unit.
- **Engine start and stop** – triggered by an external input from the engine.
- **Take-off and landing** – triggered by aircraft speed and/or an extra input.
- **Periodic events** – triggered at regular intervals.
- **Aircraft heading changes** – based on change in heading and time since last message sent.

Manual Position Reports

Manual position reports may be sent to mark a point of interest or to send specific information. This includes position only, position with preconfigured message, or mission details. The aircraft position and time are taken from the time and location when **MARK** is pressed.

To Send a Manual Report

1. Press and release the **MARK** button.
2. The DZMx will display **'Position Marked'** and a tracking message will be added to the outgoing message queue.

To Send a Manual Report with Message Attached

1. Press and hold **MARK** until the message library opens.

2. Scroll down to the message to be sen.t
3. Press **ENTER** to display the message then press **ENTER** to send; the DZMx will display **'Position Marked'** and the tracking message will be added to the outgoing message queue.

> **Note:** These are the default settings. The installer profile can attribute different settings to short and long MARK button presses.

Mission Reports

Pre-defined mission reports can be sent to the mapping service provider and to individual contacts. When used in conjunction with the **MARK** button, one of the four coloured buttons on the keypad can correspond to a stage of a mission (e.g. picked up patient) and there is also the option to enter a job number. The status of the mission is reported to the operations centre, and/or pre-determined contacts, along with the location information. It is important to ensure the tracking service provider supports this capability.

> **Note:** This functionality will only be available to the user if the installer has attributed Mission Marking to a short button press. Refer to the Installation Manual for further information.

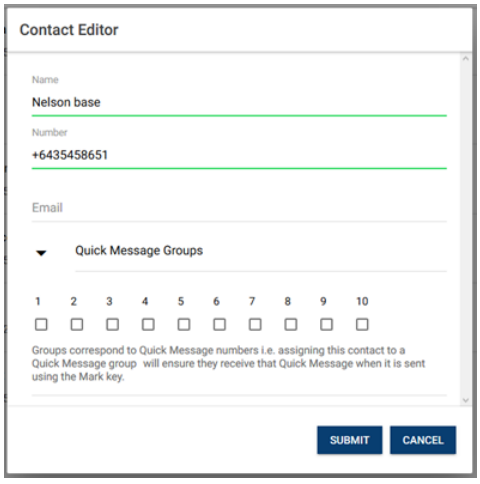
Send a Mission Report to Tracking Provider

1. Short press the **MARK** button.
2. Select the colour that relates to the mission.
3. Enter the mission or job number.
4. Press **ENTER**

Send a Position Report to Tracking Provider and Text (SMS) Contacts

Preconfigured text messages can be sent to selected contacts or to multiple text recipients numbered from 1 – 10 from the DZMx quick message library.

The recipients for each message are designated using the DZMx Connect app Contact Editor as shown below.



1. Long press the MARK button.

2. Select the number between 1 and 10 that corresponds to a pre-configured message.
3. A confirmation of the outgoing message will be displayed.
4. The designated SMS recipients will receive the message and GPS coordinates.
5. Select **END** to return to the main screen.

Text (SMS) Contacts only

The recipients for each message are designated individually by editing entries in the DZMx Contact Editor in the DZMx Connect app. To send messages to one or more text recipients.

1. Short press the **MARK** button.
2. Select the number between **1** and **10** that corresponds to a pre-configured message.
3. A confirmation of the outgoing message will be displayed.

The designated SMS recipients will receive the message and GPS coordinates.

Note: To send mission reports and to text contacts, these features must be enabled in the DZMx configuration menu under **Menu>Tracking>Triggered Events**. Please refer to the DZMx Installer Manual for further details.

Geofence Suspend Mode

The Geofence Suspend application allows operators to suspend tracking while the aircraft remains within a 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:

1. Press and hold the **MENU** key to activate.
2. 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.
3. 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.

Periodic and HD Tracking Timers

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

- **HD Tracking:** 15-seconds between tracking reports.
- **Periodic Tracking:** Configurable to be anywhere between a 1 to 60-minute delay between tracking reports.

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 report 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.

Four periodic timer settings can be adjusted by the user:

- **Periodic Timer:** The delay between scheduled tracking reports during flight. The minimum interval is 1 minute.
- **Heading Timer:** Position reports are sent more frequently when the aircraft is changing heading.
- **Heading Variation:** Configures the change (in degrees) by which the aircraft's heading must vary before it triggers a course change position report.
- **On Ground Timer:** The tracking interval on the ground. On Ground tracking can be disabled.

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

To change the settings of the periodic timer settings:

1. Press **MENU** > **Tracking** > **Periodic Events**. Select the setting from the menu (Periodic Timer, Heading Timer, Heading Variation or On Ground Timer). Press **ENTER**. The DZMx will display a slider indicating the current settings value.
2. Use the **LEFT**, **RIGHT** or **UP** and **DOWN** keys to adjust the time or heading variation.
3. Press **ENTER** to confirm the setting change and to return the Periodic Events menu.
4. Press **BACK** to abort the setting change and return to the Tracking menu.
5. Press **END** to exit the main screen.

Note: The Periodic Timer setting must have a higher value than the heading timer. On Ground tracking can disabled by reducing the "On Ground Timer" setting to Disabled by moving the slider to the very left.

Tracking Intervals Summary

Whenever HD Tracking is enabled, it becomes effective whenever Tracking-over-IP is operational. The resulting tracking frequency also depends on the current Flight State as follows:

Tracking Network	Flight State	HD Tracking Available	Tracking Frequency
Satellite SBD	All	No	From 1 to 60 minutes
Tracking-over-IP (Cell data)	On ground	HD tracking suspended	From 1 to 60 minutes
Tracking-over-IP (Cell data)	Hovering	Yes	60 seconds
Tracking-over-IP (Cell data)	In Flight	Yes	15 seconds

Section 11: WiFi

WiFi is an in-built option that works with any DZMx or DZMx Plus that has a DZP_04 or DZP_ 07 part number ending with the letter W. It provides an onboard hotspot and hub for smart devices and connected equipment such as medical monitors aboard the aircraft. WiFi also allows the user to use the DZMx Connect app.

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

WiFi Setup & Operation

1. Power up the unit and wait for it to fully initialise.
2. 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**.
3. Check that WiFi is enabled. Look for a radiating WiFi icon located at the top right-hand side of the DZMx display. If the WiFi icon is not present, WiFi can be checked and enabled in one of three ways:
   i. Press and hold the **MODE** button until **"Enabling WiFi"** is displayed on the screen. WiFi can also be disabled with a press of the **MODE** button.
   ii. Using the DZMx keypad, navigate to **Menu** > **Hardware Config** > **Wireless and Networks** > **WiFi Enable** > **Yes**.
   iii. 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** > **Wi-Fi**. Toggle the switch to **On**.
4. Configure the mobile device or the connected device (e.g. medical monitor) to connect to:
   i. Default SSID: DZMx WiFi.
   ii. **Default password**: flightcell (all lower case).

Discovery using DZMx Connect app

To use the DZMx Connect app on a mobile device, download it from the Apple App Store or from Google Play. The DZMx Connect app lets you manage contacts, initiate telephone calls, send and receive text & SBD messages, and configure the DZMx.

1. Open the DZMx Connect app. The initial screen is a discovery screen and the DZMx should be discovered automatically. The discover button is only required if the process needs to be repeated.
2. Click on the discovered DZMx unit to open navigate and settings options.

Section 12: Bluetooth™

Bluetooth is an in-built option that works with any DZMx or DZMx Plus 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 mobile phone or tablet, to the aircraft ICS or headset. The user can make and take calls on the mobile device and talk via the intercom system similar to hands-free in a motor vehicle.

Mobile Device Functionality includes:

- Receive calls on headset.
- Make calls and use headset.
- Listen to streaming media on headset.

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.

Bluetooth Setup & Operation

1. Power up the unit and wait for it to fully initialise.
2. Ensure the DZMx or DZMx Plus 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**.
3. Bluetooth can be enabled in one of three ways:
   i. Using the DZMx keypad, navigate to: "**Menu** > **Hardware Config** > **Wireless and Networks** > **Bluetooth Enable** and select **Yes**.
   ii. Connect a PC or laptop to the DZMx via an Ethernet cable. Type 192.168.4.1 into a web browser and navigate to: **Connectivity > Bluetooth**. Toggle the switch to **On**.
   iii. Using the DZMx Connect app on a mobile device, navigate to **Connectivity** > **Bluetooth**. Toggle the switch to **On**. This can only be done if the DZMx is WiFi capable and WiFi has been set up and enabled.

When Bluetooth is enabled, this icon will appear in the top right-hand side 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 in one of three ways:

1. Using the keypad select: **Menu > Hardware Config > Wireless and Networks > Bluetooth Discoverable > Yes.**
2. 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 > Bluetooth**. Toggle the Discoverable switch to **On**.
3. Using the DZMx Connect app on a mobile device, navigate to **Connectivity > Bluetooth**. Toggle the Discoverable switch to **On**. This can only be done if the DZMx is WiFi capable and WiFi has been set up and enabled.

Pairing

1. Check that these icons are displayed on the DZMx display:
2. Enable Bluetooth on the mobile device settings and select the Bluetooth device.

3. A pairing notification message with a confirmation code will appear on both the DZMx and the mobile device. Ensure they are the same number.
4. 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 in one of two ways:

» Using the keypad select Menu > Hardware Config > Wireless and Networks > Bluetooth Auto-connect.

» Using the DZMx Connect app navigate to Connectivity > Bluetooth > 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 or DZMx Plus 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:

1. 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.
2. 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:

1. 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.

2. When the DZMx receives and 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.

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:

1. Using the keypad press and hold the **EMER** key until the DZMx beeps and flashes **DISTRESS queued**.
2. The DZMx will display **Position Marked**.
3. A tracking message will be added to the front of the outgoing message queue.
4. Distress messages will continue to be sent at pre-programmed intervals until distress mode is terminated.

To terminate distress mode:

1. Using the keypad press and hold the **EMER** key until the DZMx makes an audible beep.
2. Emergency Mode will no longer be displayed on the DZMx screen.
3. The DZMx will transmit a message that emergency mode has been terminated.

Alert Mode

The DZMx allows users to activate an "Alert" mode event that says something is wrong with the flight or the mission. It is not as severe as the emergency mode.

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

Activating Alert Mode

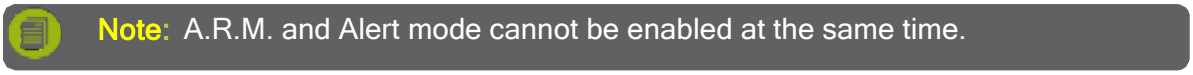
Alert messages may be sent from the DZMx in an emergency. Your tracking provider will have a system for raising an alert or alarm when an alert message is received.

To send an alert message:

1. Press and hold the **A.R.M**. key until the DZMx beeps and flashes **Alert Queued!**
2. A tracking message will be added to the front of the outgoing message queue.
3. 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:

1. Press and hold the **A.R.M.** key until the DZMx beeps.
2. The DZMx will NOT transmit a message that the Alert mode has been terminated.



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:

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

Forms

What are Forms?

Forms is a feature developed to aid operators to collect data and analyse flight trends. The form is completed at specified intervals or after a certain event and can be sent to a tracking provider, and a recipient destination.

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

Form Prompt Timer:

This is the time between triggering a new prompt to complete a new form. Between 0 (Disabled) and 1200 minutes. If a prompt timer has expired, an operator can access the form to fill it in via the Mode key without having to navigate through the menu. Once it has been completed (filled in and sent), the prompt at the top of the screen will disappear and the form access via the mode key will be removed.

Completing a Form

When a form requires completion, **Form Entry Required** will be displayed on the top of the DZMx main screen.

To complete the form using the DZMx keypad:

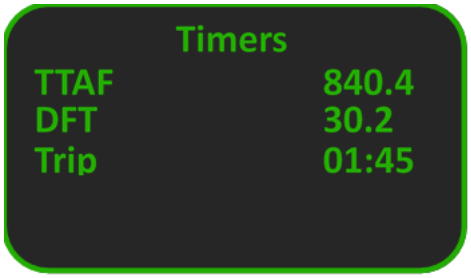
1. Select **MENU > Form > Form Entry**.
2. Use the **UP** and **DOWN** keys to move between entry fields. Not all fields require an entry.
3. Select **Form Complete** to finish the form and send it to the required configuration or destination(s).
    - **Export Form History**
    - **Delete Form History**

> **Note:** When in airline mode only form entry and clear form can be used from the menu, even in installer mode.

Flight Timers

The DZMx provides three flight timers, they are:

- **Total Time Airframe Hours (TTAF)** – also known as Hobbs Meter. This records all flight time in hours and tenths of hours. The user enters the aircraft airframe hours once on installation and this is incremented during every flight.
- **Daily Flight Timer (DFT).** This is a continuous timer that records flight time in hours and tenths of hours. It can be reset daily or periodically to allow the user to measure a flight or sequence of flights.
- **Trip Timer.** 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.



The DFT and the Trip Timer can be reset using the DZMx Connect app. Refer to the DZMx Installation Manual for instructions on how to set the TTAF.

Note: The TTAF reset is one-time only and it is important to set it correctly.

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 the DZMx Connect app. NOTAM, weather, and passenger information can be transmitted.

Prerequisites

To use this feature, the DZMx or DZMx Plus 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 the DZMx Connect app.

Viewing the Email

Received emails are viewed by selecting **SBD Inbox** in the DZMx Connect app 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

Geofence Suspend Mode

The Geofence suspend application allows operators to suspend tracking while the aircraft remains within a geographical radius. Moving outside the geofence perimeter will cause geofence mode to be cancelled and normal tracking to resume. Whilst within the perimeter, periodic tracking is suspended and depending on how geofence suspend mode is configured, triggered events, such as take-offs and landings, can also be suspended.

Setting the Geofence Mode using the keypad:

Press **MENU** > **Tracking** > **Geofence** > **Geofence Mode. S**elect the required mode of operation.

1. Select: **Disabled** to disable the Geofence application. This will remove the geofence function from the **MENU** key.
2. Select: **Without Events** mode to suspend all tracking messages, except emergency, forms, ETM1000 and manual mark messages.
3. Select: **With Events** mode to suspend periodic and course change tracking messages as above, but all triggered events will still be transmitted.
4. Select: **Events on Cell Only** mode to operate as per **With Events** mode but with the additional cost saving feature of only sending event messages via the cellular modem. Triggered event messages will be queued if the cellular modem has no signal until the cellular modem obtains a connection to the cellular network, or the aircraft flies out of the geofence perimeter. Press **ENTER** to return to the main screen.

Setting the Geofence Mode using DZMx Connect:

1. Select **Settings > Tracking > Geofence**.
2. A Tracking Geofence Settings window will open.
3. Select one of the Geofence Mode options from the drop-down list.
4. Select **Cancel** or **OK.**

Note: Geofence suspend events, manually marked positions, form data transmissions, ETM1000 events, exceedances and emergency messages are never suspended and will always be generated and transmitted according to the normal tracking rules.

Setting Geofence Radius

When activated, the geofence perimeter is fixed to a radius as specified via this setting. The radius can be set between 1 and 10 nautical miles:

Press **MENU > Tracking > Geofence > Geofence Radius.**

Use the **LEFT** and **RIGHT** keys to adjust the radius to the preferred distance.

Activating Geofence Suspend Mode

Geofence suspend mode can be activated by pressing and holding the **MENU** key. 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.

While inside the geofence perimeter, the distance from the centre of the geofence will be displayed at the bottom of the main screen.

When geofence has been configured to use **Events on Cell Only** mode, the message queue size is increased to 100 if tracking over IP is available otherwise the queue is increased to 40 to maximise the cost-saving benefits of tracking using the cellular modem. If the message queue reaches half full (50 or 20) due to no cell coverage, then the oldest message will be sent using the configured preferred network priority (i.e., via satellite if available) to ensure the queue does not overflow.

See the Installer Manual for more details on how to set the preferred transmission mode.

Leaving the Geofence Perimeter

When the aircraft flies outside the geofence perimeter, the DZMx will beep, and a pop-up screen will notify the operator that the aircraft has flown beyond the geofence perimeter. Once the aircraft has left the geofence perimeter, geofence mode is cancelled and normal tracking and queue rules are resumed. Any queued messages will be sent using the preferred transmission priority.

How to Re-centre or Cancel Geofence Suspend Mode

While flying inside the geofence perimeter you can use the **Geofence Options** menu to either re-centre the perimeter radius on the aircraft's current position or cancel the geofence suspend mode and resume normal tracking operations.

If the DZMx is within a geofence perimeter, press and hold the **MENU** key until the Geofence Options menu appears.

1. Select **Recentre**: Re-centring the geofence will reset the geofence radius to centre on the current position and the DZMx will remain in geofence suspend mode.
2. Select **Cancel:** Cancelling the geofence will cancel geofence suspend mode and the DZMx will resume normal tracking.

Flightcell Remote Assistance

Flightcell Remote Assistance allows Flightcell support staff to diagnose issues remotely by connecting to a DZMx or DZMx Plus 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.

1. To establish a connection using DZMx Connect app,

» Select **Settings** > **Remote Access** > **Connect** using the toggle switch. Auto Connect on Start-up can be selected if repeated sessions are required.

2. To establish a connection using the DZMx keypad:

» Press **MENU > Remote Assistance > Connect VPN > ENTER.**

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 app.

1. To disconnect using the DZMx Connect app

» Select **Settings** > **Remote Access** >de-select **Connect** using the toggle switch.

2. To disconnect using the DZMx keypad:

» Press **MENU > Remote Assistance > Disconnect VPN > Yes > ENTER.**

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 the pre-requisite connection configuration, or for error and diagnostics, refer to the Flightcell Remote Assistance section in the Installation Manual.

The DZMx can connect to an existing OpenVPN.

The VPN provides private and secure (encrypted) communications, regardless of the under-lying nature of physical networks used to connect the devices together. It acts as if the network was one and only uniform physical private and secure network, such as local physical Ethernet network.

Note: OpenVPN is an additional licensed feature. Contact your DZMx Administrator or Flightcell International at info@flightcell.com for more information.

Section 14: Documentation and Information

The latest version of the documentation is available on the Flightcell website www.flightcell.com/resources.

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

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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
PTT	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