000

Flightcell DZMx Plus with Flightcell Controller Operator Manual

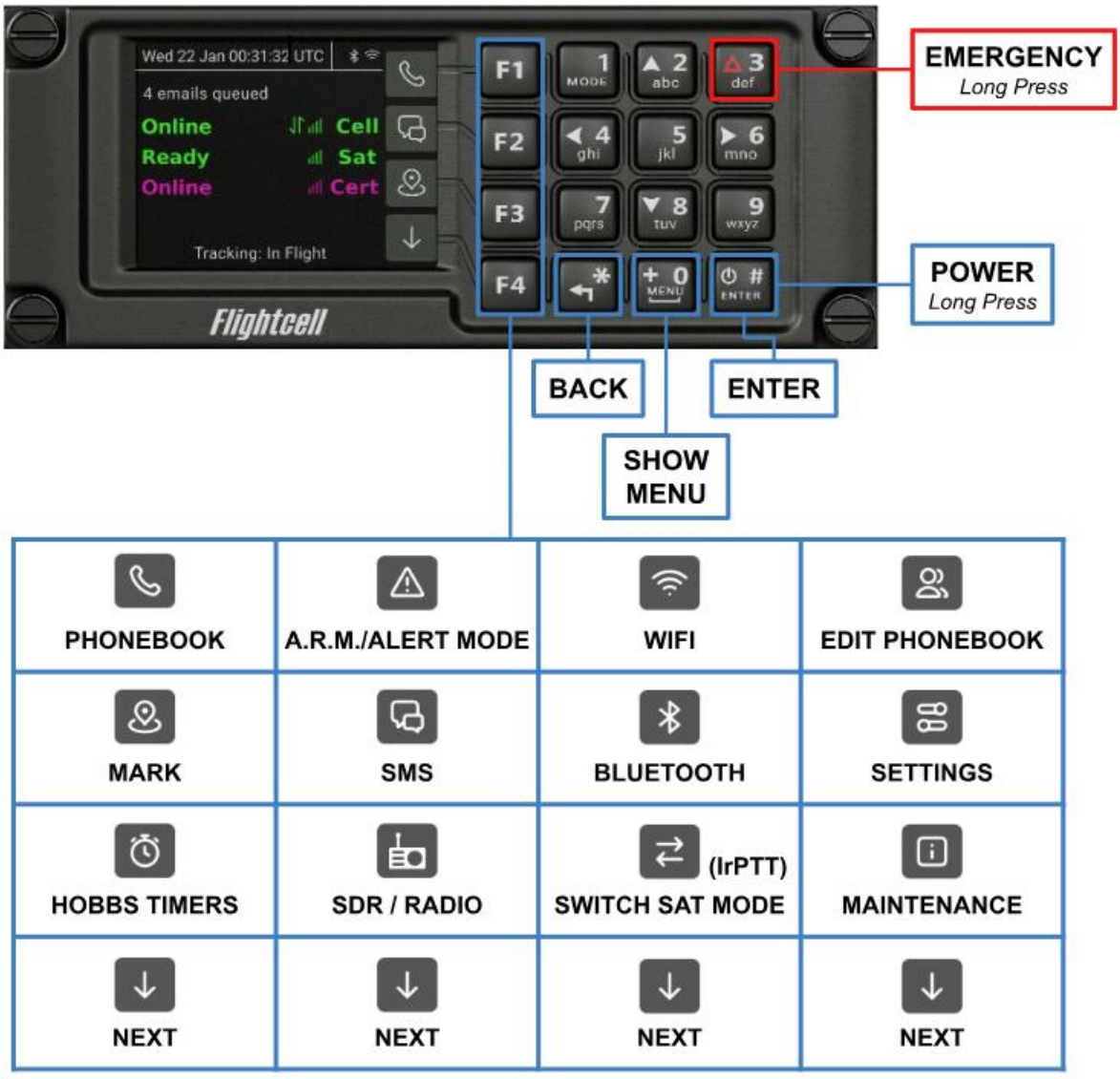
DZMx Plus Product Rev 4.0 with Firmware Rev 4.14.1, & Flightcell Controller DZP_08 Rev 1.0, with Firmware Rev 1.2.0

117-00024 Flightcell DZMx Plus with Flightcell Controller Operator Manual, Rev. 2.0

Effective Date: 27 May 2026

Flightcell Support

Quickstart



Making a call

Call existing contact

- » Go to Phonebook Page (/ F1)
- » Select contact with up/down arrow keys
- » Press 'Make Call' (/ F1)
- » Select modem to use

Call new number

- » Go to Phonebook Page (/ F1)
- » Press 'Enter Number' (/ F3)

- Enter number with keypad (*Long press 0 for +*)
- Press 'Make Call' (/ F1)
- Select modem to use

Call from call history

- Go to Phonebook Page (/ F1)
- Press 'Call History' (/ F4)
- Select past call with up/down arrow keys
- Press 'Make Call' (/ F1)
- Select modem to use

Sending a preconfigured SMS

Same as making a call, but press 'Send SMS' (/ F2) instead of 'Make Call'

- Select message to send with up/down arrow keys
- Press 'Send'
- Select modem to use

Viewing SMS conversations

- Go to SMS Conversations (/ F2)
- Select conversation with up/down arrow keys
- Press 'Enter'
- Use up/down arrow keys to look through conversations

Marking current position

- Pressing the Mark key (/ F3) will send the current GPS position to your tracking provider.

Navigating lists

All lists on the Controller can be navigated with the up and down arrow keys.

Note: The 'F' key position in the quick guide, is based on original factory configuration.

Section 1: Manual Revisions and Approvals

Revision	Effective Date	Approved By	Reasons for Change
1.0	31 May 2025	Luke Garside	Introduction of Controller for DZMx Plus user interface DZMx Plus v4.13.0 and Controller v1.1.0
2.0	27 May 2026	Phil Hutchings	Firmware v4.14.1 and DZP_08 Controller Firmware v1.2.0

Contents

Section 2: Introduction

Applicability of this manual

This manual applies to DZP_07 Flightcell DZMx Plus revision 4.0 with firmware 4.13.0, 4.14.1 and above, that is installed with a DZP_08 Flightcell Controller revision 1.0 with firmware 1.1.0 and above.

Overview of Functions

The Flightcell DZMx Plus with Controller includes several features, accessible via the Controller screen, or on a smart device or computer using DZMx Connect. It uses Iridium satellite and/or terrestrial cellular networks to provide the following:

Voice Calling

- Ability to make phone calls to anywhere in the world.
- A Phonebook to store contacts.
- Audio is routed via the ICS system. Refer to installation data for details.

SMS Messaging

- Ability to send and receive SMS text messages (prerecorded or composed)
- Ability to automatically send SMS to phonebook contacts when a flight event is triggered

Tracking

The DZMx Plus can send position reports to tracking service providers if set up to do so. These include:

- Automatic position reports
- Manual position reports
- Emergency mode reports

SDR

The DZMx Plus can include a Software Defined Receiver (SDR) that enables it to receive radio signals if licensed. It supports the following bands: AM, FM, NBFM, ADS-B In, AIS, and UAT. Refer to Appendix 4.

Internet

- Data connections from connected devices over supported Certus devices and cellular networks providing access to the internet and emails (cellular networks only)
- Access to data via Ethernet or wirelessly via Wi-Fi
- Automatically switch between active data connections when signal is lost. Refer to Appendix 5.

Wi-Fi

The DZMx Plus provides a licensed Wi-Fi feature that can provide external devices with a wireless connection to the DZMx Plus and access the internet through the cellular or Certus devices.

Bluetooth

The DZMx Plus provides a licensed Bluetooth feature, enabling hands-free calling, and playing media from a connected mobile device through the intercom system.

Hobbs Timers

The DZMx Plus includes Hobbs Timers (or maintenance timers) that allow the user to track flight time and other flight statistics.

Iridium PTT

The DZMx Plus allows users to use Iridium's Push To Talk (IrPTT) service, providing global one-to-many calling. IrPTT is a licensed feature on the DZMx Plus.

Forms

The DZMx Plus supports forms for recording operational data. Data can be entered into forms on the Controller screen or on DZMx Connect.

Fire App

The DZMx Plus can collect data from the aircraft to send real-time firefighting events and GPS position information to tracking providers and fire authorities. The Fire App is a licensed feature. Refer to Appendix 6.

Load App

The DZMx Plus can measure loads using a variable voltage input. It can send pickup and drop events to tracking providers, as well as send load reports to an email address. The Load App is a licensed feature. Refer to Appendix 8.

A.R.M.

The DZMx Plus supports A.R.M. (Automated Rescue Monitoring) (also known as Automated Flight Following, or A.F.F.). This is an optional service that monitors your aircraft's flight and raises an alarm if position reports are overdue. This needs to be set up by your tracking provider, if they offer the feature.

Alert Mode

The DZMx Plus 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.

Section 3: DZMx Connect

DZMx Connect is a versatile web application designed to configure and operate the DZMx Plus.

Accessing DZMx Connect

Wired Ethernet Connection

- Connect a computer to the DZMx Plus Ethernet port.
- Open a web browser and enter 192.168.4.1 in the address bar, then press enter. The DZMx Connect home screen will appear.

Wireless Laptop Connection

- Power on the DZMx Plus and allow it to complete its initialization.
- Check for the Wi-Fi icon at the top right of the Controller display. If the icon is not visible, enable Wi-Fi following the instructions for setting up Wi-Fi in Section 10: Wi-Fi
- Open a web browser on your laptop, enter 192.168.2.1 in the address bar, and press enter. The DZMx Connect home screen will be displayed.

Permission Levels

Permission levels control how users can configure the DZMx Plus, with three distinct roles available within DZMx Connect:

- **Operator**: Upon power-up, DZMx Connect is automatically in operator mode. This role has access to all standard functions of the DZMx Plus. Only a limited range of settings which may need adjustment by the operator are accessible.
- **Installer and Administrator**: These roles have access to additional functions and settings that are password-protected. Details about these roles can be found in the Installation Manual.
  - **Contacts** enables contacts to be added or edited on the DZMx Plus 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 Plus, or incoming messages to be read. Messages are organised in message strings.
  - **Dialler** allows calls to be dialled on the DZMx Plus Iridium or cellular connection, to phone numbers in the DZMx Plus phone directory, or on smart devices, using the device phone directory.
  - **Inbox** provides for messages to be sent or received using the DZMx Plus 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 Plus **MARK**, **A.R.M.** and **EMER** keys
    - Access to the DZMx Plus flight timers

- Access to the DZMx Plus Flight Recorder.

- **Forms** enable DZMx Plus Forms to be added, edited or completed.
- **Connectivity** enables the DZMx Plus data, Wi-Fi and Bluetooth connections to be managed
- **Remote Access** provides for Flightcell to provide remote support on the DZMx Plus
- **Settings** provides for various DZMx Plus settings to be configured.

DZMx Connect on Mobile

Adding DZMx Connect to Home Screen

The user can add an Icon for DZMx Connect to their home screen from a mobile browser, by selecting Add to Home Screen from the relevant browser menu.

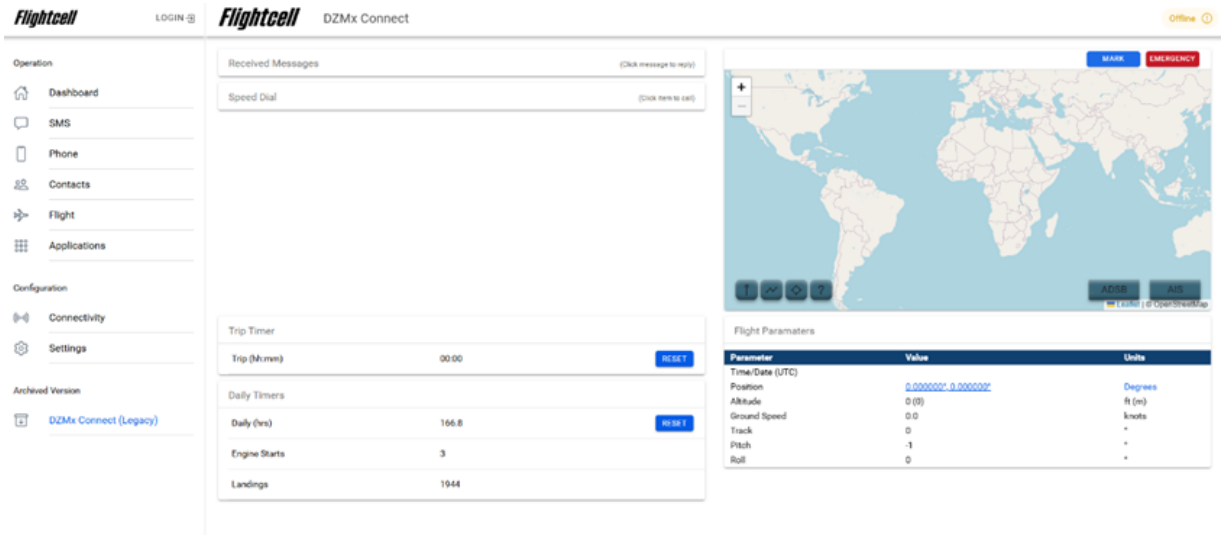
Switching between Mobile/Desktop Site Versions

When using DZMx Connect through the Chrome browser on iOS/Android (as opposed to the native application), pages that contain an upload function do not display those buttons. This is because the site has been loaded as a mobile version.

To resolve this, the user may click the three dots to the right of the address bar and select “Request Desktop Site”. They will then need to re-authenticate with the DZMx Plus and the relevant buttons should now be available.

Using DZMx Connect

Following is the DZMx Connect home screen.



Page Descriptions

Contact Page

Enables contacts to be added or edited. Swiping left on a contact opens options for that contact, including calling, sending SMS messages, editing the contact, and deleting the contact. A contact’s quick message groups & event message groups can also be edited.

Contacts can be added with the + symbol in the top left.

The buttons in the top right corner allow for uploading and downloading phonebooks. This can be used to transfer contacts across multiple DZMx Plus devices.

SMS Page

Allows for browsing past SMS conversations and sending SMS messages.

New messages can be sent with the pencil symbol in the top left.

Dialler Page

Allows for calls to be dialled. The call history can also be viewed. Pressing X on a modem will hang that modem up if it is in a call.

Flight Page

There are 7 possible tabs within this page. Not all may be accessible, depending on the DZMx Plus configuration:

- **Map** - Provides a moving map showing aircraft position (when a cellular data connection is available), and allows for pressing Mark, A.R.M. and Emergency.
- **Air Traffic** - If an SDR is installed and set to ADS-B mode, this provides a TCAS-style display with nearby air traffic. The table lists all nearby aircraft detected.
- **Marine Traffic** - If an SDR is installed and set to AIS mode, this provides a TCAS-style display with nearby marine traffic. The table lists all nearby watercraft detected.
- **Flight Timers** - Includes Hobbs Timers (or maintenance timers) allowing the user to track flight time and other flight statistics.
- **Flight Data** - Includes several flight instruments based on the position of the DZMx Plus. Not to be used for flight control or navigation.
- **Direction Finder** - The Direction Finder is a licensed feature that allows a user to operate a subset of the controls of a connected Rotheta RT-600 device. This DZMx Connect tab contains:
    - The unit status
    - The RT-600 output
    - Frequency range selector
    - Frequency control slider
    - Volume slider
    - Squelch slider
    - Dimming control

    - On the map tab, a map overlay will indicate the direction finder heading and min/max readings with a triangle originating from the current aircraft position.
- **Load Status** - The Load App is a licensed feature that allows operators to view and control load metrics, including:
    - Current load
    - Total load lifted (weight)
    - Total number of loads lifted
    - Load tracking events created
    - Send load metrics
    - Reset load metrics

Forms Page

Allows for entering forms and viewing form data. Swipe left on a form to see options.

Connectivity

Allows for managing Data, Wi-Fi, and Bluetooth connections.

Remote Access

Allows Flightcell to provide remote support for the DZMx Plus with Controller. This is described in detail in the Installation Manual.

Settings

Allows for managing various DZMx Plus settings.

Offline Maps

The DZMx now provides an offline map capability through DZMx Connect 2. When using DZMx Connect 2 on the dashboard or flight page, the device will automatically download map tiles and store for future use if the DZMx Plus has an available internet connection. (IP connection available over cell or Certus) If DZMx Connect 2 is not open or the map is not on screen, the device will not automatically store map tiles. It is recommended that for flights where internet coverage may be lost, that the map is viewed pre-flight or whilst data is available. By zooming in on the areas of interest/flight path, the user can ensure those Offline Map tiles are stored for later use.

Section 4: Physical Interface

DZMx Plus Physical Interface

The DZMx Plus has a very minimal physical interface. Most operator actions will be done through the Controller or DZMx Connect.

Power Button

The power button can be found on the back of the DZMx Plus, near the handle. Press the power button to turn the DZMx Plus on or off. When the DZMx Plus is on, the power button will light up with a red ring around it.

Controller Physical Interface

This section explains the Controller's physical interface and how to operate the Controller.

Keypad

The Controller has a keypad with 16 keys. The keypad keys are as follows:

Function Keys

The function keys F1 - F4 act as soft keys for the corresponding function shown on the display.

For example, in the image below, pressing F1 would open the Phonebook, pressing F2 would open the SMS Conversation List, pressing F3 would mark the current position with the tracking provider, and pressing F4 would scroll the main menu.

Power Key

Long pressing the power key on the main screen will shut down the Controller, and the DZMx Plus it is connected to.

Long pressing the power key again will power up the Controller and the DZMx Plus.

Back Key

The back key can be pressed on most screens to go back to the previous screen. Long pressing the back key will cause the Controller to return to the main screen.

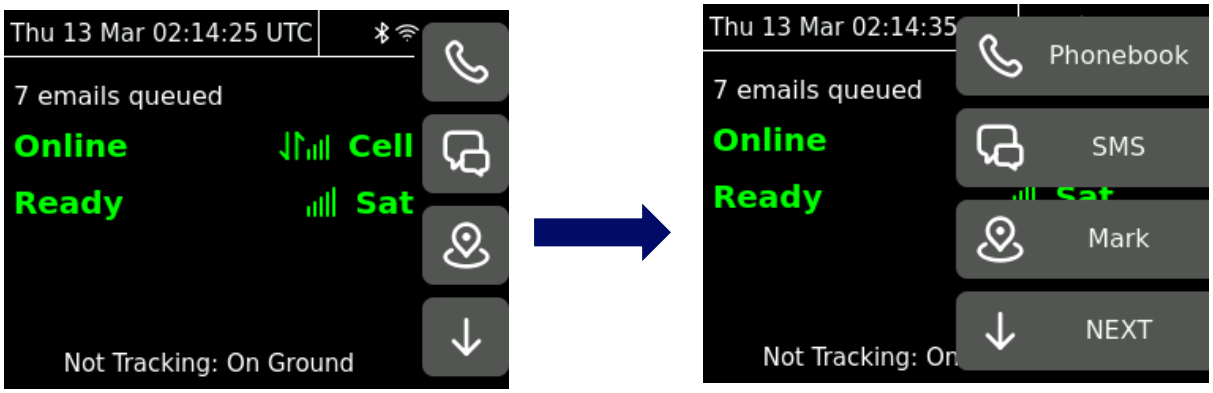
The exception to this is number and text entry screens, where the back key acts as a backspace for the entry field.

Menu Key

Pressing the menu key on most screens will temporarily show a description of the function key functions.

The exceptions to this are:

» Number and text entry screens, where the menu key is used for number/text entry.



Enter Key

The enter key acts as an 'accept' on many screens. Selecting items in menus can be done with the enter key.

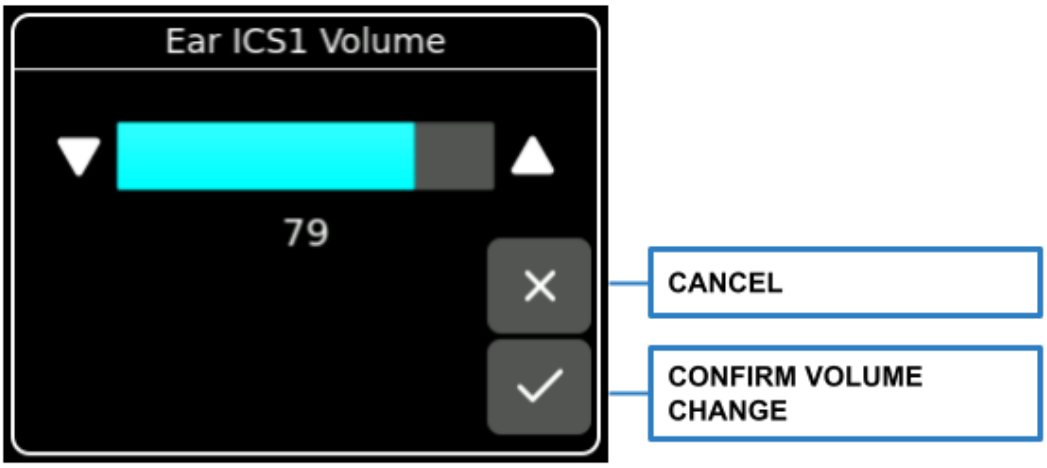
Emergency Key

To activate Emergency Mode, hold the emergency key until the screen flashes red with EMERGENCY MODE on the bottom. For more information see Section 5. Features.

Arrow Keys

The up and down arrows are used to navigate menus on the Controller.

The arrow keys are also used for some other controller functions. They are always displayed on the screen where they can be used. For example, on the change volume screen, the up and down arrows can be used to change the volume.



Number Entry

Several functions of the Controller require number entry. Pressing the number keys results in the corresponding number being entered. The back key acts as a backspace. Additionally, in phone number entry boxes, long pressing the 0/+ key will result in a + if the entry box is empty.

Text Entry

Several functions of the Controller require text entry. Text entry operates similarly to old mobile phones. Pressing any of the keys with letters on them will cycle between the letters, then cycle between the capitalised versions of the letters, then the number on the letter. For example, continuing to press the 6 key will result in the following characters: m > n > o > M > N > O > 6.

The exceptions to this are the 0 key, which cycles: SPACE > + > 0, and the 1 key, which cycles between the following special characters: .,?!@&*-_1. The back key acts as a backspace.

Additionally, long pressing any key results in the number on that key being added to the text box. Long pressing the Back key results in an asterisk (*), and long pressing the Enter key results in a hash (#).

Display

The Controller has an NVIS backlit keypad and Colour + NVIS display.

The Controller has two available lighting modes:

- Day mode – the display is in colour mode; the keypad is not backlit.

- NVIS (night) mode – the keypad is backlit in NVIS green. Depending on the configuration, the display can operate in either:
  - Full colour.
  - NVIS green.

The Controller Day mode screen brightness can be adjusted on the Controller by going to Settings > Device Brightness.

The lighting mode is controlled from an external source, such as a day/night switch or dimmer with detent. See the Installation Manual for detailed instructions on setting up lighting.

Main Screen

The Main Screen is the default screen displayed when starting the Controller. It contains the following information:

- **Modem Status** – The centre of the screen displays the modems installed in the DZMx Plus, and their statuses. The Modem Status Table in this section shows messages and their meaning. Signal strength is displayed on the left (up to five bars). If the modem has no signal, X will be displayed instead. The colour of the modems change based on their signal strength:
  - 0-1 is Magenta
  - 2-3 is Cyan
  - 4-5 is Green
- **Data Symbol** – The DZMx Plus is capable of automatically switching data connections between modems, but only one can be active at any given time. A unique symbol (⇅) will be displayed on the interface to indicate which modem is currently in use.
- **Current Time** – This comes from the GPS. If the DZMx Plus has no GPS connection, this will display "No GPS Lock" instead.
- **Status Icons** – This section displays several icons to indicate the status of the DZMx Plus. The possible icons are described in the table below.

Icon	Meaning
	DZMx Plus disconnected from Controller
	DZMx Plus reconnected to Controller
	Audio fault

	Bluetooth fault
	AWTC connected
	Wi-Fi on
	Bluetooth discoverable
	Bluetooth on
	Bluetooth hands-free phone connected
	Bluetooth media connected

» **Tracking Status** – This displays the status of the tracking system. Refer to Section 9: Tracking for the tracking status messages and their meaning.

» **Main Menu** – The function keys on the Main Screen provide access to the rest of the functions of the Controller. F4 scrolls the main menu*. The list of available functions will depend on the configuration of the DZMx Plus and Controller. Installers also have the ability to hide certain functions, making them inaccessible.

*if 4 or less functions are available, F4 will not scroll the main menu.

The functions are:

Icon	Function	Icon	Function
	Next – Scroll main menu		Forms
	Switch Tab (available when in call)		Toggle Bluetooth
	Phonebook		Toggle WiFi

	Mark (short/long press)		Toggle Cell Flightmode
	Hobbs Timers		Edit Phonebook
	A.R.M. / Alert Mode		Switch Sat Mode (Satellite calling & SBD / IrPTT)
	SMS		Load App
	SDR		Settings
	Geofence		Maintenance menu

Call Tabs

When the user is in a call, an extra tab will be added to the Main Screen for managing the call. There can be several call tabs as it is possible to be in multiple calls at once. When call tabs exist, a 'Switch Tab' icon is added to the top of the main menu for switching between them. In the image above, the user is currently in a call with 'Hangar1' over the Cell modem.
Refer to the relevant section for more details on Ph
For more information, see Section 6: Phonebook/Calling and Section 8: Iridium Push-To-Talk.

Modem Status Table

The following table outlines the various modem status messages that may appear on the front screen, and their meaning.

Modem Status	Definition
Initialising	Modem is starting up after powering up or resetting the modem
Ready	Modem is fully operational with data turned off
Ready (SBD Only)	Iridium modem has initialised for SBD, but there is no SIM for voice or SMS services
Online	Modem is fully operational with data turned on
Call Queued	Modem is busy and will make the call once it is free
Voice Only	Certus-only status when only voice is ready for use (no data)
Calling...	Modem is dialling out
Incoming Call...	Modem is receiving an incoming call
On Call	Modem is on a call with no caller ID available.
SMS Sent	SMS successfully sent via the modem
SMS Failed!	SMS failed to send on the modem
Receiving SMS	Modem is receiving an SMS
SBD Sent	SBD successfully sent via the Iridium modem
Receiving SBD	Iridium modem is receiving an SBD message
SBD Failed!	SBD failed to send via the Iridium modem
Startup Err	Error detected during modem start-up
Sending Data..	IP tracking message is attempting to send via modem
IP msg Sent	IP tracking message sent via modem
IP msg Failed!	IP tracking message failed to sent on the modem
Not Responding	Modem has stopped responding to commands
Not Inserted	Cradle-only status to indicate the phone is not in the cradle
Searching	Modem has no signal and is searching for a network

No Service	No service registration on the network
Low Signal	Low signal on the modem, capabilities may be reduced
Disabled	Modem is in Flight Mode (no RF)
No Signal	Modem has no signal and is searching for a network
Disconnecting	Modem is hanging up a call
Device Error	DZMx Plus has failed to open communications to the modem
SIM Error	SIM not detected, or other SIM fault
Locked	Modem or SIM is locked
SIM Locked	SIM card is locked
PUK Required	SIM PUK code is required to operate SIM
Device Locked	Modem or SIM is locked
Incorrect SIM	Invalid SIM card detected in modem
Service Centre Error	Invalid service centre number detected in modem
Firmware Upgrade	Modem is going through an Over-The-Air upgrade (cell only)
No modem fitted	No modem found in the slot it the configured slot
No Certus Found	No Certus modem detected on the network

Note: Modem status messages may be replaced by a caller ID or phonebook entry name during a call.

Section 5: Features

Emergency Mode

Emergency mode will alert your tracking provider of the emergency, and cause distress tracking messages to be sent until emergency mode is terminated.

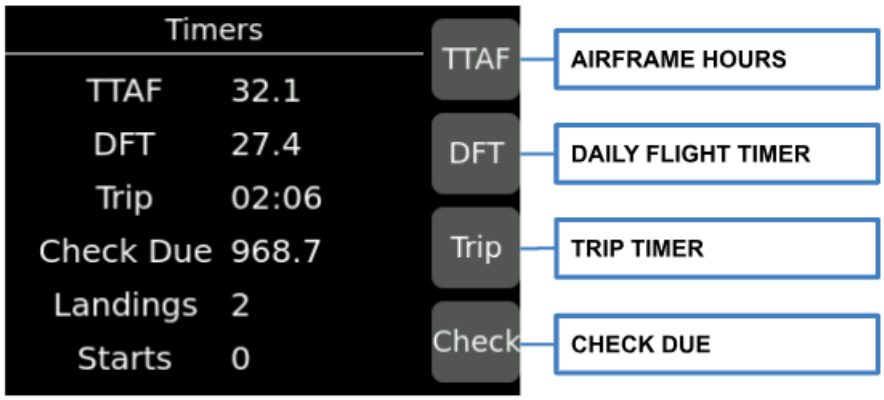
To activate emergency mode, hold the emergency key (key 3) until the screen flashes red with EMERGENCY MODE on the bottom.

To terminate emergency mode, hold the emergency key (key 3) again until the screen stops flashing red.

Note: If Emergency Mode has not been terminated before the unit is shut down, it will start up in Emergency Mode when next powered on and resume to send distress tracking messages.

Hobbs Timers

The Hobbs Timers (or maintenance timers) allow the user to track flight time and other flight statistics.



The following information is recorded by the Hobbs Timers:

- **TTAF** (Total Airframe Flight Time (hrs)). This records all flight time in hours and tenths of hours. The airframe hours are entered on installation, and this is incremented during

every flight. A special Hobbs password is required from Flightcell to change the flight hours after the initial setup.

- **DFT** (Daily Flight Timer) This is a continuous timer that records flight time in hours and tenths of hours. The DFT button can be used to reset the timer. It can be reset daily or 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 using the Trip button. This is the only timer that can be reset mid-flight.
- **Check Due** (hrs) This records hours since the last maintenance check and triggers an alert when the next check is due. The Check button allows the user to enter the number of hours since the last maintenance check. This should be used after a maintenance check.
- **Landings** This only displays if Preferences->Hobbs and Maintenance Settings->Count Landings is enabled. This can only be set using DZMx Connect.
- **Starts** (Engine Starts) This only displays if Preferences->Hobbs and Maintenance Settings->Count Engine Starts is enabled. This can only be set using DZMx Connect.

Forms

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

Installer and Administrator privileges are required to create forms. Refer to the Installation Manual for details on how to set up a Form.

To open a form

Forms can be accessed on the Controller via the Forms icon or Forms on DZMx Connect. The Forms icon will not appear in the menu list if no forms have been set up.

Disabled Forms

By default, the forms list will show only enabled forms. Select Disabled Forms (F2) to view any disabled forms.

An operator cannot fill in a disabled form, and disabled forms will never be triggered. To enable the form on the Controller go to *Forms > Disabled Forms (F2) > (select the disabled form) > Enable Form (F4)*

Triggered Forms

Forms in the forms list prefixed with an alert icon (ⓘ) have been triggered and the icon 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 icon will disappear once the form has been completed.

Filling a Form

- Go to 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 Plus 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
    - Text
- Select Submit Form (F1) 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 during the flight. However, if 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 Controller main screen. It is not possible to complete a form if any mandatory fields have not been filled in. Go to the forms screen to fill the forms out.

If the DZMx Plus is powered off before an actively prompted form has been completed the form will appear on the screen when the DZMx Plus is next powered on.

Clear Form

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

- Press Clear Form (F2) while on the Form Entry screen.
- “Form Cleared” will appear on the screen.

Form List Sub-menu

To access the Forms sub menu, go to Forms > (highlight the form) > Settings (F1).

The following options are available in the sub menu:

- Form Configuration: This is a read only screen.

- Form Enabled; press ENTER to enable/disable 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 only shows enabled 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
- New Data – Allows the user to fill in a form entry

A.R.M.

A.R.M. is an optional automated flight monitoring system. Please check with your tracking service provider if they support this feature. 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.

Instructions for activating and configuring the A.R.M. service are provided in the Installation Manual.

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 raise the alert. If A.R.M. has not been terminated after landing, beeps will sound in your headset to remind you approximately 15 seconds after landing.

Activating A.R.M.

To activate A.R.M. using the Controller keypad:

- Press the **A.R.M.** key (). A popup “Activate A.R.M.” will appear. Press ENTER to accept the popup. This will cause the DZMx Plus to send an A.R.M. activation request to your tracking provider. The Controller status line will display "A.R.M. Requesting".
- When the DZMx Plus receives an acknowledgement from the tracking provider, A.R.M. mode is considered active, and the Controller will display “A.R.M. Active”.

Deactivating A.R.M.

To terminate A.R.M. using the Controller keypad:

» Press the **A.R.M.** key (). A popup “Deactivate A.R.M.” will appear. Press ENTER to accept the popup. This will trigger the DZMx Plus to send an A.R.M. cancellation request message to your tracking provider. The Controller will show "A.R.M. Cancelling" on the status line.

» When the DZMx Plus receives an acknowledgement from the tracking provider, 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 the button is held for an extended period of time, A.R.M. will be enabled or disabled without a confirmation prompt.

A.R.M. Status Messages

Automated Rescue Monitoring status information is displayed on the tracking status line when A.R.M. is active. Enabling and disabling A.R.M. mode causes the DZMx Plus to send an activate or deactivate message to the tracking provider followed by the DZMx Plus receiving an acknowledgement.

The status of this process is displayed on the tracking status line as follows:

A.R.M. Status	Definition
A.R.M. Requesting	A.R.M. mode has been activated by the user, but the tracking provider has not yet confirmed that A.R.M. is active.
A.R.M. Active	Tracking provider has responded and confirmed that A.R.M. is active.
A.R.M. Cancelling	A.R.M. mode has been cancelled by the user, but the tracking provider has not yet confirmed that A.R.M. is cancelled.
A.R.M. Terminated	Tracking provider has responded confirming A.R.M. has been deactivated. This will be displayed briefly after termination, before returning to regular tracking display.
No Server Reply (Request)	Request for A.R.M. activation was sent to the tracking provider, but no response was received. No further automated attempts to activate A.R.M. will be made.
No Server Reply (Cancel)	Request for A.R.M. cancellation was sent to the tracking provider, but no response was received. No further automated attempts to cancel A.R.M. will be made.

Alert Mode

The DZMx Plus allows users to activate an "Alert" mode to alert your tracking provider to a specified situation, e.g. Under Fire.

It provides a lower level of alert than emergency mode.

This feature must be enabled by an Installer.

Activating Alert Mode

To activate alert mode using the Controller keypad, press the **Alert Mode** key ( ). A popup "Activate Alert Mode?" will appear. Press ENTER to accept the popup. The DZMx Plus will beep, the screen will flash orange with UNDER FIRE MODE at the bottom, and alert messages will be sent continuously at pre-programmed intervals (usually set at 1 minute) to your tracking provider.

Deactivating Alert Mode

To terminate alert mode, press the **Alert Mode** key ( ). A popup "Deactivate Alert Mode?" will appear. Press ENTER to accept the popup. The DZMx Plus will beep, the screen will stop flashing orange, and alert messages will stop being sent to your tracking provider.

Note: If the button is held for an extended period of time, A.R.M. will be enabled or disabled without a confirmation prompt.

Cellular Flightmode

The cellular modems can be set to Flightmode so that they do 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.

This feature must be enabled by an Installer using DZMx Connect.

If configured as a manual toggle the **Toggle Cell Flightmode** carousel item will be visible.

- Press Toggle Cell Flightmode
- Flightmode will be toggled
  - When activated, cellular modems will have no signal and display the status **Disabled**.
  - When deactivated, cellular modems will transition to **Searching** status until a good signal is obtained.

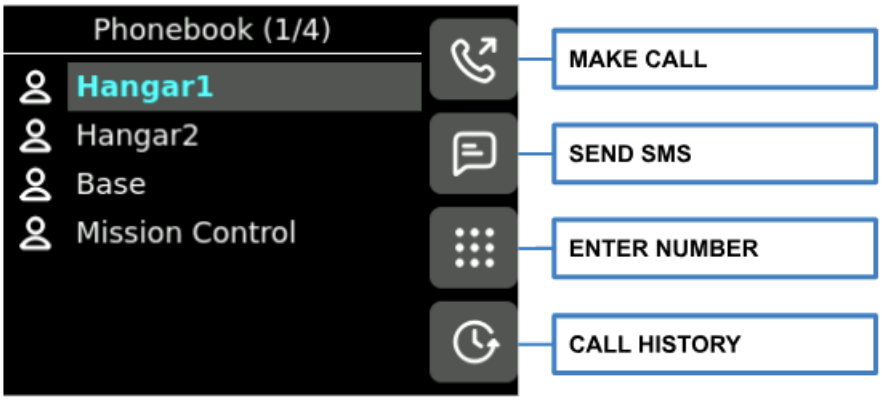
Section 6: Phonebook / Calling

The phonebook has two main screen functions:

- **Phonebook**: Allows users to select a contact from the phonebook, recent contacts, or directly dial a number. These contacts can be either messaged via SMS or dialled for a voice call.
- **Phonebook Editor**: Used for editing, deleting or reordering contacts within the phonebook.

Phonebook

The Phonebook allows users to enter or select a contact to either dial or message.



The phonebook screen highlights the currently selected contact.

Selecting a Phone Number

The Phonebook allows operators select a number to either call or message from one of the following methods:

- Selected from the phonebook (up/down arrow keys)
- Manually entered using the dialler (F3 key)
- A recent contact from the call history (F4 key)

Once a number is selected or entered, operators are able to call or message the contact.

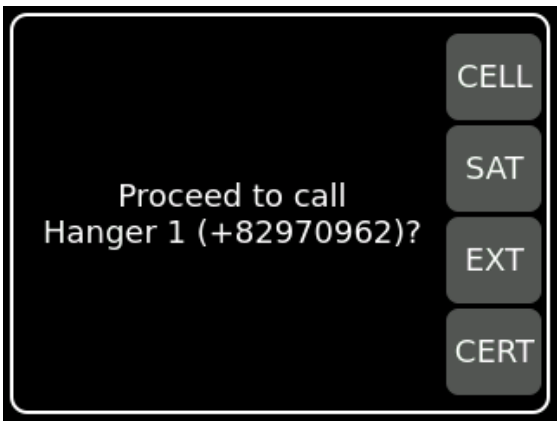
Speed Dial

Users with large phonebooks can quickly select a contact by pressing the # key on the phonebook screen and entering the contact's index number. This will navigate to that index in the phonebook.

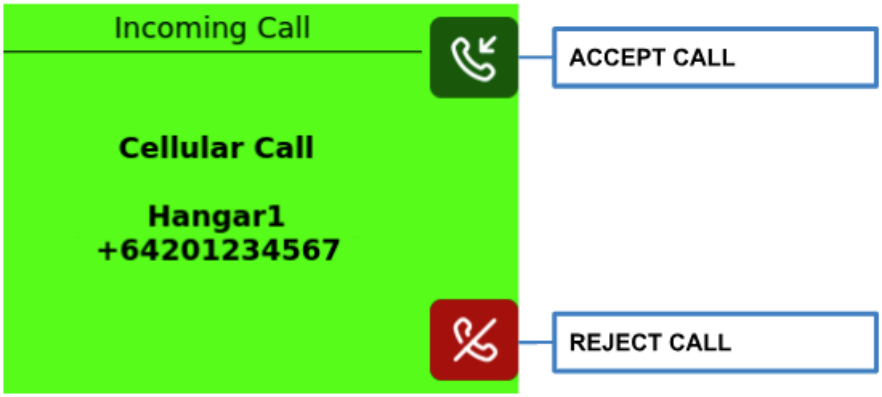
Making a Call

Once a number has been selected a call can be initiated by pressing the call button (F1). This will prompt the operator to select a modem to dial out on. Selecting a modem using the

function keys will initiate a call on that modem. Only modems which can make calls will show up on the modem selection screen. If multiple modems are installed, multiple calls can be made simultaneously. If multiple calls are active, all parties can hear you, but they are unable to hear each other.



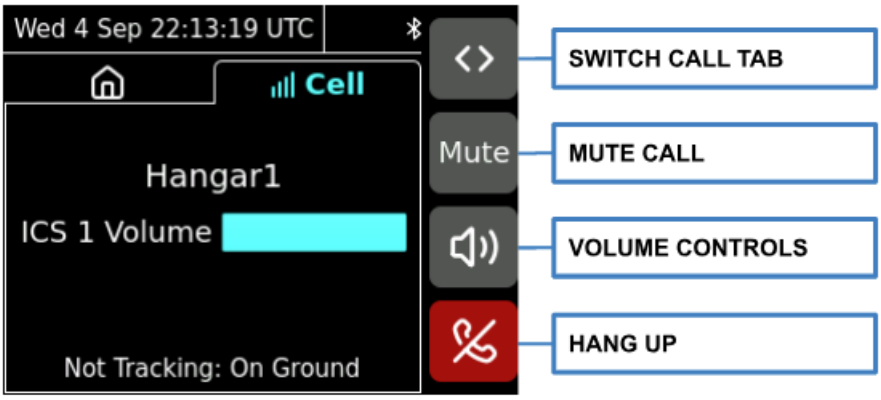
Incoming Calls



Incoming calls can be accepted with F1 (accept call) and rejected with F4 (reject call).

When a call is being received, the screen will flash green and black, and a headset ringtone will be heard.

Call Page



Once in a call, the user is taken to the main screen, and a call tab is added for the call. From this screen operators can do the following:

- **Switch Call Tab** – Switches to the next call tab. This is how the standard main screen can be accessed.
- **Mute Call** – Mutes or unmutes the call. The volume bar will be greyed out with the ( ) symbol when muted.
- **Volume Controls** – Enables or disables the volume controls. This allows for changing the volume of the call using the up/down arrow keys.
- **Hang Up** – Hangs up the call, deleting the call tab.
- **DTMF** – You may be asked to press the number keys during some calls. The number keys of the Controller, as well as * and #, are available for this. This means these keys are unavailable for anything else during calls.

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. ***Flightcell does not recommend*** *using the DZMx Plus to set up this feature, due to many cellular network operators deprecating the ability for the DZMx Plus to configure call forwarding on modern 4G/LTE networks.*

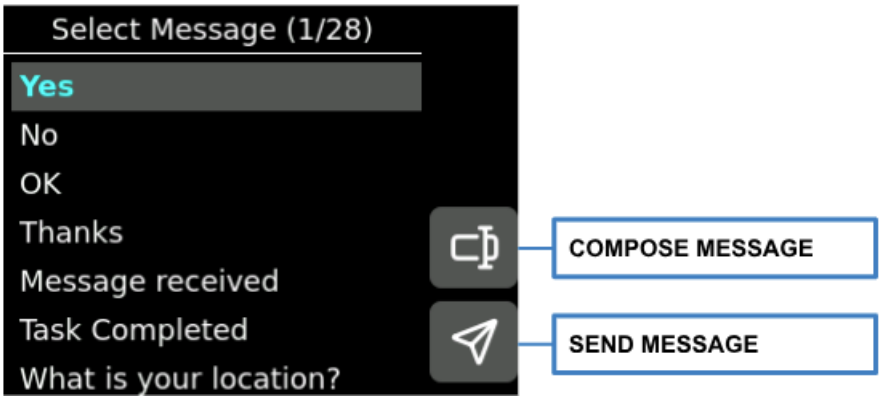
Call forwarding can still be set up by talking directly to your cellular network provider.

Setup is described in the Installation Manual. Using DZMx Connect, navigate to the Settings Page -> Modem -> Modem1 and/or Modem2 and enable call forwarding. The number to forward calls to can be set here as well.

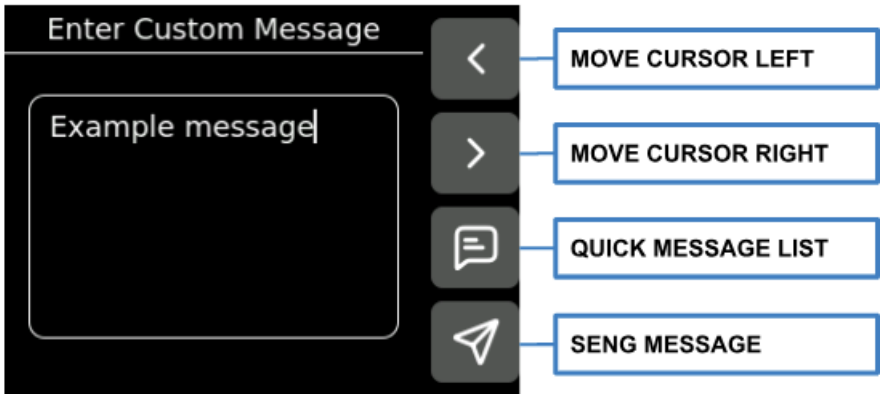
Sending an SMS

Once a number has been selected an SMS can be initiated by pressing the SMS button (F2).

The SMS button will take you to the Quick Message list, as seen below:

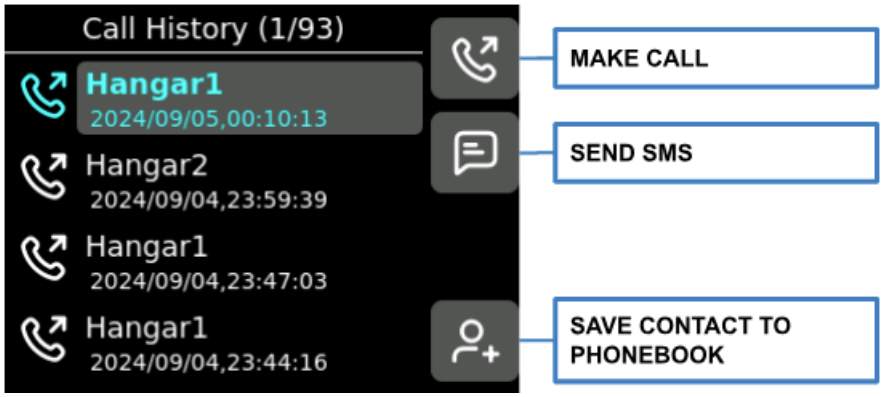


From the Select Message screen, users can either select a pre-defined message (up/down arrow keys) or compose their own custom message (F3), as shown below.



Pressing Send Message (F4) will prompt the user to select a modem to dial out on. Selecting a modem using the function keys will initiate a call on that modem. Only modems which can make calls will show up on the modem selection screen.

Call History



Call history can be viewed from the Phonebook by pressing F4. From this screen operators can do the following:

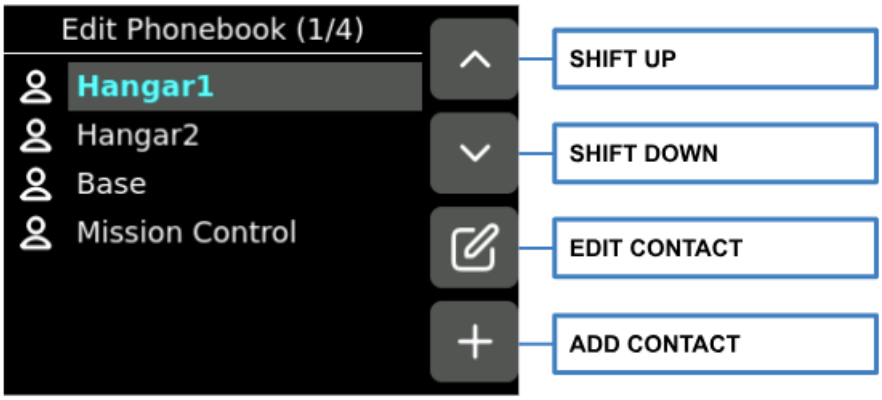
- View outgoing ( ) and incoming ( ) calls (up/down arrow keys)

- Dial a recent contact (F1)
- Send SMS to recent contact (F2)
- Save a recent contact to the phonebook (F4)

Phonebook Editor

The Phonebook Editor allows users to add, edit, delete and reorder contacts in the phonebook.

The up/down arrow keys are used to navigate the phonebook, while the function keys are used to add, edit or reorder the phonebook. A contact can be permanently deleted after selecting a phonebook and pressing edit. Refer to the following image for an outline of the function keys:



To save all changes made to the phonebook, press the back key. This will raise a prompt to either save or discard all phonebook changes.

A small pop-up showing “Phonebook updated” will display for a short period after saving the phonebook.

Upload/Download Phonebook

Users can upload and download phonebooks from DZMx Connect. This allows for copying a phonebook across multiple aircraft. The upload and download buttons are in the top right of the Contacts page in DZMx Connect. For further information on DZMx Connect, see Section 3: DZMx Connect

Bluetooth Phonebook

The DZMx Plus offers a Bluetooth phonebook transfer function that copies contacts from a smart device to the DZMx Plus phonebook. This is a separate phonebook to the one where normal DZMx Plus contacts are stored. It is a temporary function, and the contacts are erased in the DZMx Plus when the unit powers off. To access the Bluetooth phonebook, press the right arrow on the normal phonebook page. This will only be possible if a Bluetooth phonebook exists.

Refer to the Installer Manual for details on how to configure this for iPhone and Android.

Privacy

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

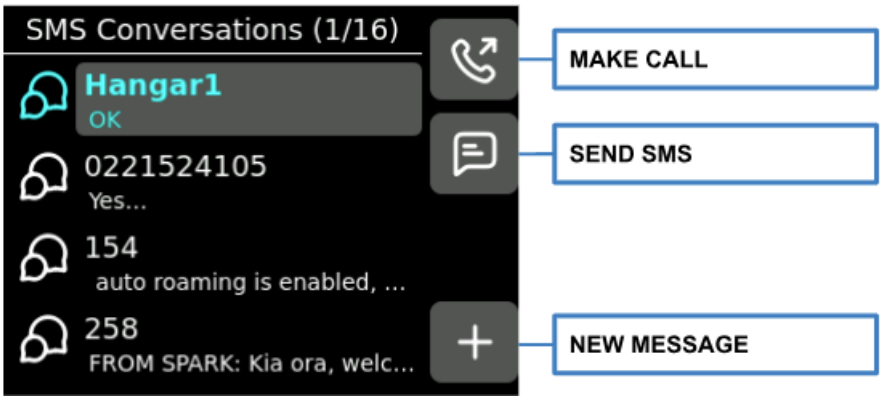
The privacy settings are available under Settings > Privacy Controls on the Controller DZMx Menu.

The available settings are “Auto Call Log Delete” and “Auto Message Log Delete”. When these settings are active, call history and message history respectively will be automatically cleared when the device is powered off.

If Privacy Controls is not present in the Settings menu, it may not have been configured by the installer. Please refer to the Installation Manual for configuration information or contact your installer.

Section 7: SMS Conversations

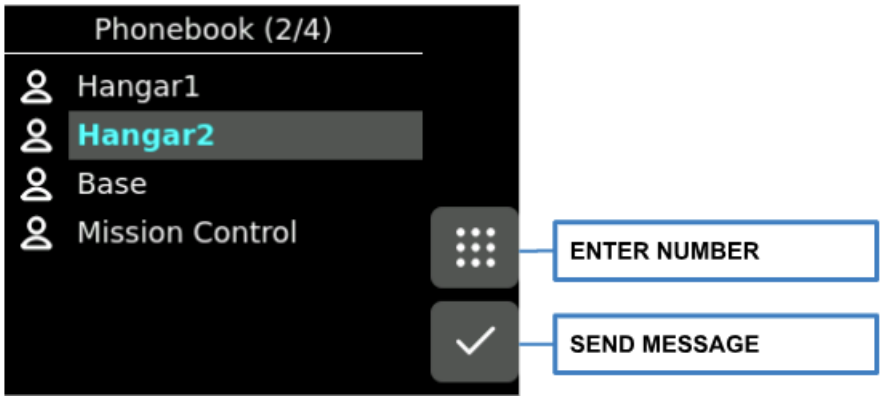
The Controller maintains a list of SMS conversations on the SMS screen. New SMS messages can also be drafted from this screen.



The list of conversations on this page goes from most to least recent. It can be navigated with the up and down arrows, and a specific conversation can be entered with the enter key.

The page has the following functions:

- **Make Call** – Calls the contact in the currently selected conversation.
- **Send SMS** – Sends an SMS to the contact in the currently selected conversation.
- **New Message** – Opens the quick message screen. However, no phone number is selected as the recipient at this point. After pressing send, a modified phonebook page opens (see below) to allow the user to select the contact they want to send the message to. The contact can be selected from the phonebook, or a new number can be entered using the keypad (F3).



SMS Conversation Screen

This screen displays a specific conversation. It can be reached after pressing the enter key with a specific conversation selected on the SMS screen.

The conversation can be navigated with the up and down arrows.

The page has the following functions:

- **Make Call** – Calls the contact in the currently selected conversation.
- **Send SMS** – Sends an SMS to the contact in the currently selected conversation.

Receiving SMS

When an SMS message is received, a popup window will appear with a border that flashes between green and white. Pressing tick (F4) will take the user to the relevant SMS Conversation Screen. Pressing X (F3) will keep the user on their current screen.

Section 8: Iridium Push To Talk

The DZMx Plus allows users to use Iridium's Push-To-Talk (IrPTT) service, providing global one-to-many calling.

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

Toggle IrPTT

The Switch Sat Mode Button switches the DZMx Plus Satellite modem between phone mode and IrPTT mode.

Make Calls with PTT Switch

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

To make a call, press and hold the IrPTT switch to start transmitting. Release the key to stop transmitting.

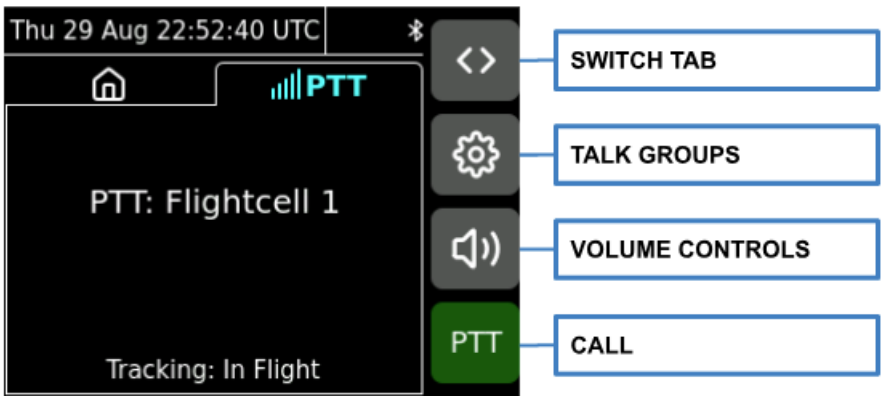
If a PTT switch is not provided for IrPTT, the PTT Screen on the Controller may be used.

See PTT screen below

Press and release **PTT** to start transmitting.
Press and release **PTT** to stop transmitting.

PTT Screen

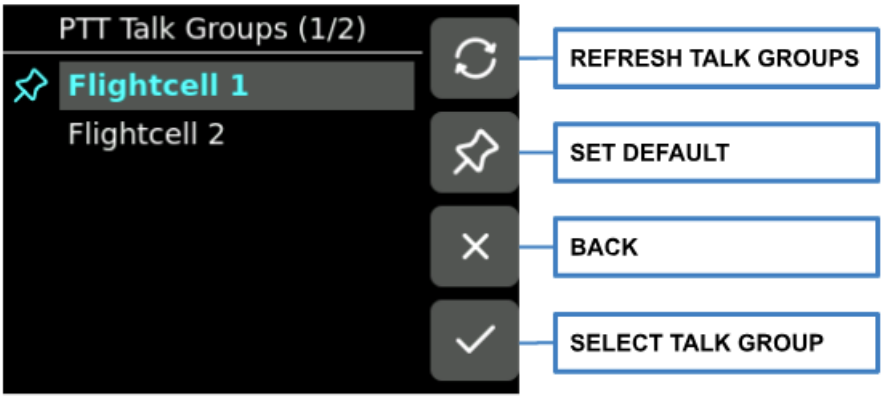
When in PTT Mode, a call tab is added for PTT on the Controller.



The PTT Screen has the following features:

- **PTT State** – The central text on this screen is the PTT state. When connected and not in a call, this will display the current talk group. Otherwise, it will display the modem state.
- **Switch Tab button** – Switches the call tab, allowing for access to the normal Controller main screen.

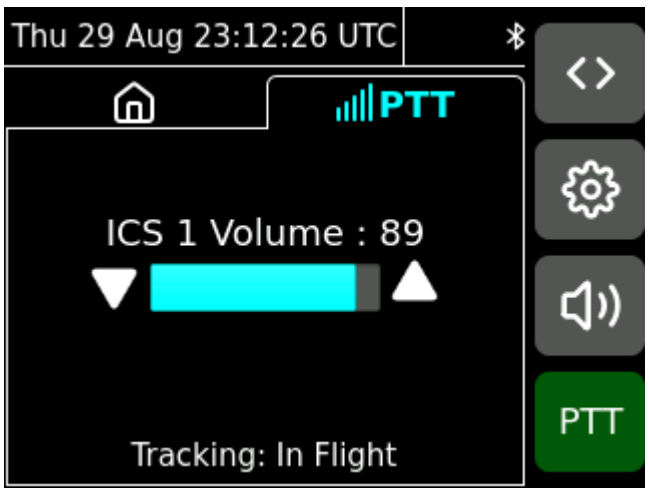
» **Talk Groups button** – Opens a menu for configuring the active PTT talk group.



The talk group list can be navigated with the up and down arrow keys. It includes the following features:

- » **Refresh Talk Groups button** – If the talk group list does not look correct and has changed recently, this will refresh the talk group list and bring it up to date.
- » **Set Default button** – Sets the default talk group to the selected one. The default group is active on startup. The current default has a pin icon beside it.
- » **Back button** – Go back.
- » **Select Talk Group button** – Sets the active talk group to the currently selected one.

» **Volume Controls button** – Toggles volume controls, allowing the user to change the headset volume using the arrow keys. The below image shows what the volume screen looks like when the PTT call is connected to ICS 1.



» **Call button** – When green, allows the user to start a IrPTT call. When red, allows the user to hang up the IrPTT call. Note that incoming calls cannot be hung up.

Section 9: Tracking / Mark

The DZMx Plus has an embedded GPS, which provides precise information on the current

state of the aircraft. This information can be sent to a tracking provider to enable the aircraft to be monitored and its movements tracked.

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 the Mark function.

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

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

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

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

Mark

A tracking position report can be manually triggered with the Mark main menu function. The Mark function has several modes of operation. The option allocated to the Mark function must be configured by an installer, and this feature must be supported by the tracking provider. The options are as follows:

Mark Short Key Press Options

- **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, press one of the four coloured keys and enter a numeric code; your organisation will advise on 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 Select Message screen on the Controller. When prompted, select the appropriate index of the Quick Message required.

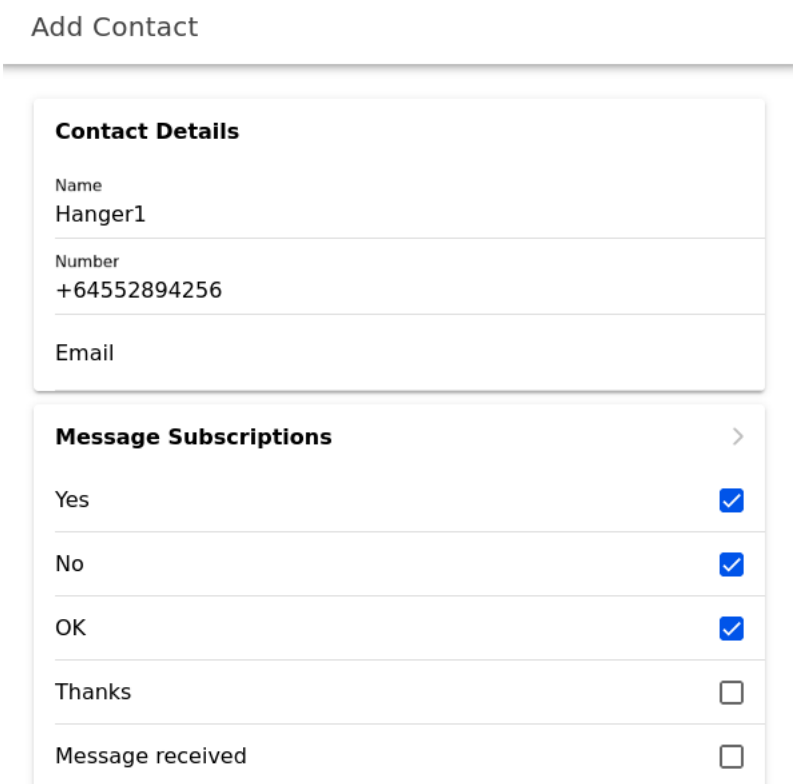
- Text Contact List Only – a message is sent by SMS to selected contacts; follow the prompt and enter a number corresponding to a specific message in the DZMx Plus Quick Message Library (see below for details of how to configure the message recipients for this option).

Mark Long Key Press Options

- **Position Only** – a position report is sent to the tracking provider
- **Position with Text Message** – a position report is sent to the tracking provider with a message attached; select a message from the list shown.

Configuring message recipients

- The recipients for each Quick 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
- Select Submit
- Repeat for additional contacts.



Enabling, Suspending or Disabling Tracking

Tracking may be suspended or disabled.

Go to *Settings* > *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 Plus 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:** Configurable to be anywhere between 15 and 60 seconds between position reports.

Note: Cell HD tracking requires Tracking over IP (cell data) to be enabled. Please refer to the Installation Manual for configuration details and for details of Full HD mode which uses both cell data and Iridium SBD.

To change periodic timer settings:

- Go to *Settings* > *Tracking* > *Periodic*. Select the timer to be changed.
- Use the arrow 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 *Settings* > *Tracking* > *Periodic Events* > *Heading Variation*.

Geofence

The Geofence Suspend function allows users to suspend tracking while the aircraft remains within a specified geographical radius. This enables position reports to be suppressed while the aircraft is operating in a localised area, e.g. during crop dusting or Airwork operations.

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.

Configure Geofence

Geofence must be configured before use.

Configure Geofence Mode:

- **Using DZMx Connect**: Go to Settings > Tracking > Geofence > Geofence Mode. Select the Geofence Mode from the list below. When selected, select OK then select DONE.
- **Using Controller keypad**: Go to Settings > Tracking > Geofence > Geofence Mode. Select the Geofence Mode from the list below, then press ENTER to save.
- Select **Disabled** to disable the Geofence application. This will remove the geofence function from the MENU key.
- Select **Without Events** mode to suspend all tracking messages, except emergency, forms, ETM1000 and manual mark messages.
- Select **With Events** mode to suspend periodic and course change tracking messages as above, but all triggered events will still be transmitted.
- Select **Events on Cell Only** mode to operate as per With Events mode but with the additional cost-saving feature to only send event messages via cell modem. Triggered event messages will be queued if the cell modem has no signal until the cell modem obtains a connection to the cell network, or the aircraft flies out of the geofence perimeter.

Configure Geofence Radius: Radius is in Nautical Miles

- **Using DZMx Connect**: Go to Settings > Tracking > Geofence > Geofence Radius.
- **Using Controller keypad**: Go to Settings > Tracking > Geofence > Geofence Radius. Enter the radius then press ENTER to save.

Activate Geofence

Press the **Geofence** key (). The screen will momentarily display that tracking is now suspended and will also state the suspend radius. The geofence will be centred at your current position and the suspend radius set will be set to the Geofence Radius setting.
Whilst geofence is active the tracking status line will display “Geofence Active”, followed by your current distance from the geofence centre in Nautical Miles, e.g. *Geofence Active: 4.985 NM*.

Recenter Geofence

While inside the geofence perimeter, press the **Geofence** key (). Options for **Cancel** and **Recenter** will be displayed. Select **recenter**. The geofence will be recentred on your current position and the suspend radius will be displayed.

Cancel Geofence

While inside the geofence perimeter, press the **Geofence** key (). Options for **Cancel** and **Recenter** will be displayed. Select **Cancel**. This will cancel the geofence and resume normal tracking.

Tracking Status Table

The Tracking status line often changes during flight to reflect the following:

- Tracking states (e.g. off, on, suspended)
- Tracking events (e.g. take off, power-up, engine-on)
- Flight state information (e.g. hovering, on-ground)

The tracking information line contains a prefix status and a suffix status in the following format:

Tracking Prefix: Tracking Suffix

The supported tracking prefixes are:

Tracking Prefix	Definition
Not Tracking	Tracking is configured to be disabled in the current flight state
HD Tracking	Tracking is running at full high-definition speed
Tracking	Tracking is running at normal speed
Geofence Active	Tracking is suspended while inside the configured Geofence
ADS-B Mode	Tracking is being temporarily suspended by the tracking provider in ADS-B mode
A.R.M Active	Automated Rescue Monitoring is currently enabled and active

The supported tracking suffixes are:

Tracking Suffix	Definition
In Flight	Default state when flying, returns to this after displaying any flight event
On Ground	Displayed while aircraft is grounded

Hovering	Displayed while DZMx Plus detects the flight speed has dropped below the hover speed threshold
No GPS	Unable to track as the DZMx Plus has no GPS signal
Suspended	Tracking has been temporarily suspended by a user or tracking provider
Disabled	Tracking has been disabled in the settings
Engine Start	DZMx Plus has detected an engine start event
Engine Stop	DZMx Plus has detected an engine stop event
Queueing	DZMx Plus is queueing more tracking messages
Queue Full!	DZMx Plus tracking queue is full. New tracking messages will erase the oldest tracking message
Retrying Msg	DZMx Plus is retrying to send a tracking message that was unable to send during the last attempt

Section 10: Wi-Fi

Some DZMx Plus configurations come 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.

Toggle Wi-Fi

The Wi-Fi Button toggles Wi-Fi on or off.

Or, using DZMx Connect, go to Connectivity > Wi-Fi, and turn the 'On' switch on.

When Wi-Fi is enabled, the Wi-Fi icon will appear in the top right-hand corner of the Controller display ().

Using DZMx Connect with Wi-Fi

Connect to the DZMx Plus Wi-Fi. Then, open a web browser on your laptop or mobile device, enter 192.168.2.1 in the address bar, and press Enter. The DZMx Connect home screen will be displayed.

Section 11: Bluetooth

Bluetooth is an in-built option that works with any DZMx Plus (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 like 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.

Toggle Bluetooth

The Bluetooth Button toggles Bluetooth on or off.

Or, using DZMx Connect, go to Connectivity > Bluetooth, and turn the 'On' switch on.

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

Setup Bluetooth with Your Device

Note: Installers can choose to disable access to the Bluetooth settings. If that has been done, these instructions will not be usable..

- Make DZMx Plus discoverable.
  - Using the Controller, go to Settings > Bluetooth > Discoverable and turn on.
  - Using DZMx Connect, go to Connectivity > Bluetooth > Discoverable and turn on.
- The Bluetooth discoverable icon ( ) should appear on the top right-hand side of the Controller display.
- Enable Bluetooth on the mobile device and select the DZMx Plus.
- A pairing request will appear on both the DZMx Plus and the mobile device. Read and accept the requests if they appear correct.
- The mobile device is now paired. It can be disconnected and reconnected using its Bluetooth settings.

Auto-connect

When a device is paired, auto-connect functionality is available, allowing a user's mobile device to automatically connect to the DZMx Plus. The auto-connect functionality may vary depending on the mobile device used. Some devices may need to be connected manually.

Auto-connect can be enabled:

- Using the Controller, go to Settings > Bluetooth > Auto-connect and turn on.
- Using DZMx Connect go to Connectivity > Bluetooth > Auto-connect and turn on.

When enabled the DZMx Plus 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.

Note: Cellphone and Bluetooth technologies are regularly changing. Autoconnection and maintenance of a reliable connection between cellphones and the DZMx Plus via Bluetooth cannot be guaranteed. A cellphone connected via Bluetooth to the DZMx Plus should not be used for mission critical communication.

Media Streaming

The DZMx Plus supports a Bluetooth audio streaming protocol called A2DP. If a Bluetooth device is connected and pairing has been successful, a music note icon ( ) will appear in the top right corner of the Controller 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 Plus supports a Bluetooth audio Hands Free Profile (HFP). If a Bluetooth device is connected in this mode and pairing has been successful, the Controller will display a mobile phone icon ( ) in the top right 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.

IMPORTANT NOTE: To comply with FCC requirements, the BT850 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:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- 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 12: Settings

Several settings can be accessed from the Settings menu. 

- **Tracking**
- **Audio** – there are two setting groups available for audio.
    - **ICS Volume** – Controls headset volume using the arrow keys. If there are 2 ICS channels, there will be 2 settings as well.
    - **Notification Tones** – There are three on/off settings for whether specific actions should trigger audio tones.
        - **Keypad Tones** – Whether button presses on the Controller trigger audio tones.
        - **Message Queue Full** – Whether the message queue being full should trigger an audio tone.
        - **Warnings** – Whether various warnings should trigger audio tones.
- **Bluetooth**
- **Device Brightness** – this controls the day mode brightness level using the arrow keys.

Section 13: Documentation and Information

Documentation for the DZMx Plus and Flightcell Controller is available on the Flightcell website (https://www.flightcell.com/support/documentation).

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

Contact Details

Technical Support

Email 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
Website	https://www.flightcell.com

Section 14: Abbreviations

Abbreviation	Definition
A2DP	Advanced Audio Distribution Profile
ADS-B	Automatic Dependent Surveillance – Broadcast
AIS	Automatic Identification System
AM	Amplitude Modulation
A.R.M.	Automated Rescue Monitoring
DFT	Daily Flight Timer
DHCP	Dynamic Host Configuration Protocol
FCC	Federal Communications Commission
FM	Frequency Modulation
GPS	Global Positioning System
HFP	Hands-Free Profile
ICS	Inter Communication System
IMEI	International Mobile Equipment Identity
IrPTT	Iridium Push to Talk
MPU	Motion Processing Unit
NBFM	Narrow Band FM
NVIS	Night Vision Imaging System
SBD	Iridium Short Burst Data
TTAF	Total Time Airframe Hours
UAT	Universal Access Transceiver
VPN	Virtual Private Network

Appendix 1: Reserved

Appendix 2: Reserved

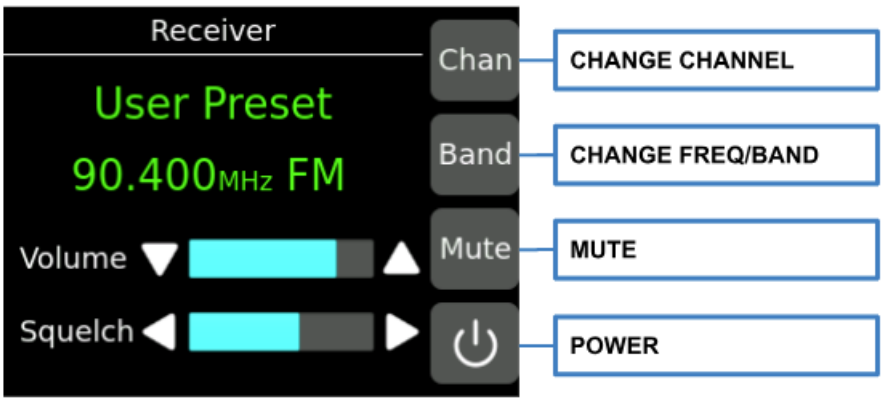
Appendix 3: Reserved

Appendix 4: Software defined receiver (SDR) operator instructions

The Software Defined Receiver (SDR) enables the DZMx Plus to receive radio signals if installed and licensed. It supports the following bands: AM, FM, NBFM, ADS-B In, AIS, and UAT.

The SDR can be operated via the Controller screen or on the web. Both options are covered here.

Controller Interface



The SDR Controller Interface has the following features:

- **SDR state** – The green text on the screen represents the channel name, frequency, and mode. The station name will only display if the SDR is in audio mode (AM, FM, NBFM).
- **Chan button** – Opens a menu for changing the channel from a list of presets. Adding or editing channels cannot be done here, and should be done in the web interface.
- **Band button** – Opens a menu with options for changing the SDR frequency, or the SDR receiver band. Band options are: AM, FM, NBFM, ADS-B, AIS, and UAT.
- **Mute button** – Toggles mute. Only has an effect if the SDR is in audio mode (AM, FM, NBFM).
- **Power button** – Turns the SDR on or off.
- **Volume bar** – Use the up and down buttons to increase or decrease the SDR volume. Only visible if the SDR is in audio mode.
- **Squelch bar** – Use the left and right buttons to increase or decrease the SDR squelch. Only visible if the SDR is in audio mode. Increasing squelch will suppress background noise, but setting it too high will cause real transmissions to be lost as well. It is recommended to set it just above the background noise level.

Web Interface

Accessing Web Interface

The DZMx Plus radio web interface is available through the wireless or wired network interfaces at the following locations:

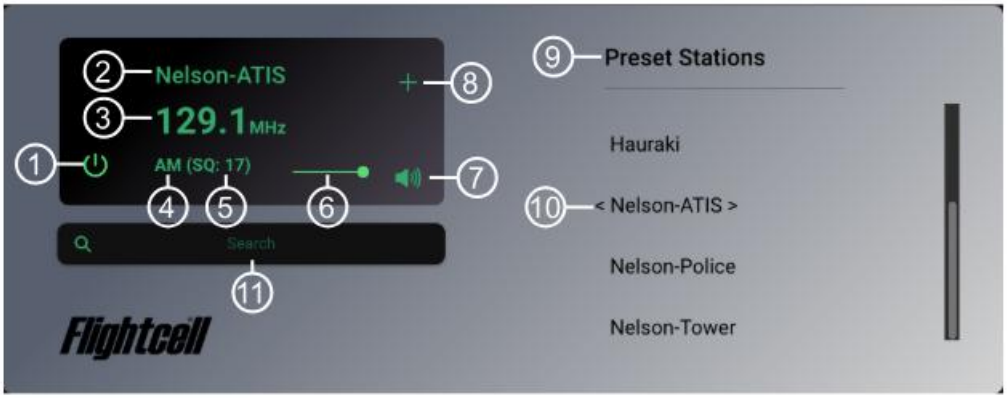
1. Wired Ethernet Connection

- Connect a computer to the DZMx Plus Ethernet port.
- Open a web browser and enter 192.168.4.1/radio in the address bar, then press enter. The SDR screen will appear.

2. Wireless Laptop Connection

- Power on the DZMx Plus and allow it to complete its initialization.
- Check for the Wi-Fi icon at the top right of the Controller display. If the icon is not visible, enable Wi-Fi following the instructions for setting up Wi-Fi in Section 11: Wi-Fi.
- Open a web browser on your laptop, enter 192.168.2.1/radio in the address bar, and press enter. The DZMx Plus radio screen will be displayed.

Interface Description



1. **Power button** (Click to the SDR turn on or off)
2. **Channel name** (Click to edit)
3. **Frequency** (Click to edit)
4. **Reception band** (Click to edit)
5. **Squelch** (Click to edit) Increasing squelch will suppress background noise, but setting it too high will cause real transmissions to be lost as well. It is recommended to set it just above the background noise level.
6. **Volume** (Drag to change)
7. **Mute** (Click to toggle)
8. **Preset Add/Update** (Click to store/update current settings)
9. **Preset List** (Hover over to show import/export functions)

10. **Current preset** (Click to change)
11. **Preset Search Filter**

SDR Settings

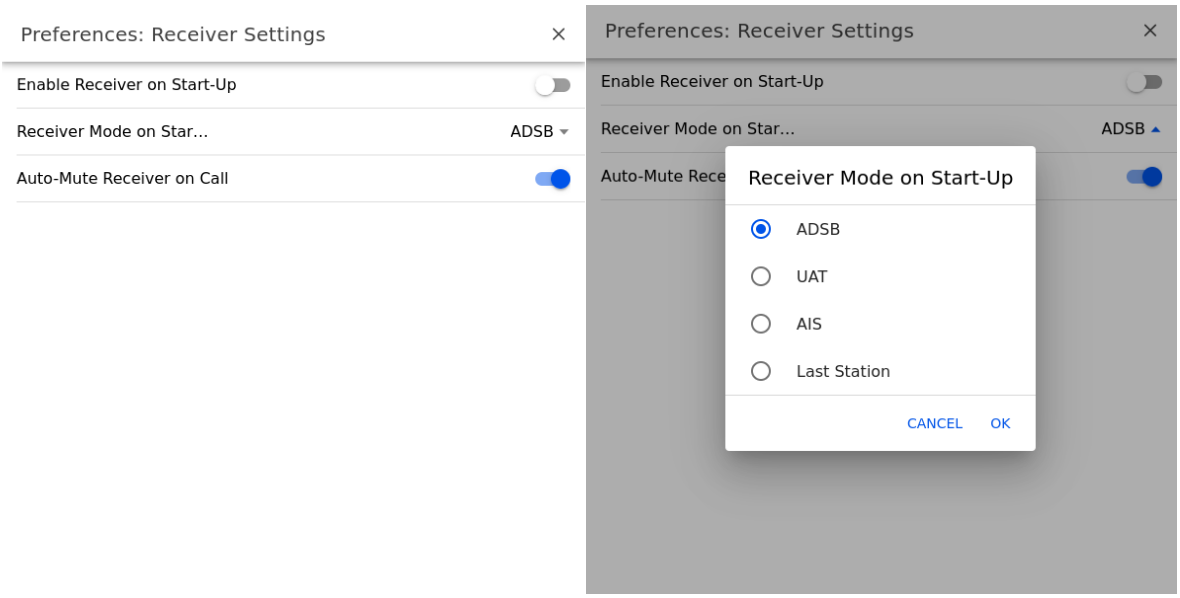
SDR settings can be changed on DZMx Connect, under Preferences->Receiver Settings. The settings available are:

- Enable Receiver on Start-Up
- Receiver Mode on Start-Up

Operator configurable start up modes

The operator can set the SDR to start up in a mode of their choice. This reduces the need to switch on the SDR by starting in a selected mode on initial power up or not. The SDR start up modes are as follows:

- Enable at Startup – On - Off
- Receiver Mode on Startup
  - ADSB
  - UAT
  - AIS
  - Last Station
- This configuration is only available on DZMx Connect. To enable this, go to **Settings->Preferences->Receiver**
- Press Done when completed



- This will enable to the selected mode setting at start up
- The operator can change the selection during operation to any other radio mode
- Should the SDR be switched off during flight while the DZMx Plus is still powered, it will restore to receiver Mode on startup when switched on again.
- The SDR can also be set to auto-mute when on a phone call. To enable this in DZMx Connect, go to **Settings->Preferences->Receiver** and set to on.

Electronic Flight Bag Configuration

The device to be used should be connected to the DZMx Wi-Fi.

To receive ADS-B data the external application should be set to receive on the same port as the DZMx Broadcasts UDP. The configuration will be according to the EFB provider instructions. Once setup, ADS-B IN traffic should then be available in the application. Check with your EFB provider if GDL-90 ADS-B data is supported over Wi-Fi or contact Flightcell International by emailing tech@flightcell.com

ADSB-IN 1090MHZ and UAT 978MHz

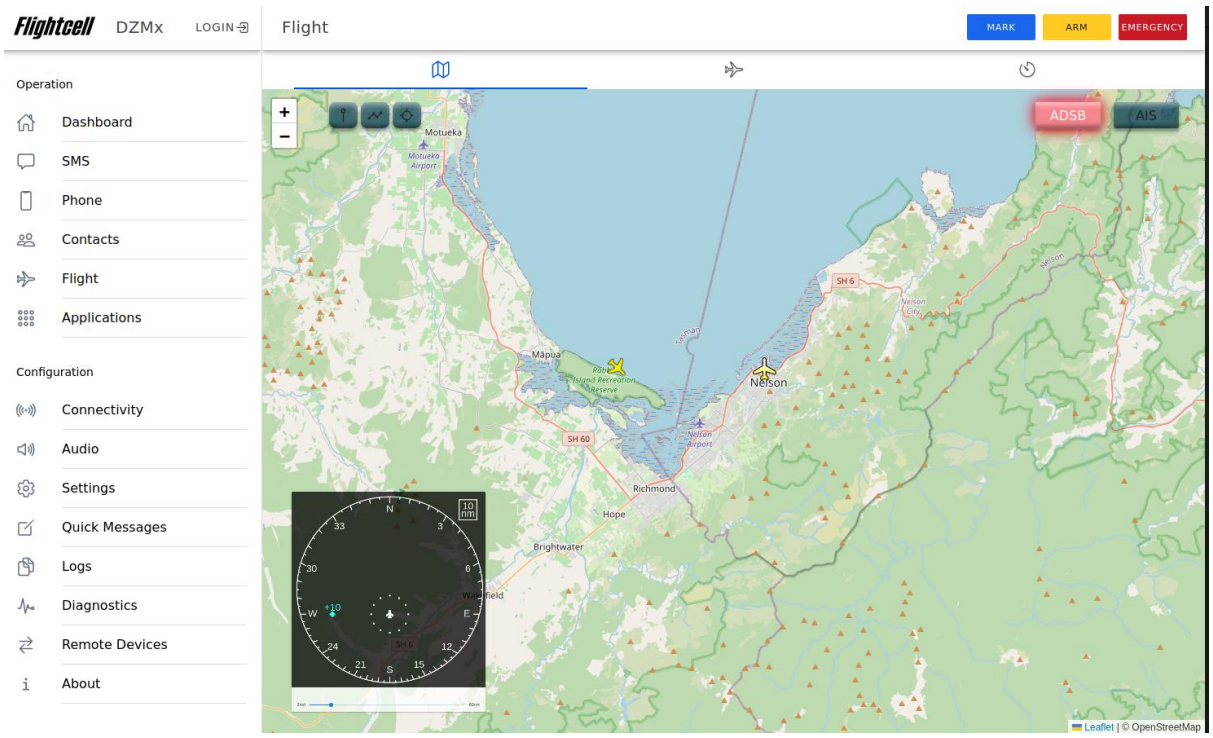
The Flightcell SDR provides a 1090MHz S-Mode ADSB-IN and UAT 978MHz (UAT in USA only) reception capability. Once activated, the user can use the Flight Page in DZMx Connect to view aircraft in the vicinity. The Map tab and Air Traffic tabs provide two different views. The Air Traffic view provides a TCAS like representation of traffic.

Both views identify:

- Other traffic – Green on map, blue hollow diamond on TCAS
- Proximate traffic – Yellow on map, blue filled diamond on TCAS
- Traffic advisory – Red on map, yellow circle on TCAS

On the map display the aircraft colour fades slowly to transparent after it loses contact, before fully disappearing after 120seconds. Hovering over an aircraft will show flight details for that aircraft.

In the air traffic view, the slider adapts the scale of the display.



AIS Displayed on EFB's

AIS data can be displayed over Wi-Fi to DZMx Connect and some 3rd Party EFB's

Contact Flightcell International to find out which 3rd Party EFB's are available to display AIS tech@flightcell.com

AIS

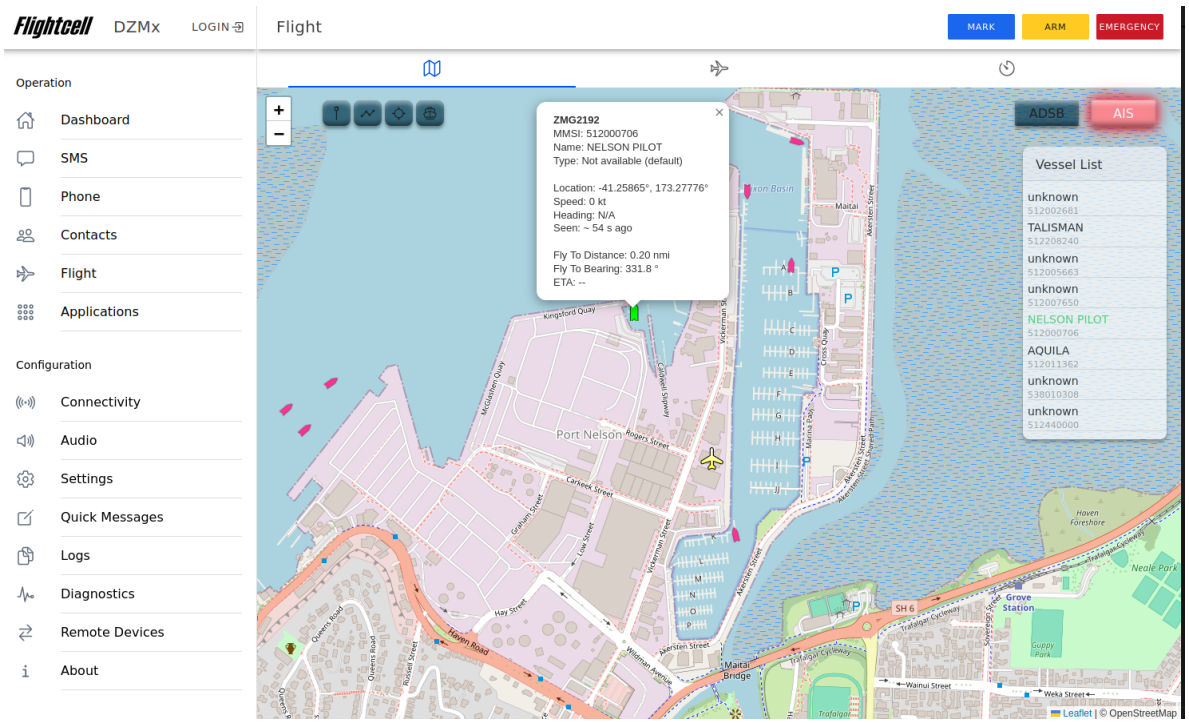
The Flightcell SDR provides a 162MHz AIS reception capability. The SDR must be assigned as a source for AIS displays using DZMx Connect (Settings->Preferences->AIS) if the user wishes to view the information on the DZMx Connect Flight Page.

Once activated on the SDR and assigned as a source in DZMx Connect, the user can use the Flight Page in DZMx Connect to view vessels in the vicinity. The Map tab and Marine Traffic tabs provide two different views. The Marine Traffic view provides an AIS "instrument-like" representation of traffic.

On both displays the vessel colour fades slowly to transparent after it loses contact, before fully disappearing after 10minutes.

Clicking on a vessel in the map view will provide vessel information and details on the bearing and ETA for flying to that vessel.

Clicking on a vessel in the marine traffic view list will highlight that vessel in the display by filling in the icon. The slider can be used to adapt the scale



Note: The DZMX stores a list of vessel names, MMSI and type internally to make recall easier

Appendix 5: Certus

The Flightcell DZMx Plus integrates the external Iridium Certus modems voice and data services into its own system. An operator can make and receive calls on the external Iridium Certus modem from the Flightcell Controller in a similar way to a modem installed in the DZMx Plus.

The Flightcell DZMx Plus currently supports the following external Iridium Certus devices:

- Guardian Mobility G6 Certus 100
- Guardian Mobility G6-S Certus 100

Appendix 6: Fire App

Introduction

The DZMx Plus can be used to provide automated reporting of aerial firefighting operations, to meet the requirements of fire management agencies such as the National Aerial Firefighting Centre (NAFC) in Australia and the US Forest Service (USFC). It collects data from the aircraft and sends real-time firefighting events and GPS position information to tracking providers and fire authorities.

Where does the firefighting data come from?

The DZMx Plus can capture firefighting data in two ways:

- From the DZMx Plus General Purpose Inputs (GPIs). which can be connected to various parts of the firefighting installation.
- From the data output of an Automatic Water Tank Controller (AWTC). This data is sent as regular reports over a serial data connection.

What data is produced?

Firefighting data is sent as event reports to a tracking service provider in real-time. There are three fire specific events sent to tracking providers:

- Fill Event, including amount of water picked up
- Drop Start Event
- Drop End Event, including amount of water dropped

How to operate

Depending on the aircraft or helicopter type and what container is being used, the aircraft will be configured for using a tank, bucket or both.

Refer to your installer's instructions to what controls or switches are used in the cockpit for controlling drop, pump, fill and end of drop events.

Most of the settings and calibrations are done on the ground except for helicopters using a bucket and load cell.

For a helicopter using a bucket and load cell, a calibration flight is required to calibrate the Bucket Load Cell Input, so the system knows the value of an empty bucket and full bucket.

This Load Cell Input Calibration is only required to be done once assuming the same bucket and hardware is used for the next flight.

Note that if any part of the system is modified (i.e. changing to a different bucket) then the Bucket Load Cell input must be recalibrated. This can be performed while doing the first fill using the new bucket.

Calibration Instructions for helicopters using a Bucket Load Cell

The Controller must be in installer mode for this (*Maintenance* > *Enable Installer Mode*)

Using the Controller main screen Menu to Calibrate the Bucket Load Cell input and with an empty bucket suspended in the hover, select Calibrate Low Level from the Bucket Load Cell menu

- Settings > Inputs > Bucket Load Cell > Calibrate Levels and press F4 (Calibrate Low Level) to calibrate.

With a full bucket suspended in the hover, select Calibrate High Level from the Bucket Load Cell menu

- Settings > Inputs > Bucket Load Cell > Calibrate Levels and press F3 (Calibrate High Level) to calibrate.

It should be noted that the helicopter must be in the hover for the calibration and not have more than 5 knots speed otherwise the DZMx Plus sees it as a flying phase and not calibration.

The DZMx Plus uses GPS speed to determine the hover. Slow down to 5 knots or below, in the hover. From the hover and accelerate above 10 knots, out of the hover and flying.

Appendix 7: Flightcell SBD Inbox Protocol

The Short Burst Data (SBD) Document Transfer Protocol is a proprietary messaging protocol which allows bi-directional transfer of documents and messages between supported tracking providers and the DZMx Plus via satellite SBD. Received documents may include NOTAM, weather, text messages, and passenger information.

Sending Documents to the DZMx Plus

The SBD Document Transfer Protocol must first be supported by your tracking provider. Refer to their documentation for how to send documents to the DZMx Plus. The DZMx Plus will reassemble SBD messages back into a single message and it can be viewed using DZMx Connect in the Inbox page.

Viewing the Documents on DZMx Connect

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

Sending Messages from DZMx Connect

The Inbox page in DZMx Connect can be used to craft simple text messages which will be sent to the tracking provider. Third party integrations can utilise the Flightcell DZMx Plus Web API to offload other documents and data to the ground. Please contact Flightcell for more information.

Appendix 8: Load App

The Load App is a licensed application for measuring Loads using a variable voltage input. Operators are able to trigger readings for pickups and drops using digital inputs. The DZMx Plus can send pickup and drop events to tracking providers, as well as send load reports to an email address which contains the number of pickups and total load picked up.

Input types:

- Loadcell Input (variable voltage input to connect to the load sensor)
- Load Measure Input (digital input for pilots to trigger pickup/drop events)
- Load Drop Input (optional additional input - only required if pilots want to separate the pickup and drop inputs)

Load App Settings:

- Email Destination - where to send load report emails too
- Load unit - What the unit of weight is for reporting (kg, pounds, litres)
- Load Calibration Weight - Calibration setting which allows the DZMx to transform input voltages to weights (configured through the front panel).
- Maximum load - Maximum weight that can be reported, any load above this will be truncated back to this value.
- Send to Tracking Provider - Option to send load reports to tracking providers (as well as to the email address)
- Debug Enable - Additional debugging (see below for more details on how this works)

How does it work?

1. Pilots pick up a load, then trigger 'Load Measure Input', DZMx sends a tracking message to the tracking provider with the weight of the load picked up.
2. Pilot drops load, then triggers 'Load Measure Input' (OR 'Load Drop Input' if configured), DZMx sends a tracking message to the tracking provider.
3. Pilot looks at the load totals;
    - Load Total - Sum of all loads picked up
    - Pickup Count - Number of loads picked up
4. Pilot selects 'Send load totals', which sends an email to the configured address (and optionally the tracking provider).
5. Email recipient receives the email which contains the load totals and an attachment of all tracking events from this flight.

Load debugging

The DZMx contains an installer setting for enabling Load App debugging. Load debugging will add the following to the system:

- The loadcell input will be recorded every second and written to a file. Any attempt to trigger a drop or pickup, is also recorded.
- Emails will contain the above debug file which can be sent back to Flightcell to see the sensor characteristics and how it is being used in the aircraft.

Flightcell

Technical Support

117-00024 Flightcell DZMX Plus with Controller Operator Manual Rev 2.0

Effective Date: 27 May 2026