Operators Manual

Handheld Multi-Purpose Interface (HHMPI)

30-0005 Issue F

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1. Record of Changes

Table 1 Record of Changes

Issue	Date	Comments
4	24 June 2011	New issue
5	20 July 2011	Added battery pack description Added PCMCIA card description Added appendices
6	9 September 2011	Added FTP setup Added wireless USB Added updated live data view Added troubleshooting
B	12 November 2013	Added CVR decompression instructions Added CVR adaptor instructions Added HHMPI cradle features Added aircraft settings
C	3 December 2013	Updated references Added screen captures to upload VADAR Program MOD table update
D	22 May 2014	Updated layout Added Engineering Units section
E	19 October 2018	Added Airbus FDS40-0310 model Clarified use of CVR rack adaptors Updated interface cable list
F	10 March 2021	Added HHMPI Version 3

2. Introduction

The FDS40-0301 Handheld Multi-Purpose Interface (HHMPI) is a portable instrument for downloading data from a Flight Data Recorder (FDR) and audio from a Cockpit Voice Recorder (CVR). It is connected to the recorder via an interface cable which identifies the attached recorder type. The downloaded data is stored in one of the following memory options: internal memory, USB flash drive, Compact Flash card, SD card, or optional PCMCIA card.

HHMPI have undergone several modifications to enhance functionality with various recorder types. This manual is applicable to HHMPI version 2 and version 3. See next section for the list of HHMPI models and description of modifications applied.

Refer to Section 3 for HHMPI Version 2 and Section 4 for HHMPI Version 3 manual.

2.1 HHMPI Modifications

Table 2 HHMPI FDS40-0301 (FDS400-301) models and description of modifications applied

HHMPI modifications	Description
Mod 1	External battery with PCMCIA card slot
Mod 2	Firmware enhancement FA2100 CVR software (ADF)
Mod 3	VADR software interface implemented (ADF)
Mod 4	MCR500 software interface implemented (ADF)
Mod 5	Version 2 HHMPI
Mod 6	Internal battery on HHMPI added
Mod 7	Docking cradle connector added
Mod 8	Audio jack added for CVR capability (ADF)
Mod 9	New revision firmware added (ADF)
Mod 10	New revision firmware added (ADF)
Mod 11	New revision firmware added (ADF)
Mod 12	Honeywell SSFDR/DVDR Live data fix
Mod 13	PCB update
Mod 14	Version 3 HHMPI

2.2 HHMPI Accessories

Table 3 HHMPI Accessories

Part Number	Description
FDS40-0107 (FDS400-107)	Cable USB, HHMPI to PC
FDS40-0302 (FDS400-302)	USB flash drive (2GB)
FDS40-0303 (FDS400-303)	Compact flash card, HHMPI
FDS40-0304 (FDS400-304)	SD card, HHMPI
FDS40-0321 (FDS400-321)	Carry case, yellow
FDS40-0322 (FDS400-322)	Power adapter kit, global, charger for internal battery
FDS40-0335 (FDS400-335)	Battery Pack Charger Cable
FDS40-0334 (FDS400-334)	Carry case, black
FDS40-0373 (FDS400-373)	Docking cradle
FDS40-0330	HHMPI Accessory Kit. The accessory kit includes the following accessories: • FDS40-0107 USB interface Cable • FDS40-0302 USB flash drive (2GB) • FDS40-0321 HHMPI Carry case, yellow • FDS40-0322 Power adapter kit, global, charger for internal battery • FDS40-0335 Battery Pack Charger Cable • FDS40-0373 HHMPI Cradle
FDS40-0332 (FDS400-332)	Wireless interface, USB 802.11g, option

2.3 Interface Cables and Software Options

Table 4 Interface cables and software options

Part Number	Description
FDS40-0068	FDS Sentry Bench Power Cable
FDS40-0069	FDS Sentry Aircraft Adapter Cable
FDS40-0201 (FDS400-201)	Interface cable, L-3 AR, F1000
FDS40-0202 (FDS400-202)	Interface cable, L-3 AR, FA2100
FDS40-0203 (FDS400-203)	Interface cable, HNY, SSFDR
FDS40-0204 (FDS400-204)	Interface cable, HNY, UFDR
FDS40-0208 (FDS400-208)	Interface cable, HNY, AR FDR
FDS40-0209 (FDS400-209)	Interface cable, L-3 EDI, SRVIVR™
FDS40-0210 (FDS400-210)	Interface cable, HNY, Light weight
FDS40-0212 (FDS400-212)	Interface cable, MCR500
FDS40-0215 (FDS400-215)	Interface cable, HNY, SSCVR, Aircraft rack adaptor
FDS40-0216 (FDS400-216)	Interface cable, HNY, SSCVR, Bench power cable
FDS40-0217 (FDS400-217)	Interface cable, HNY, SSFDR, (115VAC & 28VDC)
FDS40-0223 (FDS400-223)	Interface cable, L-3 AR, FA5000/FA5001
FDS40-0224 (FDS400-224)	Interface cable, UASC, CVFDR, CVR, FDR

FDS40-0227 (FDS400-227)	Interface cable, HNY, DVDR
FDS40-0232 (FDS400-232)	Interface cable, HNY, HFR5-D
FDS40-0241 (FDS400-241)	Interface cable, L-3 Micro QAR
FDS40-0246 (FDS400-246)	Interface cable, HNY, AR CVR/Combi
FDS40-0247 (FDS400-247)	ARINC-757 CVR Rack Adaptor. (L3 FA2100, L3 FA5000, and Honeywell HFR5-V CVR Aircraft Rack Adapter. On-Aircraft)
FDS400-257	Interface cable adapter, MCR500 to SCR500
FDS40-0257	Interface cable, UASC, CVFDR, Bench power cable
FDS400-258	Audio breakout fixture, MCR500 to SCR500
FDS40-0258	Interface cable, UASC, CVFDR, Aircraft power cable
FDS400-259	Audio test fixture, SCR500
FDS40-0259	Interface cable, HNY, LW SRVIVR™, Aircraft power cable
FDS40-0260	Interface cable, L-3 EDI, SRVIVR™, Aircraft power cable
FDS40-0270	Interface cable, B&D, 91005
FDS40-0271	Interface cable, P&G, MPFR, Bench
FDS40-0272	Interface cable, L-3 A200S CVR
FDS40-0274	Interface cable, HNY, HFR5-V
FDS40-0276	Interface cable, BASE SCR500
FDS40-0278	Interface cable, P&G, MPFR, Aircraft
FDS40-0283	Interface Cable, FDS Sentry
FDS40-0331 (FDS400-331)	Card reader, PCMCIA, option
FDS40-0337	Interface cable, Honeywell DVDR
FDS40-5011	L-3 FA2100 FDR Download Software
FDS40-5012	L-3 FA2100 CVR Download Software
FDS40-5013	L-3 FA2100 CVR Download and Decompression Software
FDS40-5013	L-3 FA2100 CVR Audio Decompression Software
FDS40-5014	L-3 F1000 FDR Download Software
FDS40-5015	L-3 FA500x CVFDR Download Software
FDS40-5016	L-3 SRVIVR Download Software
FDS40-5017	L-3 microQAR Download Software
FDS40-5020	Honeywell SSCVR Download Software
FDS40-5021	HNY CVR Download and Decompression Software
FDS40-5022	Honeywell SSFDR Download Software
FDS40-5023	Honeywell DVD-R CVFDR Download Software
FDS40-5024	Honeywell HFR5-D Download Software
FDS40-5025	Honeywell UFDR Download Software
FDS40-5026	Honeywell AR Combi CVFDR Download Software
FDS40-5027	Honeywell HFR5-V Download Software
FDS40-5028	B&D (Spirent) 91005 FDR Download Software
FDS40-5029	P&G D51615 MPFR FDR Download Software
FDS40-5030	UASC 160x CVFDR Download Software
FDS40-5031	L-3 A200S CVR Download Software

FDS40-5033	Honeywell HFR5-V CVR Audio Decompression Software
FDS40-5034	P&G D51615 MPFR CVR Audio Decompression Software
FDS40-5035	P&G D51615 MPFR CVR Download Software
FDS40-5036	Honeywell DVD-R CVFDR Decompression Software
FDS40-5040	BASE MCR/SCR-500 FDR Download Software
FDS40-5050	GE 3253C5 VADR CVFDR Download Software
FDS40-5053	FDS Sentry FDR Download Software
FDS40-5054	FDS Sentry CVR Download Software
FDS40-5100	Wireless Dongle Software
FDS40-5102	Engineering Unit Conversion Software
FDS40-5103	HHMPI Encrypted Download Software (Customer Controlled Encryption)

2.4 HHMPI Version 2 Features

Figure 1 HHMPI v2 front view

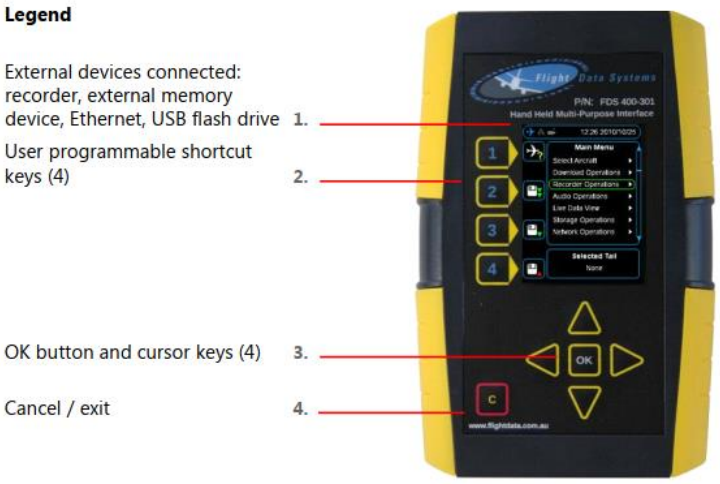


Figure 2 HHMPI v2 top view

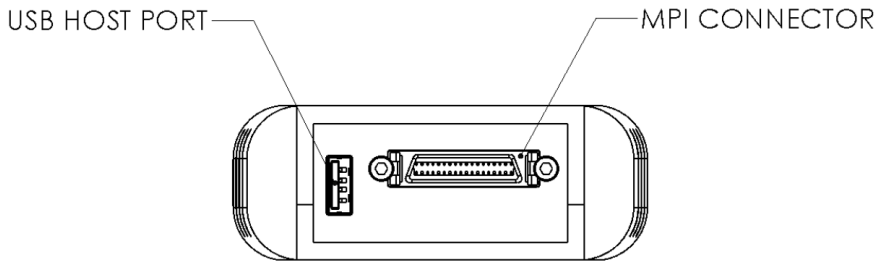


Figure 3 HHMPI v2 bottom view

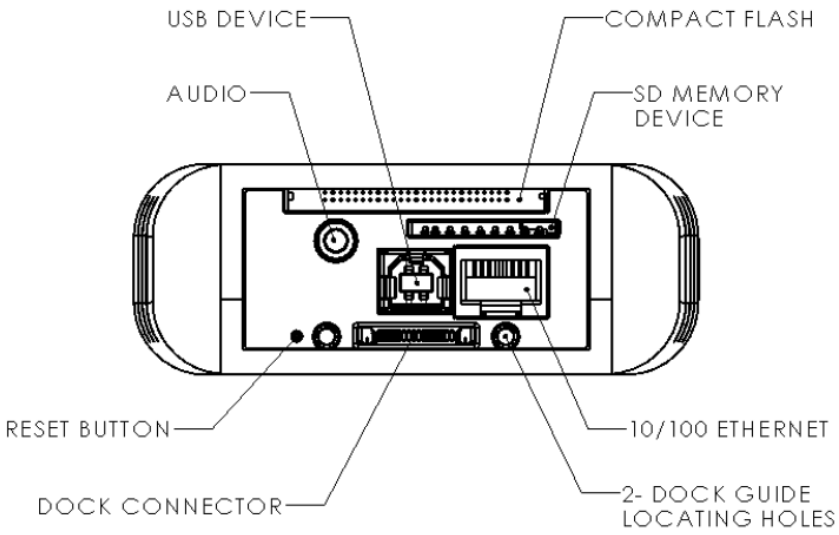


Figure 4 HHMPI v2 Mod 1 top view

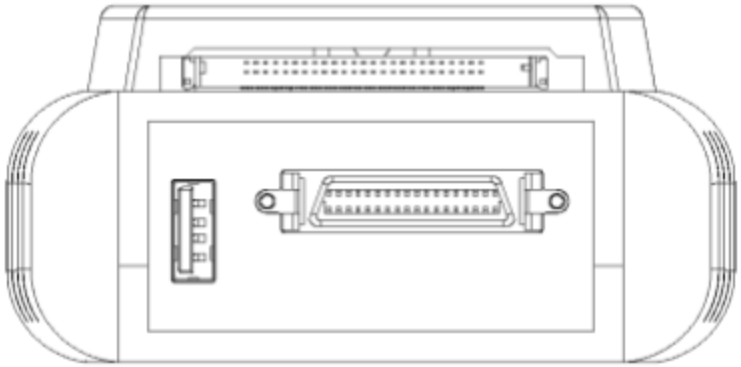


Figure 5 HHMPI v2 Mod 1 bottom view

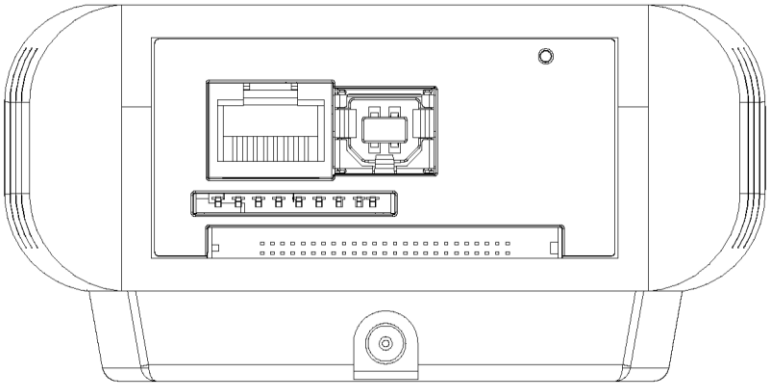


Figure 6 HHMPI carry case and selected accessories

2.5 HHMPI Version 3 Features

Figure 7 HHMPI v3 front view

Figure 8 HHMPI v3 top view

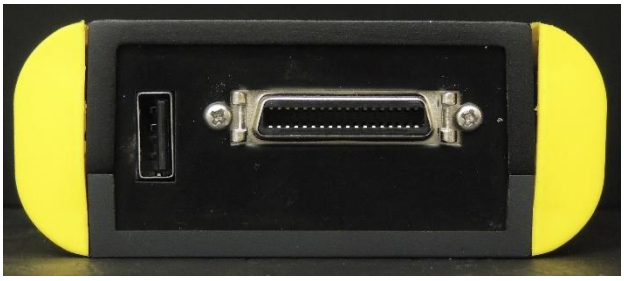


Figure 9 HHMPI v3 bottom view

2.6 HHMPI Specifications

Table 5 HHMPI Specifications

Parameter	Specification	
Mods	**HHMPI V2 Mod 5,6**	**HHMPI V3 Mod 14**
Weight:	435 g	630 g
HHMPI Kit weight:	3 kg	3 kg
Shipping weight:	6 kg	6 kg
Dimensions: (L x W x H)	145 x 95 x 35 mm	145 x 95 x 35 mm
HHMPI Kit dimension:	365 x 270 x 135 mm	
Power:	USB or FDR/CVR interface cable Internal Lithium Ion battery	Internal Lithium Ion battery
Operating Temperature:	-20°C to +60°C	-20°C to +60°C
Memory support:	Internal SD card USB flash drive CF card	Internal SD card USB flash drive
Data View	ARINC 717 for all recorders ARINC 429 standard ARINC 429 periodic Data Link Rate (DLR)	
Data view formats	Binary Octal Decimal Hexadecimal	
Communications	USB v2.0 to PC Ethernet RJ-45 to network Ethernet via recorder interface to recorder RS-422 via recorder interface to recorder Wireless 802.11g capability via optional USB key	USB v2.0 to PC Ethernet RJ-45 to network Ethernet via recorder interface to recorder RS-422 via recorder interface to recorder
Regulatory:	FCC Part 15 Subpart B, July 2008 ANSI C63.4-2014 CE (2014/30/EU) EN 55032:2015 EN 55024:2010 EN 61000-3-2:2014 EN 61000-3-3:2013 EN IEC 63000:2018 Radiocommunication act 1992 AS/NZS CISPR32: 2015	

Compliance Statement

Model: Hand Held Multi Purpose Interface (HHMPI)
Model Number: FDS40-0301, FDS400-301

Responsible Party – U.S Contact Information

Company Name: Flight Data Systems
Street Address: 6497 Parkland Drive, Suite J
City, State: Sarasota, Florida
Zip Code: 34243
Contact: support@flightdata.aero

FCC Compliance Statement

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Environmental Protection

The Waste Electronic and Electrical Equipment (WEEE) directive aims to minimize the impact of electrical and electronic equipment on the environment during their lifetimes, and when they eventually become waste. These devices should be disposed of separately, not as domestic household waste.

To dispose of your device, you should use appropriate collection, reuse, and recycling systems available in your region. Please contact your local waste administration for more information on this disposal system.

If you require information on collection and disposal of your HHMPI device, please contact Flight Data Systems or local distributor.

2.7 Terminology used in this manual

In this manual the hardware buttons on the HHMPI are referred to as the **left**, **right**, **up**, **down**, **OK**, or **cancel** buttons. See previous section for the locations of these buttons on the HHMPI.

A **menu sequence** shows you how to navigate to a specific function. For example, the sequence below shows you the menu selections required in order to listen to cockpit voice recorder live audio.

▼▲ **Main Menu > Audio Operations > CVR Live Audio**

Menu sequences are used abundantly throughout this manual to describe the order of menu steps required to undertake a piece of functionality. The right facing arrow "**>**", refers to pressing the **right arrow** push-button.

On the HHMPI version 3 the use of the push button functionality can also be interchanged via the use of the touch-screen, as such terms including **swipe left**, **swipe right**, **swipe up** and **swipe down** may be used interchangeably to right, left, up and down respectively.

You may also see information of special importance in the form of tips and notes.

A note with the heading "Note" indicates neutral or positive information that emphasizes or supplements important points in this manual. For example:

Note If the HHMPI prompts you for a network password at startup, your FTP network is already set up, and you can skip this section.

A tip is a type of note that helps you apply the techniques and procedures described in this manual. A tip may suggest an alternative method of completing a task—tips are not essential to the basic understanding of this manual. For example:

Tip You can also use these steps to copy an aircraft definition file.

An important note provides information that is essential to the completion of a task. You can disregard information in a note and still complete a task, but you should not disregard an important note. For example:

Important When powering up the HHMPI ensure that no external devices are connected.

A caution is a type of note that advises you that failure to take or avoid a specific action could result in damage or loss of data. For example:

Caution Before applying power, verify that the product is set to match the line voltage and the correct fuses are installed.

3. HHMPI Version 2

3.1 Getting started

3.1.1 Using the HHMPI

To download data from a Flight Data Recorder (FDR) or Cockpit Voice Recorder (CVR), you need the following equipment:

- The HHMPI with software options enabled for the specific recorder you want to download data from.
- An interface cable for the specific recorder you want to download data from. See Table 4 Interface cables and software options.

3.1.1.1 Connecting the HHMPI to a Recorder

To connect the HHMPI to a recorder use the interface cable for the specific recorder you want to download data from. Power is often supplied through the interface cable to the HMMPI from an aircraft powered recorder. In this configuration it is safe to connect or disconnect the HHMPI.

Figure 10 Connecting the HHMPI to the FDR or CVR

3.1.1.2 Powering and charging the HHMPI

The HHMPI can be powered by:

- An aircraft powered recorder through an interface cable.
- A PC or USB adapter power though a USB cable (P/N: FDS40-0107).
- The internal battery, on battery equipped HHMPI devices.
- The external battery, on Mod 2 HHMPI devices.

Battery powered HHMPI devices can be charged with:

- An aircraft powered recorder through an interface cable.
- A PC or USB adapter power though a USB cable (P/N: FDS40-0107).
- A global power adapter kit (P/N: FDS40-0322).

Note External battery powered HHMPI devices can only be charged with the external battery pack charge cable (P/N: FDS400-335).

3.1.1.3 Charging the HHMPI with the docking cradle

Note Only applicable to HHMPI devices with Mod 7.

HHMPI devices with Mod 7 can also be charged by a power adapter through the HHMPI docking cradle (P/N: FDS40-0373).

To charge the HHMPI with the docking cradle:

1. Connect the power adapter to the docking cradle, the green light will illuminate.
2. Insert the HHMPI into the docking cradle, the HHMPI will beep and go through the start-up process, and then begin charging. If the battery is flat, the HHMPI will remain powered off and will not beep until it has acquired adequate charge.

Flight Data Systems recommends using the HHMPI Cradle for the following reasons:

- The cradle provides direct current (DC) charging which extends battery life by avoiding trickle charging.
- The transfer of files from the HHMPI to the PC is stable and easy to operate when docked.
- Auto-sync and transfer files from the unit to a nominated FTP server via Ethernet connection.
- Configure the unit in the web interface using the Ethernet connection on the cradle.

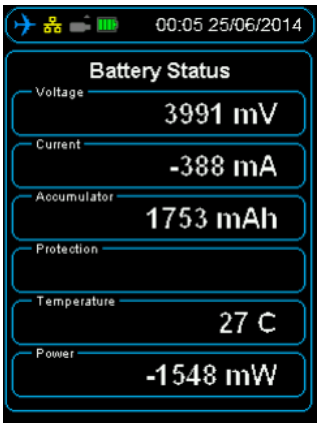
It is recommended to charge the HHMPI device for 12 hours prior to first use. Charging is indicated by an animated blue battery icon located on the top left of the screen. Full charge is indicated by a green four bar battery. When charging is required, this battery icon turns red. The HHMPI may be used when it is charging, however this will increase the total time to reach a fully recharged state.

The HHMPI equipped with internal lithium-ion battery. To monitor status of the battery, refer to the menu sequence below:

▼▲ **Main Menu > Battery Status**

1. Press right to open the **Main Menu**.
2. Scroll down to **Battery Status** and press **OK**.

Figure 11 The Battery Status screen



As per the “battery status” screen as shown above:

- **Voltage -** Reports the present battery voltage level.
- **Current -** A positive current indicates that the battery is charging, while a negative current indicates that the battery is discharging.
- **Accumulator -** Reports the remaining battery capacity.
- **Protection** - Reports any detected under voltage, over voltage or over current conditions.
- **Temperature -** Reports the internal temperature within the unit.
- **Power -** A positive power value indicates the present power being used to charge the battery, whilst a negative power value indicates the power output during operation.

Battery indicator icons on the HHMPI have the following meanings:

 Battery failure

 Critically low

 Low

 Prepare to recharge

 Adequate power to operate

 Full battery with external power disconnected (discharging)

 Charging (animated icon)

 Charged with external power still connected

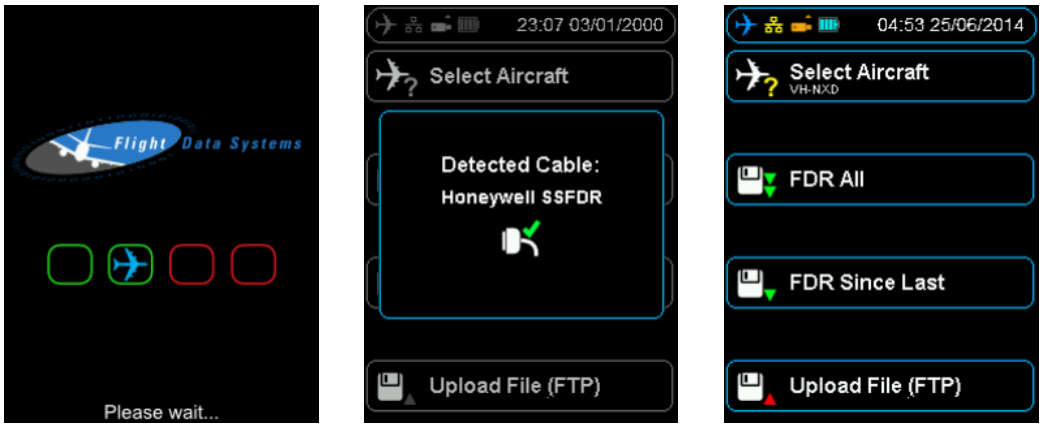
3.1.1.4 Turning on the HHMPI and self-test

To turn on a battery powered HHMPI, press **cancel** or **OK** for 2–3 seconds until the unit beeps.

Important When powering up the HHMPI ensure that no external devices are connected.

Once turned on, the start-up process begins and the power-on self-test is carried out. When the start-up process is complete, the home screen displays four short cut buttons below a status bar. If connected, the interface cable is detected automatically, and correct connection to the flight data recorder is indicated by a blue aircraft icon found in the status bar of the display.

Figure 12 HHMPI power-on sequence



To turn off the HHMPI, press **cancel** until the **Confirm Power Off** alert is displayed, and then press **OK** to confirm.

Note that the HHMPI will not prompt to turn off if it is in the cradle. The HHMPI is always powered when in the cradle.

3.1.1.5 Reset operation

If the HHMPI does not respond to normal key operation, a warm reset may be carried out by pressing the reset button for five seconds. This will reboot the HHMPI and return it to the shortcut screen.

3.1.2 Shortcuts

Shortcuts are used to provide users with a quick path to commonly used functions. There are four user defined shortcut buttons.

▼▲ **Main Menu > Device Configuration > Shortcut Keys > Shortcut n**

The HHMPI displays the shortcut keys following the start-up and self-test. The shortcut keys default to the following functions:

- Select Aircraft
- FDR All
- FDR Since Last
- Upload File (FTP)

3.1.3 Menu structure

The HHMPI is controlled and accessed via a top down menu system. The four push button arrows as well as the **OK** button are used to navigate around the menu as well as making appropriate selections where necessary.

Once the HHMPI boot-up process is complete the main menu can be accessed by pressing the **right** push-button. A selection of the following options displays, depending on the model. They are used to access a range of features:

Note The menu options may change depending on the type of recorder or other devices attached.

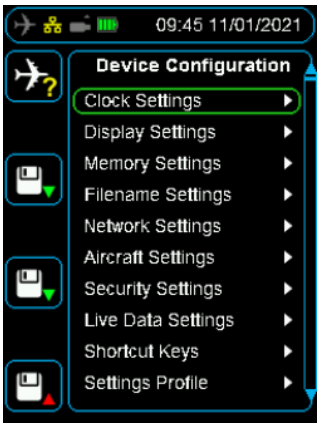
- **Select Aircraft:** Provides a list of aircraft models. This allows the operator to identify the source of the download by selecting an aircraft registration number (tail number).
- **Download Operations:** Depending on the recorder and model, presents a selection of different download options. These are covered in detail in Section 3.2.3 "Flight Data Downloads". These menus only appear when an interface cable is plugged in and the recorder is detected.
- **Recorder Operations:** Depending on the recorder and model, it allows the user to access options like FDR fault Output, Discrete status, View Fault log, Self test, FDR status, CVR status, FDR Memory marker and CVR Memory Marker.
- **FDR Configuration:** Depending on the recorder and model, it allows the user to access options like Information, Set Time and Set Date.
- **Audio Operations:** Depending on the recorder and model, it provides CVR live Audio and CVR Playback Audio. Audio operations will only display if the recorder is a CVR or CVFDR type.
- **Live Data View:** Allows the user access to view live data streaming from the FDR, this is covered in detail in Section 3.2.4 "Viewing live flight data".

- **Storage Operations:** Allows the user to select, format and copy files between different memory functions including internal and USB memory. File transfers are covered in detail in Section 3.2.6 “File transfer operations”.
- **Network Operations:** Provides IP and MAC address information as well as uploading data to the FTP server. Network operations are covered in detail in Section 3.2.7 “Network operations”.
- **Utilities:** Provides option for decompressing .dlu CVR files.

3.1.4 HHMPI Configuration

The HHMPI can be configured via a web interface, or directly on the unit. Using the web interface is the easiest way to set up the HHMPI, see Section 3.2.9.2, “Changing the HHMPI configuration via the web interface”.

Figure 13 Device Configuration Menu



3.1.4.1 Clock Settings

▼▲ **Main Menu > Device Configuration > Clock Settings**

Set the date and time format.

- **Date format -** Allows the user to select a preferred date display format.
- **Set Time -** Allows the user to manually set the time. Once selected, use the **up** and **down** buttons to change the hour and minute values and the **left** and **right** push buttons to swap between hours and minutes. Press the **OK** button to exit.
- **Set Date -** Allows the user to manually set the date. Once selected, use the up and down pushbuttons to alter the month, day, and year, use the **left** and **right** push buttons to swap between the month day and year. Press the **OK** button to exit.
- **Display Date -** Press the right push button to enable the screen to display the date, a ticked box to the right confirms selection
- **Display Time -** Press the right push button to enable the screen to display the time, a ticked box to the right confirms selection.

3.1.4.2 Display Settings

▼▲ **Main Menu > Device Configuration > Display Settings**

- **Brightness Adjust** - Set the LCD brightness between 1 and 10 (maximum brightness).

3.1.4.3 Memory Settings

▼▲ **Main Menu > Device Configuration > Memory Settings**

Set the preferred memory to download or file transfer by selecting one of the following:

- **Ask for device** - Prompts the user to specify a device for download or file transfer.

- **Use Priority list** - Prioritize memory devices based on customised preference.
- **Use Specified Device** - Set default memory device for storage and file transfer.

3.1.4.4 Filename Settings

▼▲ **Main Menu > Device Configuration > Filename Settings**

Gives access to the user to choose a convention to use for the file name description. A choice between basic and advanced file name descriptors can be used.

- **Basic Filename** - Use the right push button to select this and will subsequently give the user access to "Filename Styles" the next option down.
- **Filename Style** – Sub-level of Basic Filename. It lists 6 filename descriptor options which can be appended to a download. These are: Aircraft, Tail Number, Date, Time, IP address, MAC address. A tick in the accompanying box to the right confirms selection.
- **Advanced Filename** - When selected, the above option, "Filename Style", will disappear and an additional selection will appear named "Advanced Style".
- **Advanced Style** - Sub-level of Advanced Filename. Allows the user to manually name the file via a touch screen keypad. It is accessible by continually pressing the **right** push-button. There are reserved keywords for substituting in each of six filename descriptor options. It is recommended to set the Advanced Style through the web interface. The Advanced style supports the following substitution keywords:
  - %Aircraft% - First column of aircraft.csv
  - %Model% - Second column of aircraft.csv
  - %TailNumber% - Third column of aircraft.csv
  - %NoseNumber% - Fourth column of aircraft.csv
  - %MACAddress% - MAC address expressed as a 12-character hex string
  - %IPAddress% - IP address expressed as an 8-character hex string
  - %Date% - Date
  - %Time% - Time

  ➡ Supported characters are A-Z, a-z, 0-9, hyphen (-) and underscore (_). Unsupported characters will be replaced with underscore (_) characters.

3.1.4.5 Network Settings

▼▲ **Main Menu > Device Configuration > Network Settings**

When connecting the HHMPI to a network connection via an Ethernet cable, setup IP, DHCP and FTP settings necessary for network operation.

- **Wired Settings** - Configure network settings to use DHCP or a static IP address.
- **Wireless Settings** - Configure the wireless network.
- **FTP Servers** - Add and remove FTP servers.

3.1.4.6 Aircraft Settings

▼▲ **Main Menu > Device Configuration > Aircraft Settings**

Set or edit aircraft tail numbers.

3.1.4.7 Security Settings

▼▲ **Main Menu > Device Configuration > Security Settings**

Control access to the menus and settings of the HHMPI with a pass code by selecting either of the following:

- **Restrict Config** - Restrict access to the Device Configuration menu.
- **Restrict Menus** – Restrict access to the main menu. Only allow access to the shortcut screen.

Important By default these security restrictions are not activated. However, if whilst in the security settings menu any of the two are activated by mistake any further menu navigation from the main menu will subsequently require the user to enter a pass code. If this happens the default pass code is 0000, enter this and return to the security settings to disable (un-tick via the **OK** push button) to disable the pass code.

3.1.4.8 Live Data Settings

▼▲ **Main Menu > Device Configuration > Live Data Settings**

Set the global live data settings to be used in the live data view from, some of these options may only be available for the L-3 Communications SRVIVR™ interface:

- ARINC 717
- ARINC 429. Standard or periodic.
- DLR Settings. Select the data display format and data word description.

3.1.4.9 Shortcut Keys

▼▲ **Main Menu > Device Configuration > Shortcut Keys**

Set shortcut keys to change by selecting one of the options from the menu.

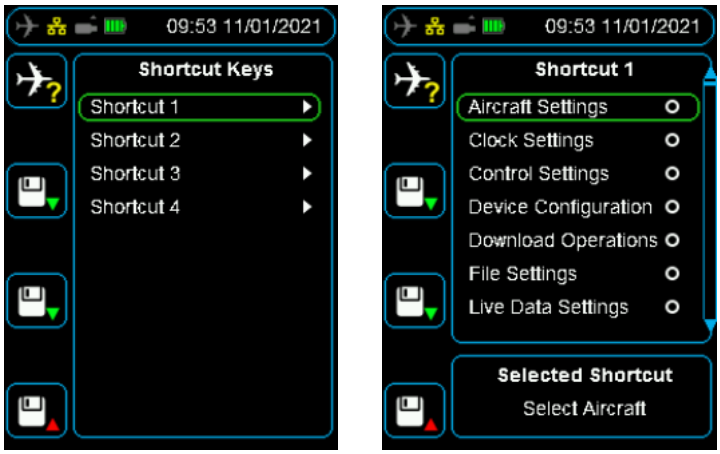
Shortcuts are used to provide users with a quick path to commonly used functions. There are four user defined shortcut buttons that are accessed by following this menu:

▼▲ **Main Menu > Device Configuration > Shortcut Keys >** Shortcut *(1,2,3,4)*

The HHMPI displays the shortcut keys following the start-up and self-test. The shortcut keys default to the following functions:

- Select Aircraft
- FDR All
- FDR Since Last
- Upload File (FTP)

Figure 14 Shortcut Configuration



As shown above, once the user has selected which shortcut key to enable, many options becomes available to choose from. Pressing the right push button enables the shortcut. This is confirmed by a dot appearing in the right most circle alongside the selection. Returning to the shortcut screen enables you to confirm that the change has occurred.

Note that the shortcut selection can also be altered via the web interface.

3.1.4.10 Settings Profile

▼▲ **Main Menu > Device Configuration > Settings Profile**

Save or load the device configuration to a file, or reset the configuration to the factory default settings:

- **Reset Configuration** - Removes the current configuration to the default settings. If selected a prompt asks the user if they wish to proceed.
- **Auto Update Configuration** - Selecting this enables the HHMPI to check for configuration updates from a configuration management server when an Ethernet connection is detected. If an update is detected, The HHMPI will automatically apply the update
- **Load Aircraft** - This allows an *aircraft.csv* file to be transferred from external memory, such as a USB onto the Internal HHMPI memory.
- **Save Aircraft** - Saves aircraft lists to alternative memory device. See Section 3.2.2.5 "Saving the Aircraft List to the USB Flash Drive on the HHMPI".

3.1.4.11 Save Settings

None of the settings in Device Configuration will be persistent after reboot unless Save Settings is used. This option saves the current running configuration to non-volatile memory.

3.1.4.12 Report Error

This selection saves the HHMPI system log files to internal or external memory as a file with the file naming convention hhmpi_debug_logs_YYYYMMDD_HHMM.tgz. This can then be sent on to the Flight Data Systems support team for debugging and troubleshooting if required.

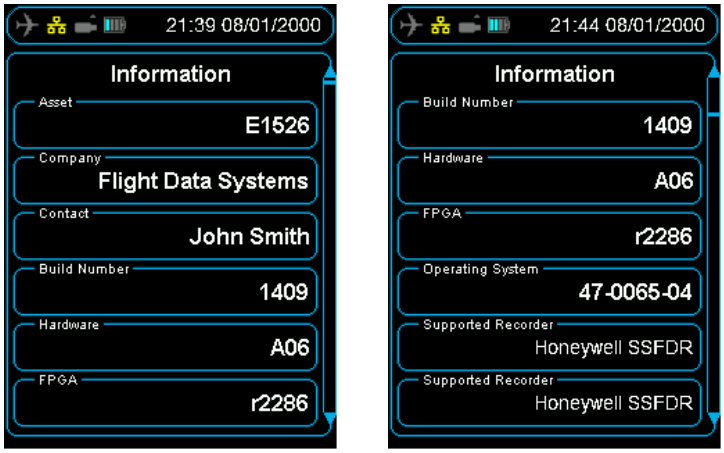
3.1.5 Information

All the information about the HHMPI feature set, supported recorder types and the operating system version is found in the Information menu. This information may be useful for troubleshooting,

▼▲ **Main Menu > Information**

To access the HHMPI information, from the Main Menu press down until you reach the Information command, and then press OK. The information in the Asset, Company and Contact fields can be changed via the web interface. The remaining fields are only configurable by Flight Data Systems.

Figure 15 Information Screen



3.2 Operation

3.2.1 Download file name convention

Files downloaded from a recorder to the HHMPI follow a standard naming convention, configured by the **Filename Style** command on the **Configuration Settings** menu. The naming convention is: _[aircraft tail number]_[date[_time]]_download type.ext

The user can choose to append any descriptor such as tail number, date and/or time to the download, however the default download to the HHMPI internal memory will appear as [aircraft tail number]_[date]_[time]_[download type].[ext]".

For example:

- **19022020_2312_fdr.pak** refers to a flight data (fdr) download on the 19th of February 2020 at 11:12 pm
- **25022020_0922_bit.bin** refers to a bit file download on the 25th of February 2020 at 9:22 am
- **25022020_0928_dlr.csv** refers to a DLR file download on the 25th of February 2020 at 9:28 am

Tip The date and time string use the time format already configured in the HHMPI. Special characters within the aircraft tail numbers are automatically converted to underscores "_" . Dates and time stamps are stripped to remove slashes and colons.

Note The file extension can vary according to the recorder type and download mode.

The date and time string use the time format already configured in the HHMPI.

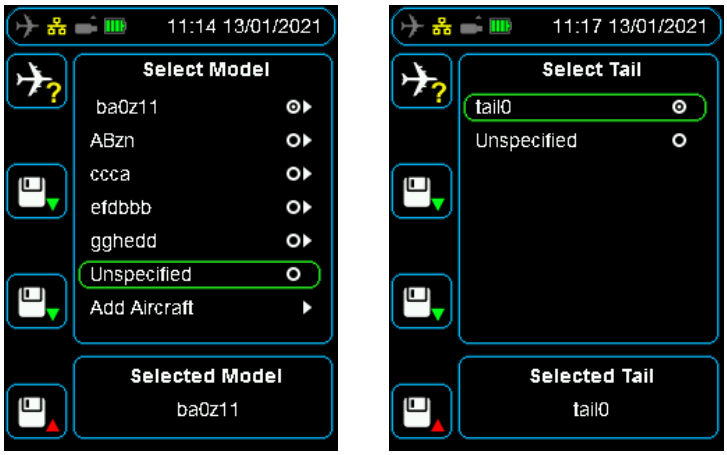
Special characters within the aircraft tail numbers are automatically converted to underscores "_".

Dates and time stamps are stripped to remove slashes and colons.

3.2.2 Aircraft lists

Stored in the HHMPI as a comma separated variable file, the Aircraft List contains a list of all aircraft in the fleet. Using an Aircraft List makes it easier to assign tail numbers to operational downloads, it also makes the file names more readable.

Figure 16 Aircraft Model and Tail Number



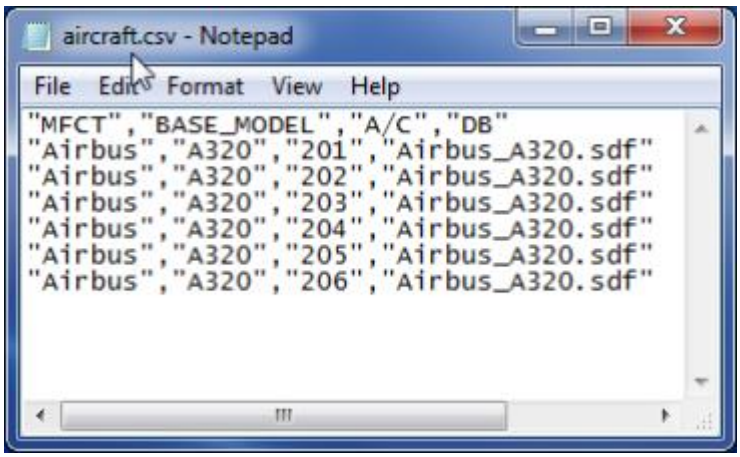
3.2.2.1 Creating an Aircraft List on a PC

The Aircraft List can be created on a PC using a text editor, such as Notepad, or in a Spreadsheet application, such as Excel, and exported as comma separated variable (.csv) file. DB and NOSE are optional fields.

Important The file must be named aircraft.csv and the data fields must be separated by a comma with each record separated by a carriage return (ASCII CR-LF).

Although not shown to the operator, the manufacturer field (MFCT) must also be present. However, the aircraft definition field (DB) is only required for the Engineering Units (EU) function, see Section 3.2.5, "Viewing live flight data in engineering units".

Figure 17 Creating an Aircraft List in Notepad



Save or export the file to a USB flash drive as aircraft.csv.

3.2.2.2 Transferring the Aircraft List to the HHMPI

To transfer the Aircraft List to the HHMPI, insert the USB flash drive containing the file named aircraft.csv into the USB port on top of the HHMPI.

▼▲ **Main Menu > Device Configuration > Settings Profile > Load Aircraft**

1. From the **Main Menu**, press **down** until you reach the **Device Configuration** command, and then press right.
2. Press **down** until you reach the **Settings Profile** command, and then press **right**.
3. Press **down** until you reach the **Load Aircraft** command, and then press **right**.
4. Select the file named aircraft.csv is located, and then press **right**.

3.2.2.3 Creating the Aircraft List on the HHMPI

▼▲ **Main Menu > Device Configuration > Aircraft Settings > Add Aircraft**

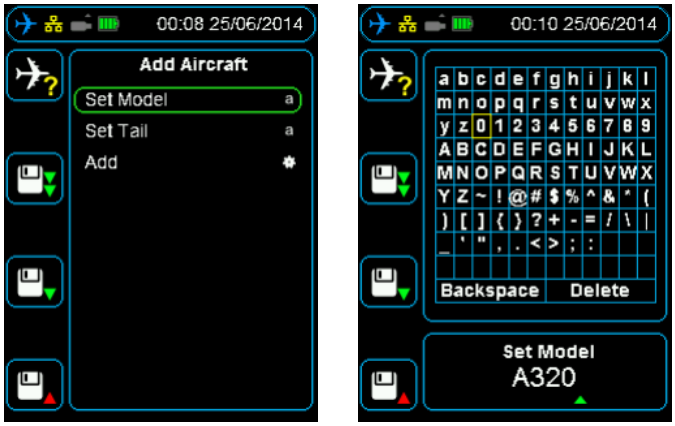
Tip For a large amount of aircraft, consider importing an Aircraft List as a comma separated variable file (aircraft.csv).

To create, or add to the Aircraft List on the HHMPI, perform these steps from the **Add Aircraft** menu:

1. Press **down** until you reach the **Set Model** command, and then press **right**.

2. Press up to enter the alphabetical grid, and then press the **up**, **down**, **left,** and **right** buttons to enter data.
3. When complete, press **cancel** to exit the alphabetical grid.
4. Press **OK** to confirm your selection.
5. Repeat steps 1 to 4 for **Set Tail**.
6. Press **down** until you reach the **Add** command, and then press **right** to confirm.
7. Press **OK** to confirm your selection.
   ➡To add additional aircraft, repeat steps 1 to 6 for each aircraft.

Figure 18 Adding aircraft to the Aircraft List on the HHMPI



3.2.2.4 Deleting an Aircraft from the Aircraft List on the HHMPI

▼▲ **Main Menu > Device Configuration > Aircraft Settings > Delete Aircraft**

To delete an aircraft from the Aircraft list on the HHMPI, from the **Device Configuration** menu:

1. Press **down** until you reach the **Aircraft Settings** command, and then press **right**.
2. Press **down** until you reach the **Delete Aircraft** command, and then press **right** to select the aircraft you want to delete.
3. Press **OK** to confirm the deletion.
   ➡Selected aircraft remain in the list but are marked by a red X.

3.2.2.5 Saving the Aircraft List to the USB Flash Drive on the HHMPI

▼▲ **Main Menu > Device Configuration > Settings Profile > Save Aircraft**

To save the Aircraft List to a USB flash drive, insert a USB flash drive into the USB port on the top of the HHMPI, and complete these steps from the **Device Configuration** menu:

1. Press **down** until you reach the **Settings Profile** command, and then press **right**.
2. Press **down** until you reach the **Save Aircraft** command, and then press **right** to save onto USB Flash Drive.

Important The Aircraft List is saved to the USB flash drive as aircraft.csv.bkp. To transfer this file to the HHMPI again, it must be renamed aircraft.csv.

Tip The saved aircraft.csv file can be used as a template to add more aircraft or aircraft definition files (databases) to the Aircraft List.

3.2.2.6 Deleting all aircraft from the Aircraft list on the HHMPI

▼▲ **Main Menu > Device Configuration > Aircraft Settings > Erase All Aircraft**

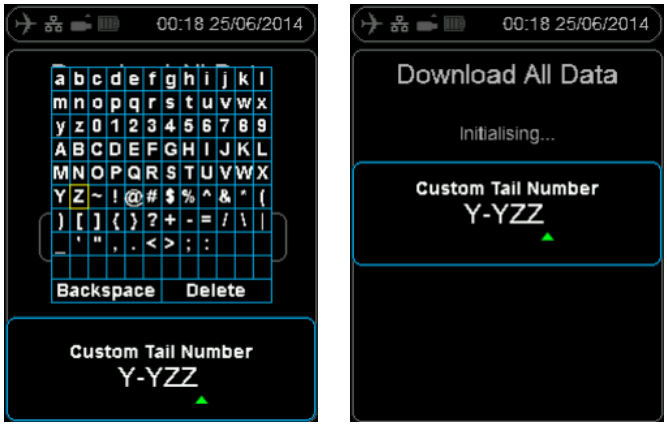
By selecting this option all the aircraft models and tail numbers in the Aircraft List will be removed from the HHMPI. Press **OK** to confirm or if not, press **Cancel** to cancel this operation.

3.2.2.7 Prompt for Tail No.

▼▲ **Main Menu > Device Configuration > Aircraft Settings > Prompt for Tail No.**

Enabling the **Prompt for Tail No.** command forces a user to assign a tail number to an operational download. This ensures that a download file name contains the aircraft tail number, which may help in traceability of data and further analysis. If enabled, the tail number entered prior to a download can be appended to the file name via the file-name settings under the device configuration menu.

Figure 19 Configuring the prompt for tail number option



3.2.3 Flight Data Downloads

3.2.3.1 HHMPI Set Up Pre-Data Download

The HHMPI can be used to download recorded flight data (FDR), voice data (CVR) as well as DLR and BIT downloads from the recorder. Prior to downloading, it is advised you ensure the following procedures are performed:

1. **Create the Aircraft List**, Not having an aircraft list will not stop the HHMPI from performing a download, however for data traceability purposes it is recommended. The Aircraft List may be created and stored in a HHMPI to populate the *aircraft tail* variable in the data file name. The *manufacturer* and *model* variables are not used in the data file name.

Note if the above step is omitted the file name will only include the time stamp. If you want to force users to assign a tail number before an operational download enable the Prompt for Tail No. command.

2. If the HHMPI is set up to prompt for a tail No. Select the model, and tail number from the Aircraft List.
3. Connect the HHMPI to the recorder via an interface cable, if properly connected the airplane Icon will appear blue in the top left-hand corner of the screen to indicate detection of the recorder.

4. Start downloading flight data as follows.

3.2.3.2 Performing Flight Data Downloads

This section assumes the user has already set the HHMPI and recorder to perform a download, if you are unaware of the steps involved see Section 3.1.1 "Using the HHMPI".

For the purposes of brevity the flight data recorder (FDR) file is used as an example in this section, the procedure used for downloading alternative file types (DLR, CVR, BIT) as well as *"downloads since last"* files are identical in the download procedure required.

In order to perform an FDR download to the Internal Memory:

1. Go to:

   ▼▲ **Main Menu > Download Operation > FDR All > Internal**

2. A screen will then appear showing the download progress with Bytes transferred, estimated Remaining time until completion, the Rate of download as well as a progress bar.
3. Once the download is complete the download will appear as a .fdr file located in internal memory.
4. To access this file:

   ▼▲ **Main Menu > Storage Operation > Select File(s) > Internal**

The exact same procedure is followed if you intend to perform a CVR, DLR, BIT or "*since last*" download to Internal memory with the exception that instead of selecting **FDR All** you select **CVR All**, **DLR All**, **BIT All**, **FDR Since Last**, **CVR Since Last** or **DLR Since last** respectively**.**

▼▲ **Main Menu >Download Operation > (CVR, DLR, BIT) All > Internal**

3.2.3.3 Downloading recorded data from the FDR to a USB flash drive

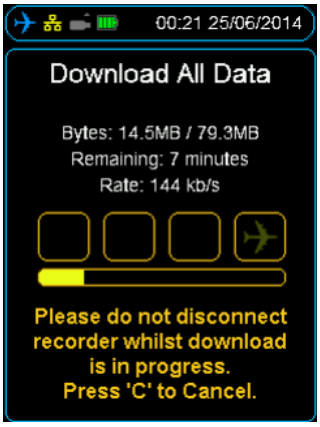
To download flight data from the FDR to a USB flash drive:

1. Connect the HHMPI to the FDR with an interface cable.
2. Turn on the HHMPI and FDR. Once turned on, the start-up process begins and the power-on self-test is carried out. If connected to the HHMPI, the interface cable is detected automatically, and correct connection to the FDR is indicated by a blue aircraft icon found in the status bar of the display.
3. Insert USB or SD card into the dedicated port. For USB, this will be located on the top of the HHMPI located to the left of the Multipurpose Interface connector. Alternatively, the SD card slot is located below the RJ45 Ethernet connector on the base of the HHMPI.
4. Once the memory device is inserted, the HHMPI will momentarily alert the user to the detection of the memory device with a prompt reading "SD card inserted" or "USB inserted" depending on the device used. An orange USB flash drive icon will also appear in the status bar indicating the HHMPI is ready to write to the USB flash drive
5. From the **Main Menu**, press **down** until you reach the **Download Operations** command, and then press **right**. Then press **down** until you reach the data you want to **download,** and then press **right.** There are usually four download commands, depending on the type of recorder:
   - **FDR All**, downloads all the available data.
   - **FDR Since Last**, downloads all the data recorded since the last download.
   - **FDR Mark**, downloads the data from a pre-recorded marker.
   - **FDR Time**, downloads data for a specified time, for example, 20 minutes will download the last 20 minutes recorded.

6. If an external storage device, like a USB flash drive, is plugged into the HHMPI, you may now select to store the data onto this device. To start downloading the data, press **right**.
   The display will now show the download progress. When the download completes, press **OK**.

Tip You can set the preference of external storage devices from the **Memory Settings** menu. For example, prioritise the USB flash drive, when present, over the HHMPI internal memory.

Figure 20 Downloading progress bar



3.2.3.4 Decompressing CVR data at the aircraft

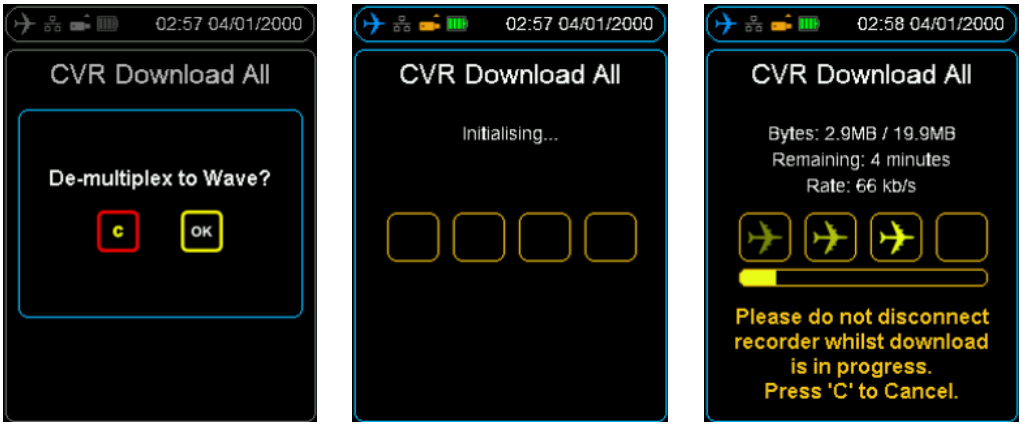
To play CVR files on a computer or another device, you may need to decompress the raw file into a waveform file (.wav).

Note To decompress CVR data at the aircraft, the de-multiplexing feature needs to be enabled on the HHMPI. Contact Flight Data Systems for more information about this feature.

After selecting CVR download, the **De-multiplex to Wave** option will appear. Press the **OK** button to decompress the raw CVR file to waveform files. Generally, there will a waveform for each channel recorded on the CVR. If you do not want to decompress the raw CVR file to waveform files, press the **cancel** button.

After the download completes, the raw CVR file and the waveform files from each channel will be available on the nominated storage device. These files can be transferred to a computer or another device where they can be replayed. A codec may need to be installed; this is included as part of the HHMPI kit.

Figure 21 Downloading and decompressing CVR data



3.2.3.5 Decompressing CVR away from the aircraft

Important This section is only applicable to .dlu CVR files only

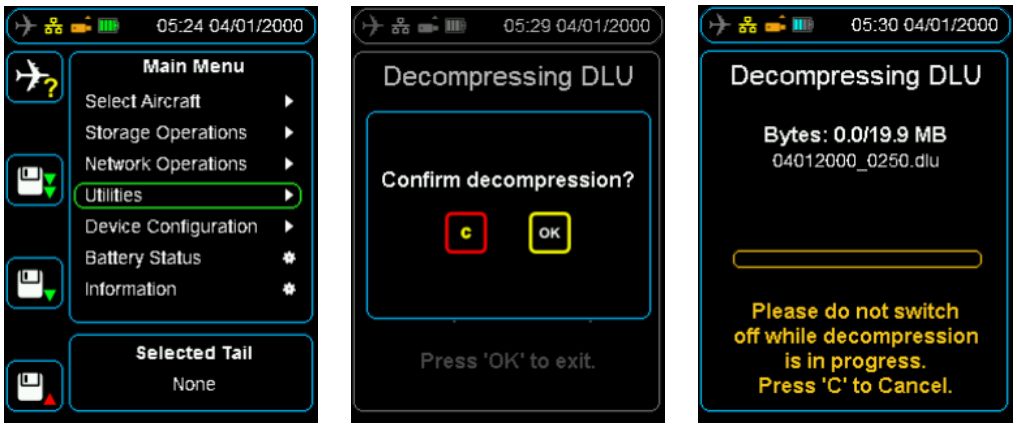
▼▲ **Main Menu > Utilities > Decompress DLU**

From the home screen, press right to access the Main Menu, scroll down to the Utilities command, and then press OK.

Note To decompress CVR data away from the aircraft, the demultiplexing feature needs to be enabled on the HHMPI. Contact Flight Data Systems for more information about this feature. Decompression of CVR data away from the aircraft also only applies to Honeywell CVRs.

On the **Decompress DLU** command, press **OK**, and then select the raw .dlu file to decompress and the decompression process will begin.

Figure 22 Decompressing Honeywell CVR file away from the aircraft



After the decompression completes, the raw CVR file and the waveform files from each channel will be available on the nominated storage device. These files can be transferred to a computer or another device where they can be replayed. A codec may need to be installed; this is included as part of the HHMPI kit.

3.2.3.6 Using the CVR Rack Adaptor or Aircraft Power Cable

To download CVR data, record mode must be disabled. Without disabling record mode, you cannot download CVR data. Use the CVR Rack Adaptor or Aircraft Power Cable to disable record mode and power the CVR from aircraft power by inserting between the aircraft power connector and the CVR. Once powered, record mode is disabled on the CVR and the data is ready to download.

Using the Honeywell SSCVR Rack Adaptor Cable part number FDS40-0215 (FDS400-215) – (For Honeywell SSCVR part numbers 980-6020-XX & 980-6022-XX only)

- Firstly, ensuring no power is provided to the CVR, un-rack the CVR.
- Connect the Honeywell SSCVR Rack Adaptor into the rear connector of the CVR and carefully rerack the CVR.
- Connect the HHMPI interface cable from the Rack Adaptor to the HHMPI.
- Power the CVR on the aircraft and start up the HHMPI. With the CVR record mode now disabled ensure the aircraft icon in the status bar of the HHMPI's display turns blue and begin a CVR download.

- After the download has completed, remove power from the CVR & remove the Honeywell SSCVR Rack Adaptor Cable from the aircraft in the reverse order to the fitment.

Using the ARINC 757 CVR Rack Adaptor part number FDS40-0247 (FDS400-247)

- Firstly, ensuring no power is provided to the CVR, disconnect the aircraft power connector.
- Connect the applicable Aircraft Power Cable to the disconnected aircraft power connector and the CVR power connector.
- Connect the applicable HHMPI interface cable to the CVR GSE connector and to the HHMPI.
- Power the CVR on the aircraft and start up the HHMPI. With the CVR record mode now disabled ensure the aircraft icon in the status bar of the HHMPI's display turns blue and begin a CVR download.
- After the download has completed, remove power from the CVR and remove the Aircraft Power Cable and HHMPI interface cable from the aircraft in the reverse order to the fitment.

Using the SRVIVR Power Cable part number FDS40-0259 and FDS40-0260

- Firstly, ensuring no power is provided to the recorder, disconnect the aircraft power, and connect the power adaptor cable between the aircraft wiring and the recorder.
- Using the HHMPI interface cable for the recorder - connect the download cable between the GSE connector and the HHMPI. Power the recorder and power the HHMPI. Ensure the blue plane appears in the HHMPI and begin a CVR download at the aircraft.
- After the download has completed ensure the power adaptor and GSE cable are removed from the aircraft.

Using the Universal Power Adaptor part number FDS40-0258

- Firstly, ensuring no power is provided to the recorder, disconnect the aircraft power, and connect the power adaptor cable between the aircraft wiring and the recorder.
- Using the HHMPI interface cable for the recorder - connect the download cable between the GSE connector and the HHMPI. Power the recorder and power the HHMPI. Ensure the blue plane appears in the HHMPI and begin a CVR download at the aircraft.
- After the download has completed ensure the power adaptor and GSE cable are removed from the aircraft.

Using the FA5000 Aircraft Adapter Cable part number FDS40-0076

- Firstly, ensuring no power is provided to the recorder, disconnect the aircraft power, and connect the power adaptor cable between the aircraft wiring and the recorder.
- Using the HHMPI interface cable for the recorder - connect the download cable between the GSE connector and the HHMPI. Power the recorder and power the HHMPI. Ensure the blue plane appears in the HHMPI and begin a CVR download at the aircraft.
- After the download has completed ensure the power adaptor and GSE cable are removed from the aircraft.

3.2.4 Viewing live flight data

The HHMPI can be used to monitor live ARINC 717 data from the aircraft. The Live Data View can display data from the FDR in five formats:

- Binary (Base 2)
- Octal (Base 8)
- Decimal (Base 10)
- Hexadecimal (Base 16)
- Engineering units (EU)

The Live Data View display options are accessible via the shortcut buttons 1–4.

Note These menu items will only be visible where they are supported by the connected FDR/CVFDR.

To view live data from the FDR:

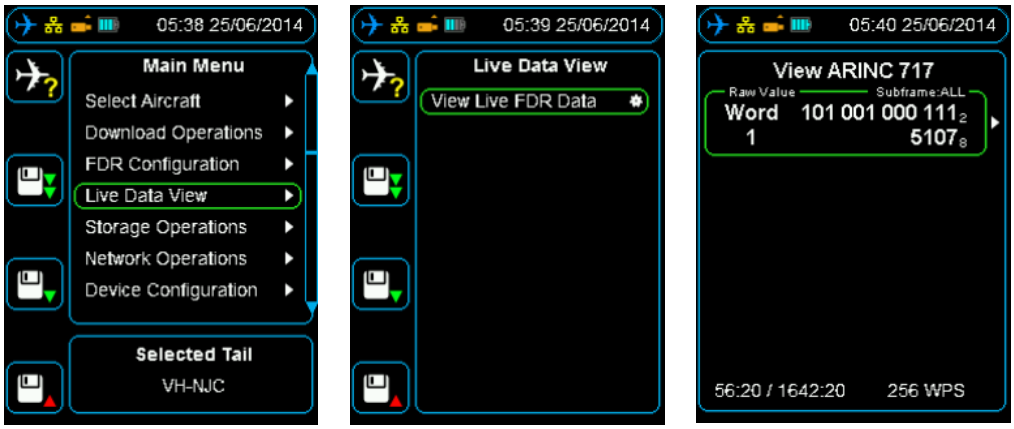
1. Connect the HHMPI to the FDR with an interface cable.
2. Turn on the HHMPI and the FDR. Once turned on, the start-up process begins and the power-on self-test is carried out. If connected to the HHMPI, the interface cable is detected automatically, and correct connection to the FDR is indicated by a blue aircraft icon found in the status bar of the display.

▼▲ **Main Menu > Live Data View > View Live FDR Data > View ARINC 717 Data**

3. From the **Main menu**, press **down** until you reach the **Live Data View** command, and then press **right**. Then press **down** until you reach the **View Live FDR Data** command, and then press **right** to **View ARINC 717 Data**.
4. Wait until the HHMPI synchronises with the FDR, while synchronising, **UNKNOWN** is displayed on the screen. After synchronising, you can view live data from the aircraft parameters.

For more information about formatting and displaying data on the HHMPI, see Section 3.2.4.2, “Adjusting ARINC 717 settings” and Section 3.2.4.3, “Changing the display format”.

Figure 23 Viewing live data



3.2.4.1 Live Data View Options

Multiple ARINC 717 words can be displayed simultaneously, these words are selected using the **shortcut** buttons 1 to 4.

3.2.4.2 Adjusting ARINC 717 settings

▼▲ **Main Menu > Live Data View > View Live FDR Data > View ARINC 717 Data**

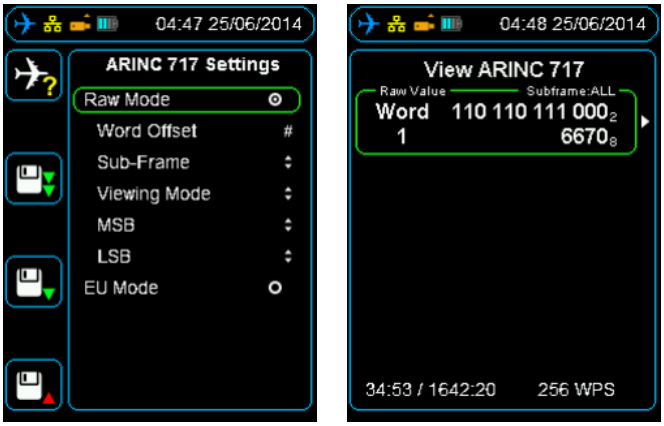
To access the ARINC 717 settings, press right on a selected parameter / word cell. The following options will be displayed:

- **Word Offset**, selects the current word from 1 to 2048. To change the Word Offset number, use the **up**, **down**, **left,** and **right** buttons, and then press **OK** to confirm your selection.
- **Sub-frame**, selects the sub-frame to view from 1 to 4, or ALL. ALL is the default value for this setting. To change the sub-frame, use the **up** and **down** buttons, and then press **right** to confirm your selection.

- **Viewing Mode**, provides the option to view live data in the following formats: Binary-Octal, Binary-Decimal and Binary-Hexadecimal. To change the viewing mode, use the **up** and **down** buttons, and then press **right** to confirm your selection.
- **MSB** (Most Significant Bit), hides all binary bits in the word before the MSB. To change the MSB, use the **up** and **down** buttons, and then press **right** to confirm your selection.
- **LSB** (Least Significant Bit), hides all binary bits in the word after the LSB. To change the LSB, use the **up** and **down** buttons, and then press **right** to confirm your selection.

3.2.4.3 Changing the display format

Figure 24 ARINC 717 settings



Simultaneous words can be displayed if required by using shortcut buttons 1 to 4.

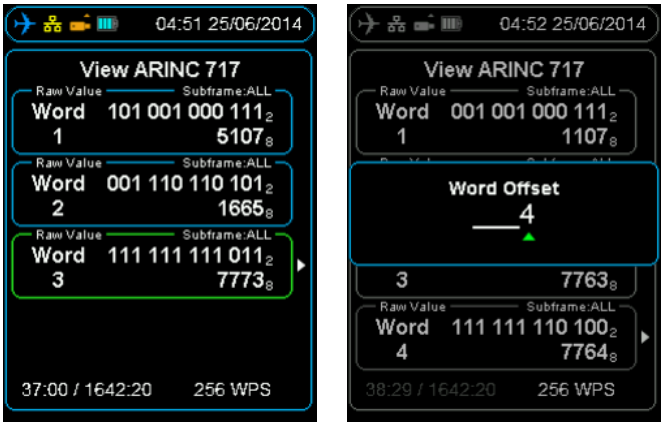
Parameters for each displayed Live Data Word-Offset can be modified.

Figure 25 Multiple live data view

Tip Word Offset can be adjusted by the following:

Main Menu > Live Data View > View Live FDR Data > View ARINC 717 Data > Up | Down | Left | Right

Figure 26 Word offset adjust



3.2.5 Viewing live flight data in engineering units

To view the live flight data in Engineering Units (EU Mode), you must associate an Aircraft Definition file with an aircraft. The Aircraft Definition file is exported from STARS with the extension .sdf. You will need to transfer this file to the HHMPI via one of the removable memory options such as an SD memory card, or USB flash drive.

Note These menu items will only be visible where they are supported by the connected FDR/CVFDR.

3.2.5.1 Assigning an Aircraft Definition file to an aircraft

▼▲ **Main Menu > Device Configuration > Aircraft settings > Assign Database**

To assign an Aircraft Definition file to an aircraft:

1. From the **Main Menu**, select **Device Configuration**, and then select **Aircraft Settings**.
2. From the **Aircraft Settings** menu, select **Assign Database**, and then select the **Aircraft Tail Number** you want to assign the Aircraft Definition file to.
3. Locate and select the .sdf file as exported from STARS.
4. Press **OK** to confirm the assignment of the Aircraft Definition file to the aircraft.

Once complete, the HHMPI will display a notification that the assignment was successful.

3.2.5.2 Viewing Live Flight Data

▼▲ **Parameter / Word Cell > EU Mode > Select Parameter > First Letter of Parameter > Parameter > OK**

To assign an Aircraft Definition file to an aircraft, see Section 3.2.5.1, "Assigning an Aircraft Definition file to an aircraft". To view the live data in Engineering Units:

1. You must select an aircraft which already has an Aircraft Definition file (database) assigned to it. To select an aircraft, from the **Main Menu**, press **right** on the **Select Aircraft** command, and then press **right** on the aircraft you want to view the live flight data from. The selected tail number will appear on the shortcut screen.

Figure 27 Selected tail number on the shortcut screen

2. Follow the procedure in Section 3.2.4 “Viewing live flight data” and wait until the HHMPI synchronises with the FDR, while synchronising, **UNKNOWN** is displayed on the screen.
3. Press a **shortcut** button to select a parameter / word cell.
4. Press **right** to display the **ARINC 717** settings menu.
5. Enable the **EU Mode** radio button, then press **down** until you reach the **Select Parameter** command, and then press **right**. An alphabetical list will be displayed.

Note The EU Mode radio button will only appear if an aircraft had been selected that has an Aircraft Definition file (database) assigned to it.

Figure 28 Changing from Raw Mode to EU Mode

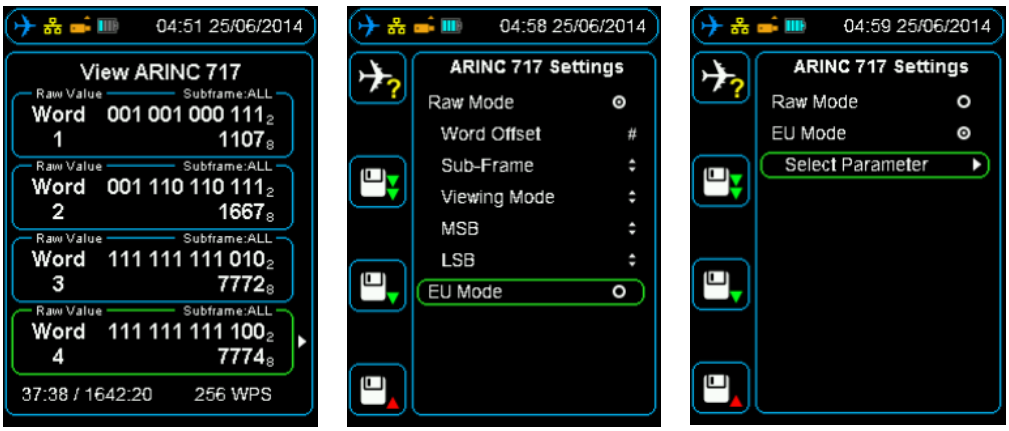
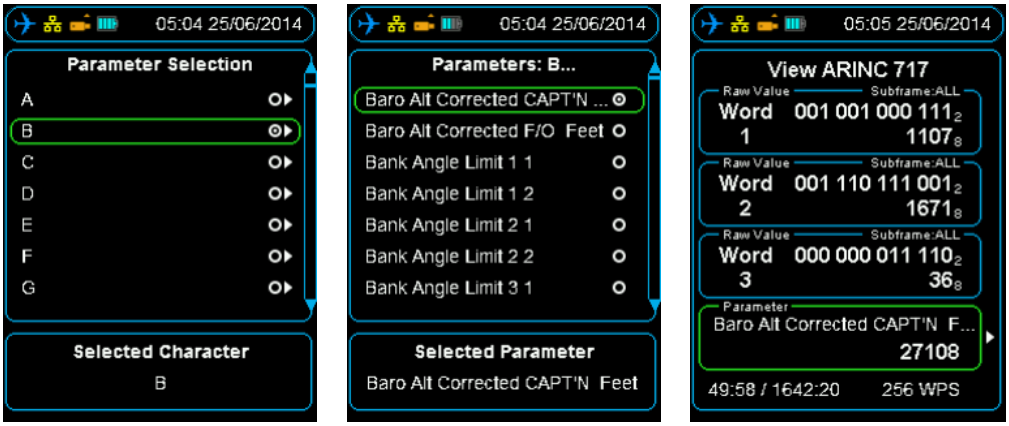


Figure 29 Accessing aircraft parameters alphabetically

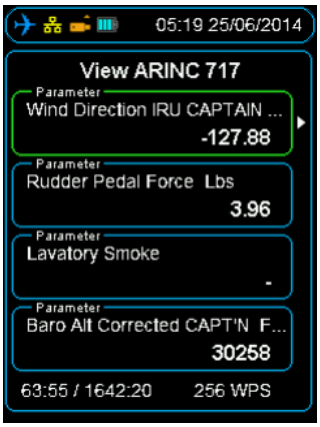


6. Press **right** on the first letter of the parameter you want to look at, and then press **right** again. This command will display all the parameters starting with the letter you have selected.

7. Press **OK** twice to return to the ARINC 717 view. The selected parameter / word cell will now display live data according to the algorithm in the configured database.

As in the raw data view, up to four parameters / word cells can be displayed and configured independently. Values will update once per sub-frame and **SAMPLING** will flash green and white for each update.

Figure 30 Four parameters populated with Engineering Units



3.2.6 File transfer operations

3.2.6.1 File transfer between HHMPI storage locations

▼▲ **Main Menu > Storage Operations > Select Files | Select All Files**

The general method of transferring files between connected memory devices is:

- From the **Main** menu press the **down** button until you reach the **Storage Operations** command, and then press the **right** button on either the **Select Files** or **Select All Files** command, and then select the preferred memory device.
- Select the file(s) by pressing the **right** button.
- Press the **left** button to return to the **Storage Operations** menu.
- Select **Copy Files** then **Select Memory Device** and press the **right** button to confirm.
- To delete, select **Delete Files**.

3.2.6.2 Other storage operations

To determine the storage used on any memory device, from the **Storage Operations** menu, press the **right** button on the **Storage Usage** command, and then press the **cancel** button to exit.

▼▲ **Main Menu > Storage Operations > Storage Usage**

To format a memory device, from the **Storage Operations** menu, press right on the **Format** command, and then select the memory device you want to format.

▼▲ **Main Menu > Storage Operations > Format > Select Memory Device**

3.2.6.3 File transfer PC to HHMPI

When connected to a PC the internal memory of the HHMPI will appear as a write-protected external hard drive, therefore files may only be copied from the HHMPI to the PC. To erase files from the HHMPI internal memory.

3.2.7 Network operations

The HHMPI is capable of transferring files over a network using FTP and also for device configuration in any web browser.

3.2.7.1 DHCP network settings

To view DHCP (automatic) network settings:

▼▲ **Main Menu > Device Configuration > Network Settings > Wired Settings**

- Navigate to **Wired Settings** as above.
- Select **Enable Networking**, checking or un-checking the check box enables or disables the **Manual Configure IP** address option.
- Choose between **Auto** and **Manual DHCP**.
- **Auto Configure DHCP** by setting the checking the check box.

  OR
- Manually configure the IP address by pressing right on the **Manual Configure** command.
- Use the up button to set the **IP Address**, **Netmask** and **Gateway**.
- Press the **OK** button.

To view HHMPI IP address:

▼▲ **Main Menu > Network Operations > View Wired Address > Adaptor: eth0**

Figure 31 DHCP or manual IP configuration

3.2.8 Configuring an FTP connection

Before you can upload files from the HHMPI to a server, you need to configure the FTP server settings. You can do this from the HHMPI or through the web interface. Using the web interface is the easiest way to configure the FTP server settings.

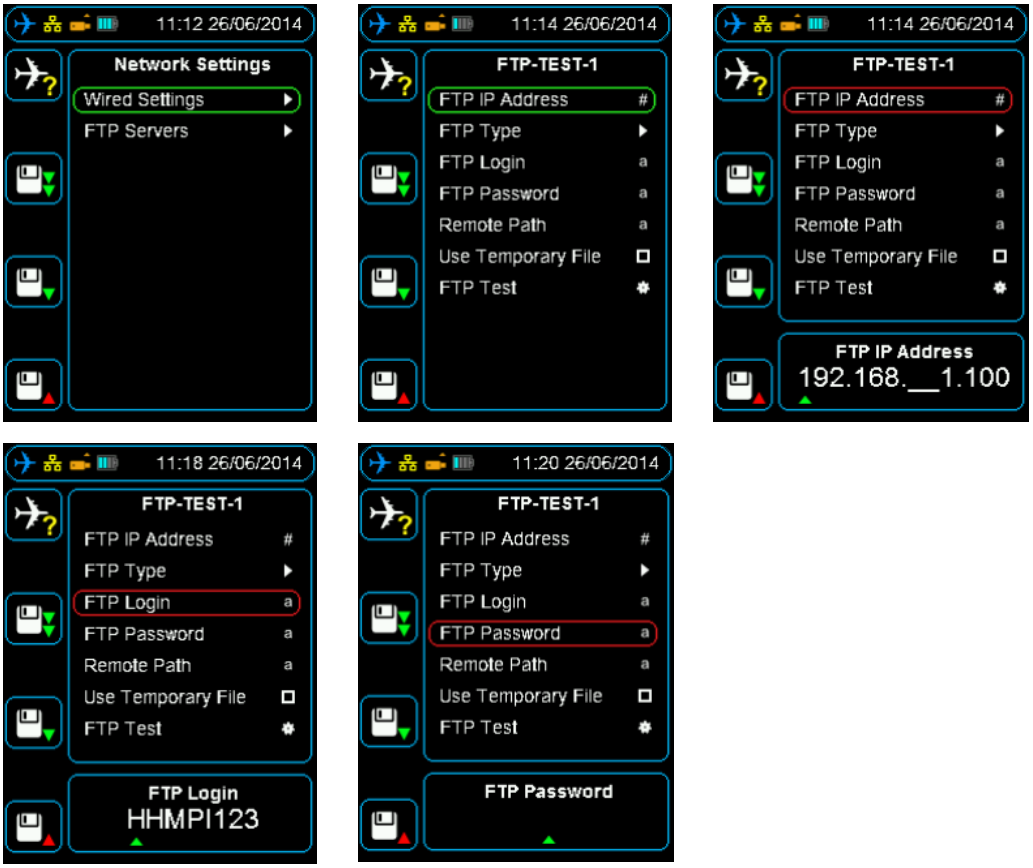
3.2.8.1 Adding a new FTP server from the HHMPI

To add a new FTP server from the HHMPI, from the Main menu:

▼▲ **Main Menu > Device Configuration > Network Settings > FTP Servers > Add FTP Server**

1. Press **down** until you reach the **Device Configuration** command, and then press **right**. Then press **down** until you reach the **Network Settings** command, and then press **right**. Then press **down** until you reach **the FTP Servers command**, and then press **right**.

Figure 32 Setting up the FTP client



2. Ensure you have access to the FTP server and the FTP server settings, including the IP address, username, password, and the encryption type. This FTP server information is usually available from your IT department.
3. From the **FTP Servers** menu, press **down** until you reach the **Add FTP Server** command, and then press **right**. To add an FTP server name, press **up** to enter the name from the alphabet grid with the arrow buttons, pressing **OK** between each letter.

When complete, press **cancel** to exit the alphabet grid, and then press **OK** to confirm your selected FTP server name.

Tip The FTP server name is not used in connection to the FTP server, you can give the FTP server any name.

3.2.8.2 Configuring an existing FTP server from the HHMPI

To configure an existing FTP server, from the **FTP Servers** menu, press **down** until you reach the FTP server name you want to configure, and then press **right**. Then do one of the following:

1. To save an IP Address, press **right** on the **FTP IP Address** command. To enter the IP Address, press **up** or **down** on each number, and then press **OK** to confirm your selection.
2. To save an FTP Type, press right on the **FTP Type** command, and then press **down** until you reach the FTP type you want, and then press **right**. The HHMPI supports three FTP types:
   - **FTP (port 21)**, unsecured transmission on port 21
   - **FTP over SSL**, secured transmission that encrypts the username and password, and content with SSL
   - **FTP over SSH**, secured transmission that encrypts the username and password, and content with SSH
3. To save an FTP username, press **right** on the **FTP Login** command, and then press **up** to enter the username from the alphabet grid with the arrow buttons, pressing **OK** between each letter. When complete, press **cancel** to exit the alphabet grid, and then press **OK** to confirm the username.
4. To save an FTP password, press **right** on the **FTP Password** command, and then press **up** to enter the password from the alphabet grid with the arrow buttons, pressing **OK** between each letter. When complete, press **cancel** to exit the alphabet grid, and then press **OK** to confirm the password.
5. To save a Remote Path, press **right** on the **Remote Path** command, and then press **up** to enter the remote path from the alphabet grid with the arrow buttons, pressing **OK** between each letter. When complete, press **cancel** to exit the alphabet grid, and then press OK to confirm the remote path.

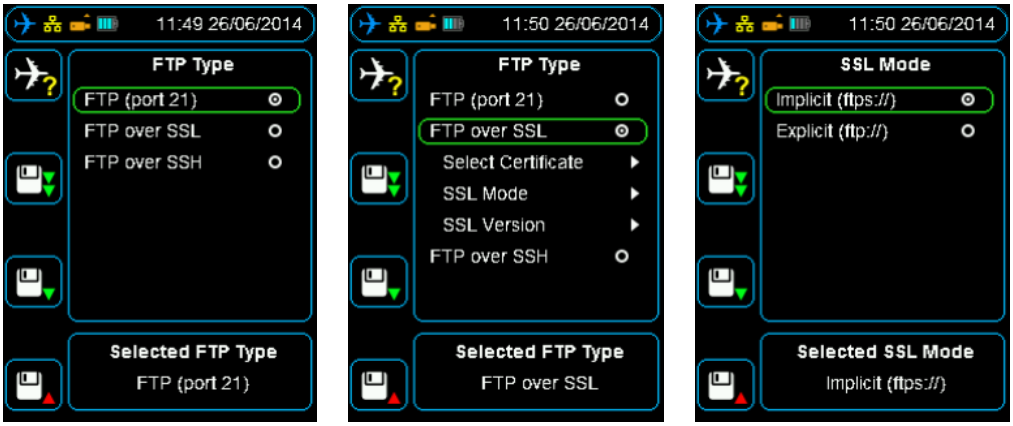
The Remote Path field controls which folder the file is uploaded to on the FTP server. Depending on the FTP server configuration, this may be an optional field. Leaving the remote path blank means the file will be uploaded to the default folder your FTP account logs into.

Note Select the **Use Temporary File** check box if the HHMPI is to use a temporary file when uploading. When the upload is complete, this temporary file is renamed to the final file name. This is useful for ensuring that remote systems do not read a partially uploaded file.

Disable this option if the remote server reports a “rename failed” error and leaves a temporary file with the extension -upload, and the channel stops. This typically means that the server is employing its own temporary file mechanism that is incompatible with the HHMPI.

Caution Using an unsecured FTP connection may result in the loss of sensitive information. See your IT department or contact Flight Data Systems for more information on encryption.

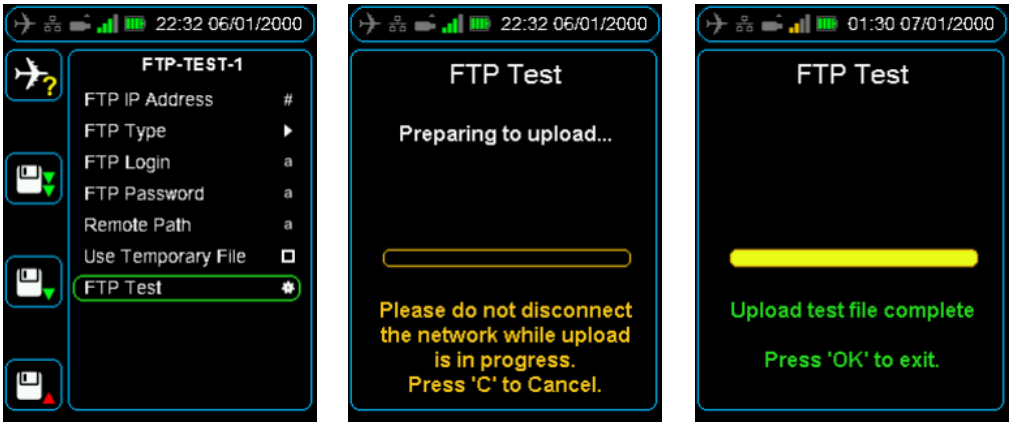
Figure 33 FTP type menus



3.2.8.3 Testing and FTP server from the HHMPI

To test an FTP connection, from the **FTP Servers** menu, press **down** until you reach the FTP server name you want to test, and then press **right**. Then press **down** until you reach the **FTP Test** command, and then press **right**.

Figure 34 Login, password, remote path, and FTP test



3.2.8.4 Setting up an FTP connection from the web interface

You can configure the HHMPI through the web interface in any web-browser. Using the web interface is the easiest way to configure the HHMPI.

▼▲ **Device Configuration > Network Settings**

To access the HHMPI web interface:

1. Connect the HHMPI to the local area network (LAN) router or switch which will allocate a unique IP address.
2. From the **Main** menu, press **down** until you reach the **Network Operations** command, and then press **right**. Then press down until you reach the **View Wired Address** command, and then press **right**.
   If the HHMPI is assigned an IP address it will now be displayed, if no link is detected **No Link Detected** will be displayed.
3. Record the IP address.

Figure 35 Viewing the wired ID address

Note If no link is detected an IP address has not been assigned to the HHMPI, this may be because of you network security settings. See your IT department or contact Flight Data Systems for more information if this occurs.

4. Open a web-browser such as Mozilla Firefox or Google Chrome and type the wired IP address into the browser's address bar.
5. Login to the HHMPI web interface using the default username and password:
   Username: admin
   Password: admin

Figure 36 Web interface login

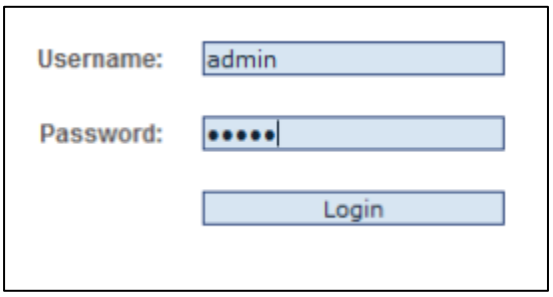
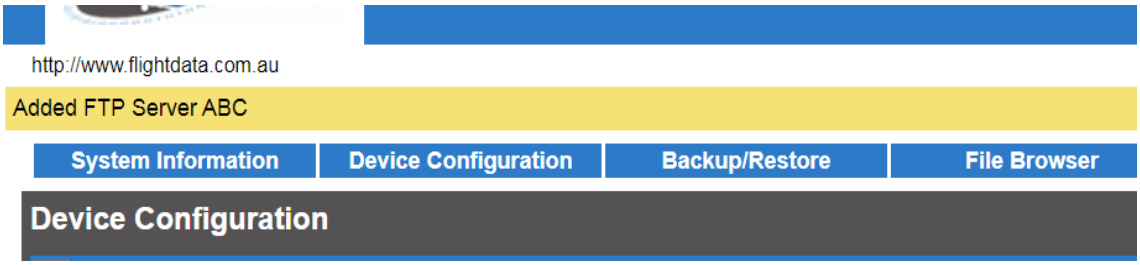


Figure 37 Web interface screen

6. Click the **Device Configuration** tab, scroll down until you reach **Network Settings.**
7. To add a new FTP server name:

- Enter the name of a server in **FTP Server Name**
- Click on **Add FTP Server**
- Once Adding the FTP Server is finished**, Added FTP Server <Server Name>** message will appear at the top

Figure 38 Added FTP Server



8. To configure the server, scroll down until you reach that Server Name and configure the following parameters see

- Select FTP Type out of four FTP types
- Select SSL mode
- Select SSL Version
- Enter the Server IP Address
- FTP login
- FTP Password
- FTP Remote Path

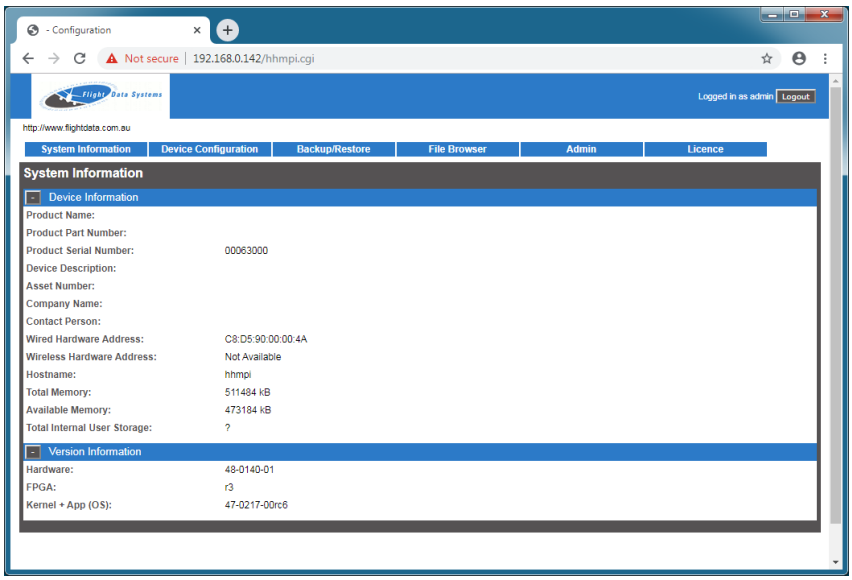
9. Click **Save** then **Apply**. Once these settings have been successfully applied a prompt reading " **Reloaded Settings**" will appear on the HHMPI screen

3.2.9 Web Interface Application

The HHMPI web interface has six available tab options allowing the user access to view and alter current system configurations:

- **System Information:** It provides device information including product serial numbers, available memory, and MAC addresses. It further provides version information including hardware, FPGA and Kernel operating system numbers.
- **Device Configuration:** Displays the device configuration, including network settings and wireless settings, it gives the user access to changing a range of various settings which can be enabled or disabled depending on the discretion of the user.
- **Backup/Restore:** Allows the user to backup or restore the device configurations.
- **File Browser:** Displays a list of the files in the HHMPI internal memory for download.
- **Admin:** Displays the administrator's configuration information, the user can access this to input their own administrator specific information and change Access restrictions.
- **License:** Allows the user to download the security configuration and validate the license key.

Figure 39 Web Interface Home Page



3.2.9.1 Accessing the Web Interface

1. Via the RJ45 socket, plug the HHMPI into an Ethernet network, alternatively you may plug the HHMPI into a cradle which has an existing Ethernet connection.
2. Navigate to the Wired Settings as shown in the menu below and record the allocated IP address:

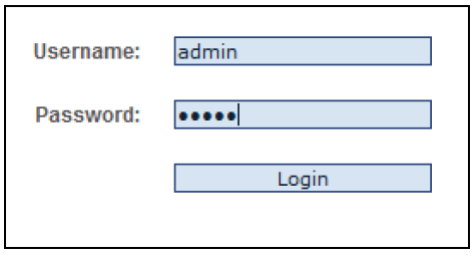
▼▲ **Main Menu > Network Operations > View Wired Address**

3. Open a web-browser that uses https protocol, such as Mozilla Firefox or Google Chrome, and type the wired IP address into the browser address bar.

Note If no link is detected an IP address has not been assigned to the HHMPI, this may be because of your network security settings. See your IT department or contact Flight Data Systems for more information if this occurs.

4. Login to the HHMPI web interface using the default username and password **admin** and **admin**.

Figure 40 Web Interface Login



5. After you successfully log in the default screen should appear as per Section 3.2.9.1, “Accessing the Web Interface” with the device and version information listed.

3.2.9.2 Changing the HHMPI configuration via the web interface

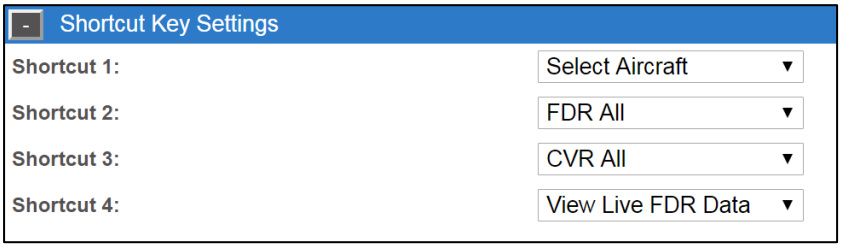
To configure the HHMPI through the web interface, in any web-browser:

1. Log on to the HHMPI web interface as per Section 3.2.9.1, “Accessing the Web Interface”.
2. Click the **Device Configuration** tab.

➡ All the HHMPI configurations detailed in Section 3.1.4, "HHMPI Configuration" can also be altered via the web interface, for the purposes of brevity an example covering how to change the featured shortcuts on the shortcut menu will be described.

3. Scroll to the bottom of the device configuration page where you will encounter the shortcut key settings option.
4. In order to alter the 3rd shortcut, for example, click on the down arrow located to the right of Media Download and select CVR All, this will allow the user easy access to performing a CVR download without having to cycle through the menu structure.
5. Navigate to either the top right or bottom left portion of the screen and click Save then Apply. Once these settings have been successfully applied a prompt reading "Reloaded Settings" will appear on the HHMPI screen.
6. Power cycle the HHMPI by turning the unit off, waiting at least 3 seconds, then turning the unit back on. Once the unit powers up again the reloaded settings will take effect.

Figure 41 Shortcut Settings



3.2.9.3 File Browser

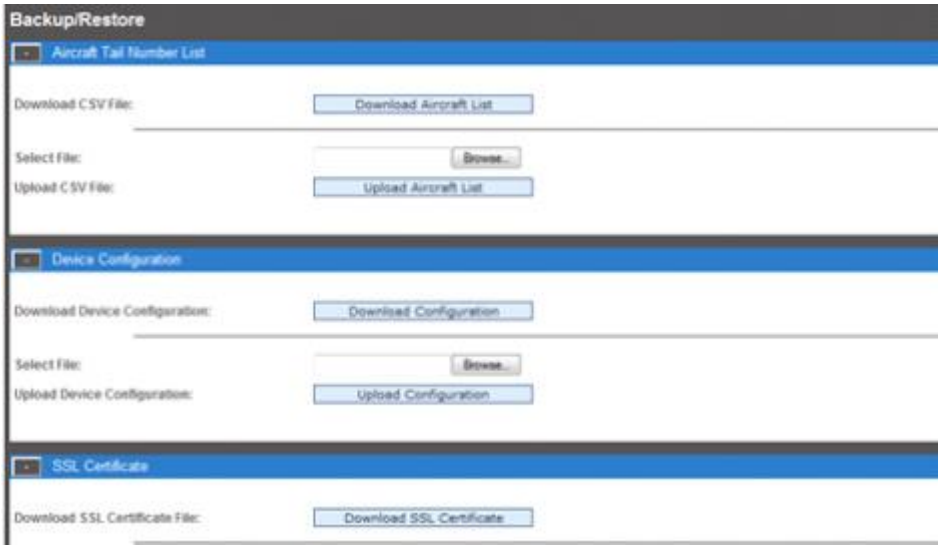
The file browser menu gives the user access to download, delete or format internally stored files within the HHMPI. As such it does not allow access to files stored on external memory locations such as USB and SD cards. File size and creation date are also viewable within the file browser page.

3.2.9.4 Backing up the HHMPI configuration

To back up the HHMPI settings, aircraft list and SSL certificate (if installed) through the web interface, in any web-browser:

1. Log on to the HHMPI web interface as per Section 3.2.9.1, "Accessing the Web Interface".
2. Click the **Backup/Restore** tab, located 3 tabs to the right of **System Information**. The **Backup/Restore** screen provides options including Aircraft Tail Number List, Device Configuration, SSL certificate, Custom Encryption Key and SFTP key.
3. Click **Download Aircraft List** to download a .bkp (backup file). The user should then take care ensuring to save it in a known, safe location on a local PC.
4. Repeat steps 1 to 3 to back up the HHMPI settings, SSL certificate and Custom Encryption key (if installed).

Figure 42 Backup/Restore screen



3.2.9.5 Restoring backup files via the web interface

Important The Aircraft List is saved as aircraft.csv.bkp when downloaded through web interface or on HHMPI. To transfer this file to the HHMPI again, it must be renamed aircraft.csv.

To reload HHMPI settings, aircraft list, SSL certificate and Custom Encryption key follow these steps:

1. Select the file to be uploaded, e.g. aircraft.csv (for an aircraft list) or hhmpi.conf (for device configuration) by selecting the "**Choose file**" button.
2. Select the "**Upload Aircraft List**" or alternatively "**Upload Configuration**" depending on which file is being uploaded to the HHMPI.
3. Scroll to the bottom of the **Backup/Restore** settings tab and select the "**Apply**" button.

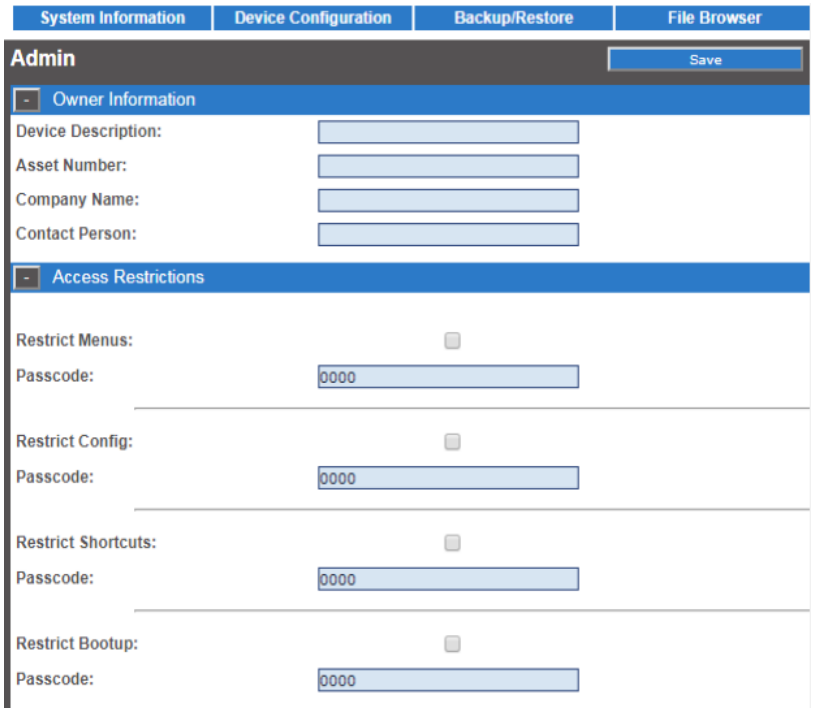
   ➡ A prompt reading "**Reloaded Settings**" appears on the HHMPI screen confirming the update.
4. For the current updates to take effect, power cycle the unit by turning the unit off, waiting at least 3 seconds then turning the unit back on.
5. Repeat steps 1 to 4 with their adjacent "**Choose file**" to restore the SSL certificate and Custom Encryption key.

3.2.9.6 Administration settings

The Admin Screen allows users to:

- Add owner information.
- Enter pass codes for restricting main menu access, device configuration, shortcut access or restricting access on power on.
- Change the administrator login.
- Reset the device or restore back to factory settings.

Figure 43 Admin screen



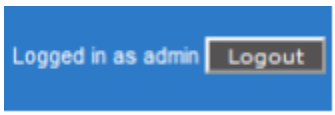
To configure an access passcode, follow these steps:

1. In the **Access Restrictions** section, enable a pass code function by clicking on the adjacent check box.
2. Enter a 4-digit pass code in the adjacent text box and then click **Save**.
3. The new pass code will take effect the next time you turn on the HHMPI.

3.2.9.7 Logging out of the web interface

To log out of the web interface press the **Logout** button below.

Figure 44 Logout button



3.3 Wirelessly uploading files from the HHMPI to a server

3.3.1 Setting up a wireless network connection

Some HHMPI models, when in range of a wireless network, support the wireless upload of files from the HHMPI to a server. This upload method uses a USB wireless network adapter plugged into the USB port on top of the HHMPI.

Note The HHMPI must include the wireless option which enables support for the wireless upload of files from the HHMPI to a server.

The Airbus approved HHMPI model (FDS40-0310) does not support the wireless option.

USB flash drives cannot be used when connected to a wireless network.

3.3.1.1 Required equipment and wireless network information

To wirelessly upload files from the HHMPI to a server, you will need:

- A HHMPI with the wireless option enabled.
- A USB wireless network adapter.
- Access to a wireless network, including the SSID (or the public name of the wireless network), and the encryption type and key. This wireless network information is usually available from your IT department.

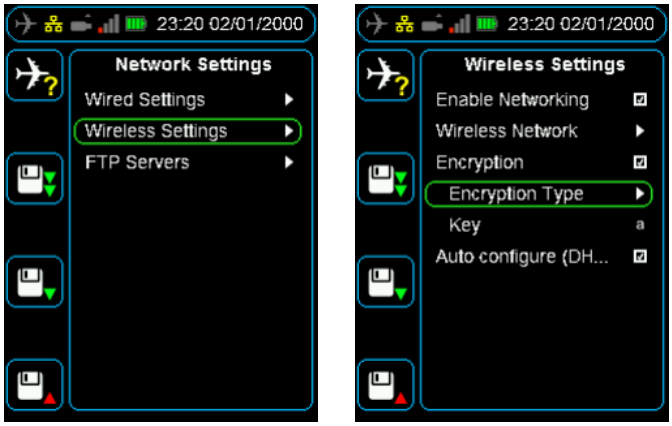
3.3.1.2 Turning on wireless network support

To wirelessly upload files from the HHMPI to a server, when in range of a wireless network:

▼▲ **Main Menu > Device Configuration > Network Settings > Enable Networking > Wireless Network**

1. Turn on the HHMPI.
2. Plug the USB wireless network adapter into the USB port on the top of the HHMPI. An alert **Configuring Wi-Fi - Please Wait** should appear momentarily.
   A white antenna icon will also appear in the status bar indicating the HHMPI is ready to connect to wireless networks in range.
3. From the **Main** menu, press down until you reach the **Device Configuration** command, and then press **right**. Then press **down** until you reach the **Network Settings** command, and then press **right**.
4. Press **right** to select the **Enable Networking** check box.
5. Press **down** until you reach **Wireless Network**, and then press **right** to **Scan** for wireless networks in range or add a wireless network manually with an **ESSID**.

Figure 45 Connecting to a wireless network



3.3.1.3 Connecting to a wireless network

To connect to a wireless network, it is likely that you will need to configure some security settings like the encryption type and key. To turn on encryption, from the **Wireless Settings** menu:

- Press **down** until you reach the **Encryption** command, and then press **right** to select the **Encryption** check box.

To select an encryption type and enter a key, from the **Wireless Settings** menu:

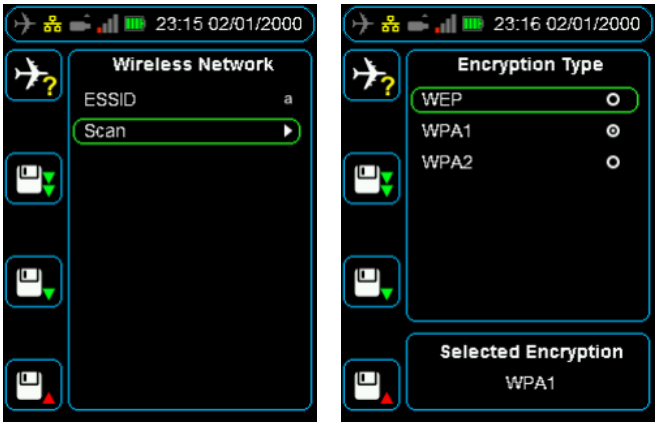
1. Press **down** until you reach **Encryption Type** command, and then press **right** to select the encryption type from the following commands: **WEP**, **WPA1**, and **WPA2**.
2. Press **left** to return to the **Wireless Settings** menu, then press **down** to select the **Key** command, and then press **right** to enter the key.
3. Press **up** to enter the key from the alphabet grid with the arrow buttons, pressing **OK** between each letter. When you are finished, press **cancel** and then **OK** to return to the **Wireless Settings** menu. If you have successfully connected to a wireless network, the white antenna icon in the status bar will change to a green four bar signal strength icon. If this signal strength icon does not appear, you are not connected to a wireless network and may need to contact your IT department.

Caution Using an unsecured wireless network may result in the loss of sensitive information. See your IT department or contact Flight Data Systems for more information on encryption.

To save the encryption type and key, from the **Device Configuration** menu:

- Press **down** until you reach the **Save Settings** command, and then press **right**.

Figure 46 Configuring security like the encryption type and key



3.3.1.4 Uploading files via FTP with a wireless network connection

When the HHMPI is connected to a wireless network, files saved on the HHMPI, or on one of its external storage devices, can be uploaded wirelessly to a server via FTP.

To upload files via FTP with a wireless network connection, ensure:

- That the HHMPI is connected to a wireless network. From the **Main menu**, press **down** until you reach the **Network Operations** command, then press down until you reach the **View Wireless Address** command, and then press **right**. If the HHMPI is connected to a wireless network, it will display an IP address assigned by the wireless router.
- That the FTP settings have been configured. See Section 3.2.8, “Configuring an FTP connection”.

3.4 Troubleshooting

To troubleshoot the HHMPI, first try the following steps:

- **Turn the HHMPI on and off** by following the steps in Section 3.1.1.4, "Turning on the HHMPI and self-test".
  If this did not work, try connecting the HHMPI to a power adapter and plug the power adapter into an electrical outlet, or connect the HHMPI to your computer. Make sure the computer is turned on and is not set to go to sleep. If this does not work, try resetting the HHMPI by following the steps in Section 3.1.1.5, "Reset operation".
- **Retry** the HHMPI with a different recorder if possible.
- **Restart** the recorder if possible and try again.

▼▲ **Main Menu > Device Configuration > Report Error**

If these steps do not solve your problem, below is a list of potential problems and solutions. If your problem is not listed, use the **Report Error** menu option (if possible) on the HHMPI, and send the generated file to support@flightdata.aero with a description of the problem, the serial number of the HHMPI, and the part numbers of recorders you are trying to interface with (if applicable).

If it is not possible to report the error on the HHMPI, send an email to support@flightdata.aero. In your email, include the following information:

- Company name and contact details.
- Any relevant part numbers, serial numbers and mod status of the Flight Data Systems equipment involved in your troubleshooting process. See Section 3.1.5, "Information".
- Any part numbers and a brief description of any equipment not manufactured by Flight Data Systems involved in your troubleshooting process.
- Reported fault, including as much information about the conditions when the fault occurs.
- Once your email has been received, we will investigate your issue and contact you as soon as possible.

Table 6 Troubleshooting common issues with the HHMPI

Issue	Solution
HHMPI does not power up.	Battery requires charge, for battery equipped units. For HHMPIs without an internal battery, ensure that it is connected to a powered recorder.
Screen is not visible	Reset the HHMPI by following the steps in Section 3.1.1.5, "Reset operation".
No communication between the HHMPI and the recorder	Ensure that the HHMPI is configured for the recorder, see System Information in Section 3.2.9.2, "Changing the HHMPI configuration via the web interface" Ensure that no external memory device is inserted during startup. Ensure that the aircraft interface cable is correctly inserted.

Issue	Solution
Unable to download file from recorder	Select a memory device, see Section 3.1.4.3, "Memory Settings". Ensure that the aircraft interface cable is correctly inserted. Ensure that the HHMPI is configured for the recorder, see System Information in Section 3.2.9.2, "Changing the HHMPI configuration via the web interface". Check the aircraft interface cable for damage. Check the aircraft interface cable for any debris that could be causing connection issues.
A message is displayed indicating that the download has stopped or stalled.	Cancel and restart the download.
Cannot see live data in the live data view, only see unknown values.	Ensure correct connection to the recorder. Connection is indicated by a blue aircraft icon found in the status bar of the display. If you want to view the live data in engineering units, ensure that the aircraft has an aircraft definition (database) associated with it, see Section 3.2.5.1, "Assigning an Aircraft Definition file to an aircraft". Ensure FDR is in correct mode. Restart the recorder if possible and try again.
Cannot get IP address through wired network.	Ensure that an Ethernet cable is connected and ensure correct connection to the recorder. Connection is indicated by a yellow network connection icon found in the status bar of the display. See Section 3.1.4.5 "Network Settings". If no link is detected an IP address has not been assigned to the HHMPI, this may be because of you network security settings. See your IT department or contact Flight Data Systems for more information if this occurs.
Cannot get IP address through wireless network.	Ensure that the USB wireless network adapter is plugged into the USB port on the top of the HHMPI and ensure correct connection to the recorder. Connection is indicated by a white antenna icon found in the status bar of the display. See Section 3.1.4.5 "Network Settings". Ensure wireless networking is enabled. If no link is detected an IP address has not been assigned to the HHMPI, this may be because of you network security settings. See your IT department or contact Flight Data Systems for more information if this occurs.
Cannot send files from the HHMPI to an FTP server via a wired network connection	Confirm the FTP settings are correct, see Section 3.2.8, "Configuring an FTP connection". Ensure that an Ethernet cable is connected and ensure correct connection to the recorder. Connection is indicated by a yellow network connection icon found in the status bar of the display. See Section 3.1.4.5 "Network Settings". If no link is detected an IP address has not been assigned to the HHMPI, this may be because of you network security settings. See your IT department or contact Flight Data Systems for more information if this occurs.

Issue	Solution
Cannot send files from the HHMPI to an FTP server via a wireless network connection	Confirm the FTP settings are correct, see Section 3.2.8, "Configuring an FTP connection". Ensure that the USB wireless network adapter is plugged into the USB port on the top of the HHMPI and ensure correct connection to the recorder. Connection is indicated by a white antenna icon found in the status bar of the display. See Section 3.1.4.5 "Network Settings".. Ensure wireless networking is enabled. If no link is detected an IP address has not been assigned to the HHMPI, this may be because of you network security settings. See your IT department or contact Flight Data Systems for more information if this occurs.
Cannot copy files from HHMPI to PC using USB cable.	Try another USB port. Check USB is working, and that the PC is displaying the HHMPI as a mass storage device.
Cannot load aircraft.csv file.	Check the file in Notepad or Excel to see if it meets the format described in Section 3.2.2.1 "Creating an Aircraft List on a PC". Try loading the file through the web interface, see Section 3.2.9.2, "Changing the HHMPI configuration via the web interface".
Cannot copy file from external memory device.	Ensure that the external memory device is connected. Connection is indicated by an orange USB flash drive icon found in the status bar of the display. Check that the file is selected before attempting to copy the file. Check that the external memory device is not full.
Cannot delete file from media storage device.	Ensure that the external memory device is connected. Connection is indicated by an orange USB flash drive icon found in the status bar of the display. Check that the file is selected before attempting to delete the file.
"UV" Displayed on screen.	Battery under voltage, charge battery for an extended period (12 hours), if the fault message continues to be displayed, return the unit for repair.
"Detected Battery Fault Condition" error message displayed on screen.	Charge battery for an extended period (12 hours), if the fault message continues to be displayed, return the unit for repair.
"Unsupported Cable Detected"	Ensure that the aircraft interface cable is correctly inserted. Ensure that the HHMPI is configured for the recorder, see System Information in Section 3.2.9.2, "Changing the HHMPI configuration via the web interface". Check the aircraft interface cable for damage. Check the aircraft interface cable for any debris that could be causing connection issues.
"Mount Error"	Ensure that the external memory device is not corrupt or damaged in anyway. Ensure that the external memory device is correctly inserted in the HHMPI.

Issue	Solution
Real-time clock is not keeping the correct time or date after powering up.	It is possible that the small lithium non-rechargeable battery that supports the real-time clock has gone flat. The expected lifetime of this battery is 6 to 10 years. Contact Flight Data Systems for more information if this occurs.

3.5 FA2100, FA2200 and FA2300 Interface Supplement

This supplement details the additional functions supported by the L-3 Aviation Recorders FA2100 CVFDR. For specific details on these recorders, refer to the appropriate L-3 FA2100 CVFDR OEM documentation.

3.5.1 Download Operations

The FA2100 supports the following download options:

- DLR ALL - Retrieves all DLR from recorder.
- DLR Time - Retrieve the last specified duration of DLR recordings.
  Note: This DLR function is only available if the recorder has the DLR function.
- FDR All - Retrieves all flight data from the recorder.
- FDR Since Last - Retrieves only new flight data recorded since the last download operation was performed.
- FDR Time - Retrieves the last specified duration of flight data.
- FDR Mark - Retrieves all flight data newer than a specified memory mark.
- CVR All - Retrieves all cockpit voice recordings from the recorder. If CVR de-multiplexing is enabled on the HHMPI, recordings can also be decompressed so they can be played on a PC or other device.
- CVR Time - Retrieves the last specified duration of cockpit voice recordings.

See Section 3.2.3 “Flight Data Downloads”.

Table 7 File extensions of files downloaded from the FA2100

Data Type	Extension
FDR	.fdr
CVR	.cvr
DLR	.dlr
Fault Log	.log
Debug Trace	.log

3.5.2 Recorder Operations

The FA2100 supports the following recorder operations:

- Monitoring of FDR Status.
- Monitoring of CVR Status.
- Setting of FDR and CVR memory markers.
- Clearing of latched faults and fault log. Download of CVFDR fault logs. See, ”Recorder Operations - Dump Debug Trace”

Figure 47 FA2100 Download Operations

3.5.3 FDR Status

Indicates the status of the following:

- FDR Stream Detected
- Frame Lock
- Recorded Minutes
- Latched
- Fault

3.5.4 CVR Status

Indicates the status of the following:

- Latched
- Fault
- Recording

3.5.5 FDR or CVR Fault Output

The cockpit fault light can be forced on or off using the **left** and **right** buttons.

3.5.6 Clear Latched Fault

Sets or reset the fault log.

3.5.7 Clear Fault Log

Erases the fault log.

3.5.8 Dump Fault Log

Saves the fault log to selected memory.

Figure 48 Recorder Operations - Dump Debug Trace

3.5.9 Dump Debug Trace

This function dumps the running debug stream from an L3 FA2100 recorder to a file on the HHMPI. This file is a text file readable in any text editor.

3.5.10 Memory Marker

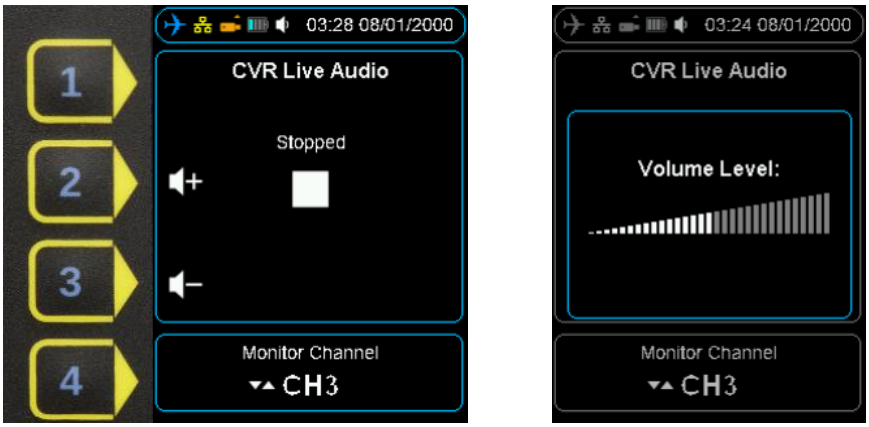
Set a new FDR memory marker. The next marker will be chosen in the range 1-15, when all the markers are set, the marker count returns to 1.

3.5.11 Audio Operations

The FA5000/FA5001 audio can be both monitored in real time, and also play back previously recorded data. To listen to audio, plug headphones into the audio jack on the bottom of the HHMPI.

Press the **up** and **down** buttons to select which channel you want to listen to. **Shortcut button 2** increases the volume and **shortcut button 3** decreases the volume. In playback mode, the **left** and **right** buttons rewind or fast forward the current playback position.

Figure 49 CVR Live Audio volume control



Note The CVFDR must be configured appropriately for playback, that is, not currently recording. Refer to the component maintenance manual for instructions.

3.5.12 Live Data View

Real time ARINC-717 data can be monitored from the FA2100. See Section 3.2.4, "Viewing live flight data".

3.5.13 Menu Tree

The following menu items are enabled on connection to a FA2100 recorder.

Table 8 Additional menu items for FA2100 CVDR

Main Menu	Menu Level 1	Menu Level 2
Download Operations	FDR All	
	FDR Since Last	
	FDR Mark	
	FDR Time	
	CVR All	*CVR Decompression (OK/Cancel)*
	CVR Time	
Recorder Operations	FDR Status	*FDR Stream Detected* *Frame Lock* *Recorded Minutes* *Latched* *Fault*
	CVR Status	*Latched* *Fault* *Recording*
	FDR Fault Output	*Forced On/Off*
	CVR Fault Output	
	Clear Latched Fault	*Set/Reset*
	Clear Fault Log	
	Dump Fault Log	*Select Memory*
	Dump Debug Trace	
	Memory Marker	*Set a memory marker (1-15)*
Audio Operations	CVR Live Audio	*Select Monitor Channel: HQV1, HQV2, HQV3, SQN, SQC, HQC.* *Audio volume* *Data Rate*
	CVR Playback	*Select Playback Channel: HQV1, HQV2, HQV3, SQN, SQC, HQC.* *Playback status* *Playback audio volume* *Playback data Rate*
Live Data View	View Live Data	

3.6 SRVIVR™ Interface Supplement

This supplement details the additional functions supported by the L-3 Aviation Recorders SRVIVR™ CVFDR. For specific details on these recorders, refer to the appropriate L-3 SRVIVR™ OEM documentation.

3.6.1 Download Operations

The SRVIVR™ supports the following download options:

- CVR All - Retrieves all cockpit voice recordings from the recorder.
- CVR Since Last - Retrieves only new cockpit voice recordings recorded since the last download operation was performed.
- CVR Last Flight - Retrieves only new cockpit voice recordings recorded since the last flight.
- CVR Time - Retrieves the last specified duration of flight data.
- DLR All - Retrieves all Datalink recordings from the recorder.
- DLR Since Last - Retrieves only new Datalink recordings recorded since the last download operation was performed.
- DLR Last Flight - Retrieves only new Datalink recordings recorded since the last flight.
- DLR Time - Retrieves the last specified duration of Datalink recordings.
- FDR All - Retrieves all flight data from the recorder.
- FDR Since Last - Retrieves only new flight data recorded since the last download operation was performed.
- FDR Last Flight - Retrieves only new flight data recorded since the last flight.
- FDR Time - Retrieves the last specified duration of flight data.
- BIT All - Retrieves all BIT data from the recorder for SRU fault isolation.
- BIT Since Last - Retrieves only new BIT data recorded since the last download operation was performed.
- BIT Last Flight - Retrieves only new BIT data recorded since the last flight.
- BIT Time - Retrieves the last specified duration of BIT data.

Table 9 File extensions of files downloaded from the SRVIVR™

Data Type	Extension
FDR	.dfd
CVR	.mic1, .mic2, .mic3, .cam
DLR	.dlr

Figure 50 SRVIVR™ Download Operations

3.6.2 Recorder Operations

The SRVIVR™ supports the following recorder operations:

- Monitoring of CVFDR information, including system version, serial number, etc. For full list of information.
- Initiating system self-test.

Figure 51 SRVIVR™ Recorder Operations - Information

Figure 52 SRVIVR™ Recorder Operations - Self Test

3.6.3 Audio Operations

The SRVIVR™ audio can be monitored in real time. To listen to audio, plug headphones into the audio jack on the bottom of the HHMPI.

Press the **up** and **down** buttons to select which channel you want to listen to. **Shortcut button 2** increases the volume and **shortcut button 3** decreases the volume.

Note The CVFDR must be configured appropriately for playback, that is, not currently recording. Refer to the component maintenance manual for instructions.

3.6.4 Live Data View

Three streams of real time data can be monitored from the SRVIVR™:

- Live ARINC-717, see Section 3.2.4, "Viewing live flight data".
- Monitoring of Captain's Clock on the ARINC-429 GMT BUS, both labels 125 and 150.
- Monitoring of Rotor Frequency in Hz.

3.6.5 Menu Tree

The following menu items are enabled on connection to a SRVIVR™ recorder.

Table 10 Additional menu items for SRVIVR™ CVFDR

Main Menu	Menu Level 1	Menu Level 2
Download Operations	CVR All	
	CVR Since Last	
	CVR Last Flight	
	CVR Time	
	DLR All	
	DLR Since Last	
	DLR Last Flight	
	DLR Time	
	FDR All	
	FDR Since Last	
	FDR Last Flight	
	FDR Time	
	BIT All	
	BIT Since Last	
	BIT Last Flight	
	BIT Time	

Main Menu	Menu Level 1	Menu Level 2
Recorder Operations	Information	*System Version* *Serial Number* *Hardware Version* *Processor Version* *CPM Version* *Audio Version* *ARINC Version* *Boot Version* *OFP Version* *OFP CRC* *Config Data Version* *Config Data CRC* *Operating Hours* *Last Time Stamp* *CVFDR Mode* *Discrete Inputs* *Discrete Outputs* *CVR Status Word* *Processor Status* *Power Supply Status* *CPM Status* *Audio Status* *ARINC Status* *External Status*
	Self Test	*Processor Status* *Power Supply Status* *CPM Status* *Audio Status* *ARINC Status* *External Status*
Audio Operations	CVR Live Audio	*Select Monitor Channel: HQV1, HQV2, HQV3, SQN, SQC, HQC.* *Audio volume* *Data Rate*
Live Data View (See Section 3.2.4, "Viewing live flight data")	View Live FDR Data	
	View DLR	*DLR Heartbeat* *DLR Data*
	View Captains Clock	*Label 150 Clock (HH:MM:SS)* *Label 125 Clock (HH:MM:SS)*
	View Rotor	*Raw Rotor Frequency*

3.7 FA5000/FA5001 Interface Supplement

3.7.1 Download Operations

The FA5000/FA5001 supports the following download options:

- FDR All - Retrieves all flight data from the recorder.
- FDR Since Last - Retrieves only new flight data recorded since the last download operation was performed.
- FDR Time - Retrieves the last specified duration of flight data.
- FDR Mark - Retrieves all flight data newer than a specified memory mark.
- CVR All - Retrieves all cockpit voice recordings from the recorder.
- CVR Since Last - Retrieves only new cockpit voice recordings recorded since the last download operation was performed.
- CVR Time - Retrieves the last specified duration of cockpit voice recordings.
- CVR Mark - Retrieves all cockpit voice recordings newer than a specified memory mark.
- DLR All - Retrieves all Datalink recordings from the recorder.
- DLR Since Last - Retrieves only new Datalink recordings recorded since the last download operation was performed.
- DLR Mark - Retrieves all Datalink recordings newer than a specified memory mark.

Figure 53 FA5000/FA5001 Download Operations

3.7.2 Recorder Operations

The FA5000/FA5001 supports the following recorder operations:

- Monitoring of FDR Status.
- Monitoring of CVR Status.
- Setting of FDR, CVR and DLR memory markers.
- Download of CVFDR fault logs.
- Download EDS file. Get the ARINC 717 Engineering Documentation Standard (EDS) conversion file (FRCS, FRED, etc.) from the recorder.

Figure 54 FA5000/FA5001 Recorder Operations - FDR Status

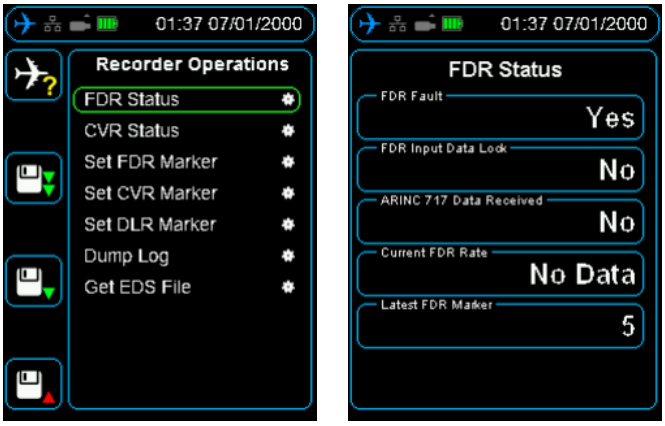
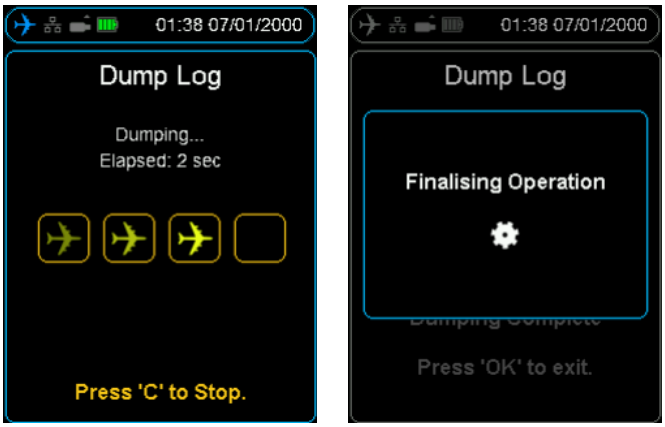


Figure 55 FA5000/FA5001 Recorder Operations - Dump Log



3.7.3 FDR Configuration

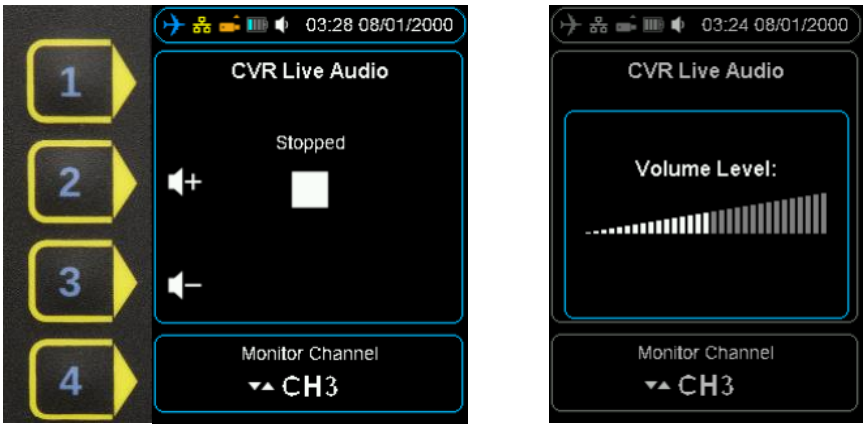
The FDR configuration menu details information about the recorder such as part numbers and version numbers.

3.7.4 Audio Operations

The FA5000/FA5001 audio can be both monitored in real time, and also play back previously recorded data. To listen to audio, plug headphones into the audio jack on the bottom of the HHMPI.

Press the **up** and **down** buttons to select which channel you want to listen to. **Shortcut button 2** increases the volume and **shortcut button 3** decreases the volume. In playback mode, the left and right buttons rewind or fast forward the current playback position.

Figure 56 CVR Live Audio volume control



Note The CVFDR must be configured appropriately for playback, that is, not currently recording. Refer to the component maintenance manual for instructions.

3.7.5 Live Data View

Three streams of real time data can be monitored from the FA5000/FA5001:

- Live ARINC-717, see Section 3.2.4, "Viewing live flight data".
- Monitoring of Captain's Clock on the ARINC-429 GMT BUS, both labels 125 and 150.
- Monitoring of Rotor Frequency in Hz.

3.7.6 Menu Tree

The following menu items are enabled on connection to a FA5000/FA5001 recorder.

Table 11 Additional menu items for FA5000/FA5001 CVFDR

Main Menu	Menu Level 1	Menu Level 2
Download Operations	FDR All	
	FDR Since Last	
	FDR Time	
	FDR Mark	
	CVR All	
	CVR Since Last	
	CVR Time	
	CVR Mark	
	DLR All	
	DLR Since Last	
	DLR Mark	
Recorder Operations	FDR Status	*FDR Fault* *FDR Input Data Lock* *ARINC 717 Data Received* *Current FDR Rate* *Latest FDR Marker*
	CVR Status	*CVR Fault* *Datalink Data Received* *GMT Data Received* *OMS Data Received* *Rotor Data Received* *CAM Audio Present and Sending Data* *MIC1 Audio Present and Sending Data* *MIC1 Audio Present and Sending Data* *MIC1 Audio Present and Sending Data* *Latest CVR Marker*
	Set FDR Marker	*Memory Marker - in progress or marker number*
	Set CVR Marker	*Memory Marker - in progress or marker number*
	Dump Log	*List of storage devices*

Main Menu	Menu Level 1	Menu Level 2
	Get EDS File	*List of storage devices*
FDR Configuration	Information	*Recorder Part Number* *Aircraft ID* *Recorder Serial Number* *Date (YYYY/MM/DD)* *Time (HH:MM:SS:MS)* *FW Version* *L3 HW FPGA Part Number* *L3 HW FPGA Part Number Revision* *L3 FW FPGA Part Number* *L3 FW FPGA Part Number Revision* *L3 FPGA FW Date (DD/MM/YYYY)* *PN Unknown1* *PN Unknown2*
Audio Operations	CVR Live Audio	*Select Monitor Channel: HQV1, HQV2, HQV3, SQN, SQC, HQC.* *Audio volume* *Data Rate*
	CVR Playback	*Select Playback Channel: HQV1, HQV2, HQV3, SQN, SQC, HQC.* *Playback status* *Playback audio volume* *Playback data Rate*
Live Data View	View Live Data	
	View Captains Clock	*Label 150 Clock (HH:MM:SS)* *Label 125 Clock (HH:MM:SS)*
	View Rotor	*Raw Rotor Frequency*

3.8 F1000 Interface Supplement

This supplement details the additional functions supported by the L-3 F1000 Solid State Flight Data Recorder series. For specific details on these recorders, refer to the appropriate OEM documentation.

3.8.1 Download Operations

The F1000 supports the following download options:

- FDR All – Retrieves all flight data from the recorder.
- FDR Since Last – Retrieves only new flight data recorded since the last download operation was performed.
- FDR TIME – Retrieves the last specified duration of flight data.

Table 12 File extensions of files downloaded from the L-3 F1000

Data Type	Extension
FDR	.fdt

3.8.2 Menu Tree

The following menu items are enabled on connection to a L-3 F1000 recorder.

Table 13 Additional menu items for L-3 F1000 recorder

Main Menu	Menu Level 1	Menu Level 2
Download Operations	FDR All	
	FDR Since Last	
	FDR Time	
Live Data View	View Live FDR Data	

3.9 Micro Quick Access Recorder Interface Supplement

This supplement details the additional functions supported by the L-3 Micro Quick Access Recorder (UQAR) Flight Data Recorder series. For specific details on these recorders, refer to the appropriate OEM documentation.

3.9.1 Download Operations

The UQAR supports the following download options:

- FDR All - Retrieves all flight data from the recorder.
- FDR Time - Retrieves the last specified duration of flight data.
- FDR Date - Retrieves only flight data from the specified date.

Table 14 File Extensions of files downloaded from L-3 Micro Quick Access Recorder

Data Type	Extension
FDR	.qar

3.9.2 Menu Tree

The following menu items are enabled on connection to a L-3 Micro Quick Access Recorder.

Table 15 Additional menu items for L-3 Micro Quick Access Recorder

Main Menu	Menu Level 1	Menu Level 2
Download Operations	FDR All	
	FDR Since Last	
	FDR Date	
Recorder Operations	Local FDR Clock	

3.10 A200S Interface Supplement

This supplement details the additional functions supported by the L-3 A200S Solid State Cockpit Voice Recorder series. For specific details on these recorders, refer to the appropriate A200S OEM documentation and A200S Decompression Tool User Guide 30-0073.

3.10.1 Download Operations

The A200S supports the following download options:

- CVR All - Retrieves all cockpit voice recordings from the recorder.

Table 16 File extensions of files downloaded from the L-3 A200S

Data Type	Extension
CVR	.bin

3.11 SMITHS VADR Interface Supplement

This supplement details the additional functions supported by the Smiths VADR. For specific details on these recorders, refer to the appropriate Smiths VADR OEM documentation.

3.11.1 Select Aircraft

The Smiths VADR Select Aircraft menu is pre-installed with ARMY and RAAF models and registration information. See Section 3.2.2.3 “Creating the Aircraft List on the HHMPI”, to add additional aircraft.

3.11.2 Download Operations

The Smiths VADR supports the following download options:

- FDR All - Retrieves all flight data from the recorder.
- CVR All - Retrieves all cockpit voice recordings from the recorder.

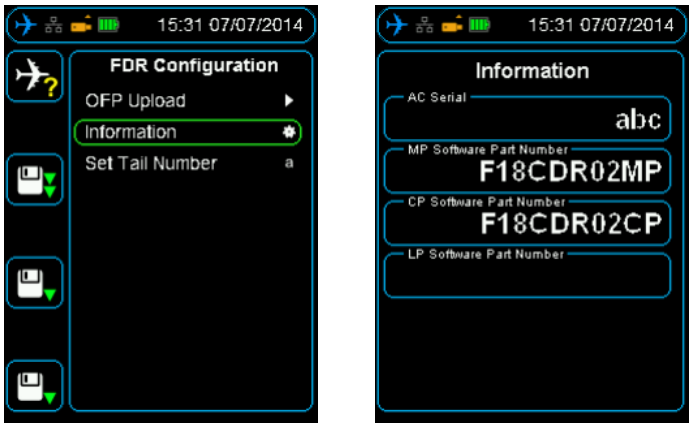
Table 17 File extensions of files downloaded from Smiths VADR

Data Type	Extension
FDR	.rdf
CVR	.rdf

3.11.3 FDR Configuration

The FDR configuration menu details information such as aircraft serial number, version numbers (MP Software P/N and CP Software P/N), upload of Operational Flight Program (OFP) and settings for the aircraft tail number.

Figure 57 VADR information



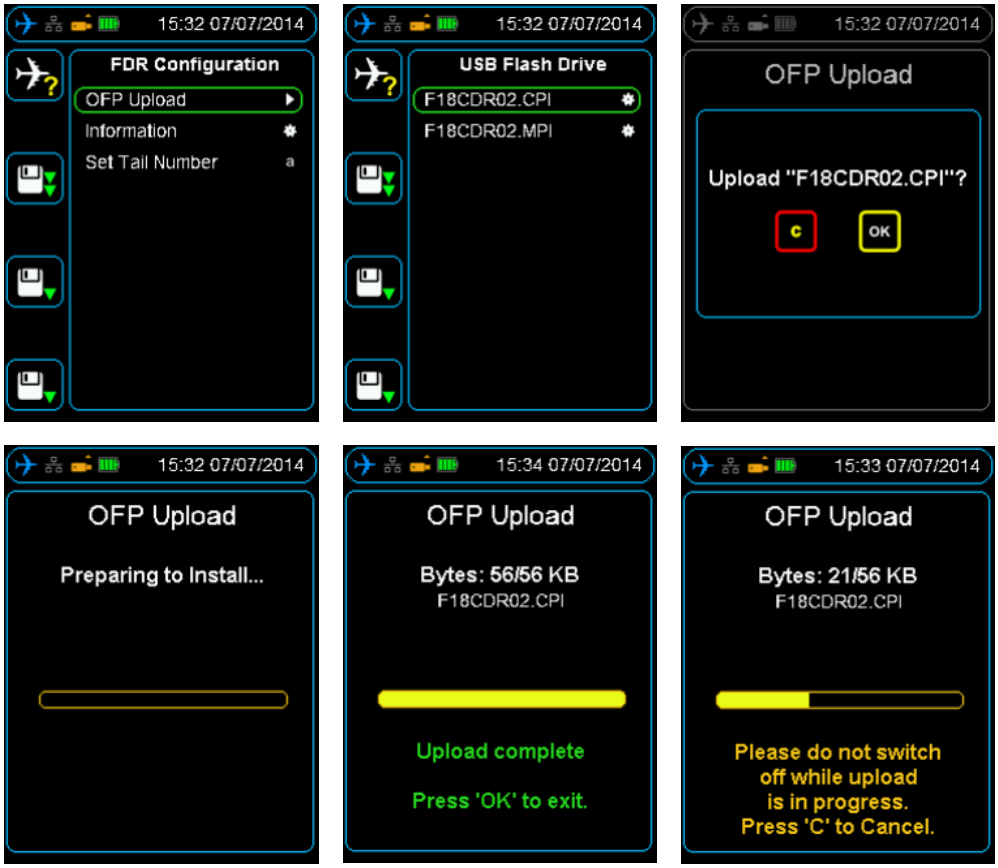
3.11.4 Upload OFP to the HHMPI

To upload OFP to the HHMPI:

1. Power up the HHMPI and connect to the VADR using a VADR aircraft interface cable.
2. Insert a USB flash drive into the USB port on top of the HHMPI containing the OFP files.
3. From the **Main** menu, press down until you reach the FDR Configuration command, and then press **right**.
4. Select **OFP Upload**, and then select the .cpi file from the USB flash drive and confirm the selection by pressing the **OK** button.
5. Repeat step 4 for the .mpi file.

Once complete return to the FDR Configuration and confirm the files are loaded in the Information section.

Figure 58 Uploading OFP to the VADR from the HHMPI



3.12 Universal™ Interface Supplement

This supplement details the additional functions supported by the Universal™ CVFDR. For specific details on these recorders, refer to the appropriate Universal CVFDR OEM documentation.

3.12.1 Download Operations

The Universal™ CVFDR supports the following download options:

- FDR All - Retrieves all flight data from the recorder.
- FDR Time - Retrieves the last specified duration of flight data.
- CVR All - Retrieves all cockpit voice recordings from the recorder.
- CVR Time - Retrieves the last specified duration of cockpit voice recordings.

Table 18 File extensions of files downloaded from the Universal CVFDR

Data Type	Extension
FDR	.bin
CVR	.wav

The cockpit voice data from the Universal™ CVFDR is downloaded as a waveform (one for each channel) which can be played in most audio applications.

3.13 B&D (Penny & Giles) 91005 series

This supplement details the additional functions supported by the B&D (Penny & Giles) 91005 series. For specific details on these recorders, refer to the appropriate B&D OEM documentation.

3.13.1 Download Operations

The 91005 supports the following download options:

- FDR All - Retrieves all flight data from the recorder.

Table 19 File extensions of files downloaded from the 91005

Data Type	Extension
FDR	.bin

3.14 Penny & Giles Multi-purpose flight recorder (MPFR) 051615 series

This supplement details the additional functions supported by the Penny & Giles Multi-purpose flight recorder (MPFR) 051615 series. For specific details on these recorders, refer to the appropriate MPFR OEM documentation.

3.14.1 Download Operations

The MPFR supports the following download options:

- FDR All - Retrieves all flight data from the recorder.
- FDR Since Last - Retrieves only new flight data recorded since the last download operation was performed.
- CVR All - Retrieves all cockpit voice recordings from the recorder.
- CVR Since Last - Retrieves only new cockpit voice recordings recorded since the last download operation was performed.
- Log All - Retrieves all the logging information.
- Log Since Last - Retrieves only new logging information recorded since the last download operation was performed.
- Config All - Retrieves all the recorder configuration information.
- Config Since Last - Retrieves only new recorder configuration information recorded since the last download operation was performed.

Table 20 File extensions of files downloaded from the MPFR

Data Type	Extension
FDR	.bin
CVR	.bin

3.14.2 Recorder Operations

The MPFR supports the following recorder operations:

- Monitoring of FDR and CVR status information.

3.14.3 Menu Tree

The following menu items are enabled on connection to a MPFR recorder.

Table 21 Additional menu items for MPFR

Main Menu	Menu Level 1	Menu Level 2
Download Operations	FDR All	
	FDR Since Last	
	CVR All	
	CVR Since Last	
	Log All	
	Log Since Last	
	Config All	
	Config Since Last	

Main Menu	Menu Level 1	Menu Level 2
Recorder Operations	Information	*Software Assembly Number* *Software Version* *Software Build* *Program Checksum* *Serial Number* *User Configured IP Address* *User Configured Gateway Address* *User Configured Subnet Mask* *MAC Address* *FDR Rate* *FDR Interface Type* *Derive Record Stop From Rotor Speed* *Recorder Type*
	Status	*Recorder Mode* *Flight Number* *Total Power On Hours* *Time Since Power On* *CVR Mode* *CVR Fault* *CVR Fault Count* *Last CVR Fault Source* *FDR Mode* *FDR Fault* *FDR Fault Count* *Last FDR Fault Source* *Manager* */CVR1/* */CVR2/* */FDR1/* */FDR2/* *Manager* *ROM Self Test* *RAM Self Test* *Program Checksum Self Test* *Configuration Checksum Self Test* *Tasks Running Self Test* *Power Supply Self Test* *Trace Message*

3.15 Honeywell HFR5-V Solid State Cockpit Voice Recorder (SSCVR)

This supplement details the additional functions supported by the Honeywell HFR5-V Solid State Cockpit Voice Recorder (SSCVR) series. For specific details on these recorders, refer to the appropriate HFR5-V OEM documentation.

3.15.1 Download Operations

The HFR5-V supports the following download options:

- CVR All - Retrieves all flight data from the recorder.
- With the demultiplexing option enabled, you can also decompress the CVR data to waveforms playable on a PC, representing the four audio channels.

Table 22 File extensions of files downloaded from the HFR5-V

Data Type	Extension
CVR	.dlu

3.16 Honeywell HFR5-D Solid State Flight Data Recorder

This supplement details the additional functions supported by the Honeywell HFR5-D Solid State Flight Data Recorder series. For specific details on these recorders, refer to the appropriate HFR5-D OEM documentation.

3.16.1 Download Operations

The HFR5-D supports the following download options:

- FDR All - Retrieves all flight data from the recorder.

Table 23 File extensions of files downloaded from the HFR5-D

Data Type	Extension
FDR	.dlu

4. HHMPI Version 3

4.1 Getting Started

4.1.1 Using the HHMPI

To download data from a Flight Data Recorder (FDR) or Cockpit Voice Recorder (CVR), you need the following equipment:

- The HHMPI kit.
- An interface cable for the specific recorder you want to download data from. See Table 4 Interface cables and software options.

4.1.1.1 Touchscreen Capabilities

Alternative to the push button use, the HHMPI offers touch-screen capabilities in order to cycle through the various menu options. Use of the push buttons and the touch screen achieve the same result and thus can be used interchangeably. The list below describes the operations of each touch-screen action:

- **Left Push Button**: Equivalent to swiping right on the screen
- **Right Push Button**: Equivalent to swiping left on the screen. Commonly used to navigate backwards or cancel an operation.
- **Vertical Scroll:** Menu items can be scrolled by dragging your finger up and down on the screen.
- **Selection:** Tap a menu item to select it.

4.1.1.2 Connecting the HHMPI to a Recorder

To connect the HHMPI to a recorder use the interface cable for the specific recorder you want to download data from. Turn on the HHMPI before connecting the interface cable to it.

4.1.1.3 Powering and Charging the HHMPI

The HHMPI is powered by the internal battery. It can be charged with the HHMPI docking cradle (P/N: FDS40-0373).

1. Connect the power adapter to the docking cradle, the green light will illuminate.
2. Insert the HHMPI into the docking cradle, the HHMPI will beep and go through the start-up process, and then begin charging. If the battery is flat, the HHMPI will remain powered off and will not beep until it has acquired adequate charge.

Flight Data Systems recommends using the HHMPI Cradle for the following reasons:

- The cradle provides direct current (DC) charging which extends battery life by avoiding trickle charging.
- The transfer of files from the HHMPI to the PC is stable and easy to operate when docked.
- Auto-sync and transfer files from the unit to a nominated FTP server via Ethernet connection.
- Configure the unit in the web interface using the Ethernet connection on the cradle.

It is recommended to charge the HHMPI device for 12 hours prior to first use. Charging is indicated by an animated blue battery icon located on the top left of the screen. Full charge is indicated by a green four bar battery. When charging is required, this battery icon turns red. The HHMPI may be used when it is charging, however this will increase the total time to reach a fully recharged state.

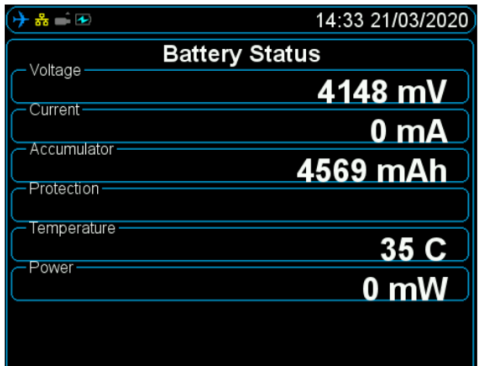
The HHMPI is powered by an internal lithium-ion battery. To monitor status of the battery, refer to the menu sequence below:

▼▲ **Main Menu > Battery Status**

1. Press right to access the **Main Menu**.

2. Scroll down to **Battery Status** and press **right**.

Figure 59 Battery Status Screen



As per the "battery status" screen as shown above:

- **Voltage -** Reports the present battery voltage level.
- **Current -** A positive current indicates that the battery is charging, while a negative current indicates that the battery is discharging.
- **Accumulator -** Reports the remaining battery capacity.
- **Protection** - Reports any detected under voltage, over voltage or over current conditions.
- **Temperature -** Reports the internal temperature within the unit.
- **Power -** A positive power value indicates the present power being used to charge the battery, whilst a negative power value indicates the power output during operation.

Battery indicator icons on the HHMPI have the following meanings:

 Battery failure

 Critically low

 Low

 Prepare to recharge

 Adequate power to operate

 Full battery with external power disconnected (discharging)

 Charging (animated icon)

 Charged with external power still connected

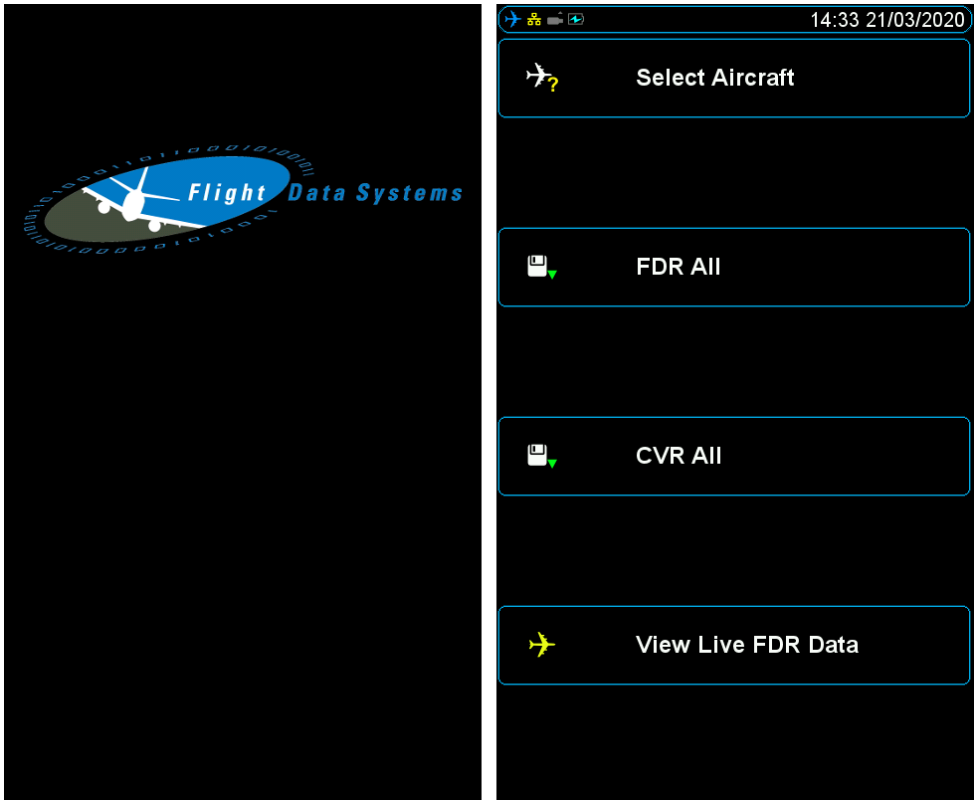
4.1.1.4 Turning on the HHMPI and self-test

To turn on the HHMPI, press the **OK** button for 2-3 seconds until the unit beeps. Alternatively, place it in a powered cradle.

Important When powering up the HHMPI ensure that no external devices are connected.

Once turned on, the start-up process begins and the power-on self-test is carried out. When the start-up process is complete, the home screen displays four short cut buttons below a status bar.

Figure 60 HHMPI Power-on Sequence



To turn off the HHMPI, press the **left** push button until the **Confirm Power Off** alert displays and then press **OK** to confirm.

Note that the HHMPI will not prompt to turn off if it is in the cradle. The HHMPI is always powered when in the cradle.

4.1.1.5 Reset Operation

If the HHMPI does not respond to normal key operation, execute a warm reset by pressing the reset button with a straightened paperclip for one second. This will reboot the HHMPI and return it to the home screen displaying the available shortcut buttons.

4.1.2 Shortcuts

Shortcuts are used to provide users with a quick path to commonly used functions. There are four user defined shortcut buttons.

▼▲ **Main Menu > Device Configuration > Shortcut Keys > Shortcut n**

The HHMPI displays the shortcut keys following the start-up and self-test. The shortcut keys default to the following functions:

- Select Aircraft
- FDR All
- FDR Since Last
- Upload File (FTP)

4.1.3 Menu Structure

The HHMPI is controlled and accessed via a top down menu system. The four push button arrows as well as the **OK** button are used to navigate around the menu as well as making appropriate selections where necessary.

Once the HHMPI boot-up process is complete the main menu can be accessed by pressing the **right** push-button. A selection of the following options displays, depending on the model. They are used to access a range of features:

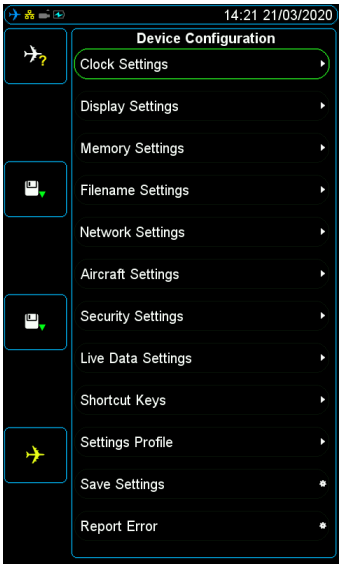
- **Select Aircraft:** Provides a list of aircraft models. This allows the operator to identify the source of the download by selecting an aircraft registration number (tail number).
- **Download Operations:** Depending on the recorder and model, presents a selection of different download options. These are covered in detail in Section 4.2.4, "Flight Data Downloads". These menus only appear when an interface cable is plugged in and the recorder is detected.
- **Recorder Operations:** Depending on the recorder and model, it allows the user to access options like FDR fault Output, Discrete status, View Fault log, Self test, FDR status, CVR status, FDR Memory marker and CVR Memory Marker.
- **FDR Configuration:** Depending on the recorder and model, it allows the user to access options like Information, Set Time, Set Date and RIPS Discharge test.
- **Audio Operations:** Depending on the recorder and model, it provides CVR live Audio and CVR Playback Audio. Audio operations will only display if the recorder is a CVR or CVFDR type. This is detailed in Section 4.2.4.4, "Audio Playback". Audio Operations will only display if the recorder is a CVR or CVFDR type.
- **Live Data View:** Allows the user access to view live data streaming from the FDR, this is covered in detail in Section 4.2.5 "Viewing Live Flight Data".
- **Storage Operations:** Allows the user to select, format and copy files between different memory functions including internal and USB memory. File transfers are covered in detail in Section 4.2.7, "File Transfer Operations".
- **Network Operations:** Provides IP and MAC address information as well as uploading data to the FTP server. Network operations are covered in detail in Section 4.2.10, "Network Operations".
- **Utilities:** Provides option for decompressing .dlu CVR files.
- **Device Configuration:** Provides options to change clock, memory, display, shortcut keys and security settings to name a few. Settings are detailed in Section 4.1.4 "HHMPI Configuration" as well as in Section 4.2.9.2, "Changing the Configuration via the Web Interface" for changes on the web interface.
- **Battery Status:** Covered in Section 4.1.1.3, "Powering and Charging the HHMPI", this information relates to the present battery life.
- **Information:** Provides HHMPI serial, part, hardware, and operating system numbers as well as build version and enabled recorder support and software options.

Tip To return to the **Main** menu from any other menu, press **left** repeatedly, or alternatively **swipe right.**

4.1.4 HHMPI Configuration

The HHMPI can be configured via a web interface, or directly on the unit. Using the web interface is the easiest way to set up the HHMPI, see Section 4.2.9.2, "Changing the Configuration via the Web Interface" .

Figure 61 Device Configuration Menu

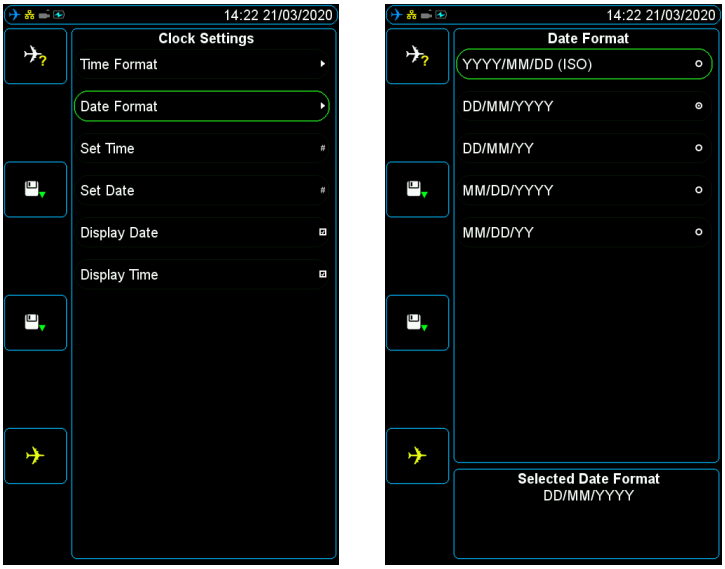


4.1.4.1 Clock Settings

▼▲ **Main Menu > Device Configuration > Clock Settings**

- **Time Format** - Can be set to either a 12-hour or 24-hour time system
- **Date Format** - Allows the user to select a preferred date display format.
- **Set Time** - Allows the user to manually set the time. Once selected, use the **up** and **down** pushbuttons to change the hour and minute values and the **left** and **right** push buttons to swap between hours and minutes. Press the **OK** button to exit.
- **Set Date** - Allows the user to manually set the date. Once selected, use the up and down pushbuttons to alter the month, day, and year, use the **left** and **right** push buttons to swap between the month day and year. Press the **OK** button to exit.
- **Display Date** - Press the right push button to enable the screen to display the date, a ticked box to the right confirms selection
- **Display Time** - Press the right push button to enable the screen to display the time, a ticked box to the right confirms selection.

Figure 62 Date Format and Settings



4.1.4.2 Display Settings

▼▲ **Main Menu > Device Configuration > Display Settings**

- **Auto-Off** - While in cradle, turns screen off after 10 minutes of inactivity. Tap screen to turn screen back on
- **Brightness Adjust** - Set the LCD brightness between 1 and 10 (maximum brightness).

4.1.4.3 Memory Settings

▼▲ **Main Menu > Device Configuration > Display Settings**

Set the preferred memory to download or file transfer by selecting one of the following:

- **Ask for Device -** Prompts the user to specify a device for download or file transfer.
- **Use Priority List** - Prioritize memory devices based on customised preferences.
- **Use Specific Device** - Always use one memory device for storage and file transfer.

4.1.4.4 Filename Settings

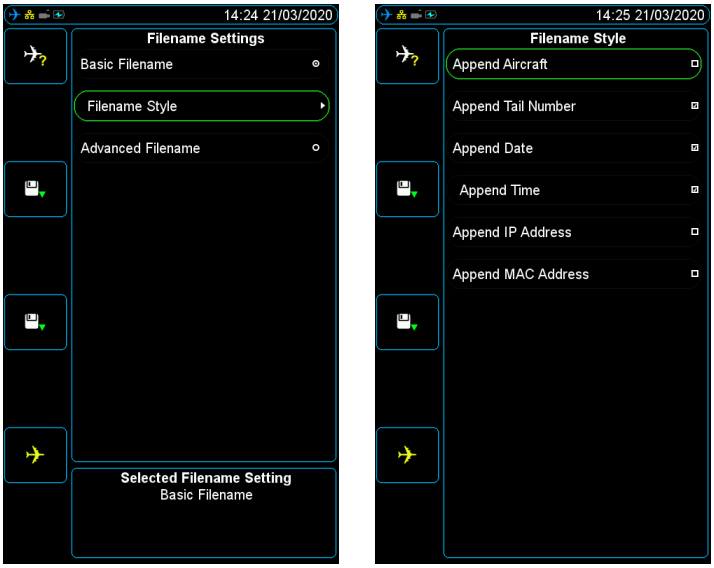
▼▲ **Main Menu > Device Configuration > Filename Settings**

Gives access to the user to choose a convention to use for the file name description. A choice between basic and advanced file name descriptors can be used.

- **Basic Filename** - Use the right push button to select this and will subsequently give the user access to "*Filename Styles*" the next option down.
- **Filename Style** – Sub-level of Basic Filename. It lists 6 filename descriptor options which can be appended to a download. These are: *Aircraft, Tail Number, Date, Time, IP address, MAC address.* A tick in the accompanying box to the right confirms selection.
- **Advanced Filename** - When selected, the above option, "Filename Style", will disappear and an additional selection will appear named "Advanced Style".
- **Advanced Style** - Sub-level of Advanced Filename. Allows the user to manually name the file via a touch screen keypad. It is accessible by continually pressing the **right** push-button. There are reserved keywords for substituting in each of six filename descriptor options. It is recommended to set the Advanced Style through the web interface. The Advanced style supports the following substitution keywords:
  - %Aircraft% - First column of aircraft.csv
  - %Model% - Second column of aircraft.csv
  - %TailNumber% - Third column of aircraft.csv
  - %NoseNumber% - Fourth column of aircraft.csv
  - %MACAddress% - MAC address expressed as a 12-character hex string
  - %IPAddress% - IP address expressed as an 8-character hex string
  - %Date% - Date
  - %Time% - Time

➡ Supported characters are A-Z, a-z, 0-9, hyphen (-) and underscore (_). Unsupported characters will be replaced with underscore (_) characters.

Figure 63 Filename Settings and Styles



4.1.4.5 Network Settings

▼▲ **Main Menu > Device Configuration > Network Settings**

When connecting the HHMPI to a network connection via an Ethernet cable, setup IP, and DHCP settings necessary for network operation.

- **Wired Settings** - Configure network settings to use DHCP or a static IP address.
- **FTP Servers** - Add and remove FTP servers.

4.1.4.6 Aircraft Settings

▼▲ **Main Menu > Device Configuration > Aircraft Settings**

Set or edit aircraft tail numbers. See Section 4.2.3 “Aircraft Lists” for more details.

4.1.4.7 Security Settings

▼▲ **Main Menu > Device Configuration > Security Settings**

Control access to the menus and settings of the HHMPI with a pass code by selecting either of the following:

- **Restrict Config** - Restrict access to the Device Configuration menu.
- **Restrict Menus** – Restrict access to the main menu. Only allow access to the shortcut screen.

Important By default these security restrictions are not activated. However, if whilst in the security settings menu any of the two are activated by mistake any further menu navigation from the main menu will subsequently require the user to enter a pass code. If this happens the default pass code is 0000, enter this and return to the security settings to disable (un-tick via the **OK** push button) to disable the pass code.

4.1.4.8 Live Data Settings

▼▲ **Main Menu > Device Configuration > Live Data Settings**

Set the global live data settings to be used in the live data view from:

- ARINC 429 Standard
- ARINC 429 Periodic

- DLR Settings

4.1.4.9 Shortcut Keys

▼▲ **Main Menu > Device Configuration > Shortcut Keys**

Set shortcut keys to change by selecting one of the options from the menu.

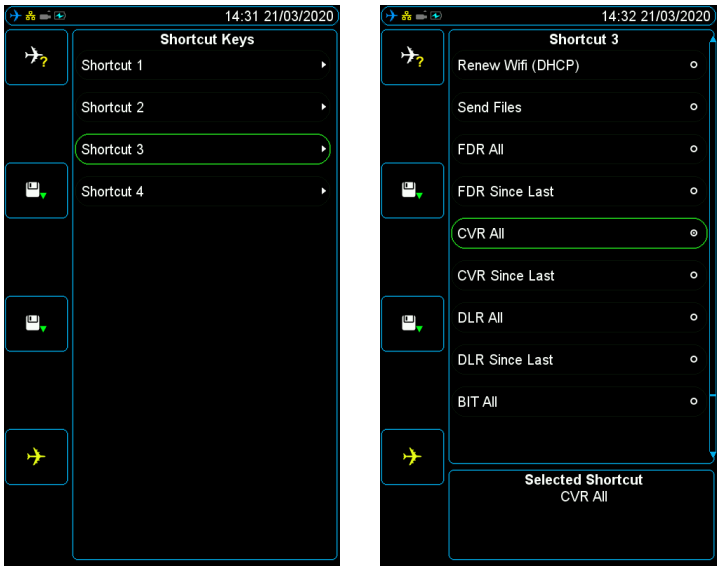
Shortcuts are used to provide users with a quick path to commonly used functions. There are four user defined shortcut buttons that are accessed by following this menu:

▼▲ **Main Menu > Device Configuration > Shortcut Keys >** Shortcut *(1,2,3,4)*

The HHMPI displays the shortcut keys following the start-up and self-test. The shortcut keys default to the following functions:

- Select Aircraft
- FDR All
- CVR All
- View Live FDR Data

Figure 64 Shortcut Selection



As shown above, once the user has selected which shortcut key to enable, many options becomes available to choose from. Pressing the **right** push button enables the shortcut. This is confirmed by a dot appearing in the right most circle alongside the selection. Returning to the shortcut screen enables you to confirm that the change has occurred.

Note that the shortcut selection can also be altered via the web interface.

4.1.4.10 Settings Profile

▼▲ **Main Menu > Device Configuration > Settings Profile**

Save or load the device configuration to a file, or reset the configuration to the factory default settings:

- **Reset Configuration** - Removes the current configuration to the default settings. If selected a prompt asks the user if they wish to proceed.
- **Auto Update Configuration** - Selecting this enables the HHMPI to check for configuration updates from a configuration management server when an Ethernet connection is detected. If an update is detected, The HHMPI will automatically apply the update

- **Load Aircraft** - This allows an *aircraft.csv* file to be transferred from external memory, such as a USB onto the Internal HHMPI memory.
- **Save Aircraft** - Saves aircraft lists to alternative memory devices refer to Section 4.2.3.5, "Saving the Aircraft list to the USB on the HHMPI" for details.

4.1.4.11 Save Settings

None of the settings in Device Configuration will be persistent after reboot unless Save Settings is used. This option saves the current running configuration to non-volatile memory.

4.1.4.12 Report Error

This selection saves the HHMPI system log files to internal or external memory as a file with the file naming convention hhmpi_debug_logs_YYYYMMDD_HHMM.tgz. This can then be sent on to the Flight Data Systems support team for debugging and troubleshooting if required.

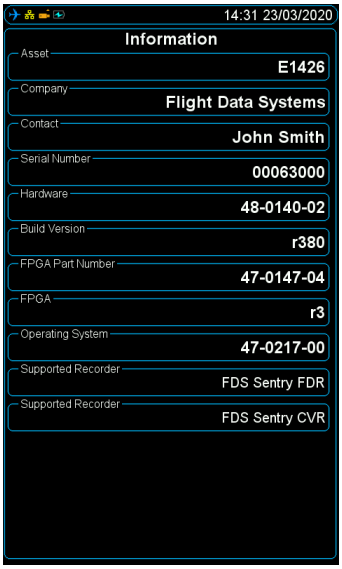
4.1.5 Information

The information screen displays the operating system version and enabled software options such as supported recorders. This information may be useful for troubleshooting. See Section 4.3, "Troubleshooting".

▼▲ **Main Menu > Information**

To access the HHMPI information, from the **Main Menu** press **down** until you reach the **Information** command, and then press **OK**. Information regarding the Asset, Company and Contact fields can be changed via the web interface. The remaining fields are only configurable by Flight Data Systems.

Figure 65 Information Screen



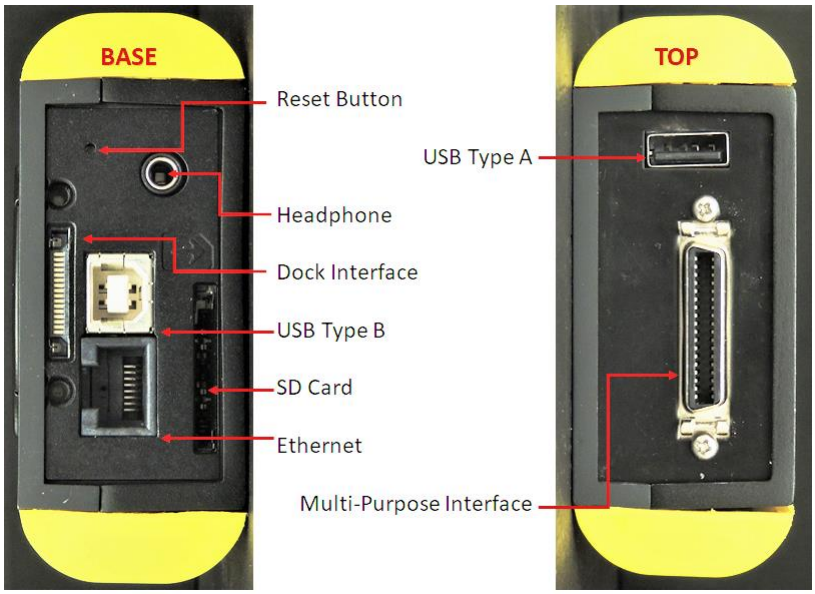
4.2 Operation

4.2.1 Communications

The HHMPI supports both Ethernet and USB 2.0 communications to a Personal Computer. An RJ45 female connector supports external connection to an Ethernet network while a USB type B female connector allows for USB communication exchange. The following figure shows the location of both connection points, as well as other notable ports.

The dock connector to cradle also supports Ethernet and USB connectivity to a PC.

Figure 66 External Connection Ports



4.2.1.1 Port Connectivity and Usage

Table 24 Port Connectivity and Usage

Port	Connectivity to	Use
Reset Button	N/A	Push to reset HHMPI device
Audio Jack	Headphones	CVR live audio monitoring
USB Type A	USB memory stick	Recorder downloads to external storage, loading or backing up configuration files
Dock connector	HHMPI cradle	HHMPI battery charging, USB file transfer, automated file uploads over Ethernet, HHMPI device configuration
USB Type B	Computer	File Transfer to PC, see Section 4.2.7.1, “File Transfer Between HHMPI Storage Locations”.
SD Card	SD card	Recorder downloads to external storage
RJ45 Ethernet	Computer Network LAN	Web Interface for HHMPI device configuration
Multi-Purpose Interface	Flight Data Recorders and Cockpit Voice Recorders	Recorder data downloads, view live data, CVR live audio monitoring

Note USB memory stick and SD card need to be formatted to FAT32 in order to be recognized by the HHMPI.

4.2.1.2 Ethernet Connectivity

Upon connecting the HHMPI to an Ethernet network, the HHMPI will automatically detect the connection. This will be shown by the 2nd icon from the left on the top of the screen appearing in yellow.

Figure 67 Ethernet Icon

If your device is not set to having a static IP address, (see Section 4.2.10.1, "DHCP Network Settings"), then the external network will automatically assign the HHMPI with an IP address.

In order to view the IP address:

▼▲ **Main Menu > Network Operations > View Wired Address**

Figure 68 IP Address Screen

4.2.1.3 USB Type B to PC Connectivity

The HHMPI supports USB connectivity to a PC via the USB type B connector. When connected to a PC the internal memory of the HHMPI will appear as a write protected portable device. Therefore, files may only be copied from the HHMPI to the PC. To erase files from the HHMPI internal memory, see Section 4.2.7.1, "File Transfer Between HHMPI Storage Locations".

4.2.2 Download File Naming Convention

4.2.2.1 FDR, DLR & BIT downloads

Files downloaded from recorders to the HHMPI follow a standard naming convention, configured by the **Filename Style** command within the **Configuration settings** menu. The user can choose to append any descriptor such as tail number, date and/or time to the download, however the default download to the HHMPI internal memory will appear as "date_time_download_type".

For example:

- ***19022020_2312_fdr.pak*** refers to a flight data (fdr) download on the 19th of February 2020 *at 11:12 pm*
- **25022020_0922_bit.bin** refers to a bit file download on the 25th of February 2020 at 9:22 am
- **25022020_0928_dlr.csv** refers to a DLR file download on the 25th of February 2020 at 9:28 am

Tip The date and time string use the time format already configured in the HHMPI. Special characters within the aircraft tail numbers are automatically converted to underscores "_". Dates and time stamps are stripped to remove slashes and colons.

Note The file extension can vary according to the recorder type and download mode.

The date and time string use the time format already configured in the HHMPI.

Special characters within the aircraft tail numbers are automatically converted to underscores "_".

Dates and time stamps are stripped to remove slashes and colons.

4.2.2.2 CVR Downloads

Depending on the recorder and features enabled on HHMPI, CVR download files can be different from the following files:

- ***_chan_1.wav**
- ***_chan_2.wav**
- ***_chan_3.wav**
- ***_chan_4.wav**
- ***_aux_info.csv**

The auxiliary information .csv file **_aux_info.csv* contains time-stamped data of the two Rotor Frequency inputs and GMT time (Captain's clock).

Note that the four downloaded audio files refer to the same audio download. They are all marked with the same date and time but differ only by the channel number.

4.2.3 Aircraft Lists

Stored in the HHMPI as a comma separated variable (.csv) file, the Aircraft List contains a list of all aircraft in the fleet. Using an Aircraft List makes it easier to assign tail numbers to operational downloads, it also makes the file names more readable.

Figure 69 Aircraft Model and Tail Number

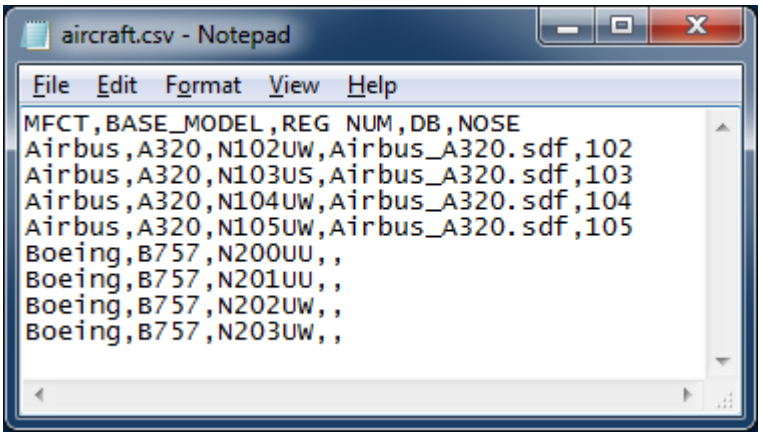
4.2.3.1 Creating an Aircraft List on a PC

The Aircraft List can be created on a PC using a text editor, such as Notepad, or in a Spreadsheet application, such as Excel, and exported as comma separated variable (.csv) file. DB and NOSE are optional fields.

Important The file must be named aircraft.csv and the data fields must be separated by a comma with each record separated by a carriage return (ASCII CR-LF).

Although not shown to the operator, the manufacturer field (MFCT) must also be present. However, the aircraft definition field (DB) is only required for the Engineering Units (EU) function, see Section 4.2.6, “Viewing live flight data in engineering units”

Figure 70 Creating an Aircraft List in Notepad



Save or export the file to a USB flash drive as *aircraft.csv*.

4.2.3.2 Transferring the Aircraft List to the HHMPI

To transfer the Aircraft List to the HHMPI, insert the USB flash drive containing the file named *aircraft.csv* into the USB port on top of the HHMPI and complete these steps.

▼▲ **Main Menu > Device Configuration > Settings Profile > Load Aircraft**

1. From the **Main Menu**, press **down** until you reach the **Device Configuration** command, and then press **right**.

2. Press **down** until you reach the **Settings Profile** command, and then press **right**.
3. Press **down** until you reach the **Load Aircraft** command, and then press **right**.
4. Select the file named *aircraft.csv* and then press **right**.

4.2.3.3 Creating the Aircraft List on the HHMPI

▼▲ **Main Menu > Device Configuration > Aircraft Settings > Add Aircraft**

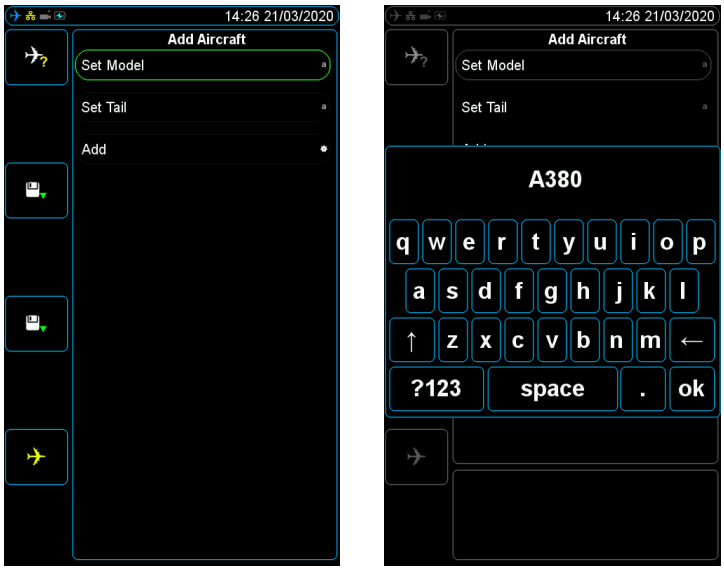
Tip For a large amount of aircraft, consider importing an Aircraft List as a comma separated variable file (aircraft.csv).

To create or add to the Aircraft List on the HHMPI, perform these steps from the **Add Aircraft** menu:

1. Press **down** until you reach the **Set Model** command, and then press **right**.
2. Press **up** to enter the keyboard, then press the **up**, **down**, **left**, and **right** buttons to enter data.
3. When complete, press **cancel** to exit the keyboard.
4. Press **OK** to confirm your selection.
5. Repeat steps 1 to 4 for **Set Tail**.
6. Press **down** until you reach the **Add** command, and then press **right** to confirm.
7. Press **OK** to confirm your selection.

   ➡To add additional aircraft, repeat steps 1 to 6 for each aircraft.

Figure 71 Adding aircraft to the Aircraft List on the HHMPI



4.2.3.4 Deleting an Aircraft from the Aircraft List

▼▲ **Main Menu > Device Configuration > Aircraft Settings > Delete Aircraft**

To delete an aircraft from the Aircraft list on the HHMPI, from the **Device Configuration** menu:

1. Press **down** until you reach the Aircraft Settings command, and then press **right**.
2. Press **down** until you reach the **Delete Aircraft** command, and then press **right** to select the aircraft you want to delete.
3. Press **OK** to confirm the deletion.

➡ Selected aircraft remain in the list but are marked by a red **X**.

4.2.3.5 Saving the Aircraft list to the USB on the HHMPI

▼▲ **Main Menu > Device Configuration > Settings Profile > Save Aircraft**

To save the Aircraft List to a USB flash drive, insert a USB flash drive into the USB port on the top of the HHMPI, and complete these steps from the **Device Configuration** menu:

1. Press **down** until you reach the **Settings Profile** command, and then press **right**.
2. Press **down** until you reach the **Save Aircraft** command, and then press **right** to save onto USB Flash Drive.

Important The Aircraft List is saved to the USB flash drive as *aircraft.csv.bkp*. To transfer this file to the HHMPI again, it must be renamed aircraft.csv.

Tip The saved aircraft.csv file can be used as a template to add more aircraft or aircraft definition files (databases) to the Aircraft List.

4.2.3.6 Deleting all Aircraft from the Aircraft List

▼▲ **Main Menu > Device Configuration > Aircraft Settings > Erase All Aircraft**

By selecting this option all the aircraft models and tail numbers in the Aircraft List will be removed from the HHMPI. Press OK to confirm or, if not, press **cancel** to cancel this operation.

4.2.3.7 Prompt for Tail No.

▼▲ **Main Menu > Device Configuration > Aircraft Settings > Prompt for Tail No.**

Enabling the **Prompt for Tail No.** command forces a user to assign a tail number to an operational download. This ensures that a download file name contains the aircraft tail number, which may help in traceability of data and further analysis. If enabled, the tail number entered prior to a download can be appended to the file name via the file-name settings under the device configuration menu.

4.2.4 Flight Data Downloads

4.2.4.1 HHMPI Set Up Pre-Data Download

The HHMPI can be used to download recorded flight data (FDR), voice data (CVR) as well as DLR and BIT downloads from the recorder. Prior to downloading, it is advised you ensure the following procedures are performed.

1. **Create the Aircraft List.** Not having an aircraft list will not stop the HHMPI from performing a download, however for data traceability purposes it is recommended. The Aircraft List may be created and stored in a HHMPI to populate the *aircraft tail* variable in the data file name. The *manufacturer* and *model* variables are not used in the data file name.

Note If the above step is omitted the file name will only include the time stamp. If you want to force users to assign a tail number before an operational download enable the Prompt for Tail No. command.

2. If the HHMPI is set up to prompt for a tail No. Select the aircraft, model, and tail number from the Aircraft List.
3. Connect the HHMPI to the recorder via an interface cable, if properly connected the airplane Icon will appear blue in the top left-hand corner of the screen to indicate detection of the recorder
4. Start downloading flight data as follows.

Figure 72 Blue Airplane Icon

4.2.4.2 Performing Flight Data Downloads

This section assumes the user has already set the HHMPI and recorder to perform a download, if you are unaware of the steps involved see Section 4.1.1 "Using the HHMPI".

For the purposes of brevity the flight data recorder (FDR) file is used as an example in this section, the procedure used for downloading alternative file types (DLR, CVR, BIT) as well as *"downloads since last"* files are identical in the download procedure required.

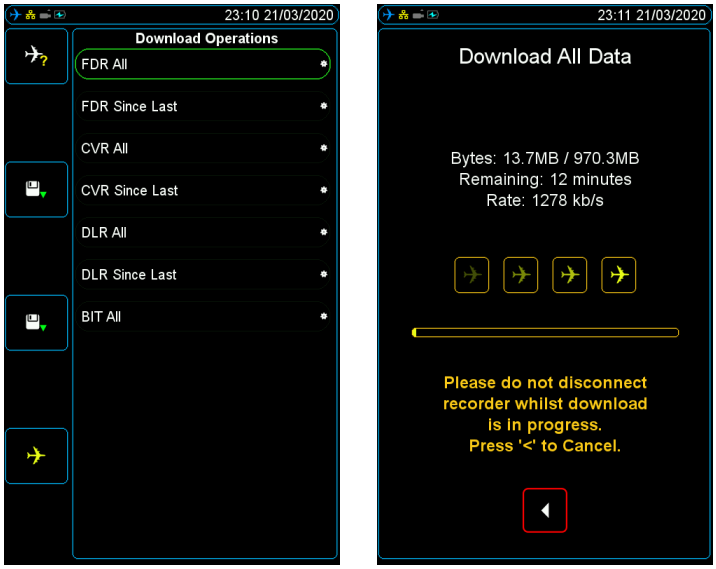
In order to perform an FDR download to the Internal Memory:

1. Go to:

▼▲ **Main Menu > Download Operation > FDR All > Internal**

2. A screen will then appear showing the download progress with Bytes transferred, estimated Remaining time until completion, the Rate of download as well as a progress bar.

Figure 73 Download Screen



3. Once the download is complete the download will appear as a .fdr file located in internal memory.
4. To access this file:

▼▲ **Main Menu > Storage Operation > Select File(s) > Internal**

The exact same procedure is followed if you intend to perform a CVR, DLR, BIT or "*since last*" download to Internal memory with the exception that instead of selecting **FDR All** you select **CVR All**, **DLR All**, **BIT All**, **FDR Since Last**, **CVR Since Last** or **DLR Since last** respectively**.**

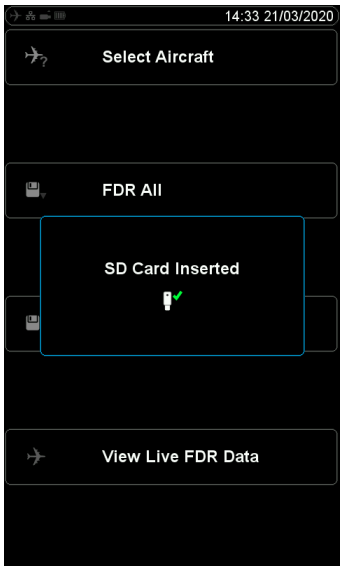
▼▲ **Main Menu >Download Operation > (CVR, DLR, BIT) All > Internal**

4.2.4.3 Downloading from the FDR to USB & SD Memory

To download flight data from the FDR to an SD card or USB device, complete the following steps.

1. Insert USB or SD card into the dedicated port. For USB, this will be located on the top of the HHMPI located to the left of the Multipurpose Interface connector. Alternatively, the SD card slot is located below the RJ45 Ethernet connector on the base of the HHMPI.
2. Once the memory device is inserted, the HHMPI will momentarily alert the user to the detection of the memory device with a prompt reading “SD card inserted” or “USB inserted” depending on the device used.

Figure 74 SD card detection



3. Assuming the recorder is already powered, continue by connecting the HHMPI to the recorder via the interface cable, the Airplane Icon in the top left-hand portion of the screen will appear **blue**.
4. Go to the following menu position:

▼▲ **Main Menu > Download Operation > FDR All > SD Card | USB**

There can be multiple download options available depending on the type of recorder:

Upon choosing a memory location, the download screen will appear signifying the commencement of the download.

Tip You can set the preference of external storage devices from the **Memory Settings** menu. For example, prioritise the USB flash drive, when present, over the HHMPI internal memory.

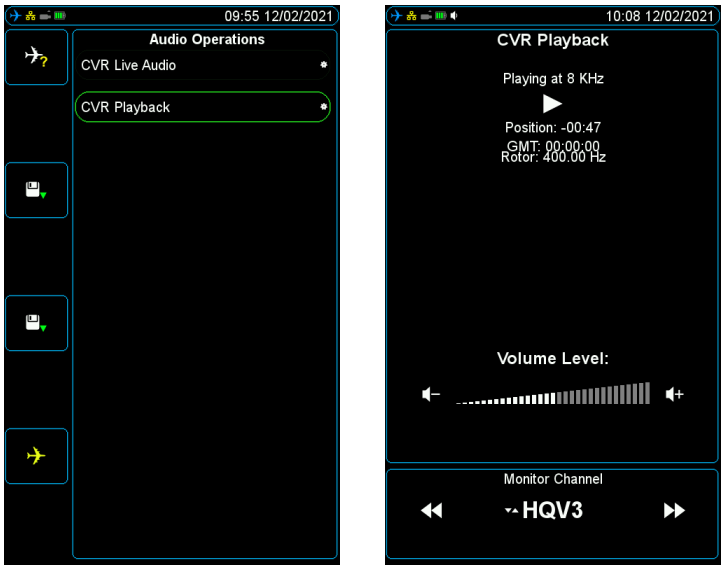
Tip Whilst the above example makes use of an **FDR All** download, the exact same procedure can be used to perform a **CVR All, DLU** and **BIT** downloads.

4.2.4.4 Audio Playback

1. To listen to audio, begin by plugging the headphones into the audio jack on the bottom of the HHMPI.
2. Navigate to CVR Live Audio as follows:

▼▲ **Main Menu > Audio Operations > CVR Playback**

Figure 75 CVR Playback Window



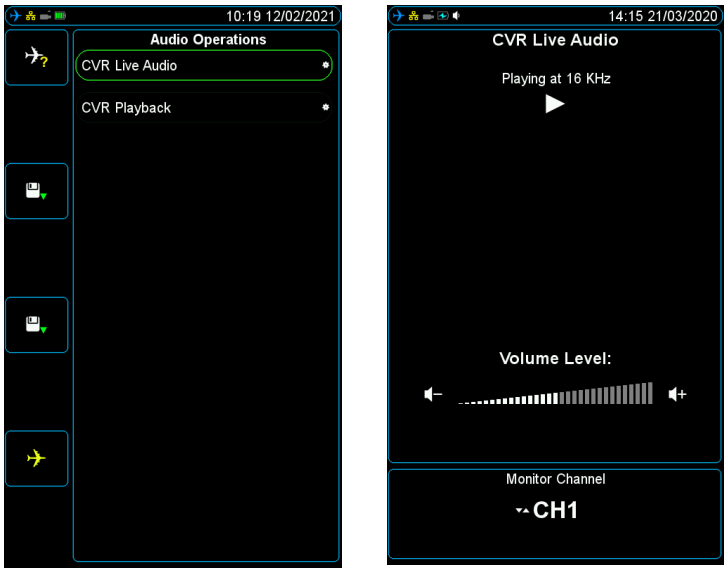
3. The live audio window will appear as above with volume control as well as the channel number listed in the bottom portion of the screen.
4. Use the up and down arrows to select 1 out of a total of 4 channels labelled **CH1**, **CH2**, **CH3** and **CH4.** Depending on the recorder these options can be different.
5. The volume is adjustable via the touchscreen:
   - to increase the volume, tap on the volume icon with the "+",
   - similarly, to reduce the volume, tap on the volume icon with the "-" sign.
6. In order to exit out of the audio playback function use the up and down push buttons used to cycle through the channels until a selection reading **EXIT** appears, press **OK** and it will return to the Audio Operations menu.

4.2.4.5 Live Audio

1. To listen to live audio, begin by plugging the headphones into the audio jack on the bottom of the HHMPI.
2. Navigate to CVR Live Audio as follows:

▼▲ **Main Menu > Audio Operations > CVR Live Audio**

Figure 76 CVR Live Audio Window



3. The live audio window will appear as above with volume control as well as the channel number listed in the bottom portion of the screen.
4. Use the up and down arrows to select 1 out of a total of 4 channels labelled **CH1**, **CH2**, **CH3** and **CH4.**
5. The volume is adjustable via the touchscreen:
   - to increase the volume, tap on the volume icon with the "+",
   - similarly, to reduce the volume, tap on the volume icon with the "-" sign.
6. In order to exit out of the audio live function use the up and down push buttons used to cycle through the channels until a selection reading **EXIT** appears, press **OK** and it will return to the Audio Operations menu.

4.2.5 Viewing Live Flight Data

The HHMPI can be used to monitor live ARINC 717 data from the aircraft. The Live Data View can display data from the FDR in the following formats:

- Binary (Base 2)
- Octal (Base 8)
- Decimal (Base 10)
- Hexadecimal (Base 16)

The Live Data View display options are accessible via the **shortcut** buttons 1–4.

To view live data from the FDR:

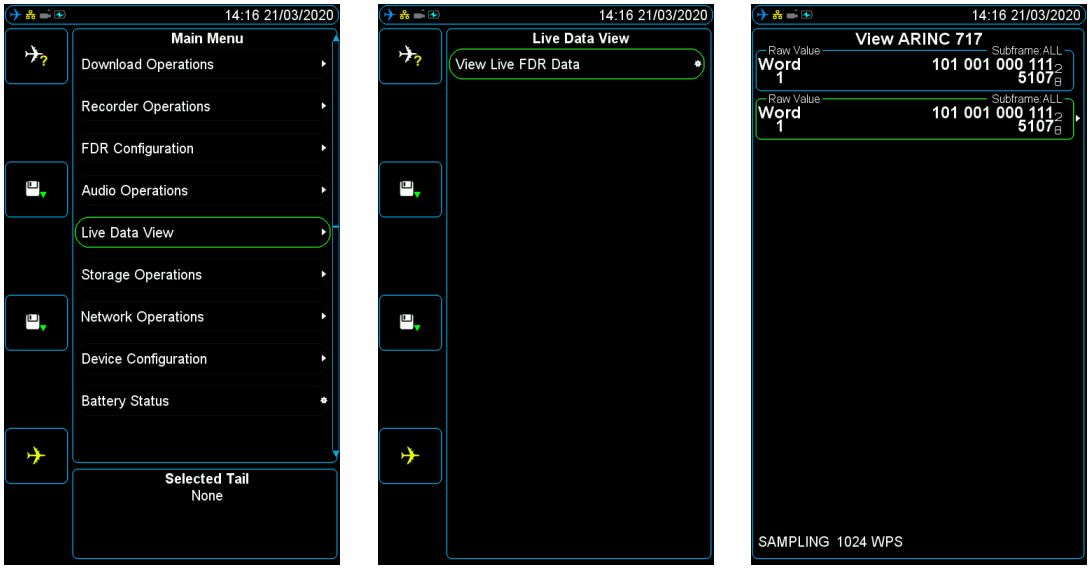
1. Connect the HHMPI to the FDR with the interface cable.
2. Turn on the HHMPI and recorder. Once the HHMPI is turned on, the start-up process begins and the power-on is completed. If connected to the HHMPI, the interface cable is detected automatically, and correct connection to the FDR is indicated by a blue aircraft icon found in the status bar of the display.

▼▲ **Main Menu > Live Data View > View Live FDR Data > View ARINC 717 Data**

3. From the Main menu, press **down** until you reach the **Live Data View** command, and then press **right**. Then press down until you reach the **View Live FDR Data** command, and then press **right** to **View ARINC 717 Data**.
4. Wait until the HHMPI synchronizes with the FDR, while synchronizing, **UNKNOWN** displays on the screen. After synchronizing, you can view live data from the aircraft parameters.

For more information about formatting and displaying data on the HHMPI, see next section “Adjusting ARINC 717 Settings”.

Figure 77 Viewing Live Data



4.2.5.1 Adjusting ARINC 717 Settings

▼▲ **Main Menu > Live Data View > View Live FDR Data > View ARINC 717 Data**

To access the ARINC 717 settings, press **right** on a selected parameter / word cell. The following options display:

- **Word Offset** selects the current word from 1 to 2048. To change the Word Offset number, use the **up**, **down**, **left,** and **right** buttons, and then press **OK** to confirm your selection.
- **Sub-frame** selects the sub-frame to view from 1 to 4, or ALL. ALL is the default value for this setting. To change the sub-frame, use the **up** and **down** buttons, and then press **right** to confirm your selection.
- **Viewing Mode** provides the option to view live data in the following formats: Binary- Octal, Binary-Decimal and Binary-Hexadecimal. To change the viewing mode, use the **up** and **down** buttons, and then press **right** to confirm your selection.
- **MSB** (Most Significant Bit), hides all binary bits in the word before the MSB. To change the MSB, use the **up** and **down** buttons, and then press **right** to confirm your selection.
- **LSB** (Least Significant Bit), hides all binary bits in the word after the LSB. To change the LSB, use the **up** and **down** buttons, and then press **right** to confirm your selection.

Figure 78 Word Offset and Sub-Frame Selection

4.2.5.2 Viewing Multiple 717 Live Data Words

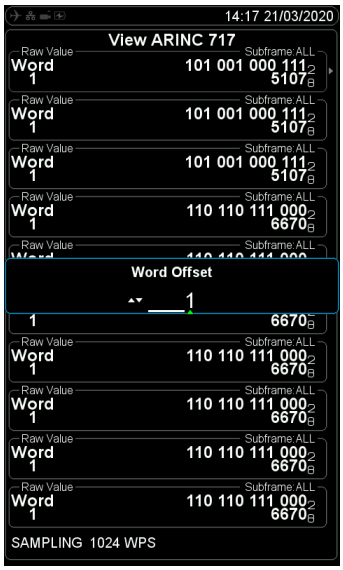
A total of 10 live data words can be viewed simultaneously. In order to do so:

1. Navigate to the Live Data View.
2. With the topmost word selected press the **down** key. This will create a word of the same sub-frame and offset value to appear directly below it.
3. Repeating the above step will continue to print the same word down the screen until the entire screen is filled.
4. Use the up and down arrow keys to select a word in order to change the subframe, offset or viewing mode.

Figure 79 Multiple Live Data Words

Note to quickly change the word offset of one of the displayed words, press OK instead of right and a pop-up will prompt you to change the offset. For an example see Viewing Multiple 717 Live Data Words below.

Figure 80 Viewing Multiple 717 Live Data Words



4.2.6 Viewing live flight data in engineering units

To view the live flight data in Engineering Units (EU Mode), you must associate an Aircraft Definition file with an aircraft. The Aircraft Definition file is exported from STARS with the extension .sdf. You will need to transfer this file to the HHMPI via one of the removable memory options such as an SD memory card, or USB flash drive.

Note These menu items will only be visible where they are supported by the connected FDR/CVFDR.

4.2.6.1 Assigning an Aircraft Definition file to an aircraft

▼▲ **Main Menu > Device Configuration > Aircraft settings > Assign Database**

To assign an Aircraft Definition file to an aircraft:

1. From the **Main Menu**, select **Device Configuration**, and then select **Aircraft Settings**.
2. From the **Aircraft Settings** menu, select **Assign Database**, and then select the **Aircraft Tail Number** you want to assign the Aircraft Definition file to.
3. Locate and select the .sdf file as exported from STARS.
4. Press **OK** to confirm the assignment of the Aircraft Definition file to the aircraft.

Once complete, the HHMPI will display a notification that the assignment was successful.

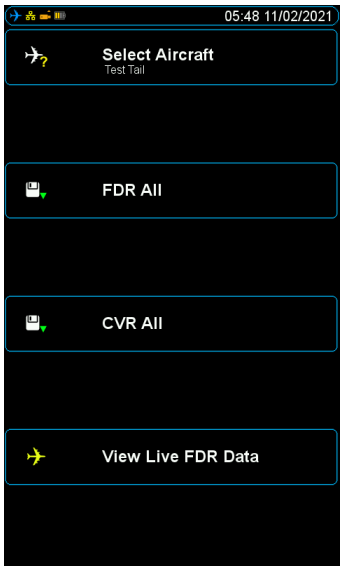
4.2.6.2 Viewing Live Flight Data

▼▲ **Parameter / Word Cell > Select Parameter > First Letter of Parameter > Parameter > OK**

To assign an Aircraft Definition file to an aircraft, see Section 4.2.6.1, "Assigning an Aircraft Definition file to an aircraft". To view the live data in Engineering Units:

1. You must select an aircraft which already has an Aircraft Definition file (database) assigned to it. To select an aircraft, from the **Main Menu**, press **right** on the **Select Aircraft** command, and then press **right** on the aircraft you want to view the live flight data from. The selected tail number will appear on the shortcut screen.

Figure 81 Selected tail number on the shortcut screen



2. Follow the procedure in Section 4.2.5, "Viewing Live Flight Data and wait until the HHMPI synchronises with the FDR, while synchronising, **UNKNOWN** is displayed on the screen.
3. Press a **shortcut** button to select a parameter / word cell.
4. Press **right** to display the **ARINC 717** settings menu.
5. Enable the **EU Mode** radio button, then press **down** until you reach the **Select Parameter** command, and then press **right**. An alphabetical list will be displayed.

Note The EU Mode radio button will only appear if an aircraft had been selected that has an Aircraft Definition file (database) assigned to it.

Figure 82 Changing from Raw Mode to EU Mode

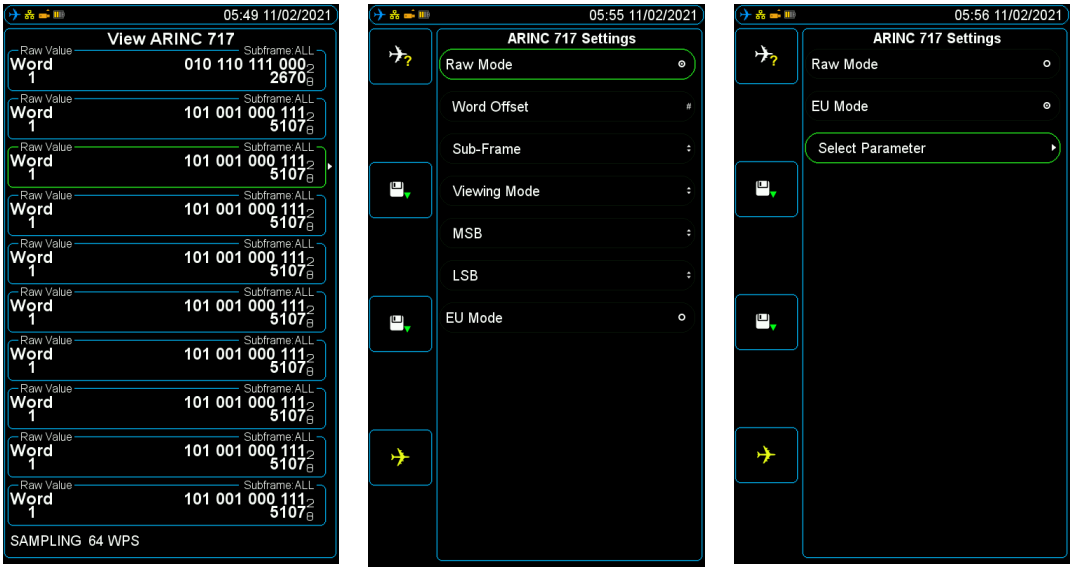
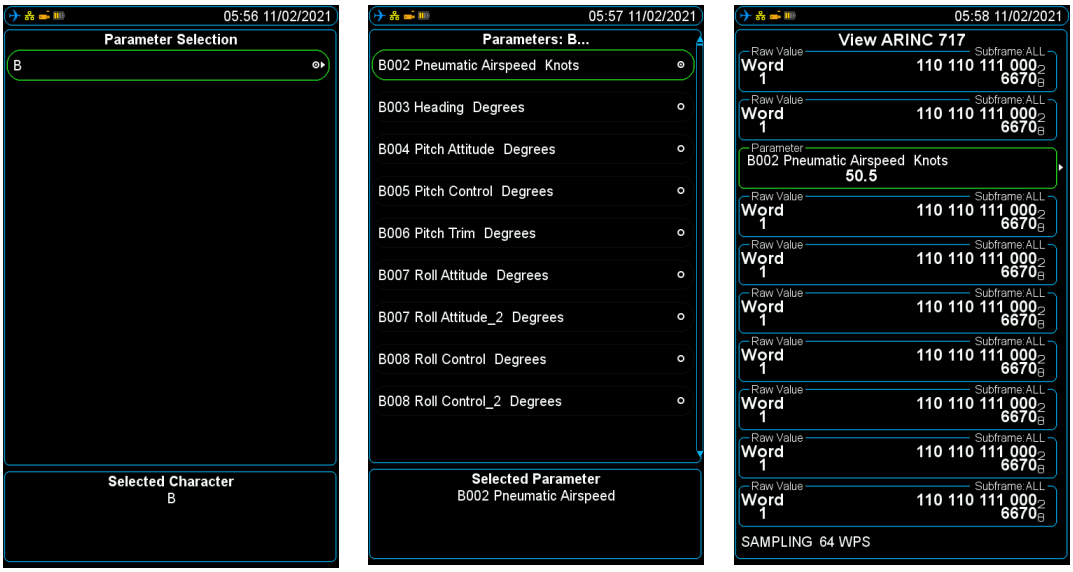


Figure 83 Accessing aircraft parameters alphabetically



6. Press **right** on the first letter of the parameter you want to look at, and then press **right** again. This command will display all the parameters starting with the letter you have selected.
7. Press **Left** twice to return to the ARINC 717 view. The selected parameter / word cell will now display live data according to the algorithm in the configured database.

As in the raw data view, up to four parameters / word cells can be displayed and configured independently. Values will update once per sub-frame and **SAMPLING** will flash green and white for each update.

4.2.7 File Transfer Operations

4.2.7.1 File Transfer Between HHMPI Storage Locations

The general method of transferring files between connected memory devices is:

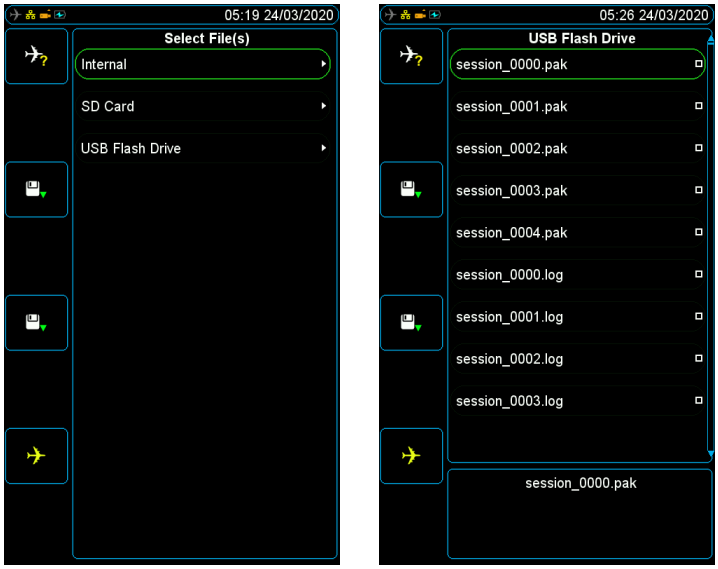
1. Insert the memory device (USB or SD card) you wish to transfer files onto or from. The HHMPI will provide a prompt on the screen indicating successful detection of the device.
2. From the main menu go:

   ▼▲ **Main Menu > Storage Operations > Select File(s) | Select All Files**

3. A prompt will appear asking you to select the memory location from which you wish to copy the file: **Internal**, **USB** or **SD** memory.
4. Use the **right** arrow to select the memory location then use the arrows to scroll for the file you wish to transfer.
5. Select that file by using the **right** arrow.

   ➡ A tick in the accompanying box confirms the successful selection. Figure 84 Memory Location and File Selection below depicts an example of selecting a file located on the SD card.

Figure 84 Memory Location and File Selection

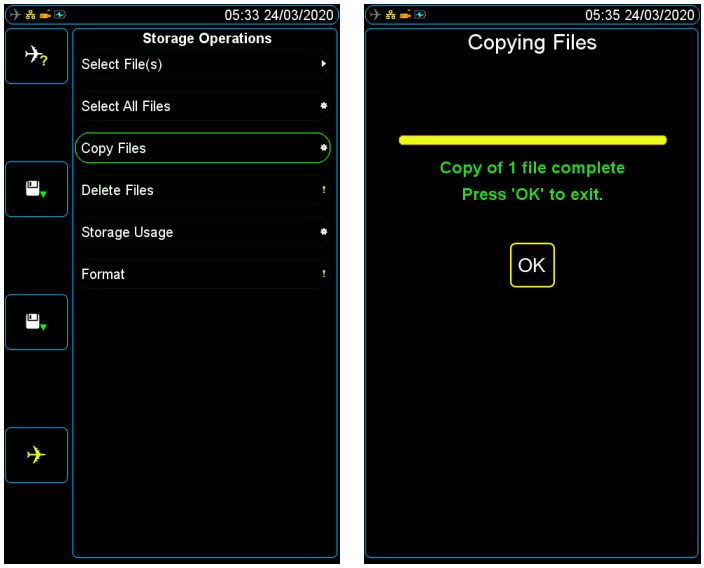


6. Once you have selected the file press the **left** button to navigate back to the **Storage Operations** menu.
7. To copy the file from the **Storage Operations** menu, use the menu sequence below:

   ▼▲ **Storage Operations > Copy Files > Internal | USB Flash Drive | SD Card**

8. When you select the memory location for file transfer, a screen appears with a status bar indicating the progress of the file transfer.
9. Upon successful completion of the file transfer a screen with a prompt reading "**copy of one file complete. Press 'OK' to exit**" appears.

Figure 85 Storage Operations and Completion Screen



4.2.7.2 Deleting Files

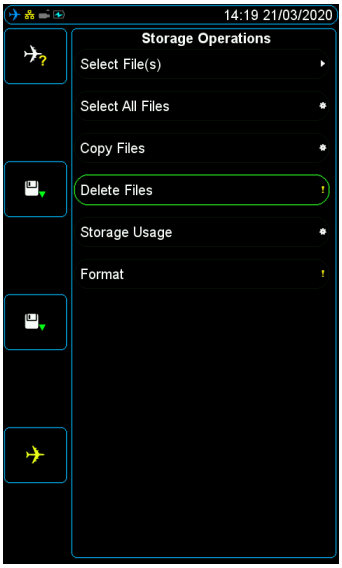
Files can be deleted from all internal and external memory locations including USB and SD card applications. In order to delete a file, you first need to select the file(s) you wish to delete.

1. Use the menu sequence below to select a file, or all files, pertaining to a specific memory location:

   ▼▲ **Main Menu > Storage Operations > Select File(s) | Select All Files**

2. If an external memory device, USB, or SD card, is inserted, the user will be prompted to choose from which memory location the file(s) are to be deleted.
3. Use the **right** push button in order to select the file(s) you wish to delete. When this is done correctly, a tick appears in the accompanying check box verifying the selection.
4. Use the **left** push button in order to navigate back to the **Storage Operations** menu.
5. Use the **Up** and **Down** keys in order to select the **Delete Files** option.
6. Using the **right** key in order to select the **Delete Files** option will then prompt the user to confirm the deletion of the selected file(s).
7. Select '**OK'** to confirm deletion.
8. Once a file has been deleted from the selected memory location a screen with the prompt reading " **Deletion of # files complete Press 'OK' to exit"** displays. Note that if for example 10 files are selected for deletion, the prompt will instead read "**Deletion of 10 files complete Press 'OK' to exit**".

Figure 86 Confirm File Deletion



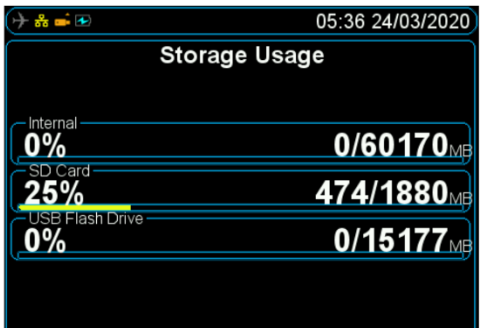
4.2.7.3 Storage Usage

From the **Storage Operations** menu the user can check the amount of data stored on connected memory locations. In order to view storage capacity, go to:

▼▲ **Main Menu > Storage Operations > Storage Usage**

What is shown will depend upon the memory devices which are currently connected to the HHMPI.

Figure 87 Device Storage Usage



4.2.8 Configuration an FTP connection

Before you can upload files from the HHMPI to a server, you need to configure the FTP server settings. You can do this from the HHMPI or through the web interface. Using the web interface is the easiest way to configure the FTP server settings.

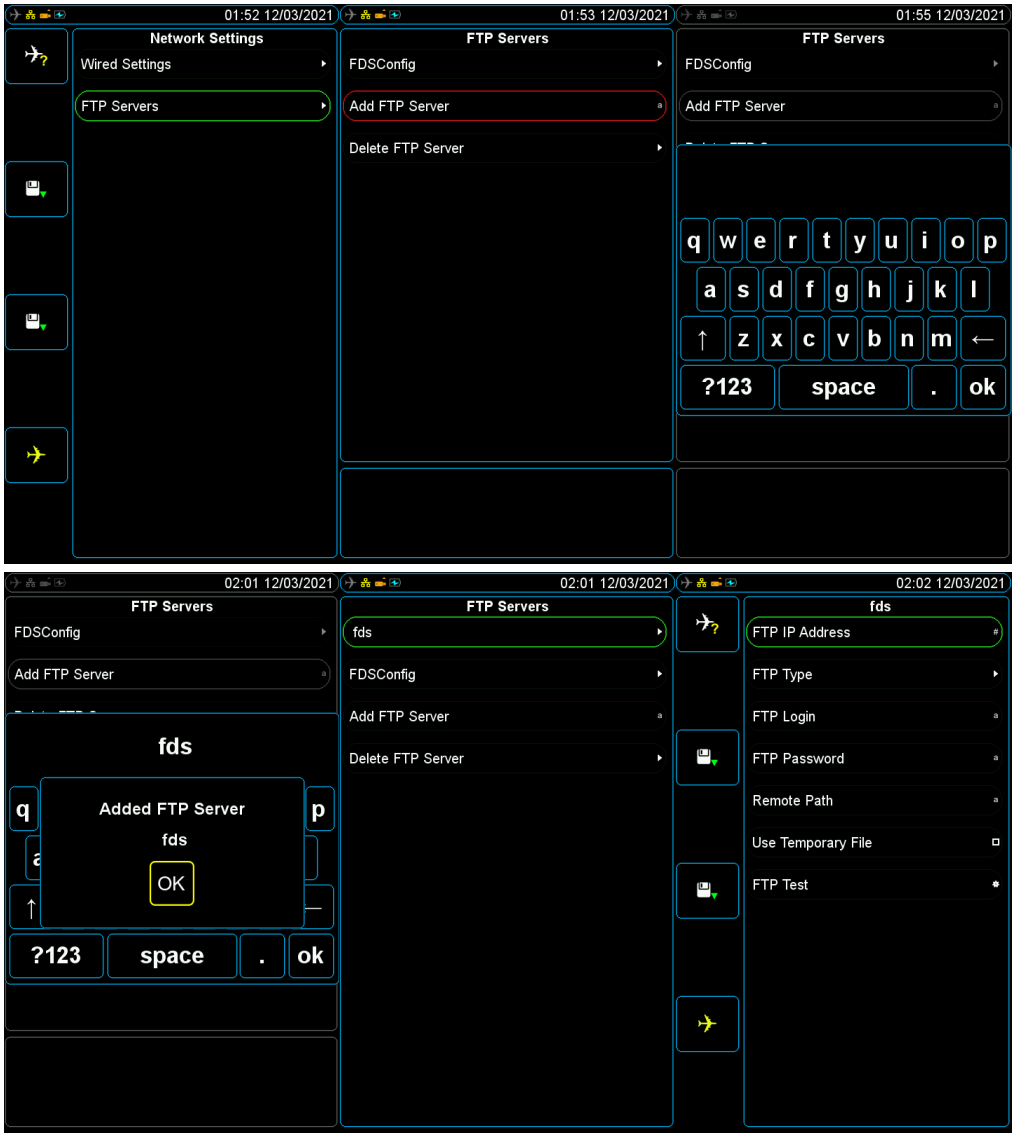
4.2.8.1 Adding a new FTP server from the HHMPI

To add a new FTP server from the HHMPI, from the Main menu:

▼▲ **Main Menu > Device Configuration > Network Settings > FTP Servers > Add FTP Server**

1. Press **down** until you reach the **Device Configuration** command, and then press **right**. Then press **down** until you reach the **Network Settings** command, and then press **right**. Then press **down** until you reach **the FTP Servers command**, and then press **right**.

Figure 88 Setting up the FTP client



2. Ensure you have access to the FTP server and the FTP server settings, including the IP address, username, password, and the encryption type. This FTP server information is usually available from your IT department.
3. From the **FTP Servers** menu, press **down** until you reach the **Add FTP Server** command, and then press **right** or **OK**. Enter the FTP server name and press **OK** and **"Added FTP Server <Server Name>"** message will appear on the screen to confirm the operation .

Tip The FTP server name is not used in connection to the FTP server, you can give the FTP server any name.

4.2.8.2 Configuring an existing FTP server from the HHMPI

To configure an existing FTP server, from the **FTP Servers** menu, press **down** until you reach the FTP server name you want to configure, and then press **right**. Then do one of the following:

1. To save an IP Address, press **right** or **OK** on the **FTP IP Address** command. To enter the IP Address, press **up** or **down** on each number, and then press **OK** to confirm your selection.
2. To save an FTP Type, press **right** or **OK** on the **FTP Type** command, and then press **down** until you reach the FTP type you want, and then press **right**. The HHMPI supports four FTP types:
   - **FTP (port 21)**, unsecured transmission on port 21
   - **FTP over SSL**, secured transmission that encrypts the username and password, and content with SSL
   - **FTP over SSH**, secured transmission that encrypts the username and password, and content with SSH
   - **SFTP**
3. To save an FTP username, press **right** or **OK** on the **FTP Login** command, and then enter the username, press **OK** to confirm.
4. To save an FTP password, press **right** or **OK** on the **FTP Password** command, and then enter the password, press **OK** to confirm.
5. To save a Remote Path, press **right** or **OK** on the **Remote Path** command, and then enter the path, press **OK** to confirm.

The Remote Path field controls which folder the file is uploaded to on the FTP server. Depending on the FTP server configuration, this may be an optional field. Leaving the remote path blank means the file will be uploaded to the default folder your FTP account logs into.

Note Select the **Use Temporary File** check box if the HHMPI is to use a temporary file when uploading. When the upload is complete, this temporary file is renamed to the final file name. This is useful for ensuring that remote systems do not read a partially uploaded file.

Disable this option if the remote server reports a "rename failed" error and leaves a temporary file with the extension -upload, and the channel stops. This typically means that the server is employing its own temporary file mechanism that is incompatible with the HHMPI.

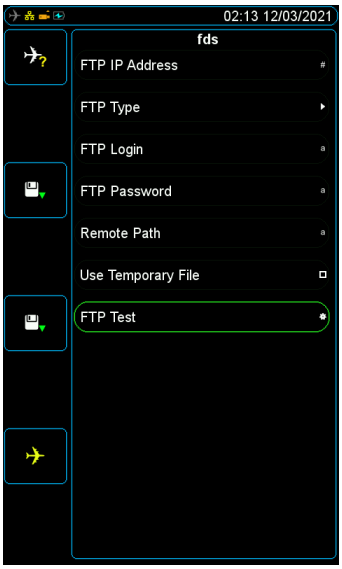
Caution Using an unsecured FTP connection may result in the loss of sensitive information. See your IT department or contact Flight Data Systems for more information on encryption.

Figure 89 FTP type menus

4.2.8.3 Testing and FTP server from the HHMPI

To test an FTP connection, from the **FTP Servers** menu, press **down** until you reach the FTP server name you want to test, and then press **right**. Then press **down** until you reach the **FTP Test** command, and then press **right**.

Figure 90 Login, password, remote path, and FTP test



4.2.8.4 Setting up an FTP connection from the web interface

You can configure the HHMPI through the web interface in any web-browser. Using the web interface is the easiest way to configure the HHMPI.

▼▲ **Device Configuration > Network Settings**

To access the HHMPI web interface:

1. Connect the HHMPI to the local area network (LAN) router or switch which will allocate a unique IP address.
2. From the **Main** menu, press **down** until you reach the **Network Operations** command, and then press **right**. Then press down until you reach the **View Wired Address** command, and then press **right**.
   If the HHMPI is assigned an IP address it will now be displayed, if no link is detected **No Link Detected** will be displayed.
3. Record the IP address.

Figure 91 Viewing the wired ID address

Note If no link is detected an IP address has not been assigned to the HHMPI, this may be because of you network security settings. See your IT department or contact Flight Data Systems for more information if this occurs.

4. Open a web-browser such as Mozilla Firefox or Google Chrome and type the wired IP address into the browser's address bar.
5. Login to the HHMPI web interface using the default username and password:
   Username: admin
   Password: admin

Figure 92 Web interface login

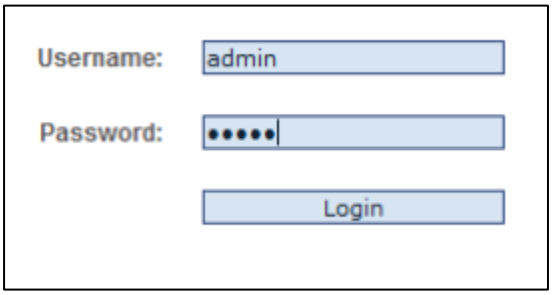
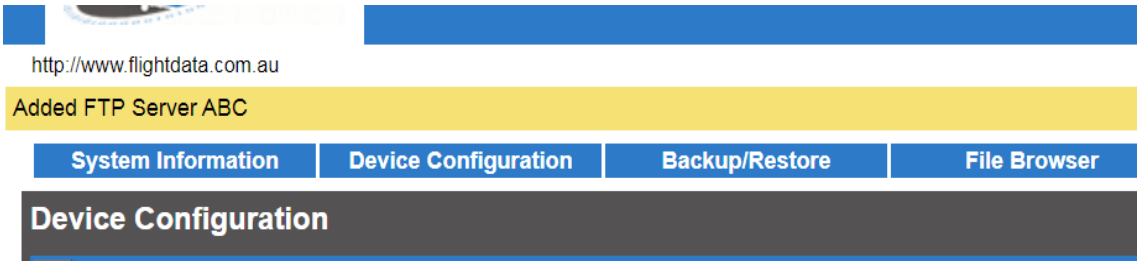


Figure 93 Web interface screen

6. Click the **Device Configuration** tab, scroll down until you reach **Network Settings.**
7. To add a new FTP server name:
   - Enter the name of a server in **FTP Server Name**
   - Click on **Add FTP Server**
   - Once Adding the FTP Server is finished**, Added FTP Server <Server Name>** message will appear at the top

Figure 94 Added FTP Server



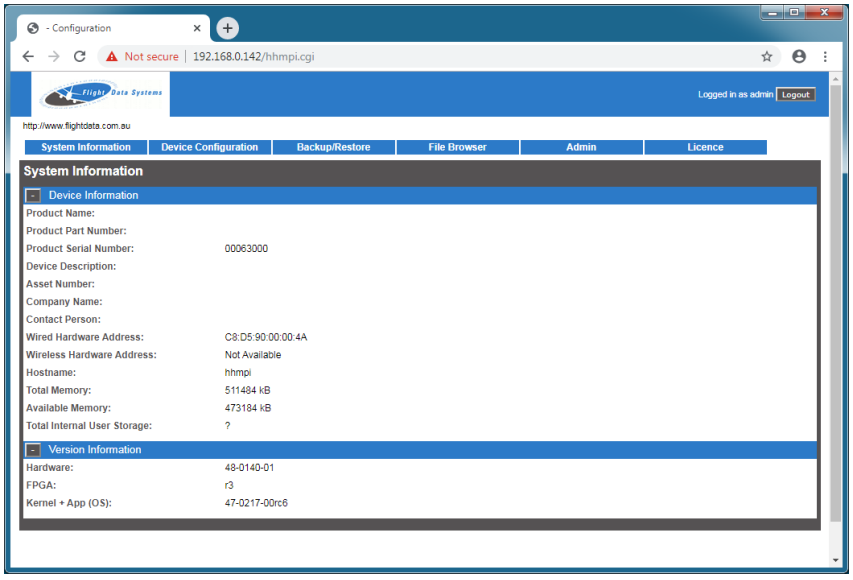
8. To configure the server, scroll down until you reach that Server Name and configure the following parameters see
   - Select FTP Type out of four FTP types
   - Select SSL mode
   - Select SSL Version
   - Enter the Server IP Address
   - FTP login
   - FTP Password
   - FTP Remote Path
9. Click **Save** then **Apply**. Once these settings have been successfully applied a prompt reading " **Reloaded Settings**" will appear on the HHMPI screen

4.2.9 Web Interface Application

The HHMPI web interface has six available tab options allowing the user access to view and alter current system configurations:

- **System Information:** Similar to the information page accessed via the HHMPI main menu, it provides device information including product serial numbers, available memory, and MAC addresses. It further provides version information including hardware, FPGA and Kernel operating system numbers.
- **Device Configuration:** Displays the device configuration, including network settings and wireless settings, it gives the user access to changing a range of various settings which can be enabled or disabled depending on the discretion of the user.
- **Backup/Restore:** Allows the user to backup or restore the device configurations.
- **File Browser:** Displays a list of the files in the HHMPI internal memory for download.
- **Admin:** Displays the administrators configuration information, the user can access this to input their own administrator specific information.
- **License:** Allows the user to download the security configuration and validate the license key.

Figure 95 Web Interface Home Page



4.2.9.1 Accessing the Web Interface

1. Via the RJ45 socket, plug the HHMPI into an Ethernet network, alternatively you may plug the HHMPI into a cradle which has an existing Ethernet connection.
2. Navigate to the Wired Settings as shown in the menu below and record the allocated IP address:

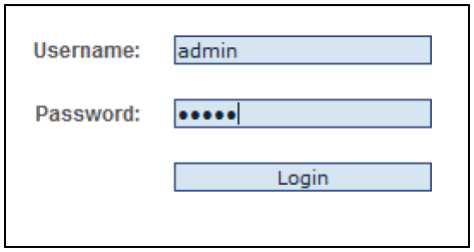
   ▼▲ **Main Menu > Network Operations > View Wired Address**

3. Open a web-browser that uses https protocol, such as Mozilla Firefox or Google Chrome, and type the wired IP address into the browser address bar.

   Note If no link is detected an IP address has not been assigned to the HHMPI, this may be because of your network security settings. See your IT department or contact Flight Data Systems for more information if this occurs.

4. Login to the HHMPI web interface using the default username and password **admin** and **admin**.

Figure 96 Web Interface Login



5. After you successfully log in the default screen should appear as per Figure 95 Web Interface Home Page with the device and version information listed.

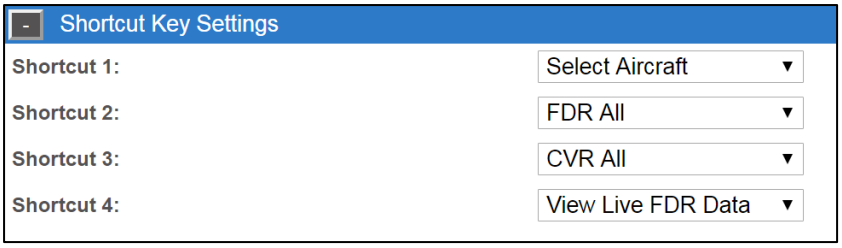
4.2.9.2 Changing the Configuration via the Web Interface

To configure the HHMPI through the web interface, in any web-browser perform the following steps.

1. Log on to the HHMPI web interface as per previous section "Accessing the Web Interface".
2. Click the **Device Configuration** tab.

   ➡ All the HHMPI configurations detailed in Section 4.1.4, "HHMPI Configuration" can also be altered via the web interface, for the purposes of brevity an example covering how to change the featured shortcuts on the shortcut menu will be described.
3. Scroll to the bottom of the device configuration page where you will encounter the shortcut key settings option.
4. In order to alter the 3rd shortcut, for example, click on the down arrow located to the right of **Media Download** and select **CVR All**, this will allow the user easy access to performing a CVR download without having to cycle through the menu structure.
5. Navigate to either the top right or bottom left portion of the screen and click **Save** then **Apply**. Once these settings have been successfully applied a prompt reading "**Reloaded Settings**" will appear on the HHMPI screen.
6. Power cycle the HHMPI by turning the unit off, waiting at least 3 seconds, then turning the unit back on. Once the unit powers up again the reloaded settings will take effect.

Figure 97 Shortcut Settings



In a similar fashion to changing the shortcut menu options, clock, display, memory, and filename settings can also be easily altered within the device configuration tab.

4.2.9.3 File Browser

The file browser menu gives the user access to download, delete or format internally stored files within the HHMPI. As such it does not allow access to files stored on external memory locations such as USB and SD cards. File size and creation date are also viewable within the file browser page.

4.2.9.4 Backing up the HHMPI Configuration

HHMPI settings can be downloaded and stored on a PC for future use. Similarly, old, or user altered settings can be uploaded to the HHMPI via the backup/restore page. In order to either access current HHMPI settings or restore the settings complete the following steps.

1. Log on to the HHMPI web interface as per Section 4.2.9.1, "Accessing the Web Interface".

2. Click the **Backup/Restore** tab, located 3 tabs to the right of **System Information**. The **Backup/Restore** screen provides options including *Aircraft Tail Number List, Device Configuration, SSL certificate, Custom Encryption Key* and *SFTP key*.
3. Click **Download Aircraft List** to download a .bkp (backup file). The user should then take care ensuring to save it in a known, safe location on a local PC.
4. Repeat steps 1 to 3 to back up the device configuration. If an SSL certificate is available, this too can be downloaded and backed up.

4.2.9.5 Restoring Backup Files via the Web Interface

Important The Aircraft List is saved to the USB flash drive as aircraft.csv.bkp. To transfer this file to the HHMPI again, it must be renamed aircraft.csv.

To reload *aircraft.csv* or a device configuration file complete these steps:

1. Select the file to be uploaded, e.g. *aircraft.csv* (for an aircraft list) or *hhmpi.conf* (for device configuration) by selecting the "**Choose file**" button.
2. Select the "**Upload Aircraft List**" or alternatively "**Upload Configuration**" depending on which file is being uploaded to the HHMPI.
3. Scroll to the bottom of the **Backup/Restore** settings tab and select the "**Apply**" button.

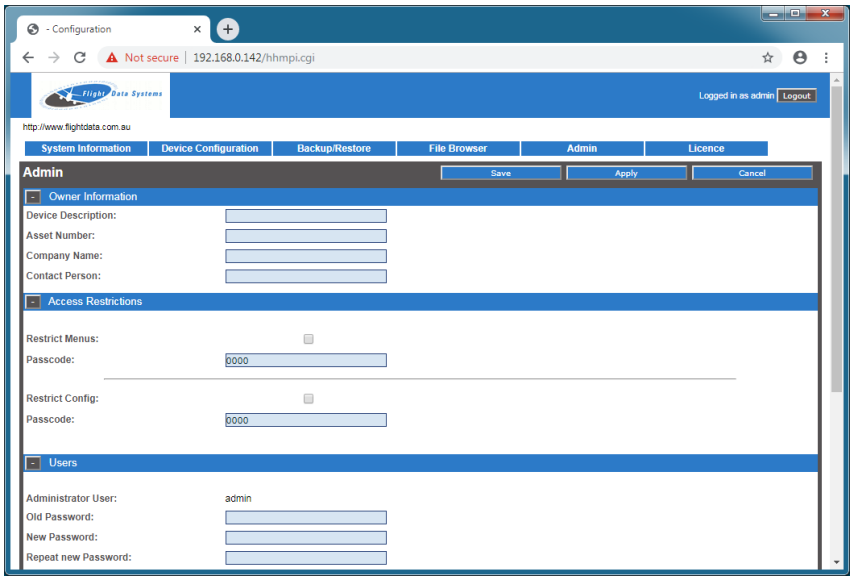
   ➡ A prompt reading "**Reloaded Settings**" appears on the HHMPI screen confirming the update.
4. For the current updates to take effect, power cycle the unit by turning the unit off, waiting at least 3 seconds then turning the unit back on.

4.2.9.6 Administration Settings

The Admin Screen allows users to:

- Add owner information.
- Enter pass codes for restricting main menu access, device configuration, shortcut access or restricting access on power on.
- Change the administrator login.
- Reset the device or restore back to factory settings.

Figure 98 Admin Screen



To configure an access pass code, complete these steps:

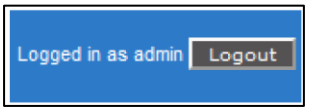
1. In the **Access Restrictions** section, enable a pass code function by clicking on the adjacent check box for either **restrict menus** or **restrict config**.
2. Enter a four-digit pass code in the adjacent text box and then click **Save**.

   ➡ The new pass code will take effect the next time you turn on the HHMPI.

4.2.9.7 Logging out of the Web Interface

To log out of the web interface press the **Logout button** as shown below.

Figure 99 Logout button



4.2.10 Network Operations

4.2.10.1 DHCP Network Settings

To view DHCP (automatic) network settings:

▼▲ **Main Menu > Device Configuration > Network Settings > Wired Settings**

1. Navigate to the **Wired Settings** as shown above in the menu sequence.
2. Select **Enable Networking**, checking or un-checking the check box enables or disables the **Manual Configure** IP address option.
3. Choose between **Auto** and **Manual DHCP**.
4. Auto Configure DHCP by checking the check box.

   OR

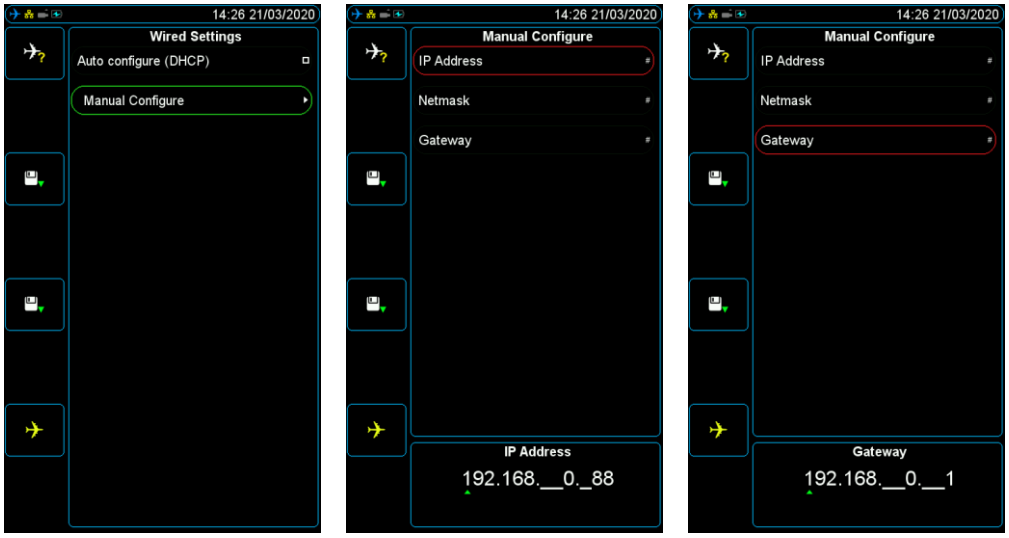
5. Manually configure the IP address by pressing right on the **Manual Configure** command.
6. Use the up button to set the **IP Address**, **Netmask** and **Gateway**.
7. Press the **OK** button.

To view HHMPI IP address Section 4.2.1.2, “Ethernet Connectivity”.

To view the IP address, select the menu as follows:

▼▲ **Main Menu > > Network Operations > View Wired Address**

Figure 100 DHCP or Manual IP Configuration



4.3 Troubleshooting

To troubleshoot the HHMPI, first try the following steps:

- **Turn the HHMPI on and off** by following the steps in Section 4.1.1.4, "Turning on the HHMPI".
- If this does not work, try plugging the HHMPI onto the cradle to charge.
- If this does not work, try resetting the HHMPI by following the steps in Section 4.1.1.5, "Reset Operation".
- Restart the recorder if possible and try again.

▼▲ **Main Menu > Device Configuration > Report Error**

If these steps do not solve your problem, listed below is a set of potential problems and solutions. If your problem is not listed, use the **Report Error** menu option (if possible) on the HHMPI, and send the generated file to support@flightdata.aero with a description of the problem, the serial number of the HHMPI, and the part numbers of recorders you are trying to interface with (if applicable).

If it is not possible to report the error on the HHMPI, send an email to support@flightdata.aero. In your email, include the following information:

- Company name and contact details.
- Any relevant part numbers, serial numbers and mod status of the Flight Data Systems equipment involved in your troubleshooting process.
- Any part numbers and a brief description of any equipment not manufactured by Flight Data Systems involved in your troubleshooting process.
- Reported fault, including as much information about the conditions when the fault occurs.

Once your email has been received, we will investigate your issue and contact you as soon as possible.

Table 25 Troubleshooting common issues with the HHMPI v3

Issue	Solution
HHMPI does not power up.	Battery requires charge.
Screen is not visible	Reset the HHMPI by following the steps in Section 4.1.1.5, "Reset Operation".
No communication between the HHMPI and the recorder	Ensure recorder is listed on Information screen. Ensure interface cable is connected correctly. Ensure recorder is powered correctly.
Unable to download file from recorder	For on-wing downloads of CVR audio, ensure that the aircraft adapter cable is correctly installed. Check the interface cable for damage. Turn HHMPI off and back on again.
A message is displayed indicating that the download has stopped or stalled.	Cancel and restart the download.
Cannot see live data in the live data view, only see unknown values.	Ensure correct connection to the recorder. Connection is indicated by a blue aircraft icon found in the status bar of the display. Ensure the recorder is in correct mode. Restart the recorder if possible and try again.

Issue	Solution
Cannot get IP address through wired network.	Ensure that an Ethernet cable is connected and ensure correct connection to the recorder. Connection is indicated by a yellow network connection icon in the status bar of the display. See Section 4.2.1.2, “Ethernet Connectivity”. If no link is detected an IP address has not been assigned to the HHMPI, this may be because of the user network security settings. See your IT department or contact Flight Data Systems for more information if this occurs.
Cannot copy files from HHMPI to PC using USB cable.	Try another USB port on the PC. Check that USB is working, and that the PC is displaying the HHMPI as a portable device. Wait for Internal storage to load on boot. Turn HHMPI off and back on again.
Cannot load aircraft.csv file.	Check the file in Notepad or Excel to see if it meets the format described in Section 4.2.3.1, “Creating an Aircraft List on a PC”. Try loading the file through the web interface, see Section 4.2.9.2, “Changing the Configuration via the Web Interface”.
Cannot copy file from external memory device.	Ensure that the external memory device is connected. Connection is indicated by an orange USB flash drive icon showing in the status bar of the display. Check that the file is selected before attempting to copy the file. Check that the external memory device is not full.
Cannot delete file from media storage device.	Ensure that the external memory device is connected. Connection is indicated by an orange USB flash drive icon found in the status bar of the display. Check that the file is selected before attempting to delete the file.
“UV” Displayed on screen.	Battery under voltage, charge battery for an extended period (12 hours), if the fault message continues to be displayed, return the unit for repair.
“Detected Battery Fault Condition” error message displayed on screen.	Charge battery for an extended period (12 hours), if the fault message continues to be displayed, return the unit for repair.
“Unsupported Cable Detected”	Ensure that the aircraft interface cable is correctly inserted. Ensure that the HHMPI is configured for the correct recorder, see Section 4.2.9.2, “Changing the Configuration via the Web Interface”. Check the aircraft interface cable for damage. Check the aircraft interface cable for any debris that could be causing connection issues.
“Mount Error”	Ensure that the external memory device is not corrupt or damaged in any way. Ensure that the external memory device is correctly inserted in the HHMPI.

4.4 Sentry Flight Recorder Interface Supplement

4.4.1 Overview

This supplement details the additional functions supported by Flight Data Systems Sentry recorder.

4.4.2 Connecting the HHMPI to the Sentry

Specific cables are used to power and interface the Sentry recorder with the HHMPI. On-bench download requires a 28V power cable, whereas for On-wing download the recorder is powered by the aircraft

- Cable **FDS40-0283** is an interface cable used to connect the HHMPI to the Sentry recorder.
- Cable **FDS40-0068** is a cable used to power the recorder directly from a 28V supply.
- Cable **FDS40-0069** FDS Sentry Aircraft Adapter Cable is used in-line with the aircraft wiring loom to pass through 28V DC power during On-wing downloads. Without this adapter cable, the recorder will be in recording mode and prevent CVR downloads.

Depending on the site, two cables are required in order to transact communications between the HHMPI and Sentry.

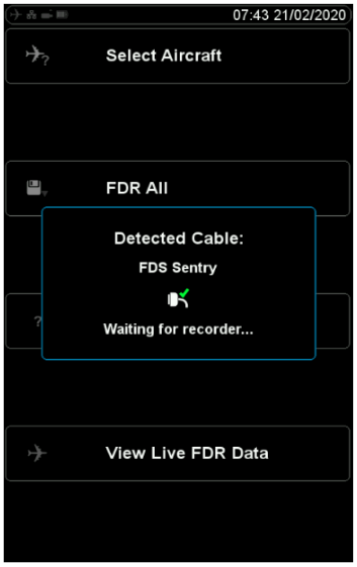
1. Screw the round connector of the interface cable **FDS40-0283** into the Sentry.
2. Connect the other end of the interface cable into the connector located on top of the HHMPI.

   ➡ If this is done correctly, a prompt will appear on the HHMPI screen reading "Detected Cable FDS Sentry Waiting for Recorder..."

3. With a local 28V power supply off, continue by screwing the round connector of the power cable **FDS40-0068** into the Sentry recorder and connecting the alternate end into the power supply.
4. Apply 28V power to the unit.

   ➡ Approximately 5 seconds after this, the prompt reading "*Waiting for Recorder...*" disappears, indicates that the Sentry and HHMPI are ready for further use.

Figure 101 Correct Cable Detection



4.4.3 Download Operations

The Sentry recorder supports the following download operations.

- FDR All - Downloads all flight data from the recorder (FDR and CVFDR models only).
- FDR Since Last - Retrieves only new flight data recorded since the last download operation.

- CVR All - Retrieves all cockpit voice recordings from the recorder (CVR and CVFDR models only).
- CVR Since Last - Retrieves only new cockpit voice recordings recorded since the last download operation.
- DLR All - Downloads all datalink recordings from the recorder (CVR and CVFDR models only).
- DLR Since Last - Retrieves only new datalink recordings recorded since the last download operation.
- BIT All - Retrieves all BIT data from the recorder.

Table 26 File Extensions of file downloaded from Sentry

Data Type	Extension
FDR	.pak
CVR	.wav
DLR	.csv
BIT	.bin

4.4.4 Recorder Operations

The Sentry FDR and CVFDR recorders support the following recorder operations:

- FDR Fault Output - The FDR fault output can be forced on or off.
- Discrete Status – Display the recorder fault, power state and other status.
- View Fault Log – Display the fault log.

4.4.5 FDR Configuration

The Sentry recorder supports the following recorder operations:

- Information - Displays the recorder part numbers, serial number and other information
- Set Time - Set the time of the recorder's Real Time Clock (RTC)
- Set Date - Set the date of the recorder's Real Time Clock
- RIPS Discharge Test - Test the Recorder Independent Power Supply (RIPS) capacitors. (CVR and CVFDR models with RIPS support only).

4.4.6 Audio Operations

The Sentry CVR and CVFDR recorders support the following audio operations:

- CVR Live Audio - The Sentry audio can be monitored in real time with headphones plugged into the audio jack.

4.4.7 Live Data View

Live flight data can also be monitored from FDR and CVFDR recorders.

- View Live FDR Data – Select and display up to 10 ARINC 717 words. (FDR and CVFDR models only).

4.4.8 Menu Tree

The following menu items are enabled on connection to FDS Sentry.

Table 27 Additional menu items for FDS Sentry

Main Menu	Menu Level 1	Menu Level 2
Download Operations	FDS All	
	FDR Since Last	
	CVR All	

Main Menu	Menu Level 1	Menu Level 2
	CVR Since Last	
	DLR All	
	DLR Since Last	
	BIT All	
Recorder Operations	FDR Fault Output	*Forced On/Forced OFF*
	Discrete Status	*System Fault* *Fault Forced On* *Fault Forced Off* *Power Holdup State* *Power Critical State* *Self Test State* *Push to Test* *CVR Erase* *Event* *Datalink Valid* *Position Strapping* *Record Bias* *RIPS Enable* *Stop Recording* *GSE Connected* *ATE Connected*
	View Fault Log	*Timestamp* *Event* *Condition*
FDR Configuration	Information	*Part Number* *Serial Number* *Mod Status* *HWCI Part Number* *HWCI Checksum* *Time* *Date*
	Set Time	
	Set Date	
	RIPS Discharge Test	
Audio Operations	CVR Live Audio	*Select Monitor Channel: CH1, CH2, CH3, CH4, Exit.* *Audio volume*
Live Data View	View Live FDR Data	

4.5 SRVIVR™ Interface Supplement

This supplement details the additional functions supported by the L-3 Aviation Recorders SRVIVR™ CVFDR. For specific details on these recorders, refer to the appropriate L-3 SRVIVR™ OEM documentation.

4.5.1 Download Operations

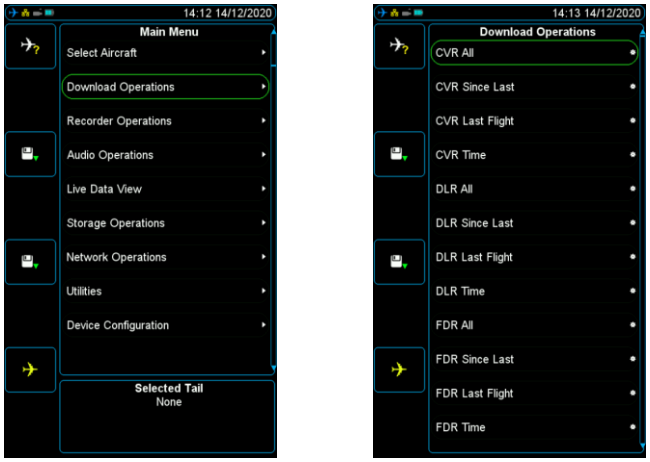
The SRVIVR™ supports the following download options:

- CVR All - Retrieves all cockpit voice recordings from the recorder.
- CVR Since Last - Retrieves only new cockpit voice recordings recorded since the last download operation was performed.
- CVR Last Flight - Retrieves only new cockpit voice recordings recorded since the last flight.
- CVR Time - Retrieves the last specified duration of flight data.
- DLR All - Retrieves all Datalink recordings from the recorder.
- DLR Since Last - Retrieves only new Datalink recordings recorded since the last download operation was performed.
- DLR Last Flight - Retrieves only new Datalink recordings recorded since the last flight.
- DLR Time - Retrieves the last specified duration of Datalink recordings.
- FDR All - Retrieves all flight data from the recorder.
- FDR Since Last - Retrieves only new flight data recorded since the last download operation was performed.
- FDR Last Flight - Retrieves only new flight data recorded since the last flight.
- FDR Time - Retrieves the last specified duration of flight data.
- BIT All - Retrieves all BIT data from the recorder for SRU fault isolation.
- BIT Since Last - Retrieves only new BIT data recorded since the last download operation was performed.
- BIT Last Flight - Retrieves only new BIT data recorded since the last flight.
- BIT Time - Retrieves the last specified duration of BIT data.

Table 28 File extensions of files downloaded from the SRVIVR™

Data Type	Extension
FDR	.bin
CVR	.bin
DLR	.bin
BIT	.bin

Figure 102 SRVIVR™ Download Operations



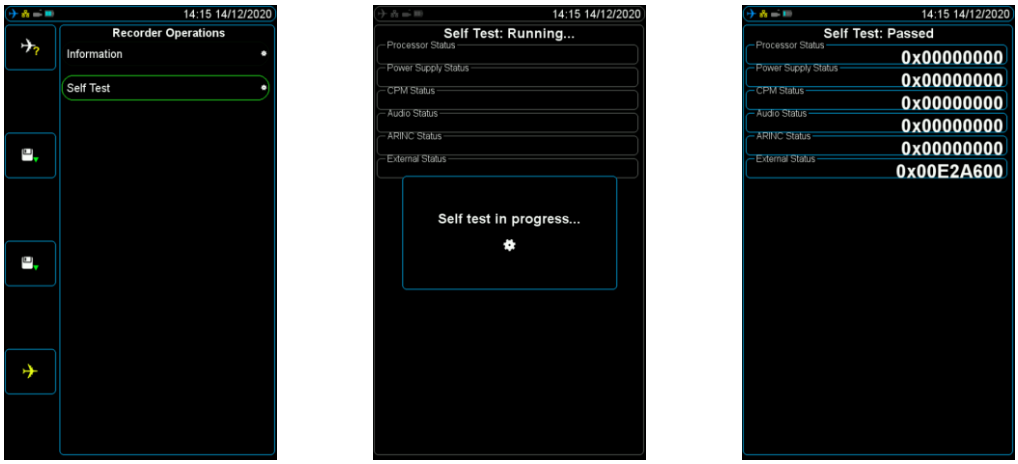
4.5.2 Recorder Operations

The SRVIVR™ supports the following recorder operations:

- Monitoring of CVFDR information, including system version, serial number, etc. For full list of information.
- Initiating system self-test.

Figure 103 SRVIVR™ Recorder Operations - Information

Figure 104 SRVIVR™ Recorder Operations - Self Test



4.5.3 Audio Operations

The SRVIVR™ audio can be monitored in real time. To listen to audio, plug headphones into the audio jack on the bottom of the HHMPI.

Note The CVFDR must be configured appropriately for playback, that is, not currently recording. Refer to the component maintenance manual for instructions.

4.5.4 Live Data View

Three streams of real time data can be monitored from the SRVIVR™:

- Live ARINC-717, see Section 4.2.5, "Viewing Live Flight Data",
- Monitoring of Captain's Clock on the ARINC-429 GMT BUS, both labels 125 and 150.
- Monitoring of Rotor Frequency in Hz.

4.5.5 Menu Tree

The following menu items are enabled on connection to a SRVIVR™ recorder.

Table 29 Additional menu items for SRVIVR™ CVFDR

Main Menu	Menu Level 1	Menu Level 2
Download Operations	CVR All	
	CVR Since Last	
	CVR Last Flight	
	CVR Time	
	DLR All	
	DLR Since Last	
	DLR Last Flight	
	DLR Time	
	FDR All	
	FDR Since Last	
	FDR Last Flight	
	FDR Time	
	BIT All	
	BIT Since Last	
	BIT Last Flight	
	BIT Time	

Main Menu	Menu Level 1	Menu Level 2
Recorder Operations	Information	*System Version* *Serial Number* *Hardware Version* *Processor Version* *CPM Version* *Audio Version* *ARINC Version* *Boot Version* *OFP Version* *OFP CRC* *Config Data Version* *Config Data CRC* *Operating Hours* *Last Time Stamp* *CVFDR Mode* *Discrete Inputs* *Discrete Outputs* *CVR Status Word* *Processor Status* *Power Supply Status* *CPM Status* *Audio Status* *ARINC Status* *External Status*
	Self Test	*Processor Status* *Power Supply Status* *CPM Status* *Audio Status* *ARINC Status* *External Status*
Audio Operations	CVR Live Audio	*Select Monitor Channel: CH1, CH2, CH3, CH4, Exit.* *Audio volume*
Live Data View	View Live FDR Data	
	View DLR	*DLR Heartbeat* *DLR Data*
	View Captains Clock	*Label 150 Clock (HH:MM:SS)* *Label 125 Clock (HH:MM:SS)*
	View Rotor	*Raw Rotor Frequency*

4.6 FA2100 and FA2300 Interface Supplement

This supplement details the additional functions supported by the L-3 Aviation Recorders FA2100 CVFDR. For specific details on these recorders, refer to the appropriate L-3 FA2100 CVFDR OEM documentation.

4.6.1 Download Operations

The FA2100 supports the following download options:

- DLR ALL - Retrieves all DLR from recorder.
- DLR Time - Retrieve the last specified duration of DLR recordings.
  Note: This DLR function is only available if the recorder has the DLR function.
- FDR All - Retrieves all flight data from the recorder.
- FDR Since Last - Retrieves only new flight data recorded since the last download operation was performed.
- FDR Time - Retrieves the last specified duration of flight data.
- FDR Mark - Retrieves all flight data newer than a specified memory mark.
- CVR All - Retrieves all cockpit voice recordings from the recorder. If CVR de-multiplexing is enabled on the HHMPI, recordings can also be decompressed so they can be played on a PC or other device.
- CVR Time - Retrieves the last specified duration of cockpit voice recordings.

See Section 4.2.4, "Flight Data Downloads".

Table 30 File extensions of files downloaded from the FA2100

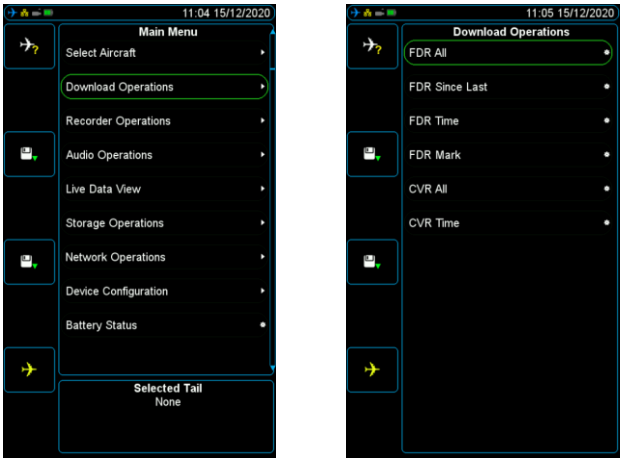
Data Type	Extension
FDR	.fdr
CVR	.cvr
DLR	.dlr
Fault Log	.log
Debug Trace	.log

4.6.2 Recorder Operations

The FA2100 supports the following recorder operations:

- Monitoring of FDR Status.
- Monitoring of CVR Status.
- Setting of FDR and CVR memory markers.
- Clearing of latched faults and fault log. Download of CVFDR fault logs. See 4.6.9, "Dump Debug Trace"

Figure 105 FA2100 Download Operations



4.6.3 FDR Status

Indicates the status of the following:

- FDR Stream Detected
- Frame Lock
- Recorded Minutes
- Latched
- Fault

4.6.4 CVR Status

Indicates the status of the following:

- Latched
- Fault
- Recording

4.6.5 FDR or CVR Fault Output

The cockpit fault light can be forced on or off using the **right** buttons.

4.6.6 Clear Latched Fault

Sets or reset the fault log.

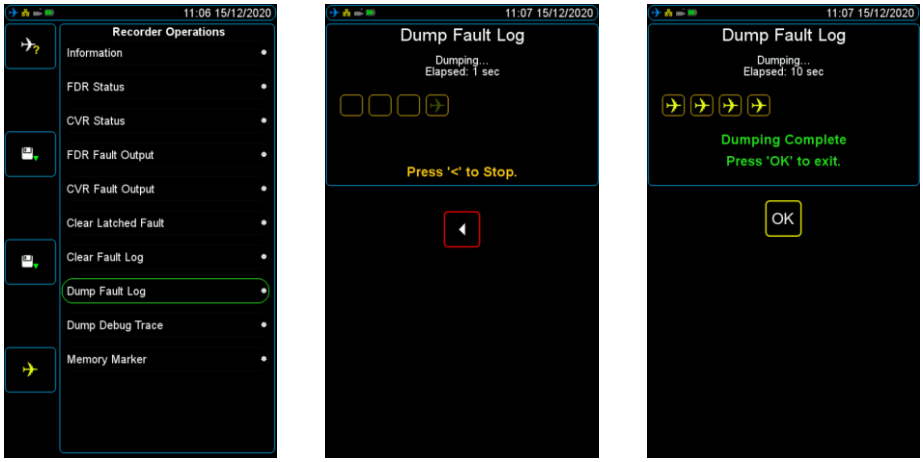
4.6.7 Clear Fault Log

Erases the fault log.

4.6.8 Dump Fault Log

Saves the fault log to selected memory.

Figure 106 Recorder Operations - Dump Fault Log



4.6.9 Dump Debug Trace

This function dumps the running debug stream from an L3 FA2100 recorder to a file on the HHMPI. This file is a text file readable in any text editor.

4.6.10 Memory Marker

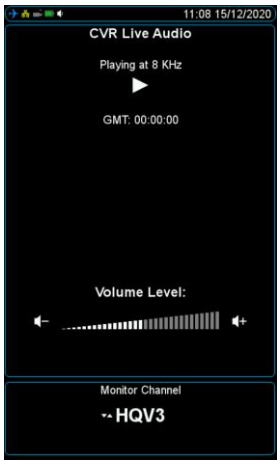
Set a new FDR memory marker. The next marker will be chosen in the range 1-15, when all the markers are set, the marker count returns to 1.

4.6.11 Audio Operations

The FA5000/FA5001 audio can be both monitored in real time, and also play back previously recorded data. To listen to audio, plug headphones into the audio jack on the bottom of the HHMPI.

Press the **up** and **down** buttons to select which channel you want to listen to. In playback mode, the **left** and **right** buttons rewind or fast forward the current playback position.

Figure 107 CVR Live Audio volume control



Note The CVFDR must be configured appropriately for playback, that is, not currently recording. Refer to the component maintenance manual for instructions.

4.6.12 Live Data View

Real time ARINC-717 data can be monitored from the FA2100. See Section 4.2.5, "Viewing Live Flight Data".

4.6.13 Menu Tree

The following menu items are enabled on connection to a FA2100 recorder.

Table 31 Additional menu items for FA2100 CVDR

Main Menu	Menu Level 1	Menu Level 2
Download Operations	FDR All	
	FDR Since Last	
	FDR Mark	
	FDR Time	
	CVR All	*CVR Decompression (OK/Cancel)*
	CVR Time	
Recorder Operations	Information	*FDP Checksum* *FDP Version* *MAX CVR Length* *MAX FDR Rate* *SMP Cheksum* *SMP Version* *SW Part Number*
	FDR Status	*FDR Stream Detected* *Frame Lock* *Recorded Minutes* *Latched* *Fault*
	CVR Status	*Latched* *Fault* *Recording*
	FDR Fault Output	*Forced On/Off*
	CVR Fault Output	*Forced On/Off*
	Clear Latched Fault	*Confirm clear fault log*
	Clear Fault Log	
	Dump Fault Log	*Select Memory*
	Dump Debug Trace	
	Memory Marker	*Set a memory marker (1-15)*
Audio Operations	CVR Live Audio	*Select Monitor Channel: HQV1, HQV2, HQV3, SQV, SQC, HQC.* *Audio volume*
	CVR Playback	*Select Playback Channel: HQV1, HQV2, HQV3, SQV, SQC, HQC.* *Playback status* *Playback audio volume* *Playback time*
Live Data View	View Live FDR Data	
	View Captain's Clock	*Clock (HH:MM:SS)*
	View Rotor	*Raw Rotor Frequency*

4.7 FA5000/FA5001 Interface Supplement

4.7.1 Download Operations

The FA5000/FA5001 supports the following download options:

- FDR All - Retrieves all flight data from the recorder.
- FDR Since Last - Retrieves only new flight data recorded since the last download operation was performed.
- FDR Time - Retrieves the last specified duration of flight data.
- FDR Mark - Retrieves all flight data newer than a specified memory mark.
- CVR All - Retrieves all cockpit voice recordings from the recorder.
- CVR Since Last - Retrieves only new cockpit voice recordings recorded since the last download operation was performed.
- CVR Time - Retrieves the last specified duration of cockpit voice recordings.
- CVR Mark - Retrieves all cockpit voice recordings newer than a specified memory mark.
- DLR All - Retrieves all Datalink recordings from the recorder.
- DLR Since Last - Retrieves only new Datalink recordings recorded since the last download operation was performed.
- DLR Time - Retrieves the last specified duration of Datalink recordings.
- DLR Mark - Retrieves all Datalink recordings newer than a specified memory mark.

Table 32 File extensions of files downloaded from the FA5000/5001

Data Type	Extension
FDR	.dfd
CVR	.mic1, .mic2, .mic3, .cam
DLR	.dlk
Fault Log	.log

4.7.2 Recorder Operations

The FA5000/FA5001 supports the following recorder operations:

- Monitoring of FDR Status.
- Monitoring of CVR Status.
- Setting of FDR, CVR and DLR memory markers.
- Download of CVFDR fault logs.
- Download EDS file. Get the ARINC 717 Engineering Documentation Standard (EDS) conversion file (FRCS, FRED, etc.) from the recorder.

4.7.3 FDR Configuration

The FDR configuration menu details information about the recorder such as part numbers and version numbers.

4.7.4 Audio Operations

The FA5000/FA5001 audio can be both monitored in real time, and also play back previously recorded data. To listen to audio, plug headphones into the audio jack on the bottom of the HHMPI.

Press the **up** and **down** buttons to select which channel you want to listen to. In playback mode, the left and right buttons rewind or fast forward the current playback position.

Note The CVFDR must be configured appropriately for playback, that is, not currently recording. Refer to the component maintenance manual for instructions.

4.7.5 Live Data View

Three streams of real time data can be monitored from the FA5000/FA5001:

- Live ARINC-717, see Section 4.2.5, "Viewing Live Flight Data".
- Monitoring of Captain's Clock on the ARINC-429 GMT BUS, both labels 125 and 150.
- Monitoring of Rotor Frequency in Hz.

4.7.6 Menu Tree

The following menu items are enabled on connection to a FA5000/FA5001 recorder.

Table 33 Additional menu items for FA5000/FA5001 CVFDR

Main Menu	Menu Level 1	Menu Level 2
Download Operations	FDR All	
	FDR Since Last	
	FDR Time	
	FDR Mark	
	CVR All	
	CVR Since Last	
	CVR Time	
	CVR Mark	
	DLR All	
	DLR Since Last	
	DLT Time	
	DLR Mark	
Recorder Operations	FDR Status	*FDR Fault* *FDR Input Data Lock* *ARINC 717 Data Received* *Current FDR Rate* *Latest FDR Marker*
	CVR Status	*CVR Fault* *Datalink Data Received* *GMT Data Received* *OMS Data Received* *Rotor Data Received* *CAM Audio Present and Sending Data* *MIC1 Audio Present and Sending Data* *MIC1 Audio Present and Sending Data* *MIC1 Audio Present and Sending Data* *Latest CVR Marker*
	Set FDR Marker	*Memory Marker - in progress or marker number*
	Set CVR Marker	*Memory Marker - in progress or marker number*

Main Menu	Menu Level 1	Menu Level 2
	Dump Log	
	Get EDS File	
FDR Configuration	Information	*Recorder Part Number* *Aircraft ID* *Recorder Serial Number* *Date (YYYY/MM/DD)* *Time (HH:MM:SS:MS)* *FW Version* *L3 HW FPGA Part Number* *L3 HW FPGA Part Number Revision* *L3 FW FPGA Part Number* *L3 FW FPGA Part Number Revision* *L3 FPGA FW Date (DD/MM/YYYY)* *PN Unknown1* *PN Unknown2*
Audio Operations	CVR Live Audio	*Select Monitor Channel: CH1, CH2, CH3, CAM.* *Audio volume* *Data Rate*
	CVR Playback	*Select Playback Channel: CH1, CH2, CH3, CAM.* *Playback status* *Playback audio volume* *Playback data Rate*
Live Data View	View Live Data	
	View Captains Clock	*Label 150 Clock (HH:MM:SS)* *Label 125 Clock (HH:MM:SS)*
	View Rotor	*Raw Rotor Frequency*

4.8 A200S Interface Supplement

This supplement details the additional functions supported by the L-3 A200S Solid State Cockpit Voice Recorder series. For specific details on these recorders, refer to the appropriate A200S OEM documentation and A200S Decompression Tool User Guide 30-0073.

4.8.1 Download Operations

The A200S supports the following download options:

- CVR All - Retrieves all cockpit voice recordings from the recorder.

Table 34 File extensions of files downloaded from the L-3 A200S

Data Type	Extension
CVR	.bin

4.9 F1000 Interface Supplement

This supplement details the additional functions supported by the L-3 F1000 Solid State Flight Data Recorder series. For specific details on these recorders, refer to the appropriate OEM documentation.

4.9.1 Download Operations

The F1000 supports the following download options:

- FDR All - Retrieves all flight data from the recorder.
- FDR Since Last - Retrieves only new flight data recorded since the last download operation was performed.
- FDR Time - Retrieves the last specified duration of flight data.

Table 35 File extensions of files downloaded from the L-3 F1000

Data Type	Extension
FDR	.fdt

4.9.2 Menu Tree

The following menu items are enabled on connection to a L-3 F1000 recorder.

Table 36 Additional menu items for L-3 F1000 recorder

Main Menu	Menu Level 1	Menu Level 2
Download Operations	FDR All	
	FDR Since Last	
	FDR Time	
Live Data View	View Live FDR Data	

4.10 Micro Quick Access Recorder Interface Supplement

This supplement details the additional functions supported by the L-3 Micro Quick Access Recorder (UQAR) Flight Data Recorder series. For specific details on these recorders, refer to the appropriate OEM documentation.

4.10.1 Download Operations

The UQAR supports the following download options:

- FDR All - Retrieves all flight data from the recorder.
- FDR Time - Retrieves the last specified duration of flight data.
- FDR Date - Retrieves only flight data from the specified date.

Table 37 File extensions of files downloaded from the L-3 Micro Quick Access Recorder

Data Type	Extension
FDR	.qar

4.10.2 Menu Tree

The following menu items are enabled on connection to a L-3 Micro Quick Access Recorder.

Table 38 Additional menu items for L-3 Micro Quick Access Recorder

Main Menu	Menu Level 1	Menu Level 2
Download Operations	FDR All	
	FDR Since Last	
	FDR Date	
Recorder Operations	Local FDR Clock	

4.11 Honeywell HFR5-V Solid State Cockpit Voice Recorder (SSCVR) Interface Supplement

This supplement details the additional functions supported by the Honeywell HFR5-V Solid State Cockpit Voice Recorder (SSCVR) series. For specific details on these recorders, refer to the appropriate HFR5-V OEM documentation.

4.11.1 Download Operations

The HFR5-V supports the following download options:

- CVR All - Retrieves all cockpit voice recordings from the recorder.
- With the demultiplexing option enabled, you can also decompress the CVR data to waveforms playable on a PC, representing the four audio channels.

Table 39 File extensions of files downloaded from the Honeywell HFR5-V

Data Type	Extension
CVR	.dlu

4.12 Honeywell HFR5-D Solid State Flight Data Recorder Interface Supplement

This supplement details the additional functions supported by the Honeywell HFR5-D Solid State Flight Data Recorder series. For specific details on these recorders, refer to the appropriate HFR5-D OEM documentation.

4.12.1 Download Operations

The HFR5-D supports the following download options:

- FDR All - Retrieves all flight data from the recorder.
- FDR Since Last - Retrieves only new flight data recorded since the last download operation was performed.

Table 40 File extensions of files downloaded from the Honeywell HFR5-D

Data Type	Extension
FDR	.dlu

4.13 Honeywell Digital Voice Data Recorder (DVDR) Interface Supplement

This supplement details the additional functions supported by the Honeywell Digital Voice Data Recorder (DVDR) series. For specific details on these recorders, refer to the appropriate OEM documentation.

4.13.1 Download Operations

The DVDR supports the following download options:

- FDR All - Retrieves all flight data from the recorder.
- CVR All - Retrieves all cockpit voice recordings from the recorder.

Table 41 File extensions of files downloaded from the DVDR

Data Type	Extension
FDR	.dlu
CVR	.dlu

4.13.1 Menu Tree

The following menu items are enabled on connection to a DVDR recorder.

Table 42 Additional menu items for Honeywell DVDR

Main Menu	Menu Level 1	Menu Level 2
Download Operations	FDR All	
	CVR All	
Live Data View	View Live FDR Data	

4.14 Honeywell Solid State Cockpit Voice Recorder (SSCVR) Interface Supplement

This supplement details the additional functions supported by the Honeywell Solid State Cockpit Voice Recorder (SSCVR) series. For specific details on these recorders, refer to the appropriate OEM documentation.

4.14.1 Download Operations

The SSCVR supports the following download options:

- CVR All - Retrieves all cockpit voice recordings from the recorder.

Table 43 File extensions of files downloaded from the SSCVR

Data Type	Extension
CVR	.dlu

4.15 Honeywell Solid State Flight Data Recorder (SSFDR) Interface Supplement

This supplement details the additional functions supported by the Honeywell Solid State Flight Data Recorder (SSFDR) series. For specific details on these recorders, refer to the appropriate OEM documentation.

4.15.1 Download Operations

The SSFDR supports the following download options:

- FDR All - Retrieves all flight data from the recorder.

Table 44 File extensions of files downloaded from the SSFDR

Data Type	Extension
FDR	.dlu

4.15.1 Menu Tree

The following menu items are enabled on connection to a SSFDR recorder.

Table 45 Additional menu items for Honeywell SSFDR

Main Menu	Menu Level 1	Menu Level 2
Download Operations	FDR All	
Live Data View	View Live FDR Data	

4.16 Honeywell AR Series CVR/Combi Interface Supplement

This supplement details the additional functions supported by the Honeywell AR Series CVR & AR Combination Recorders. For specific details on these recorders, refer to the appropriate OEM documentation.

4.16.1 Download Operations

The Honeywell AR CVR/Combi supports the following download options:

- FDR All - Retrieves all flight data from the recorder.
- CVR All - Retrieves all cockpit voice recordings from the recorder.

Table 46 File extensions of files downloaded from the Honeywell AR CVR/Combi

Data Type	Extension
FDR	.dlu
CVR	.dlu

4.17 Penny & Giles Multi-purpose flight recorder (MPFR) Interface Supplement

This supplement details the additional functions supported by the Penny & Giles Multi-purpose flight recorder (MPFR) 051615 series. For specific details on these recorders, refer to the appropriate MPFR OEM documentation.

4.17.1 Download Operations

The MPFR supports the following download options:

- FDR All - Retrieves all flight data from the recorder.
- FDR Since Last - Retrieves only new flight data recorded since the last download operation was performed.
- CVR All - Retrieves all cockpit voice recordings from the recorder.
- CVR Since Last - Retrieves only new cockpit voice recordings recorded since the last download operation was performed.
- Log All - Retrieves all the logging information.
- Log Since Last - Retrieves only new logging information recorded since the last download operation was performed.
- Config All - Retrieves all the recorder configuration information.
- Config Since Last - Retrieves only new recorder configuration information recorded since the last download operation was performed.

Table 47 File extensions of files downloaded from the Penny & Giles MPFR

Data Type	Extension
FDR	.bin
CVR	.bin

4.17.2 Recorder Operations

The MPFR supports the following recorder operations:

- Monitoring of FDR and CVR status information.

4.17.3 Menu Tree

The following menu items are enabled on connection to a MPFR recorder.

Table 48 Additional menu items for Penny & Giles MPFR

Main Menu	Menu Level 1	Menu Level 2
Download Operations	FDR All	
	FDR Since Last	
	CVR All	
	CVR Since Last	
	Log All	
	Log Since Last	
	Config All	
	Config Since Last	

Main Menu	Menu Level 1	Menu Level 2
Recorder Operations	Information	*Software Assembly Number* *Software Version* *Software Build* *Program Checksum* *Serial Number* *User Configured IP Address* *User Configured Gateway Address* *User Configured Subnet Mask* *MAC Address* *FDR Rate* *FDR Interface Type* *Derive Record Stop From Rotor Speed* *Recorder Type*
	Status	*Recorder Mode* *Flight Number* *Total Power On Hours* *Time Since Power On* *CVR Mode* *CVR Fault* *CVR Fault Count* *Last CVR Fault Source* *FDR Mode* *FDR Fault* *FDR Fault Count* *Last FDR Fault Source* *Manager* */CVR1/* */CVR2/* */FDR1/* */FDR2/* *Manager* *ROM Self Test* *RAM Self Test* *Program Checksum Self Test* *Configuration Checksum Self Test* *Tasks Running Self Test* *Power Supply Self Test* *Trace Message*

4.18 British Aerospace MCR500/SCR500 Interface Supplement

This supplement details the additional functions supported by the BAE MCR500/SCR500. For specific details on these recorders, refer to the appropriate OEM documentation.

4.18.1 Download Operations

The MCR500/SCR500 supports the following download options:

- FDR All - Retrieves all flight data from the recorder.
- CVR All - Retrieves all cockpit voice recordings from the recorder.

Table 49 File extensions of files downloaded from the MCR500/SCR500

Data Type	Extension
FDR	.pak
CVR	.bin

4.18.2 Menu Tree

The following menu items are enabled on connection to a MCR500/SCR500 recorder.

Table 50 Additional menu items for MCR500/SCR500 recorder

Main Menu	Menu Level 1	Menu Level 2
Download Operations	FDR All	
	CVR All	
Audio operation	CVR Playback	*Select Playback Channel: CH1*