



Pratt & Whitney Canada

Une société de United Technologies / A United Technologies Company

MONITORTM MONITOR TRANSFER MODULE HELP MANUAL



Version 4.1

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Monitor™

User Guide and Reference Manual

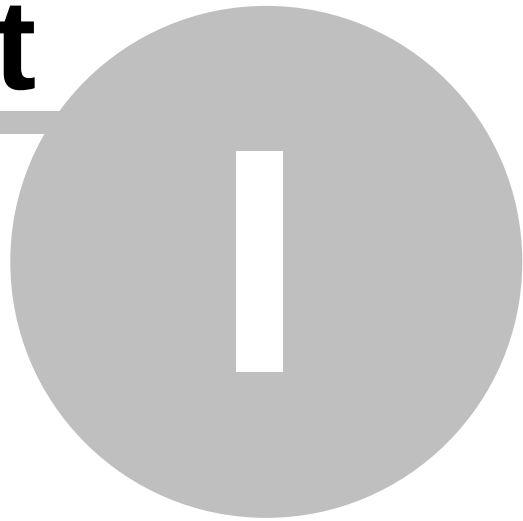
Pratt & Whitney Canada - DPHM Group

Table of Contents

Part I MonitorTm Help Manual	6
1.1 Overview	6
1.2 Export Classification	6
1.3 What's New	7
1.4 Hardware Requirements	10
1.5 Software Requirements	11
1.6 Program Installation	11
1.7 Program Version	13
1.8 Printing a hard copy of manual	13
Part II Accessing MonitorTm Functions	15
2.1 Starting and Closing the Program	15
2.2 Main Program View	15
Part III Communicating with the Monitor	20
3.1 Sync to Aircraft Function	20
3.2 Retrieve Log Files Function	20
3.3 Configure Unit Function	23
3.4 Monitor Status Function	25
3.5 Test Monitor Transmission Function for FAST	28
3.6 Test Monitor Transmission Function for DCTU	33
3.7 Live Data Function	34
3.8 Communication Settings Function	36
3.8.1 Accessing	36
3.8.2 Auto-Detection	36
3.8.3 Manual detection	36
3.9 View/Change Monitor Parameters	40
3.9.1 View/Change Monitor Parameters for ATR42/ATR72 application	40
3.9.2 View/Change Monitor Parameters for CARAVAN application	40
3.9.3 View/Change Monitor Parameters for other FAST applications	40
3.9.4 View/Change Monitor Parameters for DCTU application	40
3.10 Expert Command Mode Function	47
3.11 Get Micro Server Logs	49
3.12 FAST Factory Reset	49
3.13 Delete Non-Transmitted Logs	51
3.14 Wi-Fi Configuration	51

3.15	Wi-Fi Configuration for DCTU	53
3.16	DCTU Icoognito mode	54
Part IV	Communicating with Webserver	58
4.1	Sync to Webserver Function	58
Part V	Analyzing Data	61
5.1	Convert Log Function	61
5.1.1	General convert log function	61
5.1.2	Q200/Q300/ATR42/ATR72 convert log function	61
5.1.3	Q400 convert log function	61
5.1.4	AW139 convert log function	61
5.1.5	680A convert log function	61
5.1.6	Caravan convert log function	61
5.1.7	EPEC Convert Log function	61
5.2	View Data in GBSLite Function	65
Part VI	Monitor TM Auto-Update	68
6.1	Monitor TM Auto-Update	68
Part VII	Additional Information	70
7.1	Changing MonitorTm preferences	70
7.2	Printing	71
7.3	Troubleshooting	72
7.3.1	View Session Log Function	72
7.3.2	View Saved Monitor Status Function	72
7.3.3	Communication Troubleshooting	72
7.3.4	GBSLite Analysis Troubleshooting	72
7.3.5	Sync to Webserver Troubleshooting	72
7.4	FAST USB GSE Cable Driver Installation	75
7.5	DCTU USB GSE Cable Driver Installation	76

Part



MonitorTm Help Manual

1 MonitorTm Help Manual

1.1 Overview

MonitorTm is the Transfer Module program used to communicate with [FAST and DCTU units](#) ¹⁰ allowing the user to

- [Synchronize data with the Aircraft](#) ²⁰
- [Synchronize data with Webserver](#) ⁵⁸
- [View Monitor Status](#) ²⁵
- [View Live Data](#) ³⁴
- [View/Change Monitor Parameters](#) ⁴⁰
- [Configure the FAST Monitor](#) ²³
- [Retrieve Log Files](#) ²⁰
- [Convert Log File Data](#) ⁶¹ for [analysis using GBSLite](#) ⁶⁵
- [Retrieve Micro-Server logs](#) ⁴⁹
- [Reset FAST box to factory](#) ⁴⁹

1.2 Export Classification

The MonitorTM software export classification is as per the following:

Export Control Classification			
			(X) if Applicable
Contains no Technical Data			()
Not Subject to the EAR pursuant to 15 CFR 734.7(a)(1) or Not Subject to the ITAR pursuant to 22 CFR 120.11 (NSR)			()
Jurisdiction and Classification based on Physical Location of the Item.	Location	Regulations	
		EAR	ITAR
	Outside U.S.*	NSR	NSR
	U.S.	9D991	NSR
		EIPA (ECL)	DPA (CG)
	Canada	NSR	No

* Additionally, refer to the classification under the local export regime where the item is located, as provided in the grid

1.3 What's New

What's new in MonitorTM Version 4.1

- Update MonitorTM to support PC12-NGX Full flight data processing
- Update MonitorTM Graphic interface to support PC12-NGX new feature
- Update to the Graphic interface for Daher K-Factor
- Handling of invalid value all Aircraft style
- In service issue addressed

What's new in MonitorTM Version 4.0

- Updated MonitorTM with new features for DCTU
- Improvement to the manual data download time for Caravan.
- TBM940 new version supported (21.25).
- Fix Invalid value in Daher OEM file.
- In service issue addressed

What's new in MonitorTM Version 3.8

- ATR42/72 exceedances detection updated.
- TBM910/930 new Garmin versions supported (20.51, 20.87 and 20.85).
- King Air B200/B300 Full flight data processing supported.
- Pilatus PC12-47E Full flight data processing supported.

What's new in MonitorTM Version 3.7

- View/Change parameters function: current value display corrected.

What's new in MonitorTM Version 3.6

- Q400 EMU converter 1505HI detection updated.

What's new in MonitorTM Version 3.5

- Updated MonitorTM functions for DCTU (HTTP protocol).
- Support AW139 V6 configuration.
- Support Q200/Q300 with additional propeller Overtorque Events.
- Updated Q400 EMU converter for 1505HI event detection.
- Support FAST full flight data processing for King Air B200/B300.
- Support FAST full flight data processing for Pilatus PC12-47E.

What's new in MonitorTM Version 3.4

- Application updated to restore 32 bit operation systems compatibility (All functionalities except "Convert log" function)
- Updated event detection for Q200/Q300 and M600

What's new in MonitorTM Version 3.3

- Updated Q200/Q300 exceedances, trace and snapshot capture
- Improved Mission enhancements and filtering Q200/Q300.
- Support enhanced mission and filtering for Daher
- Updated filtering logic for ATR42/72
- Updated AW139 Exceedance and Fault detection
- Updated filtering logic for Q400

- Updated filtering logic for CARAVAN
- Updated trend filtering logic for F7X
- Updated trend filtering logic for F8X
- Support FAST for PIPER .
- Support [Test Monitor Transmission](#)^[33] for EPECS
- Support [Wi-Fi Configuration](#)^[53] EPECS
- In service issue addressed

What's new in MonitorTM Version 3.2

- Support FAST for Daher TBM .
- Upgrade MonitorTM compatibility with new SFTP Server
- New feature to change Daher A/C serial Number
- In service issue addressed
- Support Configure Unit for EPECS

What's new in MonitorTM Version 3.1

- Support DCTU for EPECS.
- Support FAST for ATR42/72 FDAU V3.
- New feature to manually check for Monitor TM version upgrade
- Application upgrade for 64 bit support and Tablet Windows 8 Pro.

What's new in MonitorTM Version 3.0

- Support FAST for ATR PBMS and RSN.
- Support FAST for ATR42/72 FDAU V2b.
- Support FAST for King Air B200/B300.

What's new in MonitorTM Version 2.9

- Support FAST for ATR Propeller Balance.
- Support FAST for King Air B200/B300 and generic ETM conversion
- Support MicroFAST Full Flight Data Conversion
- Support Q400 and ATR42/72 OOOI events
- PW150A EMU converter updated : missing traces extracted

What's new in MonitorTM Version 2.8

- Latitude conversion issues addressed
- Windows 10 compatibility

What's new in MonitorTM Version 2.7

- Support FAST for Dassault Falcon 8X conversion.
- Support FAST for Cessna Latitude 680A Phase 2 (enhanced cruise monitoring)
- Support FAST for AW139 Phase 2 (APAC)
- Support FAST for Q400 propeller vibration monitoring
- Support enhanced filtering of Q400 trend events
- [Wi-Fi Configuration](#)^[51] for data offload
- Improved [View Live Data](#)^[34] performance
- Improved communication for FAST Monitor communication.

What's new in MonitorTM Version 2.6

- In service issues addressed.

What's new in MonitorTM Version 2.5

- Support FAST for Cessna Latitude 680A EDU conversion.
- Support enhanced filtering of Caravan trend events
- Support new FOQA cleaning process
- Improved GUI performance, especially for Windows 8.1.

What's new in MonitorTM Version 2.4

- ATR42/72 conversion update for ARINC label decoding

What's new in MonitorTM Version 2.3

- Support FAST for AW139
- Support FAST for Q400 Phase 2 (1505HI, MTOP Monitoring, etc.)
- Enhanced [Retrieve Log Files Function](#)^[20].

What's new in MonitorTM Version 2.2

- Support FAST for ATR42/72 aircraft.
- New "Delete Non-Transmitted Logs" password protected function.

What's new in MonitorTM Version 2.1

- Enhancements to Q400 data conversion.
- Improved communication for configuring the FAST Monitor.
- Full flight data conversion options simplified.

What's new in MonitorTM Version 2.0

- New drivers to support Windows 8.
- New ["FAST Factory Reset"](#)^[49] function.
- New ["Get Micro Server Logs"](#)^[49] function.
- Improved Sync to Aircraft.
- Improved data conversion.

What's new in MonitorTm Version 1.8

- Support for Cessna Caravan aircraft:
New "Retrieve Log Files" interface, New "View/change Monitor Parameter" interface to display Engine/Flight cycles and creep information.
- Improved test monitor transmission function.

What's new in MonitorTm Version 1.7

- Data conversion function for Q300 application timestamp fixed.

What's new in MonitorTm Version 1.6

- Data conversion function for Q300 application
- [Preference](#)^[70] "Tag Data Transmitted" is not ON by default.
- Successful data conversion of files with multiple legs (error codes 17 and 18)

What's new in MonitorTm Version 1.5

- Data conversion function for Q400 EMU and QAR files
- Support of new FAST embedded software v1.1.0
- Improve Convert Log function user interface for more flexibility

What's new in MonitorTm Version 1.3

- Data conversion function improved for LJ60 application
- Data conversion performance improved

What's new in MonitorTm Version 1.1

- Windows 7 32-bit and 64-bit support
- Updated communications to monitor
- Updated user messages
- Removed transparent function
- Added [View/Change Monitor Parameters](#) function
- Updated F7X event list
- Updated synchronization procedure to synchronize to Webserver

What's new in MonitorTm Version 1.0

First release of the program including the following functions:

- [Synchronize data with the Aircraft](#)
- [Synchronize data with WebECTM](#)
- [View Monitor Status](#)
- [View Live Data](#)
- [Configure the FAST Monitor](#)
- [Retrieve Log Files](#)
- [Convert Log File Data](#) for [analysis using GBSLite](#)
- Support for F7X aircraft
- Support for LJ60 aircraft

1.4 Hardware Requirements

Communicating with Monitor Functions

- For FAST Monitor, connection via GSE USB cable on J3 connector
- For DCTU Monitor, connection via GSE USB cable on J2 connector (USB mini-B)

FAST Monitor Radio frequency radiation exposure Information:

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

"Changes or modifications not expressly approved by the Pratt & Whitney Engine Services could void the user's authority to operate the equipment"

"The integrated radio modules [IC: 7830A-PLS62W & IC: 5969A-TIW101] on this device has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this

list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device."

WiFi antenna: Single element, 50 ohms, vertical/omnidirectional, RPSMA, Dipole, Freq Rng: 2.4-2.5GHz, 1.5dB gain @ 2.4GHz or equal.

Cellular antenna: Single element, 50 ohms, Linear, omnidirectional, SMA, VSWR:2.1,

Frequency range/Gain: 698-960MHz 1.5dB, 1710-2170MHz 3.0dB, 2500-2700 4.5dB or equal.

To comply with FCC rule parts 2.1091 / ISSED RSS 102 RF exposure requirements for mobile transmitting devices, this device and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 30 cm (~ 12 inches) from all persons (and must not be co-located or operating in conjunction with any other antenna or transmitter.

1.5 Software Requirements

All Installations:

- Windows 7, Windows 8, Windows 8.1, Windows 8.1 Pro or Windows 10
- Windows 64bit operation systems (All functionalities)
- Microsoft Internet Explorer 6.0 or above
- PDF Reader

Tablet Installations:

- Windows 8 Pro 64bits

Communicating with Webserver

- Internet Access

Optional:

- GBSLite Diagnostic Module for data analysis on PC

1.6 Program Installation

Initial Installation

To install MonitorTm for the first time, launch the set-up program and follow instructions.

The default location for installation is C:\GBS-PWC however; when GBSLite is already installed on the PC, the default installation location will automatically be configured to the GBSLite installation directory. If GBSLite is to be installed after MonitorTm is installed, it should be installed in the same location as MonitorTm

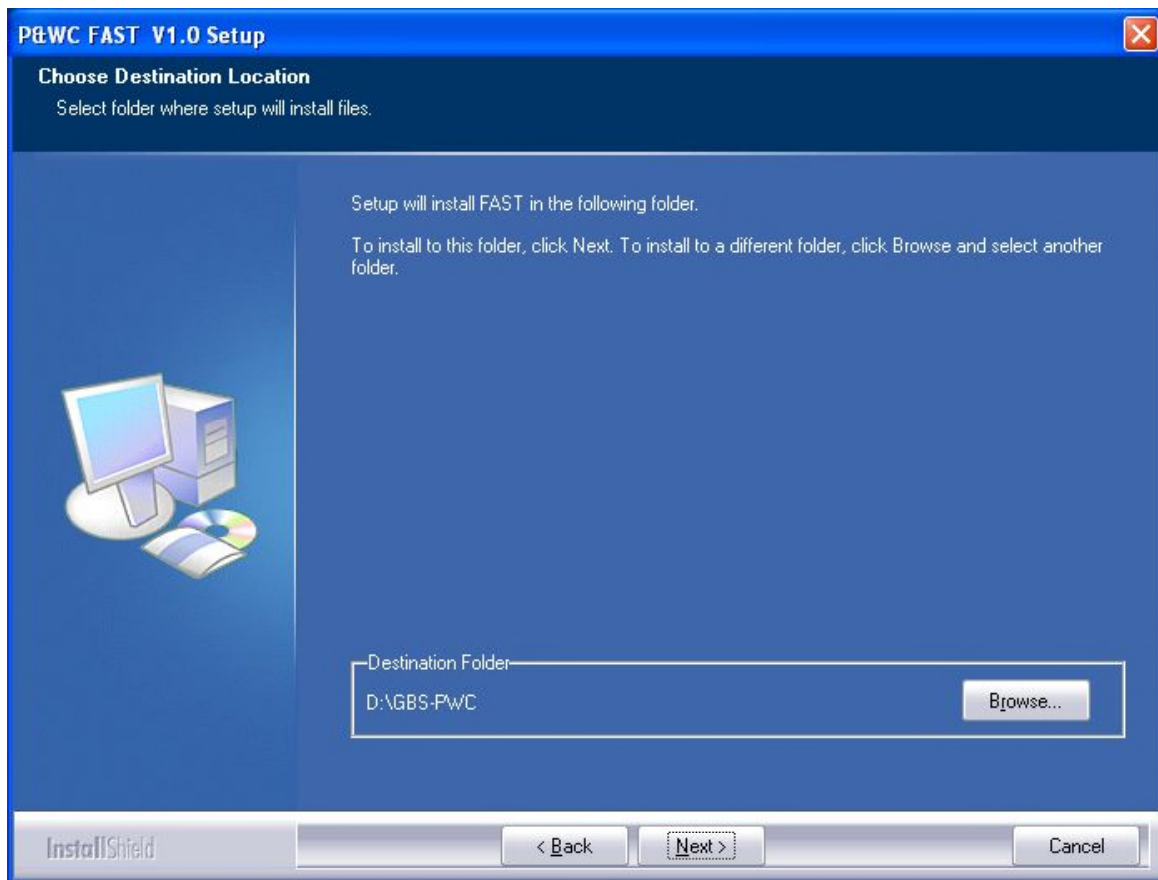
Automatic Updates

When the program starts, it verifies if there is a new version available. If an update exists, the program will indicate that an update is available and to perform [Monitor](#)

[TM Auto-Update](#) in the Help Menu .

Message:**Software update available – Perform Monitor TM Auto-Update in Help Menu**

Whenever MonitorTM synchronizes with the Web and an update is available, the user will be prompted to download the new version. If the user selects to download the new version, it will be installed at next program startup with user required to follow on screen instructions

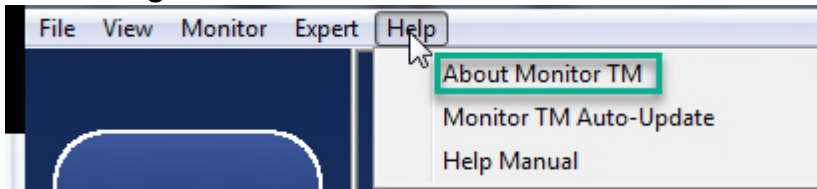


A shortcut will be installed on the desktop

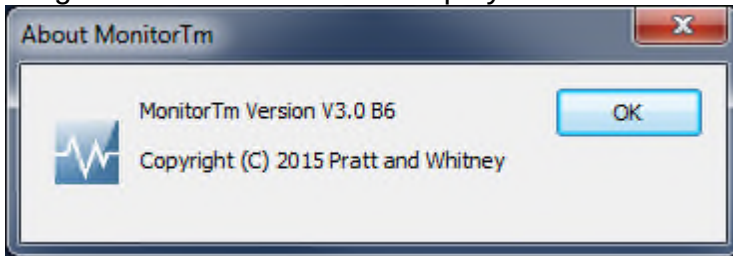


1.7 Program Version

Accessing:

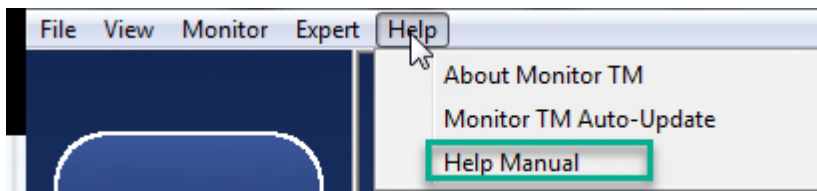


Program version information displayed



1.8 Printing a hard copy of manual

Accessing:



Upon selection, the PDF Help Manual will be displayed

Adobe Acrobat is required. See [Software Requirements](#)¹¹ for details

MonitorTm Help Manual

Part



Accessing MonitorTm Functions

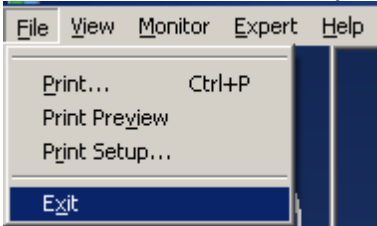
2 Accessing MonitorTm Functions

2.1 Starting and Closing the Program

To start the MonitorTm program, double click on the MonitorTm desktop icon



To close the MonitorTm program use  or

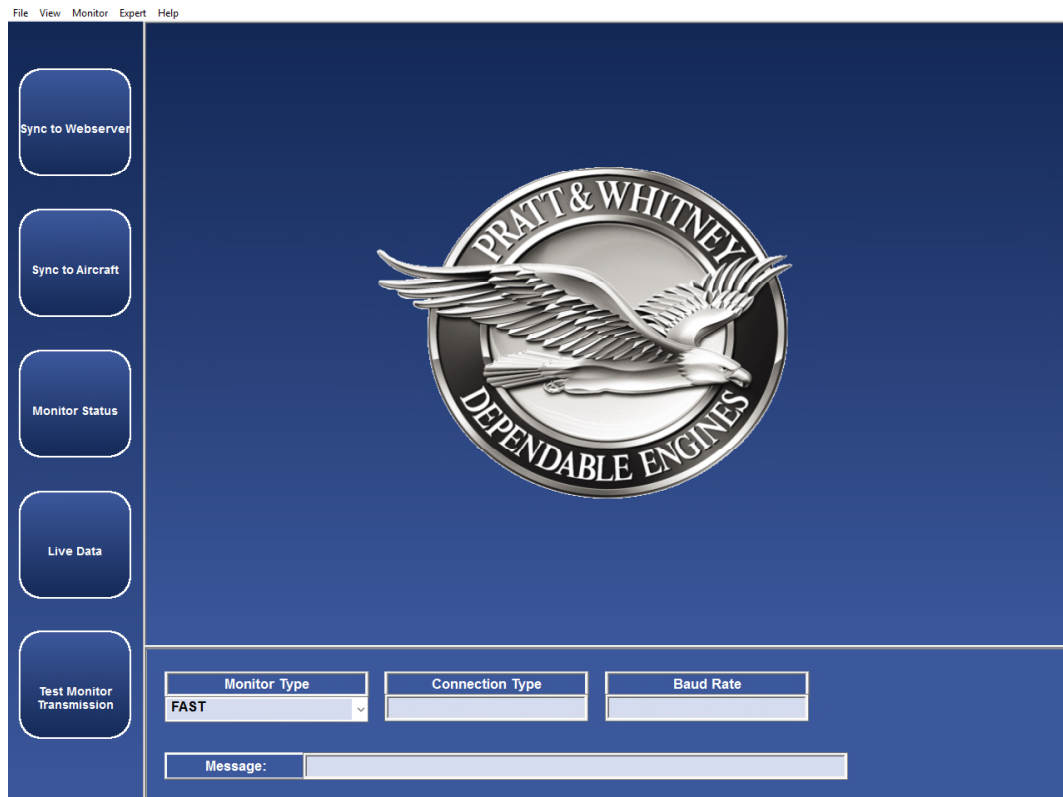


2.2 Main Program View

Functions in the MonitorTm Main Program View can be accessed in two different ways

The Side Bar: Large buttons with the most commonly used functions

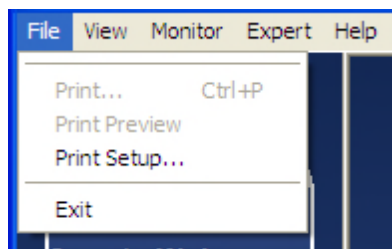
[Sync to Webserver](#)⁵⁸, [Sync To Aircraft](#)²⁰, [Monitor Status](#)²⁵, [Live Data](#)³⁴,
[Test Monitor Transmission](#)²⁸.



The Menu Bars: contain side bar functions as well as other functions

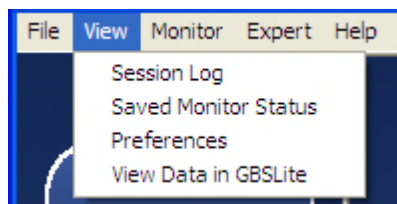
The File Menu has the following functions available:

[Print](#)^[71], [Print Preview](#)^[71], [Print Setup](#)^[71], [Exit](#)^[15]



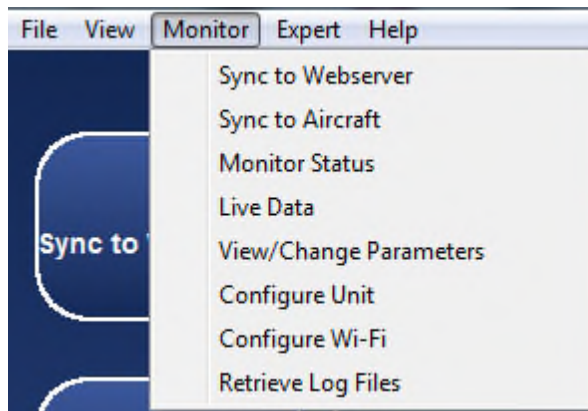
The View Menu has the following functions available:

[Session Log](#)^[72], [Saved Monitor Status](#)^[73], [Preferences](#)^[70], [View Data in GBSLite](#)^[66]



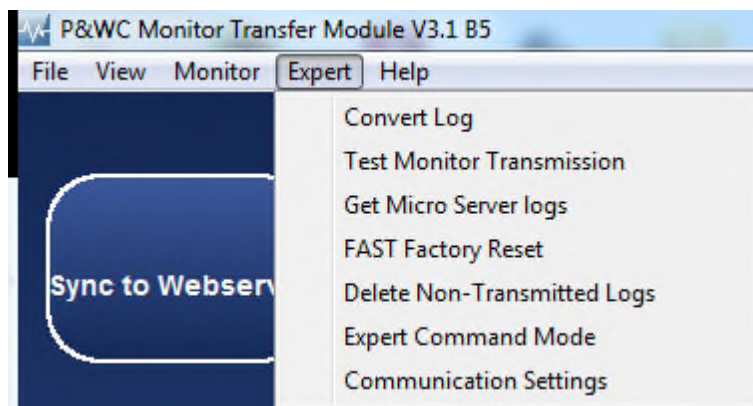
The Monitor Menu has the following functions available:

[Sync to Webserver](#)^[58], [Sync to Aircraft](#)^[20], [Monitor Status](#)^[25], [Live Data](#)^[34],
[View/Change Parameters](#)^[40], [Configure Unit](#)^[23], [Retrieve Log Files](#)^[20]



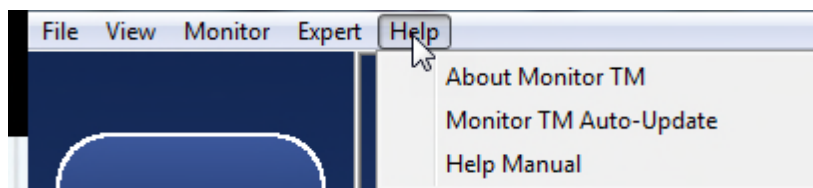
The Expert Menu has the following functions available:

[Communication Settings](#)^[36], [Expert Command Mode](#)^[47], [Convert Log](#)^[61],
[Test Monitor Transmission](#)^[28], [Get Micro Server Logs](#)^[49], [FAST Factory Reset](#)^[49]

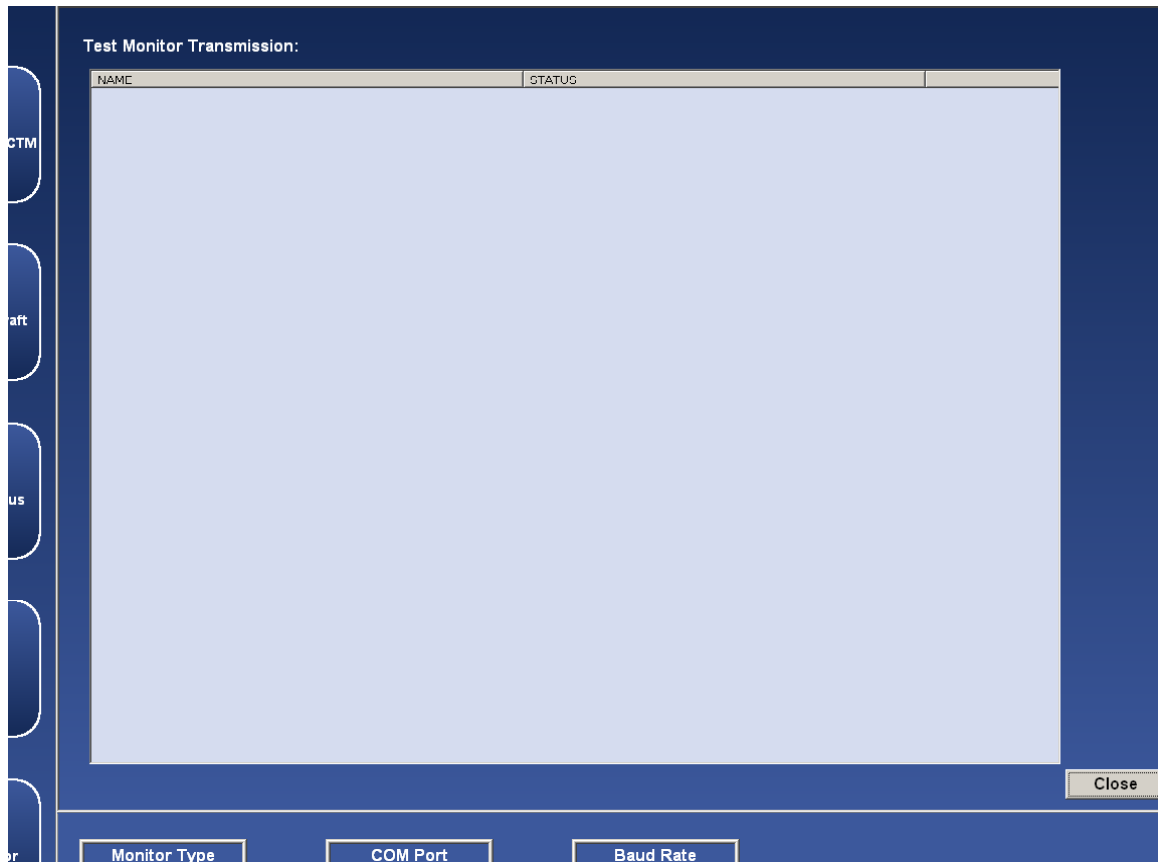


The Help Menu has the following functions available:

[About Monitor](#)^[13], [Monitor TM Auto-Update](#)^[68], [Help Manual](#)^[13]

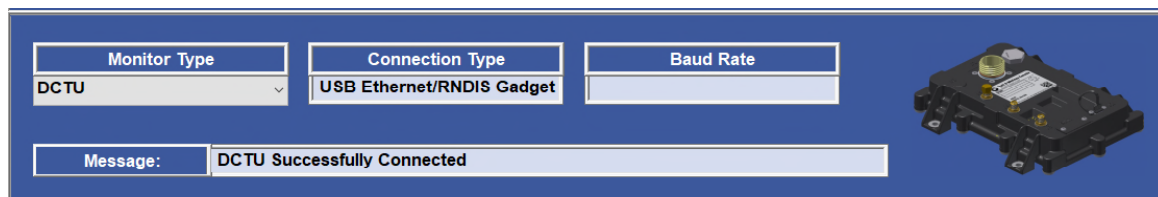


Functions are always performed in the main area

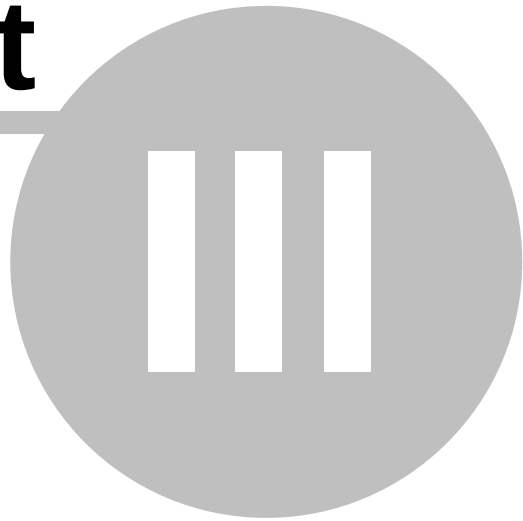


Communication settings and status messages are always displayed in the lower area

When connected to the monitor, a photo of the monitor is displayed



Part

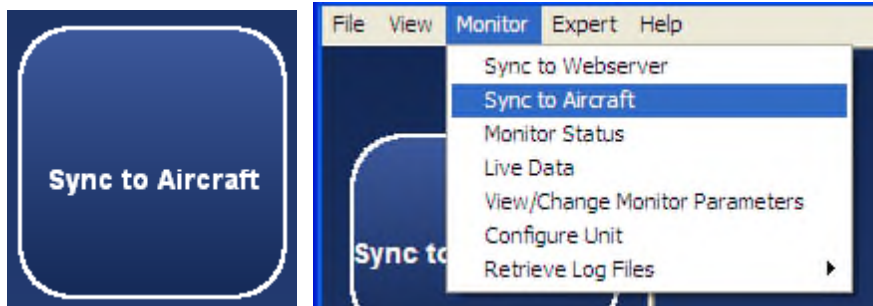


Communicating with the Monitor

3 Communicating with the Monitor

3.1 Sync to Aircraft Function

Accessing:



The Sync to Aircraft function is used to download log files from the monitor to the pc and to upload configuration files from the pc to the monitor

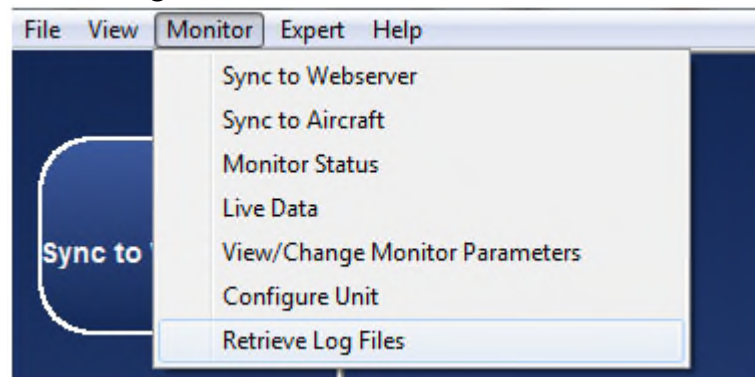
This function automatically performs the following 2 functions

1. [Retrieve Log Files Function](#) ²⁰
2. [Configure Unit Function](#) ²³

Refer to individual function descriptions for further details

3.2 Retrieve Log Files Function

Accessing:



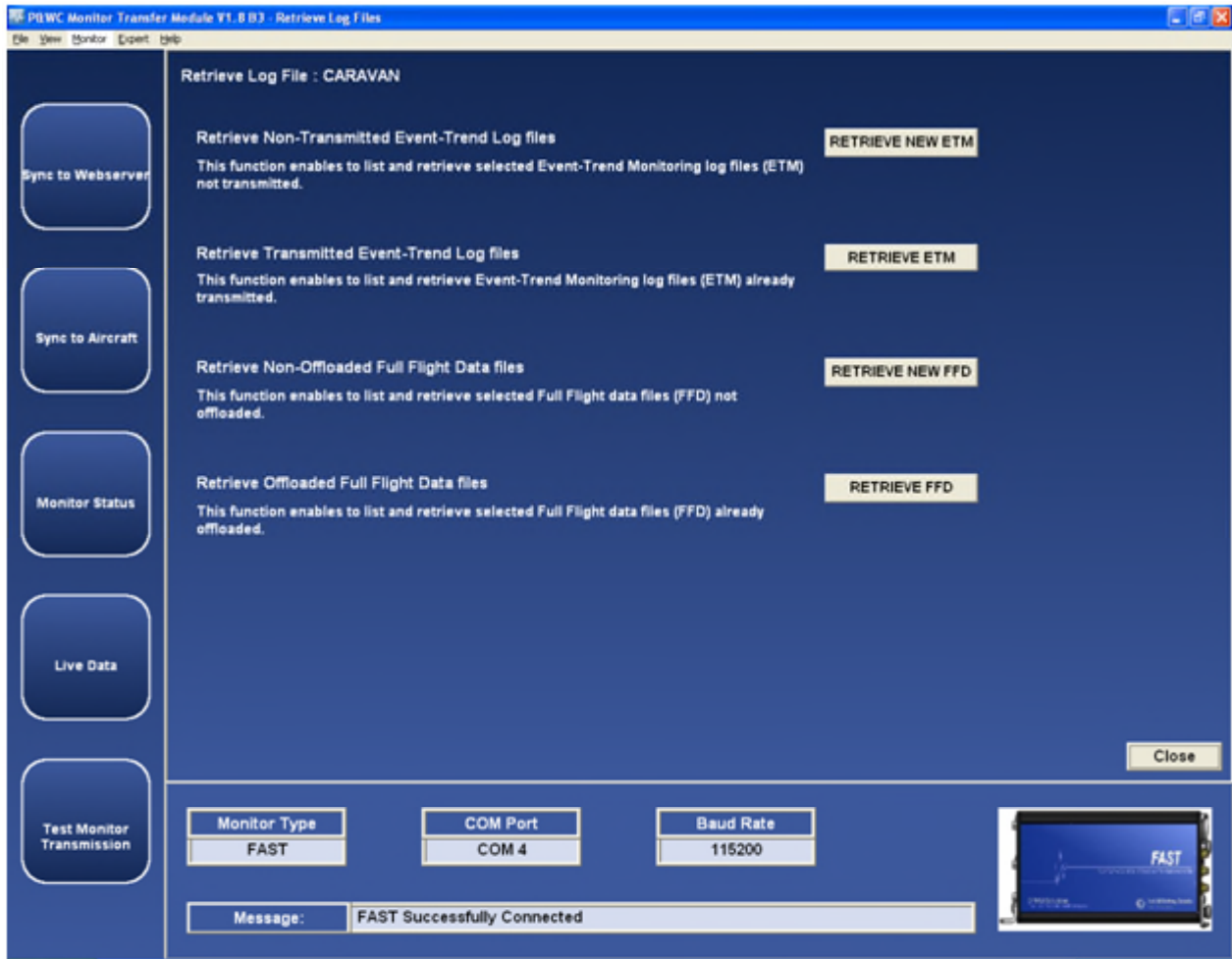
This function retrieves log files from the monitor for the purpose of analyzing the data locally on the computer or to transfer data to the P&WC Web server.

The files to be retrieved can be selected by the user and download time is indicated. The column header check box can be used to select all log files.

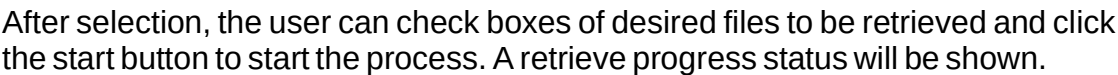
When the estimated retrieval time is less than a configurable limit, all files will be retrieved without requiring user selection. Refer to [Changing MonitorTm Preferences](#) ⁷⁰ for details

By default, retrieving logs from the monitor does not modify their transmitted status in the monitor (i.e. the monitor will still upload them to the web via GSM cellular). Refer to [Changing MonitorTm Preferences](#)⁷⁰ for details

For the Caravan application and all FAST serial number 45xxxx, the user can either retrieve transmitted or not transmitted log files for ETM and Full Flight data files. See the screenshot below:



For other applications, the user can either retrieve transmitted or non transmitted log files.

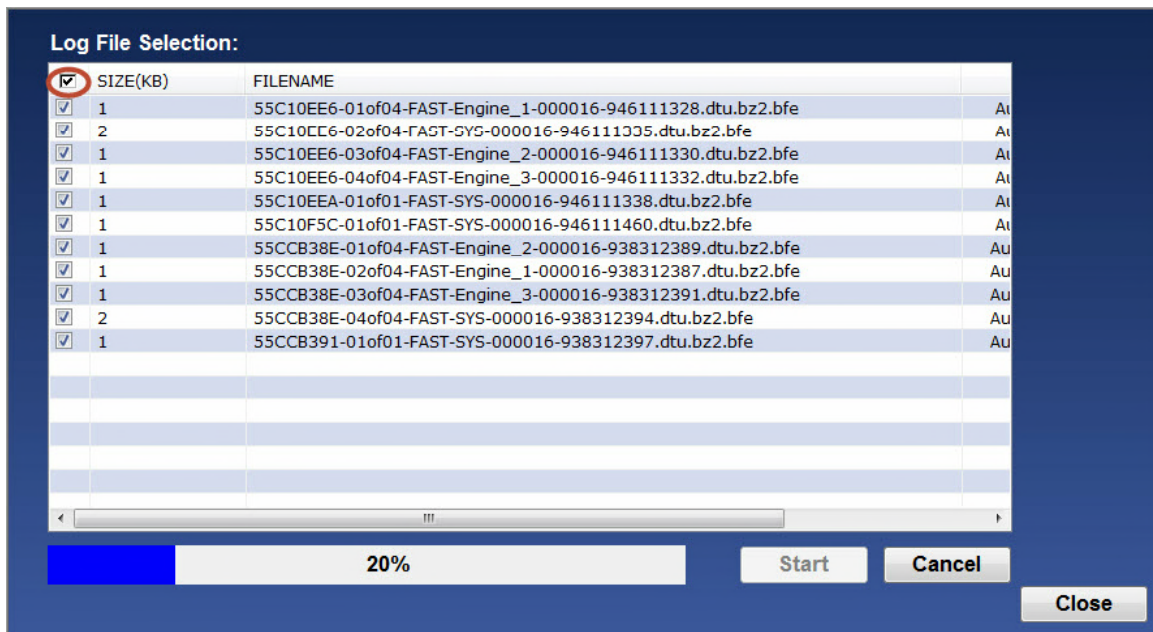


The export control classification with respect to this document is ECL: NSR, P-ECCN: 9E991.

For FAST system containing Micro Server Software version 2.9 or higher (refer to PW_VER field in the [Monitor Status Function](#) ⁽²⁵⁾), the download time is reduced when all log files are selected for download.

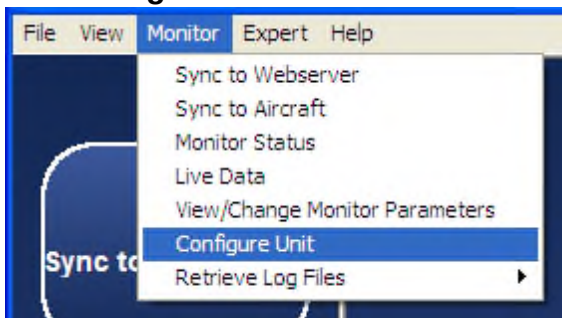
To retrieve all log files, select the checkbox on the top left in the Log File Selection screen. The download process will be displayed in seconds.

Note: MonitorTM download all files packaged in a TAR format using Open Source Software Windows TAR library where distribution is managed by license terms as per link <http://creativecommons.org/licenses/by-sa/3.0/legalcode>



3.3 Configure Unit Function

Accessing:

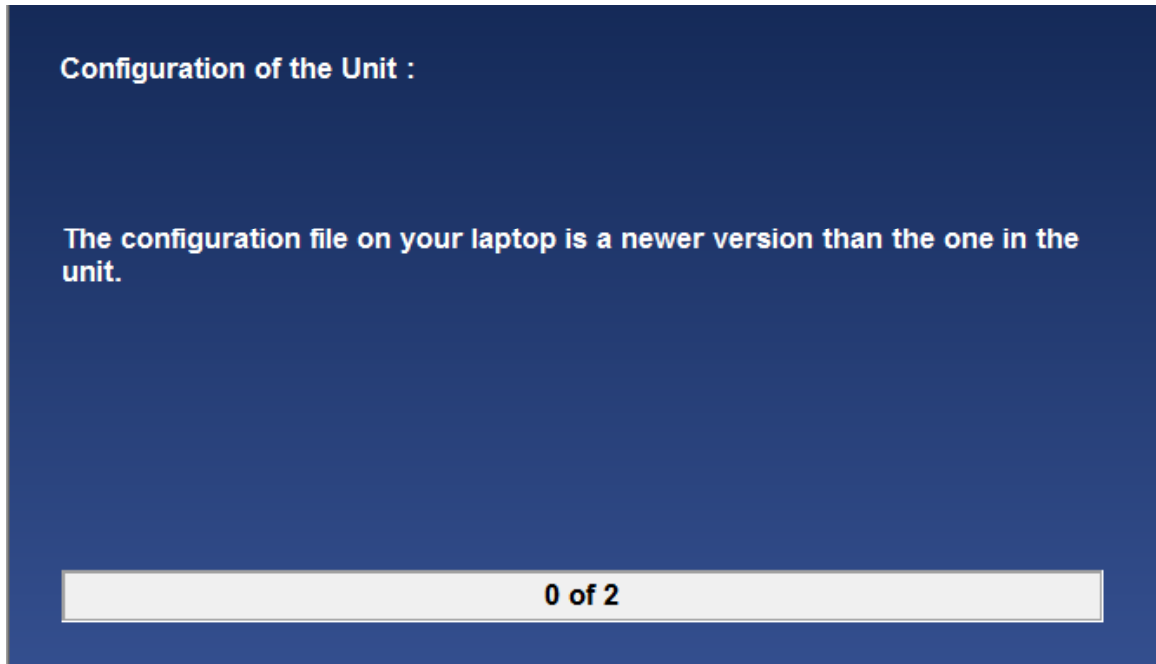


This function is used to reconfigure the monitor settings when they need to be modified

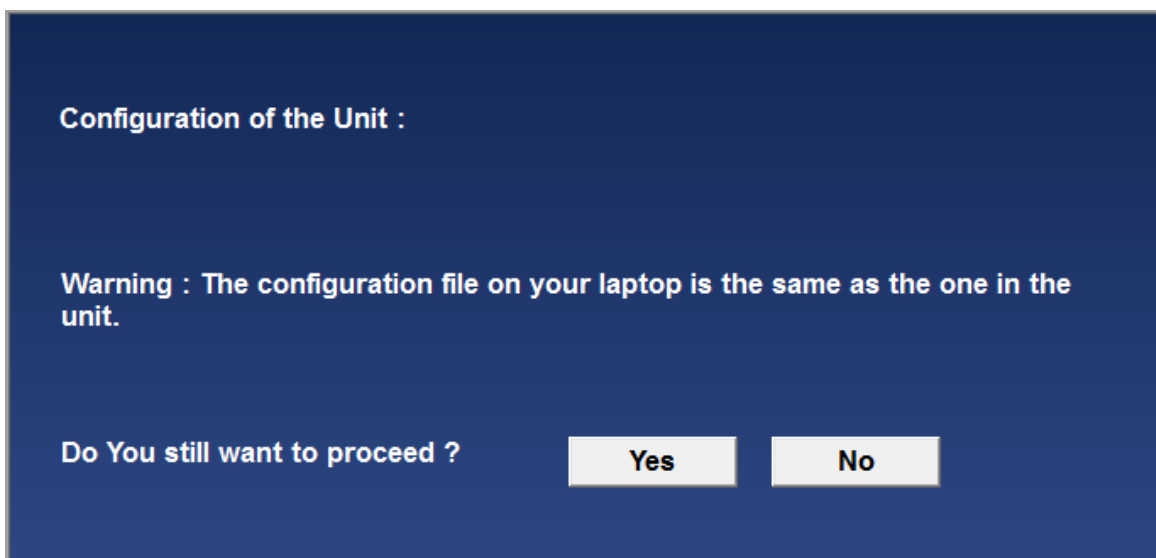
This function uploads configuration files from the computer to the monitor

Configuration file versions in the monitor are compared with configuration file versions on the computer

When the configuration file versions on the computer are more recent than those in the monitor, the program will proceed with the configuration of the monitor



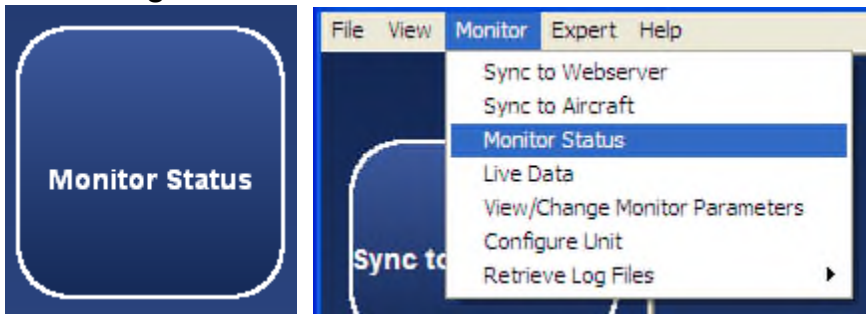
When the configuration file versions on the computer are the same or older than those in the monitor, the user must choose to proceed with the configuration of the monitor.



After the files are uploaded into the monitor, the monitor will reboot. This should take approximately 1 minute.

3.4 Monitor Status Function

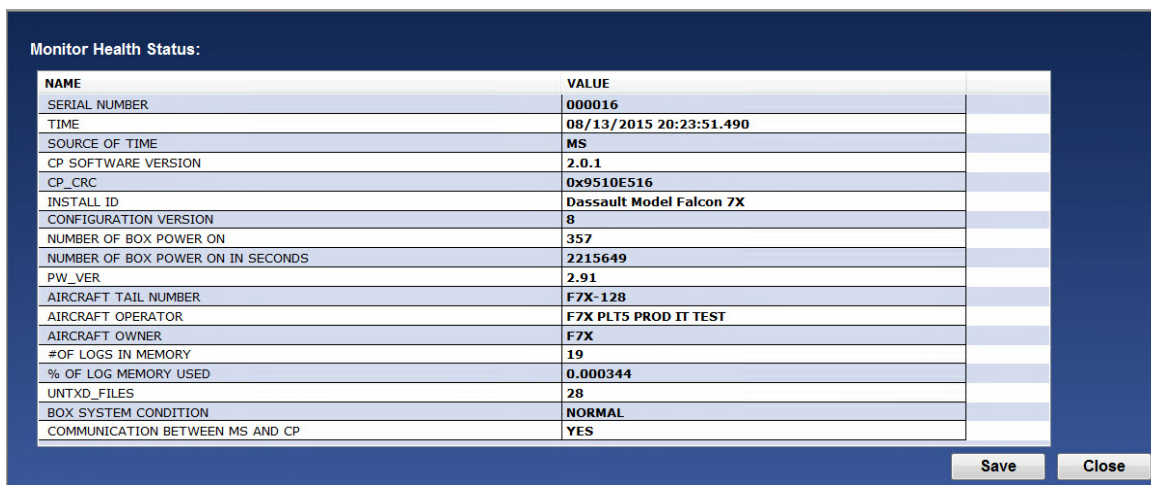
Accessing:



This function provides an overview of the status of the monitor and the status is updated continuously as long as the function is selected.

The status can be saved to an xml file or printed via File>Menu/Print.

The saved status can be viewed via the [View Saved Monitor Status Function](#) ⁷³



The following are the possible status messages that can be seen as well as recommended actions to take

For the FAST Box :

Displayed Name	Description
Serial Number	FAST Box serial number
Time	FAST Box time of day
Source of Time	Source that FAST syncs to for time of day clock
	LOCAL : Time is synchronized to the FAST box
	REMOTE : Time is synchronized to the EEC (Electronic Engine Controller) Note: This option is not available on all applications
	MS : Time is synchronized to the ground server
CP Software	The CP (Control Processor) software version

Version	
CP_CRC	The CP (Control Processor) software CRC (Cyclic Redundancy Check)
Install_ID	Installation ID field of the FAST Box from the loaded configuration
Configuration Version	The loaded configuration version
Number of Box Power On	The total cumulative number of times the box has been powered on
Number of Box Power On In Seconds	The total cumulative number of seconds the box has been powered on
PW_VER	Micro server software version
Aircraft Tail Number	The aircraft tail number field stored in the configuration
Aircraft Operator	The aircraft operator field stored in the configuration
Aircraft Owner	The aircraft owner field stored in the configuration
# of Logs in Memory	The total number of logs in memory that are pending upload to the Micro-Server Compact Flash
% of Log Memory Used	The percentage of log memory used
UNTXD_FILES	Number of non transmitted files
Box System Condition	The box system condition NORMAL CAUTION FAULT If fault or caution status, please perform the Expert Commands function ^[47] : Recent Faults to obtain a list of the last 10 faults and call P&WC Customer First Center. If the problem persists, download system logs using Retrieve Log Files function ^[20]
Communication Between MS and CP	Indicates if communication between the Micro-Server processor and Control processor is running YES : Communication between Micro-Server Processor and Control Processor is running NO : not necessarily a problem and can occur during a box power up - Try closing the function, wait 2 minutes; and then retry the Monitor Status function - If NO still displayed, call P&WC Customer First Center

For the DCTU :

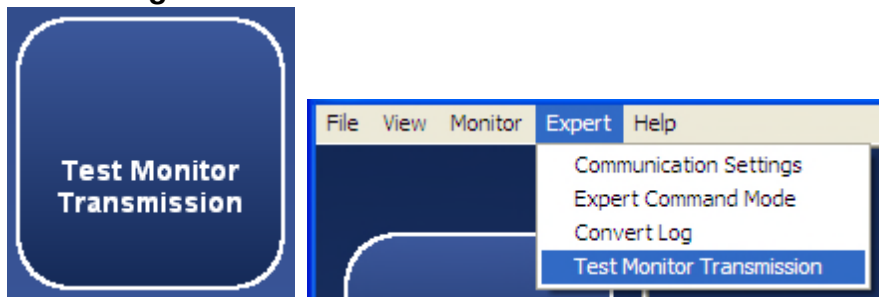
Displayed Name	Description
Serial Number	DCTU Box serial number
MFG Date	Date the DCTU was manufactured in the following format: MM/DD/YYYY
MFG Revision	Description of the revision of the hardware

Displayed Name	Description
Last Repair	Date the DCTU was last repaired in the following format: MM/DD/YYYY
PW Version	Version of the software package that was installed in the DCTU.
MFAST-W-368-1 Version	Version of the EPECS interface software that must be controlled and not updated over the air.
MFAST-W-368-1MD5	32 character md5 sum of the EPECS interface software that must be controlled and not updated over the air.
Date Time	Date/Time when the monitor_status command was issued. Current date/time in the following format: MM/DD/YY HH:MM:SS tt UTC where tt = AM or PM
Config Version	Version of the configuration file that is currently loaded for the RTD recording process.
Config Status	Status of the configuration file that is currently loaded. See Configuration GSE section for expected status format.
XML Version	Version of the xml file that is currently loaded.
XML Status	Status of the xml file that is currently loaded. See Configuration GSE section for expected status format.
Install ID	User string to identify the specific installation of the box. From the XML configuration file.
Power On Count	Total number of times the system has been powered on.
Current Power On Time (s)	Time in seconds for the current power on.
Total Power On Time(s)	Total time in seconds that the box has been powered across power cycles.
Untransmitted Files	Total number of files that are waiting to be offloaded from the DCTU.
Memory Used	Total percentage of log memory that is used.<###>% [0..100]
Tail Number	The aircraft tail number from the XML configuration file.
Operator	The aircraft operator from the XML configuration file.
Owner	The aircraft owner from the XML configuration file.
Aircraft Style	The aircraft style from the XML configuration file.
Recording Status	Current status of the RTD Recording process. IDLE means no channels are being recorded. RECORDING means one or more channels of data are being recorded.
RF Power	RF Power is Enabled or Disabled
GSM Status	Current status of the cellular connection. Example: "RF Disabled" "Connected (-77dB,'310410',INT/EXT)" "No SIM card (INT/EXT)" "SIM PIN Required (INT/EXT)"

Displayed Name	Description
WIFI Status	Current status of the DCTU internal Access Point (AP) connection Example: "Not Registered (-77dB,INT/EXT)" "Registering (INT/EXT)" "Waiting for IP Conn (-77dB,INT/EXT)" "Unknown"
WIFI AP Status	Current status of the MicroFAST connection ("Station Mode") to a local Access Point (AP). Example: "Not Connected" "(-59dB) WiFi Linksys 192.168.1.198"
VPN Status	Current status of the VPN connection. Example : "Not Connected" "Connected [GSM-Home]" "Connected [WIFI-Wifi Linksys]" "Connected [UNKNOWN-]"
PMIC Version	This is the Software Identification field returned by the PMIC in its Status Response message.
Incognito Mode	Incognito mode status: Example: "Enabled" "Disabled"
EEC Maintenance Mode	EEC Maintenance mode status

3.5 Test Monitor Transmission Function for FAST

Accessing:



This function verifies that the monitor can transmit data to the Web server successfully

Test Monitor Transmission:

NAME	STATUS
SYSTEM CONDITION	PASS
WEIGHT ON WHEELS CONDITION	PASS
ON GROUND TRIGGER	PASS
RECORD DATA TRIGGER	PASS
MICRO SERVER READY	PASS
GSM SIM CARD	PASS
GSM SIGNAL	PASS (-77DB)
VPN CONNECTION	PASS
UPLOAD STATUS	MOVELOGSTOGROUND 00%
TEST MONITOR TRANSMISSION STATUS	INPROGRESS

The following are the possible test status messages that can be seen as well as recommended actions to take

Displayed Name	Possible Values	Description	Recommended Action
System Condition	blank	System Condition verification is not yet complete	
	PASS	System Condition is OK	
	FAIL	System Condition is FAULT and cannot transmit through GSM	Please perform the Expert Commands function ^[47] : Recent Faults to obtain a list of the last 10 faults and call P&WC Customer First Center
Weight On Wheels Condition	blank	Weight on Wheels verification is not yet complete	
	PASS	WOW discrete input is TRUE	
	FAIL	WOW discrete input is FALSE and GSM cannot be enabled	Verify the resistance between J1 (harness connector) pin 15 and pin 2 or 3. At least one of them should be < 100 ohm.
On Ground Trigger	blank	On ground criteria verification is not yet complete	
	PASS	On ground criteria is being met	
	FAIL	On ground criteria is not being met and GSM cannot be enabled	1. Ensure engines are off and wait 2 minutes 2. Repeat Test Monitor transmission. If FAIL remains, perform Live Data Function ^[34] to verify validity of parameters. If any parameters are invalid, correct the problem. 3. Repeat Test Monitor transmission. If FAIL remains, perform Expert Command function ^[47] : show config and save/send to P&WC Customer First Center for review of show config and live data parameter values from

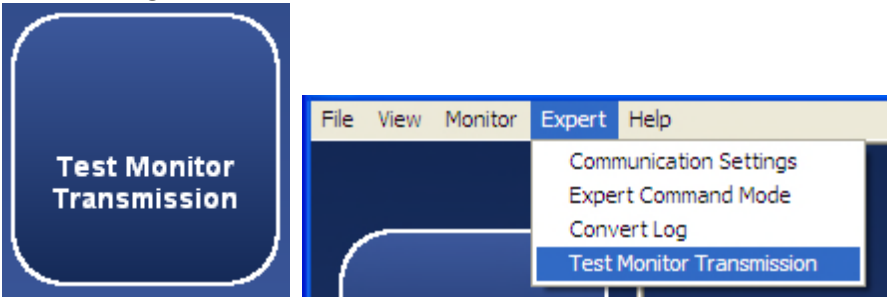
			step 2
Record Data Trigger	<i>blank</i>	Configurable data record triggers verification is not yet complete	
	PASS	Configurable data record triggers are inactive. FAST is not recording data	
	FAIL	Configurable data record triggers are active. FAST cannot upload log data while recording	1. Ensure engines are off and wait 2 minutes 2. Repeat Test Monitor transmission. If FAIL remains, perform Live Data Function^[34] to verify validity of parameters. If any parameters are invalid, correct the problem. 3. Repeat Test Monitor Transmission. If FAIL remains, perform Expert Command function^[47]: show config and save/send to P&WC Customer First Center for review of show config and live data parameter values from step 2
Micro Server Ready	<i>blank</i>	Micro-Server interface verification is not yet complete	
	<i>InProgress</i> ###%	FAST waiting for Micro-Server interface to become ready. This can be displayed for up to 2 minutes	
	PASS	Micro-Server interface is ready for use	
	FAIL	Micro-Server interface is not ready for use	Repeat test one more time. If the test fails again, perform Expert Command function ^[47] : Micro-Server Status and contact P&WC for support
GSM Sim Card	<i>blank</i>	GSM SIM card verification is not yet complete	
	<i>InProgress</i> ###%	FAST waiting to detect and read the SIM card. This can be displayed for up to 3 minutes	
	PASS	SIM card is detected and card ID detected	

	FAIL	FAST not able to read the SIM card ID	1. Verify that the SIM card is installed properly, cycle box power 2. Repeat Test Monitor Transmission function. If FAIL remains, remove and re-insert the SIM card, cycle box power. 3. Repeat Test Monitor Transmission function. If FAIL remains, remove SIM card and test in a cellular phone of the same network provider (i.e. AT&T, Rogers, or unlocked, ...) 4. Repeat Test Monitor Transmission function. If FAIL remains, contact P&WC Customer First Center for further support
GSM Signal	<i>blank</i>	GSM signal strength verification is not yet complete	
	<i>InProgress</i> ###%	FAST waiting to connect to a GSM network. This can be displayed for up to 5 minutes	
	PASS - ###dB	FAST can connect to GSM network. Signal Strength displayed (dB)	Preferred to see -95db or greater (i.e. -60 is good). Try relocating aircraft if signal strength is poor (i.e. out of hangar, or different airport) and repeat Test Monitor Transmission function.
	FAIL	FAST was unable to connect to a GSM network within the expected time	1. Verify the account is active with network provider (i.e. AT&T, Rogers, etc..) 2. Repeat Test Monitor Transmission function. If FAIL remains verify you are in cellular range by removing SIM card and testing in a cellular phone of the same network provider. (need to cycle box power after reinserting in FAST box) 3. When in cellular range, repeat Test Monitor Transmission function, verify antenna is connected to FAST box (GSM connector) 4. When antenna is connected, repeat Test Monitor Transmission function. If FAIL remains, contact P&WC Customer First Center for further support
VPN Connection	<i>blank</i>	VPN Connection verification is not yet complete	
	<i>InProgress</i> ###%	FAST waiting to establish VPN connection to ground server. This can be displayed for up to 5 minutes	
	PASS	FAST established VPN connection to the ground	

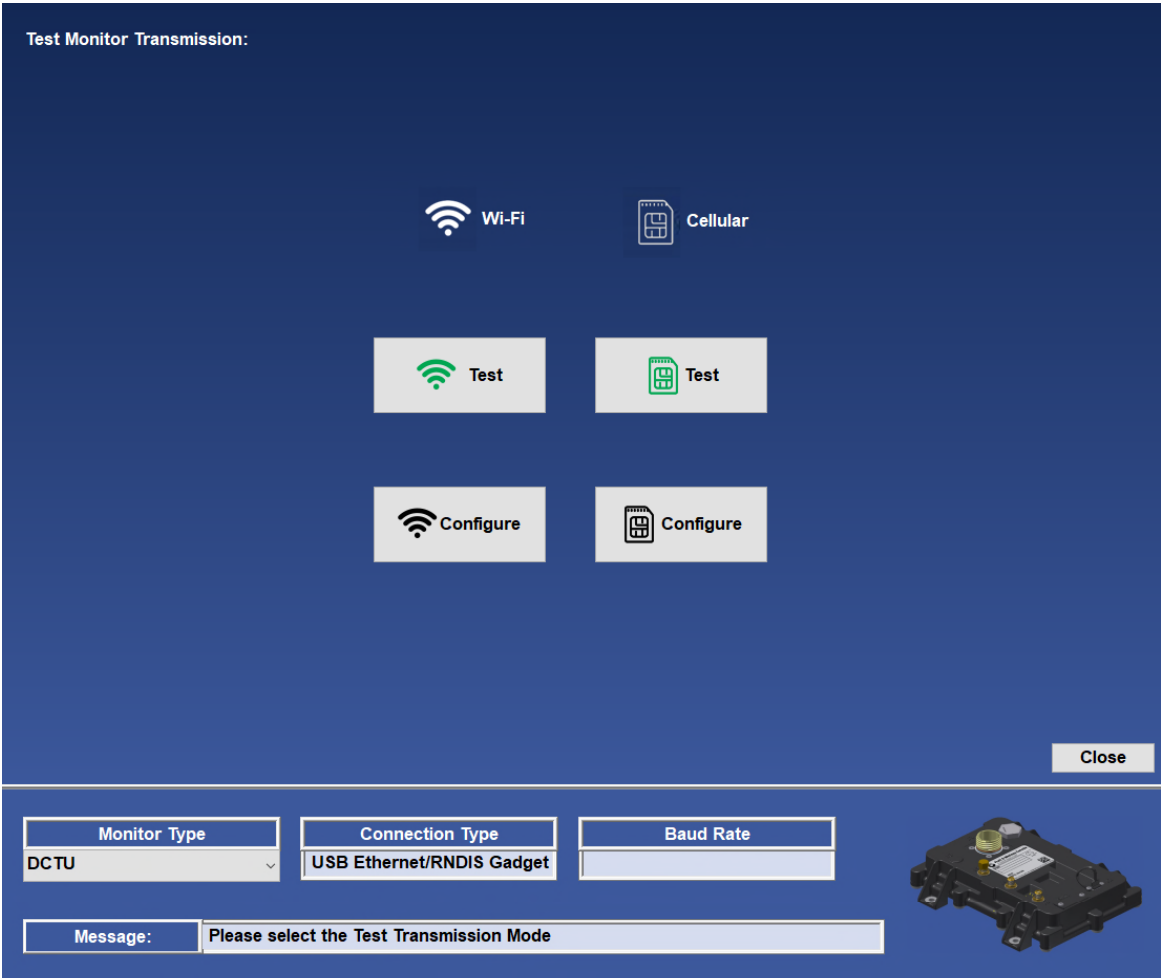
Upload Status	FAIL	FAST unable to establish VPN connection to ground server within expected time	server 1. Verify that a data plan is activated with the cellular network provider. If no data plan, activate data plan and repeat Test Monitor Transmission function. 2. If FAIL remains, verify GSM using GSM Signal Strength indication above (i.e. PASS -###dB). If GSM Signal Strength is too low, try to correct the problem and repeat Test Monitor Transmission function. 3. If FAIL remains, contact P&WC Customer First Center for further support
	blank	Upload Status verification is not yet complete	
	MoveLogsToMS	FAST is moving log data from control processor to Micro-Server	If this message is seen for more than 5 minutes: 1. Perform Expert Command function ^[47] : Verbosity Normal to see messages 2. If messages beginning with "Upload" seen, wait for completion. Perform Expert Command function ^[47] : Verbosity Off and repeat Test Monitor Transmission function. 3. If this status is seen for more than 5 minutes again, or if no messages beginning with "Upload" seen, contact P&WC Customer First Center for support
	MoveLogsToGround ## %	FAST is moving logs from Micro-Server to Ground via GSM	If number is incrementing, wait for completion If number is not incrementing after a few minutes, contact P&WC Customer First Center for support
Test Monitor Transmission Status	PASS	FAST has moved all log files to ground server and verified	
	This Is The Final Overall Status of the Test Monitor Transmission function		
	Stopped	There has been no test activity since the last power-on	Cycle box power and repeat Test Monitor Transmission Function
	InProgress	running each step to verify log transmission to ground server	
	PASS	Test completed and successfully transmitted data to the ground	
	Fail: <FailReason>	Test stopped because one of the above statuses has failed	

3.6 Test Monitor Transmission Function for DCTU

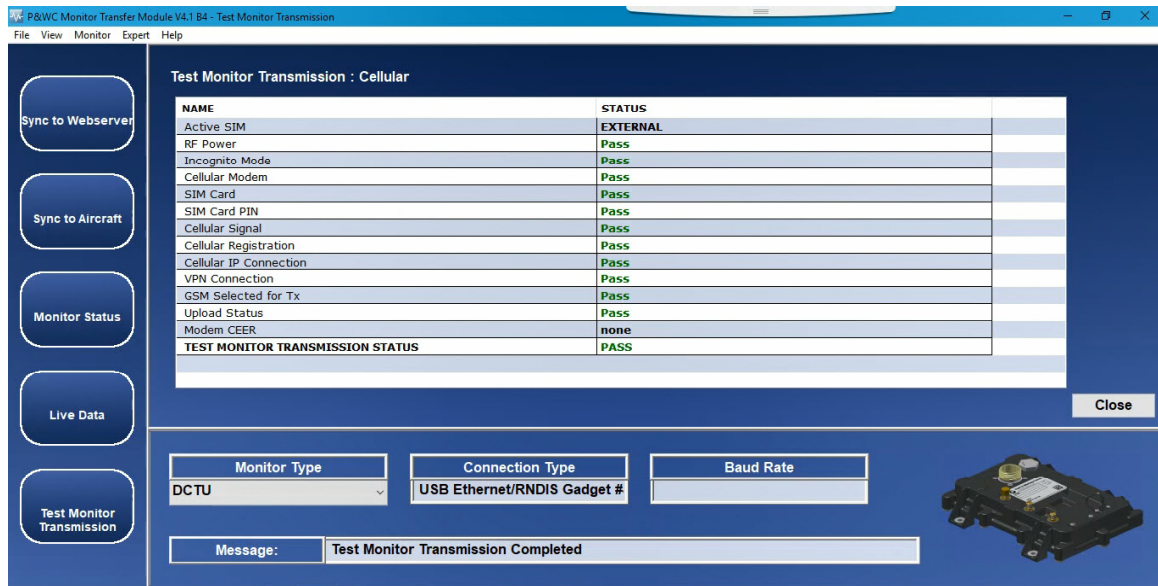
Accessing:



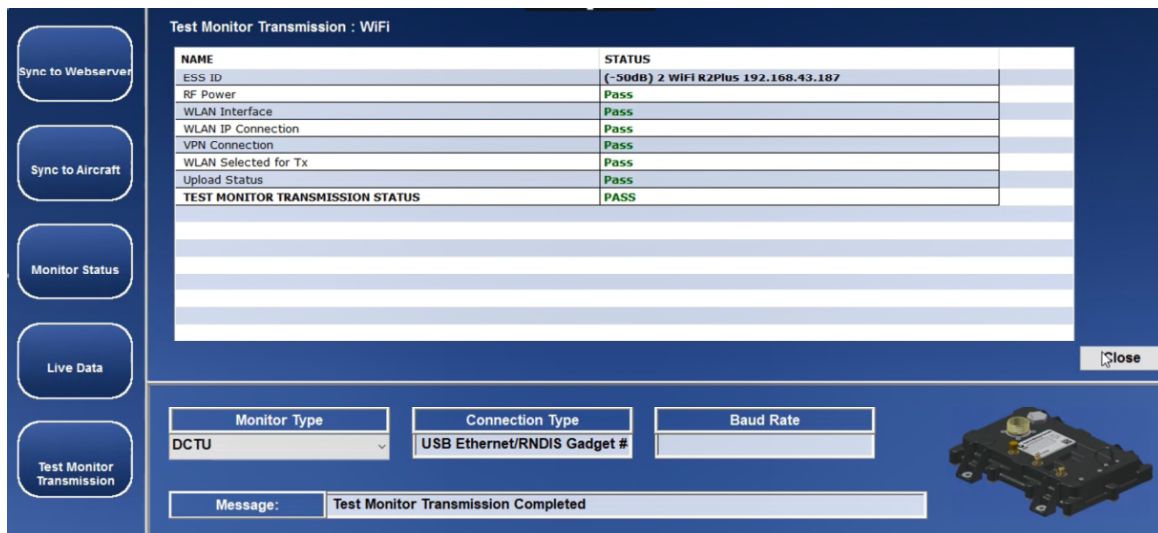
This function verifies that the monitor can transmit data to the Web server successfully by using one of the two options



Function using Cellular

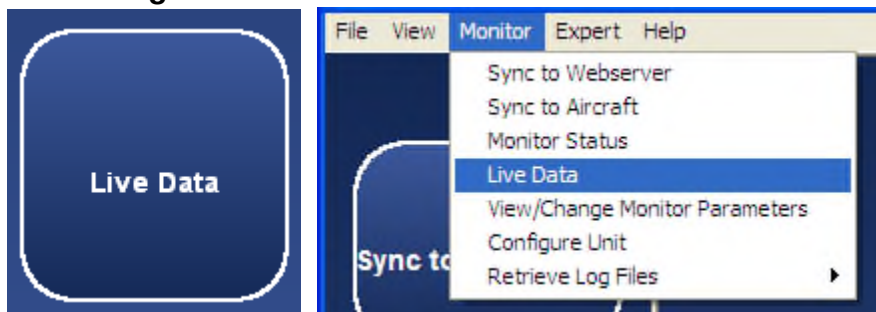


Function using WI-FI



3.7 Live Data Function

Accessing:



The user must select the sensors to display using check boxes. The column header check box can be used to select all sensors.

[illegible]

Any invalid sensors are displayed in red.

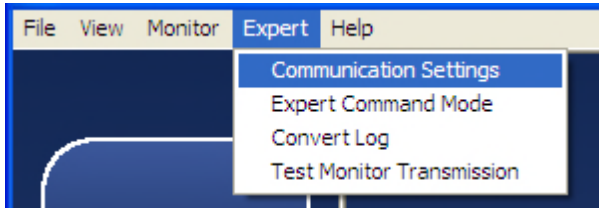
Refer to the Analyzing Data section for analysis

NAME	VALUE	UNIT
Bus	30.2039	VDC
Lithium Battery	2.9993	VDC
Battery	29.6267	VDC
Board Temp	35.4736	C
WOW	1.0000	b

NAME	VALUE	UNIT
PFEN	0.0000	b
FPGA Error	0.0000	b
WLAN WOW Enb	0.0000	b
LSS OC	0.0000	b
WOW	1.0000	b

3.8 Communication Settings Function

3.8.1 Accessing



The Communication Settings Function can be used for detecting and troubleshooting connection settings and contains two options. For troubleshooting guidelines, refer to [Communication Troubleshooting](#) ⁷⁴

3.8.2 Auto-Detection

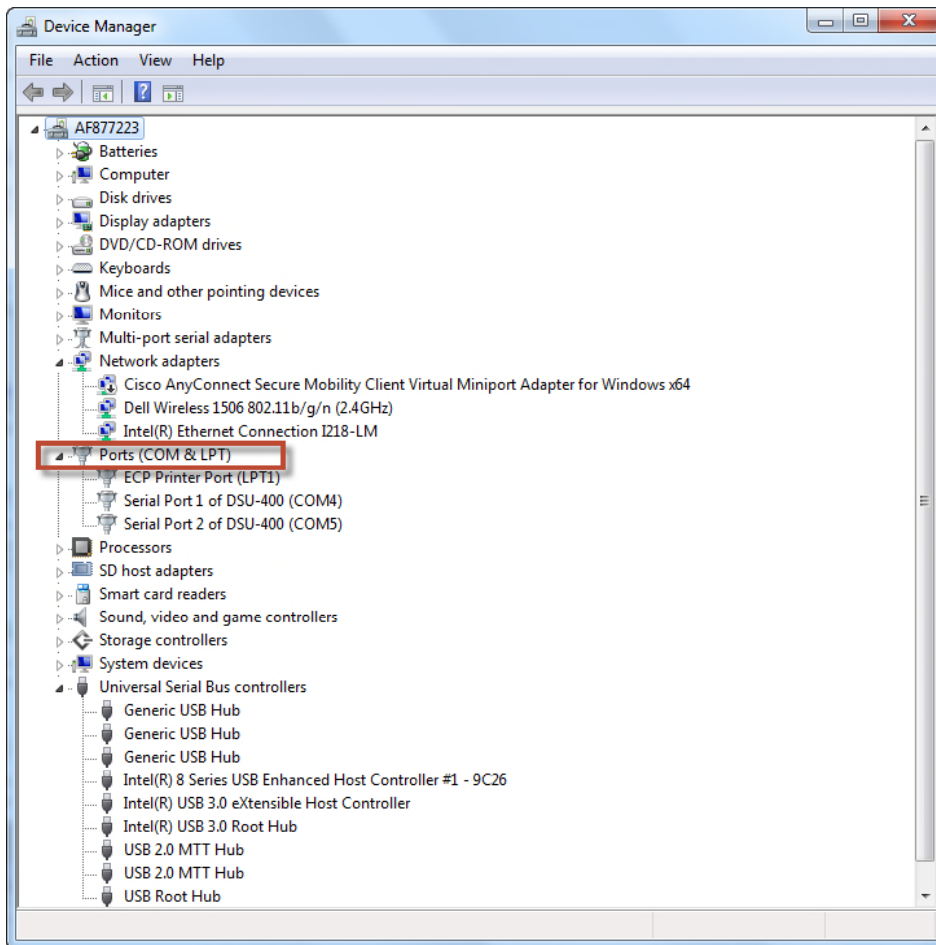
Automatically detects the Connection Type connected to the monitor by screening the available COM ports. Performed automatically prior to each function requiring communication with the Monitor.

Auto Detection:

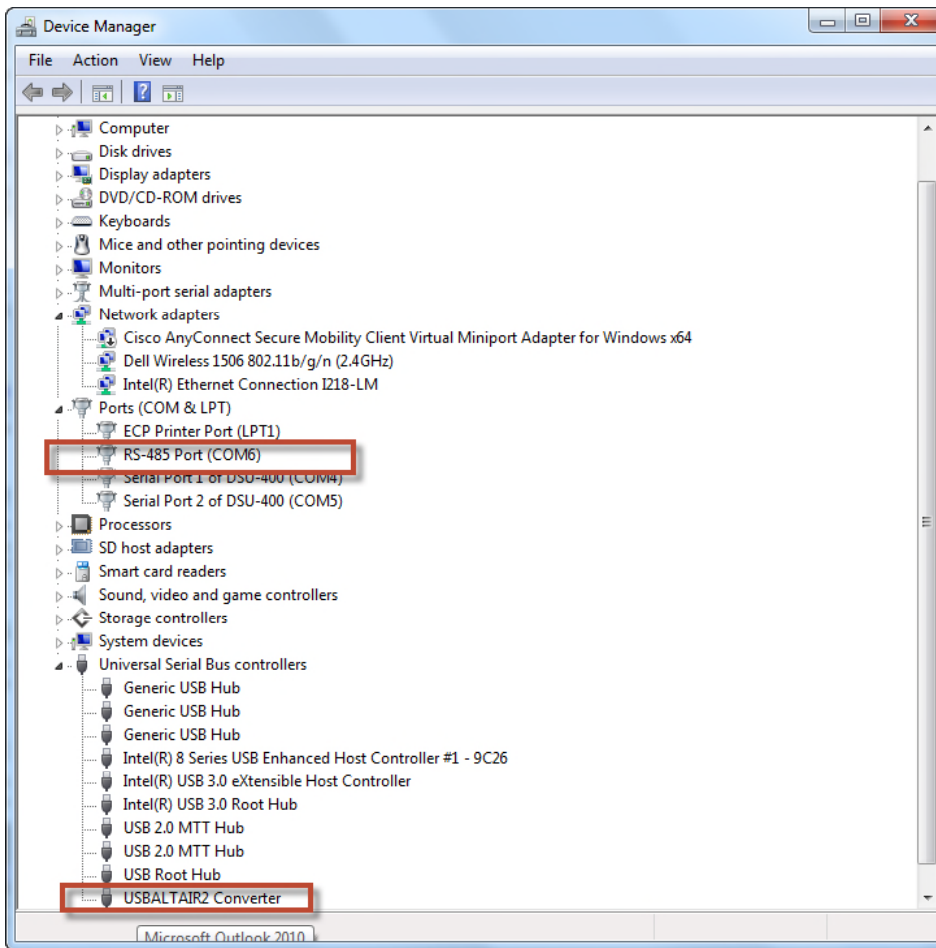
Connect

3.8.3 Manual detection

- Find the com port via Device Manager
- Disconnect FAST USB cable and Expand the Ports menu  Ports (COM & LPT)

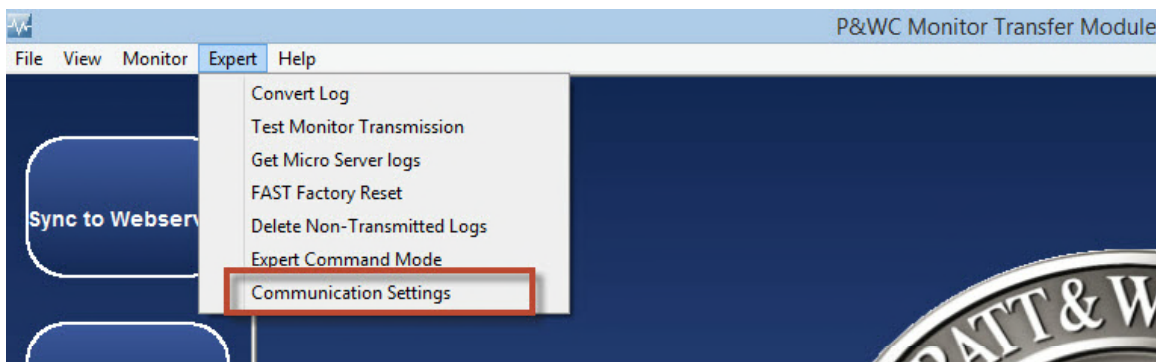


- Connect the FAST USB cable, the Ports will automatically update



Note: If the RS-485 Port (COMX) is not displayed, USB driver is not properly installed, please refer to [FAST USB GSE Cable Driver Installation](#).

- Open Monitor TM 
 - Under Expert , select Communication Settings



- From Connection Type scrolling menu select the com port found previously (i.e : COM6)

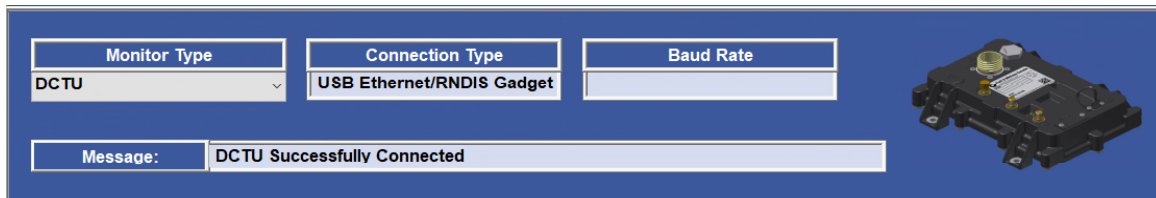
- Click on **Connect**

Communication settings are displayed in the Monitor Type, COM Port and Baud Rate fields.

Communication status is displayed in the Message field

For DCTU from the Monitor Type scrolling menu select "DCTU"

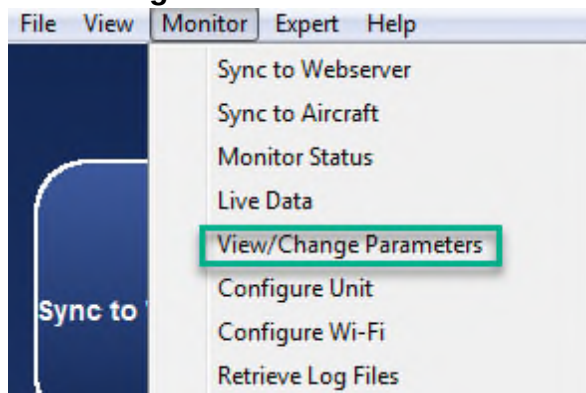
From Connection Type scrolling menu select the "Ethernet/RNDIS"



Communication status is displayed in the "Message" field.

3.9 View/Change Monitor Parameters

Accessing:



The View/Change Parameters function can be used to change parameters in your monitor.

3.9.1 View/Change Monitor Parameters for ATR42/ATR72 application

For ATR42/72 and AW139 applications, the function enables the user to view/change the fast box time and enter the engine serial number information. For ATR42/72 only, the user can also clear the engine serial number the engine serial number is available via the ARINC 429 data.

View/change FAST box time and engine serial number information

View/Change Monitor Parameters - ATR72

FAST Information	Current Value	New Value
Box Date and Time (MM/DD/YYYY HH:MM:SS)	12/16/2011 12:53:50	

Engine Information	Current Value	New Value
Engine 1 Serial Number		
Engine 2 Serial Number		

Clear Engine Serial Numbers Proceed

Write Close

After you enter the new values, select the write button.

Write Close

The new parameters values will be updated in the monitor and the Current Value column will be refreshed. Verify the current values are appropriately refreshed before closing.

View/Change Monitor Parameters - ATR72

FAST Information	Current Value	New Value
Box Date and Time (MM/DD/YYYY HH:MM:SS)	12/16/2011 12:53:50	

Engine Information	Current Value	New Value
Engine 1 Serial Number		
Engine 2 Serial Number		

Clear Engine Serial Numbers Proceed

Write Close

Click "Proceed" to clear the engine serial numbers stored in the FAST box.

Clear Engine Serial Numbers

Proceed

3.9.2 View/Change Monitor Parameters for CARAVAN application

For Caravan application, the function enables the user to view/change the fast box time, engine serial number, flight/engine cycles and creep information. The user can also reset creep faults and CAS Previous Exceed messages.

View/change FAST box time, engine serial number, flight/engine cycles and creep information

View/Change Monitor Parameters - CARAVAN

FAST Information	Current Value	New Value
Box Date and Time (MM/DD/YYYY HH:MM:SS)	12/16/2011 12:59:06	

Engine Information	Current Value	New Value
Engine Serial Number (VAXXXX)	VA1234	
Cumulative Creep CT (%)	0.0000	
Cumulative Creep PT (%)	0.0000	
Cumulative Engine Run Time (hours)	0.0000	
Cumulative Engine Cycles	0	
Cumulative Flight Time (hours)	0.0000	
Cumulative Flight Cycles	0	

Write Close

After you enter the new values, select the write button.

Write Close

The new parameters values will be updated in the monitor and the Current Value column will be refreshed. Verify the current values are appropriately refreshed before closing.

View/Change Monitor Parameters - CARAVAN

FAST Information	Current Value	New Value
Box Date and Time (MM/DD/YYYY HH:MM:SS)	12/16/2011 12:59:06	

Engine Information	Current Value	New Value
Engine Serial Number (VAXXXX)	VA1234	
Cumulative Creep CT (%)	0.0000	
Cumulative Creep PT (%)	0.0000	
Cumulative Engine Run Time (hours)	0.0000	
Cumulative Engine Cycles	0	
Cumulative Flight Time (hours)	0.0000	
Cumulative Flight Cycles	0	

View/Reset creep faults:

Click "View Creep Fault" to display current creep faults:

Engine Creep Information

A list of active creep faults is displayed, including creep fault type and date and time of occurrence. To reset creep faults, click "Reset Creep Fault".

Engine Creep Information

Creep Faults = 1 (of 75 Max), Last Update = 14:16:21 03/18/2013
 01: CREEP_FAULT_RUN at 18:49:43 03/22/2013

Creep faults will be cleared in the monitor and creep fault list refreshed.

Engine Creep Information	
Creep Faults = 0 (of 75 Max), Last Update = 18:50:57 03/22/2013	
	View Creep Fault
	Reset Creep Fault

Click "Reset Prev Exceed" to reset Exceed messages from the crew-alerting system (CAS).

CAS Previous Exceed message	Reset Prev Exceed
-----------------------------	--

3.9.3 View/Change Monitor Parameters for other FAST applications

For other applications, the function enables the user to view the configuration Version and when applicable clear and enter the engine serial number information.

After you have entered the new value, select the "Write:" button.

View/Change Parameters			
Monitor Settings		Current Value	New Value
Configuration file version		11	
Box Date and Time (MM/DD/YYYY HH-MM-SS)		10/19/2017 14:00:47	
Engine Information		Current Value	New Value
Engine 1 Serial Number		123456	
Engine 2 Serial Number		000000	
Clear Engine Serial Numbers		Proceed	
		Write Close	
Monitor Type	COM Port / Ethernet	Baud Rate	
FAST	COM 3	115200	
Message:			

The new value will be written to the monitor and the Current Value column will be updated.

To clear the Engine serial number stored in the FAST Box click "Proceed"

View/Change Parameters

Monitor Settings	Current Value	New Value
Configuration file version	11	
Box Date and Time (MM/DD/YYYY HH:MM:SS)	10/19/2017 13:59:40	

Engine Information	Current Value	New Value
Engine 1 Serial Number		
Engine 2 Serial Number		

Clear Engine Serial Numbers

Proceed

Write Close

Monitor Type: FAST
COM Port / Ethernet: COM 3
Baud Rate: 115200

Message:



3.9.4 View/Change Monitor Parameters for DCTU application

For DCTU applications, the function enables the user to view/change the engine serial number information, the power section serial number, Engine Usage, the Low cycle Fatigue, Creep, Aircraft information, Engine Data plate and LRU's.

View/change parameters for DCTU main page

View/Change Parameters - EPECS

HOME Aircraft Information Engine Data Plate IRU

EPECS Identification		Ch A - Current Value	Ch B - Current Value	Eng SN - New Value
Engine Serial Number (HPXXXX)		RY0801	RY0801	

EPECS Software		CCPU Value	PCPU Value
Hyperstart part number Ch A		CtiSoftwarePN	ProtSoftwarePN
Hyperstart part number Ch B		CtiSoftwarePN	ProtSoftwarePN

EPECS Power Section		Current Value	New Value
Power Section Serial Number (SNXXXXX)			

TRIMS	Ch A - Current Value	Ch A - New Value	Ch B - Current Value	Ch B - New Value
CCPU Beta Ring calibrated PRP	5.0000		5.0000	
PCPU Beta Ring calibrated PRP	0.0000		0.0000	
ITT Trim	4.0000		4.0000	
Synchrophasing Target Delta	0.0000		0.0000	

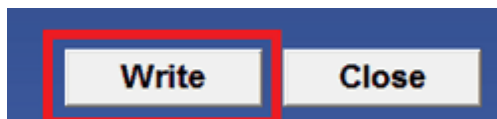
Engine Usage and Historical Data	Ch A - Current Value	Ch A - New Value	Ch B - Current Value	Ch B - New Value
Engine Start Counter	0		0	
Start Abort Counter	0		0	
Flight Counter	0		0	
Engine Shutdown Counter	0		0	
Flight Time	0		0	
Engine Run Time	0		0	
EEC Run Time	0		0	

Low Cycle Fatigue	Ch A - Current Value	Ch A - New Value	Ch B - Current Value	Ch B - New Value
LCF Count Compressor 1st Stage	9		9	
LCF Count Compressor 2nd Stage	0		0	
LCF Count Compressor 3rd Stage	0		0	
LCF Count Compressor 4th Stage	0		0	
LCF Count Impeller	0		0	
LCF Count Compressor Turbine	0		0	
LCF Count Compressor Power Turbine 1	0		0	
LCF Count Compressor Power Turbine 2	88		88	
LCF Count Compressor Rotor Shaft	0		0	

Creep	Ch A - Current Value	Ch A - New Value	Ch B - Current Value	Ch B - New Value
Creep Compressor Turbine Blades	3		3	
Creep Power Turbine 1	3		3	
Creep Power Turbine 2	0		0	

Write Close

After you enter the new values, select the write button.



The new parameters values will be updated in the monitor and the Current Value column will be refreshed. Verify the current values are appropriately refreshed before closing.

View/Change Monitor Parameters - ATR72

FAST Information	Current Value	New Value
Box Date and Time (MM/DD/YYYY HH:MM:SS)	12/16/2011 12:53:50	

Engine Information	Current Value	New Value
Engine 1 Serial Number		
Engine 2 Serial Number		

Clear Engine Serial Numbers Proceed

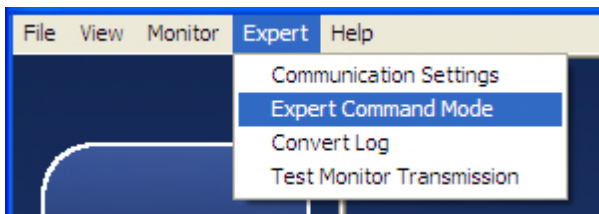
Write Close

Click "Proceed" to clear the engine serial numbers stored in the FAST box.

Clear Engine Serial Numbers Proceed

3.10 Expert Command Mode Function

Accessing:



The Expert Command Mode function can be used to communicate with the monitor by sending commands and displaying monitor responses

The user can select commonly used expert commands from a menu

When the Send button is selected

- The monitor responses are displayed
- The session can be saved and printed



Selecting the Advanced button requires entering a password for advanced troubleshooting and permits typing any command. To obtain the password, contact P&WC Customer First center.



The program then permits writing to the actual command prior to clicking the Send button

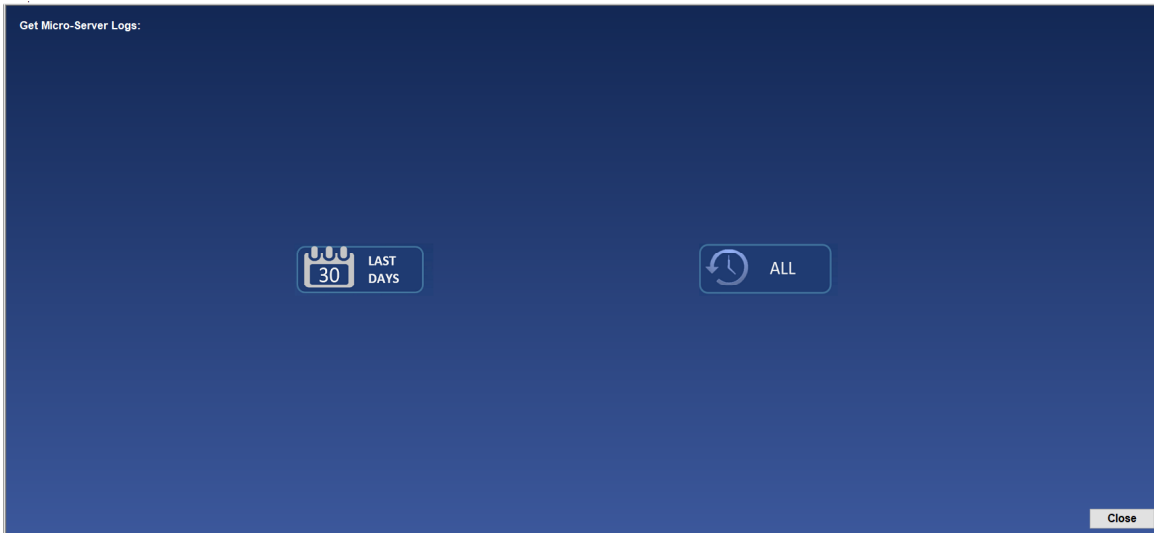


3.11 Get Micro Server Logs

The Get Micro Server Logs function is used for advanced troubleshooting when instructed by P&WC personnel.

The function will automatically download all micro server logs to the users local computer.

The options are displayed as follow :



Once the option selected the log retrieval process starts



To transfer the data to PWC for analysis, the user must perform the [Sync To Webserver](#) function.

3.12 FAST Factory Reset

The FAST Factory Reset function is to be used for advanced troubleshooting when instructed to do so by P&WC personnel.

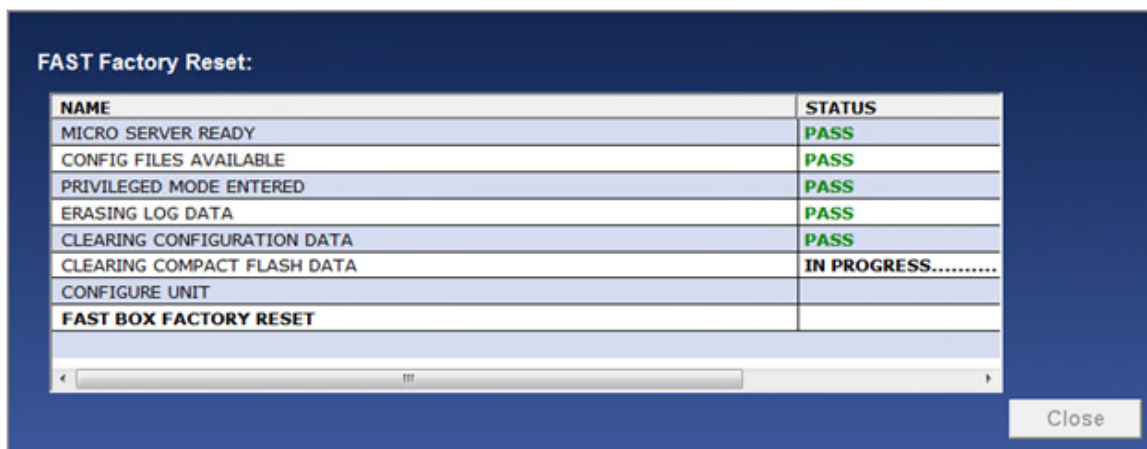
The FAST Factory Reset will delete all non-transmitted data from your FAST box

and configure it to the latest configuration. **Once this function is started, it cannot be cancelled.**

Selecting the FAST Factory Reset button requires entering a password. To obtain the password, contact P&WC Customer First center.

After the password is entered, the program will determine if the configuration files for the FAST box are located on the local computer. If the files are not available, please perform the Sync To Webserver function.

After the password is entered and the configuration files are available on the local laptop, the program will begin the reset function. During the reset it is not possible to navigate, or from the Factory Reset Screen.



At the end of the function, the program will reconfigure the box with the configuration files located on the local computer.

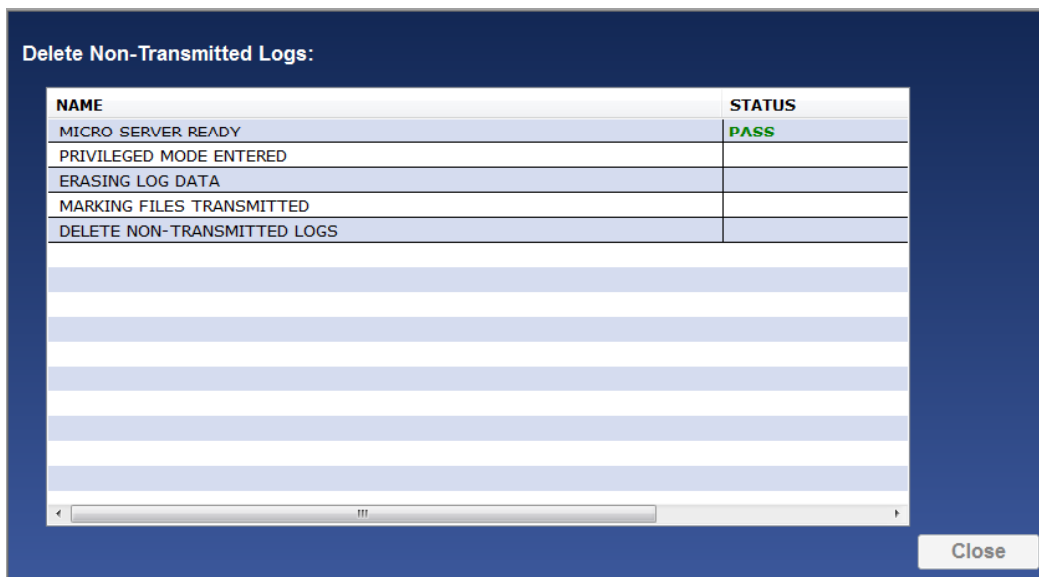


3.13 Delete Non-Transmitted Logs

The Delete Non-Transmitted Logs function may be used when instructed to do so by P&WC personnel. The function is used to erase all non-transmitted data in the FAST box. **Once this function is started, it cannot be cancelled.**

Selecting the Delete Non-Transmitted function requires entering a password. To obtain the password, contact P&WC Customer First center.

After the password is entered, the program will begin the erase function. During the erase function it is not possible to navigate from the Delete Non-Transmitted Logs screen.



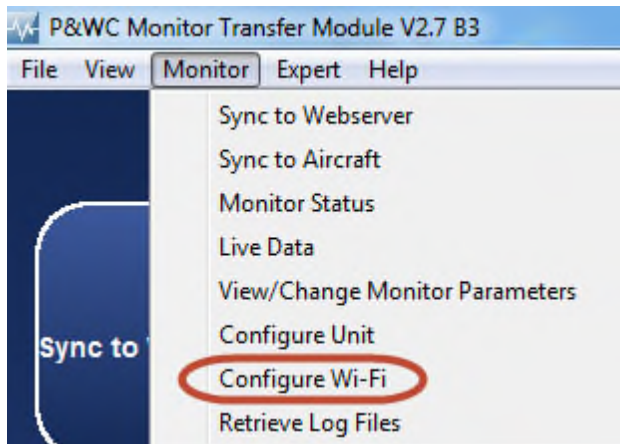
3.14 Wi-Fi Configuration

The FAST monitor revision E or higher is capable to offload data via Wi-Fi connection. The compatibility can be verified by using the [Monitor Status](#)²⁵ function to confirm that the MSSIM version (PW_VER) is 3.0 or higher.

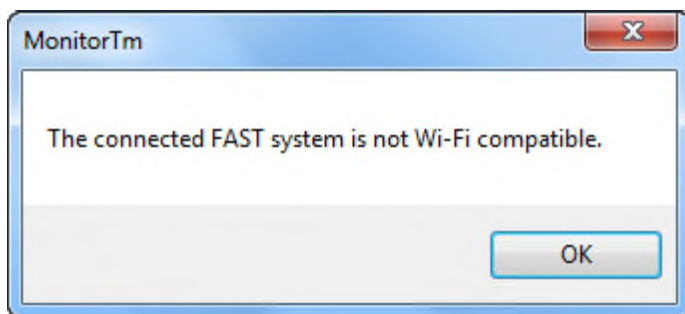
NUMBER OF BOX POWER ON IN SECONDS	134334
PW_VER	3.1
AIRCRAFT TAIL NUMBER	F7Y-128

For FAST to automatically connect to a Wi-Fi network, it must first be configured using MonitorTM and a pc connected via the GSE cable.

Accessing:



If the FAST is not compatible with Wi-Fi, the user will see the following error message.



Once connected the user will see a screen similar to the one below.

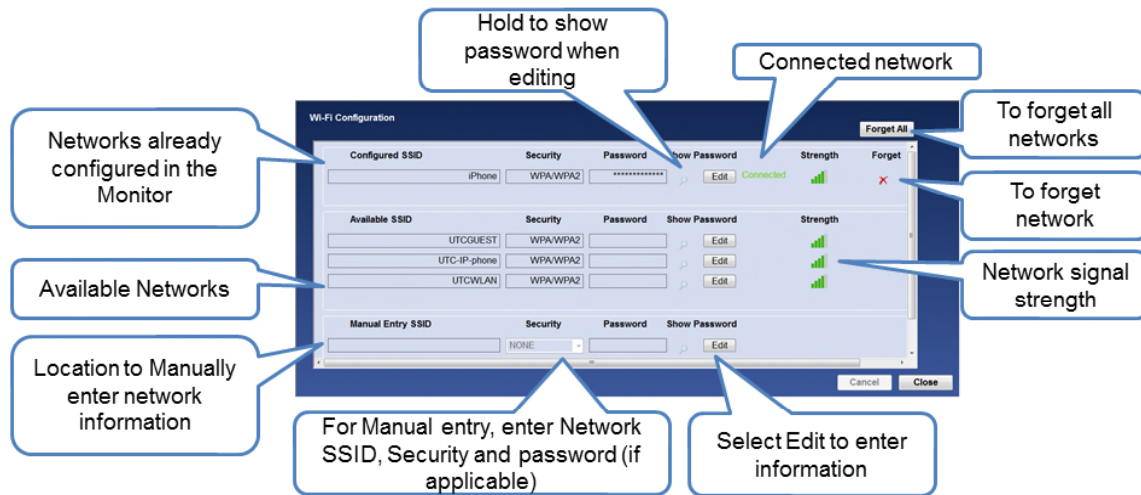
Already configured Wi-Fi networks are displayed with signal strength, if in range. If the FAST is already connected to a network, "Connected" will be displayed next to the appropriate configured network SSID. The user can remove (Forget) individual or all configured networks.

The passwords for already configured network SSIDs are not stored on the local computer. The user may enter a new password. Only when entering a password, the user can select the icon to view what is being entered. Only the FAST stores the network passwords. It is recommended that Forget All networks is done prior to FAST removal. If the FAST is returned to P&WC, the network passwords could be accessed by P&WC personnel.

Available networks are displayed with signal strength. Only available Wi-Fi networks that do not contain special characters or spaces will be available to connect. The user can enter a password for any available networks.

The user can manually enter a Network SSID, security and password. The user can enter one network at a time. SSID cannot contain special characters or spaces. Only networks with no security, WPA or WPA2 security are compatible.

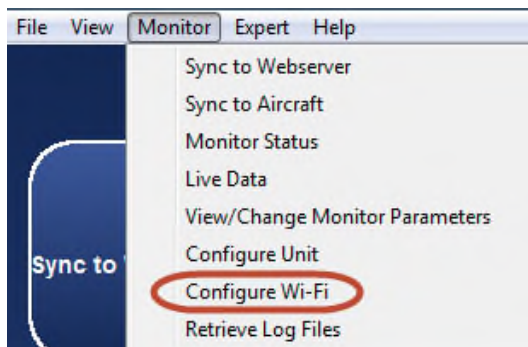
In all cases when the Edit button is selected, the user may cancel.



3.15 WI-FI Configuration for DCTU

For DCTU to automatically connect to a Wi-Fi network, it must first be configured using MonitorTM and a pc connected via the USB (RNDIS/Ethernet Gadget) cable.

Accessing:



Once connected the user will see a screen similar to the one below.

Already configured Wi-Fi networks are displayed with signal strength, if in range. If the DCTU is already connected to a network, "Connected" will be displayed next to the appropriate configured network SSID. The user can remove (Forget) individual or all configured networks.

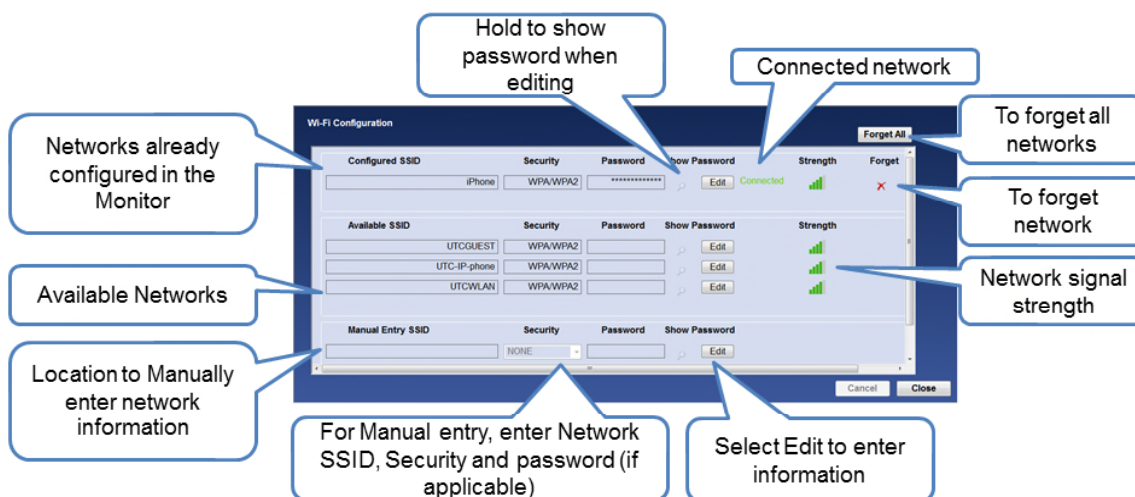
The passwords for already configured network SSIDs are not stored on the local computer. The user may enter a new password. Only when entering a password, the user can select the icon to view what is being entered. Only the FAST stores the network passwords. It is recommended that Forget All networks is done prior to FAST removal. If the FAST is returned to P&WC, the network passwords could be

accessed by P&WC personnel.

Available networks are displayed with signal strength. Only available Wi-Fi networks that do not contain special characters or spaces will be available to connect. The user can enter a password for any available networks.

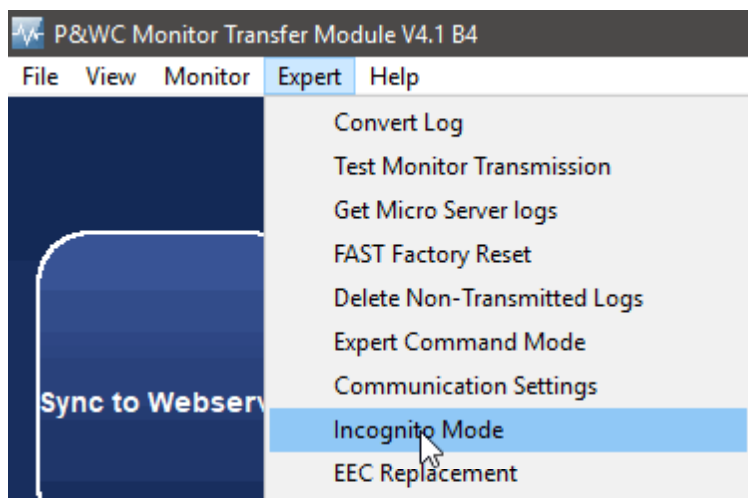
The user can manually enter a Network SSID, security and password. The user can enter one network at a time. SSID cannot contain special characters or spaces. Only networks with no security, WPA or WPA2 security are compatible.

In all cases when the Edit button is selected, the user may cancel.



3.16 DCTU Icoognito mode

Accessing :



The Incognito Mode is to be used as an advance feature to disable the Cellular and

the Wifi connection up to a period of 14 days.

Incognito Mode:

Disable Cellular / Wifi

Days: Manual entry number of days

Hours: Manual entry of the hours

Minutes: Manual entry of the minutes

Comment: Optional information

Disable Cellular and Wifi connection now until the time period specified above. (Maximum allowed is 14 days)

Force Disable **Force Incognito Mode** **Close**

In Days, Hours, Minutes you have the capability to enter the period of time desired to disable DCTU connectivity, the overall period should be less than 14 days.

In Comment section the user can add additional information about the disabling

Incognito Mode:

Disable Cellular / Wifi

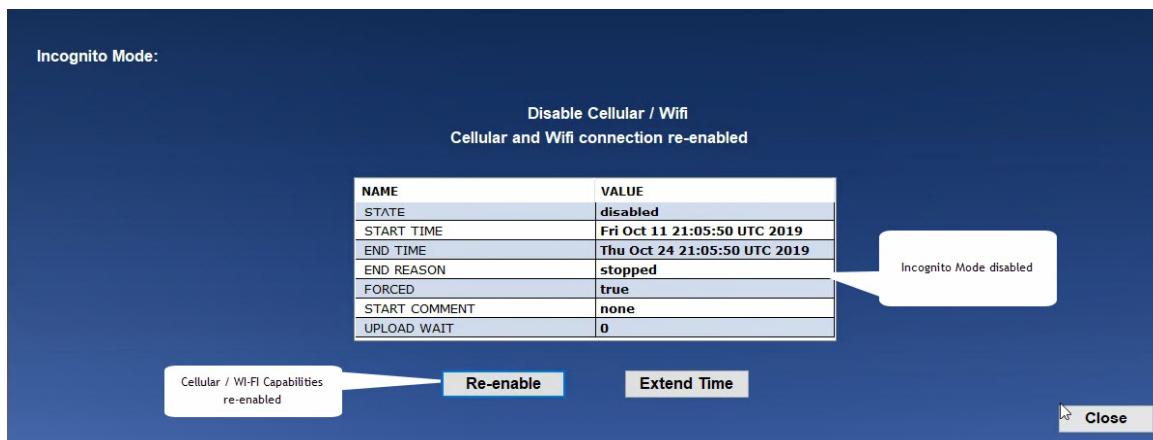
Cellular and Wifi connection already disabled for the period specified below:

NAME	VALUE
STATE	enabled
START TIME	Fri Oct 11 21:05:50 UTC 2019
END TIME	Thu Oct 24 21:05:50 UTC 2019
END REASON	none
FORCED	true
START COMMENT	none
UPLOAD WAIT	0

Re-enable **Extend Time** **Close**

When Incognito Mode is active, the screen shows all the information about when the function was activated, when it will end and any additional comments.

You can either re-enable the DCTU by clicking on the 'Re-enable' button or extend the time of the Incognito Mode by clicking on 'Extend Time'. The Incognito Mode can be exit at anytime by clicking on the 'Close' button.



After re-enabling or extending the time you can click on 'Close' to exit the menu.

Part



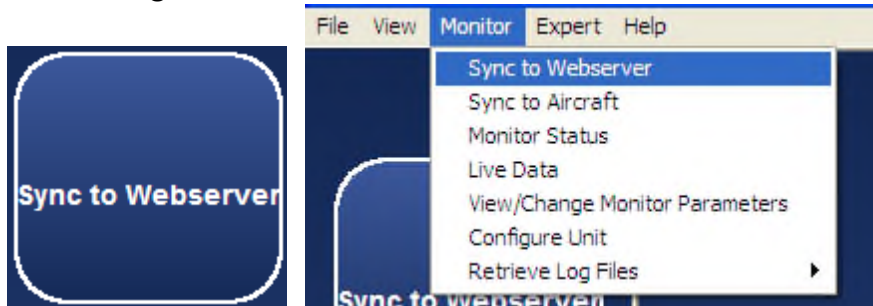
IV

Communicating with Webserver

4 Communicating with Webserver

4.1 Sync to Webserver Function

Accessing:



This function synchronizes the computer with the P&WC Webserver

- uploads log files to Webserver
- downloads configuration files to the pc
- downloads updates of the MonitorTm program

The user must manually enter the related monitor serial numbers.

The image shows a dialog box titled 'Monitor Serial Number' with a blue header bar and a red close button. The main area has a grey background and contains the text 'Please enter up to 5 FAST Monitor Serial Numbers [6 digits]'. Below this text are five input fields, each preceded by a label: 'Serial Number 1 :', 'Serial Number 2 :', 'Serial Number 3 :', 'Serial Number 4 :', and 'Serial Number 5 :'. The first input field contains the text '000014'. At the bottom right of the dialog is an 'OK' button.

The program will then transfer

- configuration files from the Webserver to the computer
- log files from the computer to the Webserver
- MonitorTm program updates from the Webserver to the computer if available

Sync to Webserver :

Transferring Configuration files from the Web to the laptop :

2 of 2

Transferring Log files from the laptop to the Web :

1 of 3