Disclaimer
Like all instrumentation, the Altair Avionics Corporation Data Transmission Unit (DTU) requires knowledgeable interpretation by the user. Any recommendations and operating procedures contained in this manual shall not supersede the Aircraft or Engine manufacturer recommendations, operating procedures, or limits. The Altair Avionics Corporation Data Transmission System should not be used as a primary guide monitoring the Aircraft and Engine manufacturers operating limits. Altair Avionics Corporation is not liable for any damages resulting from the use of this product.

NOTE: You must use the approved Instructions for Continued Airworthiness for all troubleshooting and maintenance.

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1 INTRODUCTION

This document contains general information to provide Data Transmission Unit (DTU) users with Altair Avionics approved additional technical information on how to properly configure the DTU and verify Engine Monitoring System (EMS) data transmission to the TurbineTracker™ website.

NOTE: You must use the approved Instructions for Continued Airworthiness for all troubleshooting and maintenance.

1.1 Scope

User level operational instructions for the airframe mounted Data Transmission Unit (DTU) as an element of the Altair Avionics Data Transport System (DTS). The DTU provides two bi-directional data communication portals through which aircraft and engine performance data can be transmitted:

1. Primarily via wireless Cellular techniques, to our remote data and application-processing server TurbineTracker™.
2. Secondarily via PC based laptop computer and the Monitor Link Program (MLP).

NOTE: You must use the approved Instructions for Continued Airworthiness for all troubleshooting and maintenance.

This manual explains the procedures and additional technical information to help the user understand the methods and concepts required for correct operation:

1) Overview.
   a) General Data Transport System description.
   b) DTU component description.
   c) Abbreviations and their definitions.
2) Manage DTU configuration files on the TurbineTracker™ Website.
   a) How to log on and navigate in the TurbineTracker™ website
   b) Create or change DTU configurations files.
   c) Download DTU configuration files.
3) Properly interface to the DTU through a connection via a laptop computer using the -Monitor Link Program.
   a) Install the SIM card.
   b) Establish a communication connection with MLP to the DTU.
   c) Load configuration files into the DTU.
   d) DTU Transparent Mode for operators using Altair Avionics supplied engine Trend Monitor (ETM).
   e) Retrieve log data from DTU memory.
4) Verify correct operation of the DTU.
5) DTU LOG RETRIEVAL when DTU has no GPRS coverage.
6) Replace DTU checklist.

Any deviation from the procedures described within this document could result in a failure of the product to perform properly and could possibly result in damage to other systems of the aircraft.

NOTE: You must use the approved Instructions for Continued Airworthiness for all troubleshooting and maintenance.

2 OVERVIEW

2.1 Data Transport System (DTS) General Description

A simplified block diagram of the DTS, of which the DTU is the primary physical element, is shown in Figure 1 to clarify its interaction with all of its associated elements.
The Altair Avionics Corp Data Transmission (DTU) provides a portal between the on-aircraft measurement systems and a remote data and application server. This data communication occurs with no human intervention when wireless communication is available at the aircraft destination point. Upon completion of a flight or engine run the DTU will automatically attempt to establish a cellular upload to TurbineTracker™ of log data from the aircraft monitor. This is accomplished by the DTU transferring the recorded monitor data from the aircraft monitor to the DTU memory. The DTU then attempts to connect to TurbineTracker™ via a cell phone data connection. Once the DTU has established a connection the data is loaded to TurbineTracker™ and after successful transmission the DTU memory is then reset. If the DTU is unable to connect to TurbineTracker™ through the Cellular network the DTU will power down and the next time a flight / engine run is completed it will repeat the process. If the DTU never establishes a connection there is a way to manually retrieve the data stored in its memory using a laptop computer and the Monitor Link Program (MLP).

Upon successful data retrieval and transmission to TurbineTracker™ the data is available for review almost immediately. The following document will familiarize users with the data transmission unit, its modes of operation, and pertinent information for successful utilization of the unit.

Note: Customer must supply a cellular SIM card with a data enabled (GPRS) plan that allows the transfer of data. These are usually called Internet only plans or data only plans depending on the carrier. They also need to tell the carrier to disable the PIN code for the SIM card. If they can’t disable it, they should set it to 1234 but this is not recommended since the DTU will assign a random password at the first power-up. If the DTU assigns a password it can never be changed and the SIM card will only be useable in the DTU that assigned it.

### 2.2 DTU Component Description

#### 2.2.1 System Processor

The processor (Figure 2) facilitates wireless connectivity to the TurbineTracker website for Aircraft Component Subsystems (ACS), typically Altair engine monitoring and some third party data systems. The connectivity between the DTU and ACS is bi-directional and in most cases allows configuration data to be sent to the ACS.
data to be retrieved from the ACS with the ability to interrogate the status of the ACS in near real time if the ACS supports live data output. The processor does not require access during flight. The processor measures 3.7" high by 6.0" long by 2.7" deep and weighs 1.8 lbs. An aluminum bracket with Lord Aerospace shock mounts is normally used to mount the processor to the aircraft. Specific mounting and installation instructions can be found in the Installation Manual applicable to your aircraft.

![Figure 2 - Processor](image)

### 2.2.2 DTU RF Status / Fault Lamp Switch

A status lamp and switch (Figure 3) that consists of a .75" x 1.25" rectangle push-to-test combination switch and lamp. Fault indications are displayed to the operator through the on/off, or flashing status of the lamp. The push-button switch is also used to initiate actions internal to the DTU processor such as debugging for maintenance. The RF/Fault lamp Switch requires no access during flight and is normally mounted out of the pilot’s sight and is accessible only by maintenance crews. Specific mounting and installation instructions can be found in the Installation Manual applicable to your aircraft.

![Figure 3 - DTU RF Status/Fault Lamp](image)

### 2.2.3 Communications (COMM) Port

Used for interfacing the DTU with a laptop computer when using the MLP. Data can be transferred and downloaded through this port (Figure 4). The COMM port is normally mounted in the cockpit, on the DTU mounting bracket or on the DTU processor itself. Specific mounting and installation instructions can be found in the Installation Manual applicable to your aircraft.
2.2.4 Serial Communications Download Cable

The serial download cable (Figure 5) is used to connect your laptop computer’s RS-232 serial port to the Altair DTU Communication Port shown above. The RUN/CONF switch has no function when used with a DTU and will work in either position.

*Note:* Altair also offers an optional download cable with built in USB to Serial converter for use with laptops that have no serial port connection.

The cable connectors are keyed to fit only one way, so be sure to align the connectors properly before inserting them. Don’t use excessive force. Check the orientation if a connector seems hard to insert. (red dot to red line)
2.2.5 GSM / GPRS Antenna

The cellular communications antenna (figure 5) is mounted inside the aircraft. Specific mounting and installation instructions can be found in the Installation Manual applicable to your aircraft.

**NOTE:** The antenna is not certified to be mounted external to the aircraft.

![Figure 7 - GSM / GPRS Antenna](image)

2.2.6 LAN Antenna

The LAN antenna (figure 6) may be affixed to the DTU processor or an existing wire clamp location by using the supplied nylon clamp. Specific mounting and installation instructions can be found in the Installation Manual applicable to your aircraft.

**NOTE:** The antenna is not certified to be mounted external to the aircraft.

![Figure 8 - LAN Antenna](image)

1) Some DTU installation incorporate both (2) antennas that will be mounted internal to the airframe. Velcro can be used to attach the GSM antenna to the mounting surface while the LAN antenna can be attached using the supplied nylon clamp. INSTALLATION CAUTION:

a) The specific mounting location is important due to curvatures and uneven surfaces that can be found on various aircraft. A flat surface is the desired GSM antenna mounting location.

b) The length of the coaxial cable for both the GSM and LAN antenna is six (6) feet. Ensure that the antenna location is no farther than this distance from the DTU processor.
c) The installer must ensure that the antennas are not mounted in a location totally encompassed by metal.

d) If the antennas are mounted in the cabin of the aircraft they must be securely fastened to the aircraft to prevent their movement during a hard landing. The preferred method is to mount the antenna in a secondary containment area.

e) The GSM antenna must be mounted at least 12 inches from a passenger’s head.

f) The LAN antenna may be affixed to an existing wire clamp location by using the supplied nylon clamp or can be mounted as a stand alone item. Do not use aluminum or stainless steel Adele clamps for this purpose. Ensure that the antenna is securely fastened using the supplied nylon clamp.

g) Avoid sharp bends and routing RF cable near high energy sources.

h) Keep RF cables as short as possible

i) Typical signal loss is 3 decibels per foot

2.2.7 Fuse (+28 VDC @ 1 Ampere) and or Circuit Breaker (+28 VDC @ 1 Ampere)

(Not shown) Automatically interrupts the electrical circuit when the electrical current exceeds the specified amperage. This connection is normally made directly to both the aircraft battery and primary bus power. Specific power and installation instructions can be found in the Installation Manual applicable to your aircraft.

2.3 Abbreviations and Definitions

- **ACS** – Aircraft Component Subsystem - ETM – Engine Trend Monitor - This refers to the system connected to the DTU. It could be an IntelliStart+, ADAS², ADAS+, SmartCycle+ and or third party monitors. The DTU connection is typically made at the maintenance port of the aircraft subsystem.

- **Config** – Configuration File - All of the Altair Avionics DTU’s must be configured for use on a particular airframe monitor combination. These unique installation configurations are created and maintained in the TurbineTracker™ DTU configuration area. Each installation configuration will be given a unique identification number and version. All changes to an installation configuration will cause the version number to increase.

- **Log Data** - Stored Operational Readings - This refers to the data files transferred from the engine monitor as well as the DTU operational log files that are automatically uploaded to TurbineTracker™ or stored in the DTU memory if a cellular connection is unavailable.

- **MLP** – Monitor Link Program - Standalone software executable program that is installed on your laptop (directories on C drive). This is your tool to interface with Altair products for data transfer and automatic synchronization between the DTU and TurbineTracker™. MLP lets you easily:
  - Load Configuration Files
  - Retrieve Log Data
  - View Log Data in Raw Format
  - View Live Data if connected to an Altair monitor

- **MLU** – Monitor Link Unit - This is used by the Monitor Link Program (MLP) to identify the type of Altair monitor that MLP is communicating with. It could be a DTU, IntelliStart+, ADAS², ADAS+, SmartCycle+.

- **Installation ID** – This is a unique identification number that is assigned to the installation configuration by the TurbineTracker™ system. If the installation configuration has just been created this number will remain blank until the configuration has been saved.

- **Installation Version** – The TurbineTracker™ program will keep track and issue a new (incremented) version number each time the installation configuration has been modified and saved. Past versions can be viewed at any time.

- **DTU Installation Description** – This is a description of the installation. This description will be displayed when viewing your installs so make it something that will separate your various installations like a tail number.

- **DTU Serial Number** – This is the serial number of the DTU processor that has been installed. (Located on the decal on the bottom of the unit)
Templates - The TurbineTracker™ website has system templates for various DTU systems based on engine and airframe combinations. The user has the capability of modifying these and saving them as a configuration or creating their own unique DTU installation configurations.

Log files – Refers to the trend or event data files downloaded from the engine monitoring system as well as DTU operational logs that are transmitted by the DTU to the TurbineTracker™ system using the cellular RF connection. In the event the DTU can not make a cellular RF connection the log file can be transferred to TurbineTracker™ using the Monitor Link Program (MLP).

GSM - Global System for Mobile Communication
GPRS - GSM Packet Radio Service
ISP - Internet Service Provider
IP - Internet Protocol
RF - Radio Frequency
WAP - Wireless Application Protocol
WLAN - Wireless Local Area Network

APN – Access Point Network - Is the server that the DTU logs into to transfer data to TurbineTracker™. This information can be provided by the carrier and is necessary for the DTU to establish a connection.

3 Manage DTU configuration files on the TurbineTracker™ Website.

Note: For a complete and detailed listing of the TurbineTracker™ contents and functions refer to the TurbineTracker™ User’s Guide. It is available for download under the “Support” tab by selecting the “Documents” button.

It is important to first understand how to configure the DTU so as to insure its proper operation. All of the Altair Avionics DTU’s must be configured for use on a particular airframe monitor combination. Theses unique installation configurations are created and maintained in the TurbineTracker™ DTU configuration area. The following will explain how to create new or edit existing configuration files for the DTU through the use of TurbineTracker™.

TurbineTracker™ is a web based data management tool for Altair Avionics Corp customers. This is a subscription service, and has many useful tools for analysis, interpretation, and storage of trend and exceedance data collected from aircraft.

This section is designed to help the user understand the operation of the DTU functions in TurbineTracker™. These tools will allow the user to create and manage configurations for their DTUs.

NOTE: DTU users must contact an Altair Avionics Corp sales representative in order to gain access to the functions described herein. The permissions for the use of the following tools in TurbineTracker™ must be granted before they are made available to the operator.

3.1 How to log on and navigate the TurbineTracker™ website

How to Log on - User ID & Password
• TurbineTracker™ Account Assigned
• From Altair Avionics Customer Service
• To Customer Account Administrator
• You will receive an email sent to the address you provided from TurbineTracker™ with your unique log in information:
• Your User Name
• Your Password (Case Sensitive)

Go to the TurbineTracker Website to log-in WWW.TURBINETRACKER.COM
Figure 9 – Log-in screen

After you have successfully logged in TurbineTracker™ will open to “Your Hanger” page

Figure 10 – Your Hanger page

You now have access to navigate through the TurbineTracker™ server and access the areas that you have been assigned permissions for.
Navigating in TurbineTracker™

TABS
Click a on the desired tab to change pages
Note: You may not have permission to view all of these tabs

Option Buttons
Click the buttons to select different options related to the current page
Note: If a button is gray you don't have permission to select it

Radio Buttons
Click radio buttons to mark them as checked

Hyperlinks
Click to open another window, option box or to make a selection

If you forget to log off TurbineTracker™ will automatically time out and log you off after a few minutes of inactivity

Figure 11 – Navigating in TurbineTracker™

TurbineTracker™ Tab contents at a glance:
- Your Hangar - Fleet Status
- Configuration - Create & Edit monitor configurations
- File Transfer - Upload & Download Configuration and Log Files
- Data Analysis - Analyze ETM Log Data
- DTU – Create, Edit & download Configurations, Analyze DTU Log Data
- Support - Download Manuals & Contact Help Desk
- User Administration - Create & Edit Users

For a complete and detailed listing of the TurbineTracker™ contents and functions refer to the TurbineTracker™ User’s Guide. It is available for download under the “Support” tab by selecting the “Documents” button.

3.2 Create or change DTU configurations files.

To create a configuration for the DTU, log on to TurbineTracker™ do the following:
Click on the DTU tab (see Figure 12)
NOTE: If you don’t have the DTU tab shown, the first step is to contact Altair Avionics Corp to have the DTU tab added to your TurbineTracker™ account. From here you can configure each of your DTUs.
Next select the “Configuration” button on the left side of the screen (see figure 13).

3.2.1 Add new DTU

Upon selecting the “Configuration” button a page displaying any active or inactive DTU configurations in your account will open. From here the operator is able to select an existing configuration to edit or may create new files by selecting the Add New DTU hyperlink. (See figure 14).
Figure 14 - DTU configuration page

Clicking on the **Add New DTU** will bring you to a page that contains system templates for creating configurations. Currently the list contains a limited amount of templates. As the DTU is certified on more aircraft this list will increase in options.

The template named **PW306B DTU Template** is used for transferring data that is collected by the Pratt & Whitney engine computer installed on some 306 series engines. Likewise the template labeled **Twin IS+ DTU Template** is designed for a special application for one of Altair Avionics Corp customers.

Currently any new DTU will use the template labeled **Altair DTU Template**. This is the generic template that is designed for use with any Altair Avionics Corp Engine monitor.

**NOTE:** Altair Avionics Corp Generation III Monitors must have version 3.2.0 or higher in order to be compatible with a DTU. If the monitor does not have v3.2.0 or higher code the processor will not be able to connect to the DTU, and therefore, no data will be transferred. You will need to contact Altair Customer Support for an upgrade.
3.2.2 DTU Description

Upon selecting the Altair DTU Template hyperlink, a page where the DTU description and serial number can be entered will open. The DTU description and serial number fields are text fields where the information you enter will be displayed throughout the DTU tab to help you navigate and select configurations to work with. It is suggested that you name the DTU configuration using the aircraft registration, monitor the DTU is being use in conjunction with or the cellular carrier that is providing service. By doing this it makes it easier to distinguish one unit from another with in your account. See the example in Figure 16 for reference.

![Figure 16 - DTU description and Serial Number](image)

Once a description has been given and the serial number has been recorded click the keep these values button at the bottom of the page.
3.2.3 GPRS Configuration

Next the operator will need to configure the connection information for the DTU. This will tell the DTU which service provider is being used as well as type of connection and login information (some carriers require user ID’s and passwords to access the GSM network). To accomplish this select the GPRS Config Button on the left hand side of the web page. This will open the window in figure 17.

![GPRS Configuration Window](image)

**Figure 17 - GPRS Information**

The calling plan dropdown menu contains some cellular service providers for use with the DTU, but it is in no way a complete listing. The operator may contact Altair Avionics Corp to add carriers to this list if necessary, but the Custom selection will allow the operator to enter the information that is necessary to establish a connection through the DTU.

The only mode the DTU is able to support currently in GPRS. As the technology is developed other connection modes will become available.

An APN, or Access Point Network, is the server that the DTU logs into to transfer data to TurbineTracker™. This information can be provided by the carrier and is necessary for the DTU to establish a connection. User ID and Password are required by some service providers. Again, if the carrier requires this information it needs to be entered here in order for the DTU to establish a connection and transfer data to the internet. The Phone field is currently not used and only for the rare instance the DTU would need to dial in to an ISP through the cellular provider to establish a connection to TurbineTracker™.

By selecting one of the options from the calling plan dropdown menu, most of the necessary information is already in the Altair Avionics Corp data base. The only exception is those carriers who require a user ID and password to logon to their network, in which case those fields would have to be filled in by the operator.

**NOTE**: For a list of International GPRS providers visit [http://www.access-sys-eu.com/gprs.html](http://www.access-sys-eu.com/gprs.html). This is not an Altair Avionics Corp website, nor is it affiliated with Altair Avionics Corp; therefore we can not guarantee the accuracy of the information contained within this website.
Upon completing the GPRS information select the keep these value button at the bottom of the page.

### 3.2.4 ACS selection

To complete the configuration file for the new DTU the ASC information will need to be completed. Select the ACS button your ACS based on the aircraft configuration. If you attempt to configure ASC incorrectly the DTU will not establish a connection to the engine monitor on the aircraft.

<table>
<thead>
<tr>
<th>ACS Selection</th>
<th>Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Altair monitor</td>
<td>ACS0</td>
</tr>
<tr>
<td>Dual Altair monitors</td>
<td>ACS0 &amp; ACS1</td>
</tr>
<tr>
<td>306B</td>
<td>ACS1 &amp; ACS2</td>
</tr>
<tr>
<td>Other engine monitors</td>
<td>Normally ACS0*</td>
</tr>
</tbody>
</table>

*If unsure of the ACS selection for your configuration contact Altair Customer Support for guidance*

![Figure 18 - ACS Selection](image)

Once the ACS to be configured has been chosen the following window will appear.
The monitor configuration dropdown menu will list the monitors in the operators account. From these choices the appropriate engine monitor needs to be selected. This is a list of all monitors in the operators’ account, regardless of whether or not the monitor is compatible with the DTU. Be careful to choose the correct monitor, if the wrong monitor is selected the DTU will not be able to establish a connection to the aircraft monitor. Next the monitor type will need to be selected. From the dropdown menu select the monitor best suited for your DTU. This will tell the DTU which type of engine monitor it is connecting to. Because the DTU is capable of connection engine monitors other than just Altair’s monitors selecting one of the types from the dropdown menu also tells the DTU what language to transmit the information in as well.

Note: Most operators using the DTU with an Altair monitor running V4.0 or higher firmware use the ALTAIR_V_RUN monitor type. If you are unsure of the monitor type contact Altair Customer Support for assistance.
**ALTAIR** should be selected when the DTU is being used with one of our Generation III monitors with **V3.2 firmware**.

**ALTAIR_DUAL_ADAS** should be used when an ADAS+ or an ADAS+ Upgrade monitor with **V3.2 firmware** are connected to the DTU. The ADAS+ Upgrade used on a large portion of the FMP fixed wing operators contains two processor boards in a single extrusion. This was done to allow two engines to be monitored. This is a special case for the DTU.

**ALTAIR_DUAL_SMART** should be used when SmartCycle+ Twin monitor with **V3.2 firmware** is connected to the DTU. The SmartCycle+ Twin monitor is a special case that was developed for twin engine helicopters. This monitor contains two processor boards in a single extrusion. This was done to allow two engines to be monitored. This is a special case for the DTU.

**ALTAIR_V4_CFG** should be selected when the DTU is being used with one of our Generation III monitors with V4.0 or higher firmware. Places monitor in configuration mode (Trend Lamp illuminated and hot start detection disabled) during the monitor to DTU log transfer process. I. E. at completion of engine run.

**ALTAIR_V4_RUN (preferred for Altair monitors)** should be selected when the DTU is being used with one of our Generation III monitors with V4.0 or higher firmware. Leaves the monitor in run mode (hot start detection active if applicable) during the monitor to DTU log transfer process. I. E. at completion of engine run.

**PW306BL & PW306BR** should be used when the DTU will transmit information collected by the Pratt & Whitney PW306 Engine monitor. This is an OEM data collection device that is compatible with the DTU, but uses a different code than the Altair monitors. Make sure to choose the correct type of monitor for your engine to ensure that data is successfully transmitted.

---

**Figure 21 ACS configuration**

The connect field should have **ON** selected. This allows the DTU to connect to the monitor to receive data and later transfer this information to TurbineTracker™.

Once all the ACS information has been filled in hit the keep these values button at the bottom of the page.
Once all information has been entered and verified select the “Save this Configuration” hyperlink. By selecting this, the DTU configuration will be saved on TurbineTracker™.

The user should now see the configuration that was just created listed in the configuration area of the DTU tab.

3.3 Downloading a DTU Configuration File to a Laptop Computer

The configuration file contains the special information needed by the DTU to work with that particular aircraft. To download the configuration file for the DTU, follow the steps outlined in this section. While in the DTU tab in TurbineTracker™ choose the Download Config button at the left hand side of the screen. This will open a webpage that list all of the DTU configurations in the account. From the list choose which configuration to download to the laptop.

Figure 23 - DTU Configuration Download Button
Users can manually Download Configuration Files by selecting the desired configurations and following the standard Windows prompt.

Figure 24 - Downloadable DTU Configurations

Select the blue hyperlink under version to download that configuration file. A screen asking whether to open the file or save the file will pop up. Choose to save the file to the laptop. Remember the location the file will be saved to so that it can be easily found when it is time to load the file into the DTU. Click, save on the pop up window.

The Configuration has now been saved to the laptop computer. Take the same laptop used to download the configuration file out to the aircraft and connect to the DTU. Once connected to the DTU load the configuration file into the unit.

4 DTU / Laptop Interface using the Monitor Link Program (MLP)

4.1 Installing your SIM card into the DTU

Cellular communication is provided by means of a Tri-Band GSM (EGSM900, GSM1800 and GSM1900) modem. The customer supplied SIM card must have data (GPRS) enabled. It is recommended the SIM card be tested with a cell phone prior to installation.

- The SIM card must be activated by the provider.
- It must have PIN access disabled or the card will be locked requiring the PUK code from the carrier.
- If PIN must be used the default must be set to 1234 (Your card will be locked requiring PUK activation if you use a different PIN)

**NOTE:** setting the PIN to 1234 is not recommended since the DTU will assign a random password at the first power-up. If the DTU assigns a password it can never be changed and the SIM card will only be useable in the DTU that assigned it.
SIM card installation

Using the Hex screwdriver, remove 2 screws indicated

With Hex screwdriver, press the yellow eject button

Figure 25 - Access to the SIM card

This will cause the SIM Card Holder to pop out of the DTU. Put new SIM card in SIM card holder

Note the SIM card can only go into the holder one way. Line up the notched corner on the SIM with the matching notch on the SIM card holder.

Slide SIM card holder back into the DTU. Be careful to line up the card in the slot. Put SIM card cover back on. Unit is ready to use.

Figure 26 - Installing the SIM card
4.2 Setup the Laptop for the DTU using MLP

For the initial installation and operation of a DTU the operator will need a laptop with the Monitor Link Program (MLP). MLP is the software that is used to communicate with the Altair products via laptop computer. Without MLP it will not be possible to load files or retrieve files. It is also necessary to use the most recent version of MLP for all file transfers.

*Note: For a complete and detailed listing of the MLP and its functions refer to the MLP User’s Guide. It is available for download under the “Support” tab by selecting the “Documents” button.*

If you do not have MLP version 6.7.2 or higher on your laptop you will need to download it from TurbineTracker™, Support tab by selecting the System Updates button and following the on screen instructions.

*NOTE: The following Transparent Mode feature is only required if using the DTU with an Altair monitor otherwise skip to: Section 3.3 Establish an MLP connection and Load configuration files into the DTU.*

4.2.1 Enable the Transparent Mode feature

Once MLP has been installed on the laptop it will need to be setup to allow certain functions with a DTU installed in the aircraft that has an Altair engine monitor. For example it is necessary to enable this function in MLP in order to put the DTU into Transparent Mode so that the laptop can communicate directly with the Altair engine monitor.

*Note: The Transparent Mode feature is only available when the DTU is connected to Altair engine monitors.*

To enable this feature open MLP and select Edit from the menu at the top of the page. Next select Options from the menu. (See Figure 27)
Figure 27 - MLP setup

This will open the window in Figure 28 - Enabling DTU Connect. Check the DTU connect box and select OK, this will bring up a message that MLP will have to be restarted, hit OK. Restart MLP.

Figure 28 - Enabling DTU Connect
Upon restarting MLP there should be a button at the top labeled DTU with a red background (See Figure 29). When this button is pressed it will put the DTU into a transparent mode that allows the engine monitor to communicate with the laptop.

Now that MLP has been setup to allow use of special DTU functions the operator can load the configuration file created in TurbineTracker™ into the DTU. The DTU will need to be configured before the engine monitor.

4.3 Establish an MLP connection to Load configuration files into the DTU.

To load the configuration file into the DTU follow the steps outlined below. (Figure 30).

1) Select Edit
2) Select Communication port
3) Select Auto Detect
Once MLP indicates that the communications port has been successfully detected it is possible to load the configuration file. The following steps will allow the operator to load the configuration file into the DTU (See Figure 31).

- Select MLU
- Select Configure Unit

The standard windows file open box will prompt you for the location of the DTU config file.

Note: If prompted to reset the log select yes to reset it since the DTU log must be empty to load a config file.

MLP will indicate the progress of the upload in the status bar.
4.3.1 Putting the DTU into Transparent Mode

To put the DTU into transparent mode first establish communication between the DTU and laptop. Upon establishing a connection with the DTU, click the red DTU button.

*Note: The Transparent Mode feature is only available when the DTU is connected to Altair engine monitors.*

A prompt to select an ACS will popup (See Figure 32). You normally choose ACS 1 for all single Altair Avionics Corp engine monitors (if your installation uses two engine monitors select the desired ACS). If another ACS has been setup for a different monitoring system then that is the ACS that should be chosen the click OK.
Figure 32 - Selecting an ACS

Once the DTU established the connection to the ACS (it might take a few seconds, so be patient) the red DTU button at the top of the MLP Page will turn green. (Figure 33) The green button signifies that the DTU is in transparent mode. This means that MLP is communicating directly with the engine monitor and not the DTU.
Figure 33 - DTU in Transparent Mode

When finished working with the engine monitor click the green DTU button to take the DTU out of transparent mode.

NOTE: Closing MLP without exiting transparent mode will cause the DTU to remain in transparent mode until the power to the aircraft is cycled. i.e. by closing MLP without exiting transparent mode and then attempting to do another Autodetect without cycling the aircraft power, MLP will establish a connection directly to the engine monitor.

3.4 **Retrieve log data from DTU memory.**

Synchronize MLP to the DTU and TurbineTracker™

The proper method of using the SYNCHRONIZE function is this:

- Sync to TurbineTracker™
- Sync to Aircraft.
- Sync to TurbineTracker™

NOTE: Ensure you have the current version of the Monitor Link Program (MLP). The current version is available from Turbine Tracker under the “Support Tab” and “Systems Update” button (See Checklist CUST-T-417-1).

1) Establish connection to the internet with the laptop computer to be used for loading and retrieving files to and from the processor in the aircraft.

2) Open the MLP.exe program.
3) Select “TurbineTracker™” under the Synchronize tab dropdown menu.
   a) **NOTE:** This method requires the user to enter login ID and password.

4) Enter your login information when prompted.
   a) **NOTE:** Once the computer has completed the Synchronization process the following message will appear in the status bar at the top of the MLP window:

5) “TTS Synchronization Process Complete”
   a) **NOTE:** If MLP can not establish a connection through your firewall you may need to configure MLP to logon with correct account name through a proxy to enable the “Synchronize to TurbineTracker™” feature.

6) Refer to the MLP User’s Guide for instructions on how to configure MLP with your user account information.
   a) After synchronizing to TurbineTracker™ take the laptop computer to the aircraft and connect the computer to the processor using the download cable. Ensure the RUN/CONF switch on the cable is set to “CONF” (Switch position does not matter for HUMS 1122, CrossCheck and DTU) and apply aircraft power.

7) Select “Aircraft” under the dropdown Synchronize menu in MLP.
   a) **NOTE:** If you are not able to establish a connection, accomplish the MLP Troubleshooting Procedure.
   b) **TIPS and TRICKS:** Accomplish a “MLU Status” under the MLU Menu. Receiving a response and a “MLU Status Processing Complete” prompt indicates a connection has been established between the computer and the aircraft processor.

8) DTU users select “All” for your Sync Option from the pop-up window.
   a) **Note:** The Synchronize feature will automatically retrieve the unit’s data log and prompt you to reset the log. After you reset the log any new configuration files will then be transferred automatically.
   b) **NOTE:** The Reset Log Box appears when the upload is complete. Select “Yes”.
   c) **TIPS AND TRICKS:** Resetting the Log means to clear the log data from the processor after uploading the data into your computer. If you do not reset the Log, the log data shall remain in the processor and log data generated from that point on will be appended to the existing log data.

9) **CAUTION:** If you do not reset the Log for a long period of time, the processor’s memory may become full. If the processor’s memory fills up, the processor will stop recording data.
   a) **NOTE:** Once the computer has completed the Synchronization process the following message will appear: “TTS Synchronization Process Complete”

10) Transfer your log data to TurbineTracker™ by performing steps 1 though 4 from page one.
    a) **NOTE:** If you have calibrated your monitor your configuration .cal file will be automatically uploaded as well.

**4.3.2 Manually retrieving Log Files from the DTU**

- Establish a connection to the DTU using MLP (Figure 34)
- Select Edit
- Select Communications Port
- Select Autodetect
Figure 34 - Establishing a Connection to the DTU

Once the communication port is successfully detected:

- Select MLU (Figure 35)
- Select Retrieve Unit’s Data Log
- Save the Log file
- Select Yes to reset the Unit’s Data Log when prompted
Figure 35 - Retrieving the DTU Log Files

Four files have now been created in the C:\MLP\LOG directory

- .log.dtusys (Header, ASCII)
- .dtu.gz (DTU log, compressed)
- .dtu (Header, binary)
- .log

The files that are followed by the .dtu.gz extension should be uploaded to TurbineTracker™. These files contain the pertinent information to update the trend and exceedence data along with any cycle information being collected by the engine monitor.

4.3.3 Manually upload Log files to TurbineTracker™

- Login to TurbineTracker™
- Select the File Transfer tab at the top of the screen (Figure 36)
Choose the Upload Log button from the buttons at the Left (Figure 37)

Select the Browse button to locate the log file to upload. Once you have the file in the text field hit the Upload File button to transfer the information to TurbineTracker™ (Figure 38)
4.4 Verify correct operation of the DTU

4.4.1 System Boot-up Test

The Data Transmission Unit (DTU) incorporates a “push-to-test” dual lamp indicator to provide the operator with information about the system. DTU status processing involves the display of the DTU status to the user. Two lamps and a button are employed to present and control the DTU status:

1. DTU Status Lamp: displays overall system status
2. RF Status Lamp: displays the current state of the Micro Server (MS) power
3. DTU Button: accepts user Acknowledge input to clear the Status Lamp and to enter Maintenance mode.

When power is first applied the Data Transmission Unit initializes, the fault lamp will indicate the various stages of the process. The initialization sequence will proceed as follows:

When the processor’s power is first applied, the fault lamp will illuminate both the DTU Status and RF Status lamps for 3 to 5 seconds while the system performs a series of self-tests. The following self-tests are performed during initialization:

1. Micro Controller Test
2. Lamp Test (momentary flicker)
3. Temporary Memory Test
4. Data Log Memory Test
5. Program Integrity Test

At the completion of the DTU processor initialization, the DTU Status lamp and RF Status lamp will indicate system status as described below:

- The DTU Status Lamp is used to inform a maintenance person of the DTU status.
The RF Status Lamp is provided to inform a maintenance person of the state of the DTU RF capabilities. The RF Status Lamp is on any time the RF enable is true. The RF Status Lamp is flashing rapidly any time the DTU is transferring data to or from the DTU via RF.

<table>
<thead>
<tr>
<th>Normal</th>
<th>Off</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caution</td>
<td>Flash slow (1 Hz)</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Flash slow, hold to clear</td>
</tr>
<tr>
<td>Transmitting</td>
<td>Flash fast (2 Hz)</td>
</tr>
<tr>
<td>Fault or RF Waiting</td>
<td>Solid</td>
</tr>
</tbody>
</table>

Table 2 - DTU Lamp Status

<table>
<thead>
<tr>
<th>Failure Type</th>
<th>DTU Fault</th>
<th>RF Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIT</td>
<td>F</td>
<td>Off</td>
<td>Diagnostics error</td>
</tr>
<tr>
<td>ACS Connect</td>
<td>C</td>
<td>Off</td>
<td>ACS not communicating</td>
</tr>
<tr>
<td>Data TX Error</td>
<td>Off</td>
<td>M</td>
<td>Error during up/download (bp error)</td>
</tr>
<tr>
<td>RF enable</td>
<td>Off</td>
<td>On</td>
<td>RF ok, waiting</td>
</tr>
<tr>
<td>RF TX</td>
<td>Off</td>
<td>T</td>
<td>Sending/receiving data</td>
</tr>
<tr>
<td>Memory size</td>
<td>85% - M</td>
<td>Off</td>
<td>Memory threshold(s) reached</td>
</tr>
<tr>
<td></td>
<td>100% - C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data Integrity</td>
<td>C</td>
<td>Off</td>
<td>Talking with ACS, but had a problem</td>
</tr>
</tbody>
</table>

The DTU will perform button processing. Button processing produces one of two outputs for a single button press. An ACK signal is produced if the button press is held for five seconds or less, while Maintenance Mode request is produced for a button press longer than five seconds.

<table>
<thead>
<tr>
<th>Button Action</th>
<th>Acknowledgement</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACK</td>
<td>Momentary</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Hold for &gt;5 seconds</td>
</tr>
</tbody>
</table>

5 Verify Uploaded Logs

How to access your data

1. Checking your Account Status
   a. Loaded Successfully
   b. Loaded With Errors
2. Viewing your Uploaded Log Data
   a. Last upload
   b. Last Engine Run
      i. Check Sensor Values
3. Viewing Uploaded DTU Logs
   a. Last Transmission Success

5.1 Checking your Account Status
Shows you what has happened recently with your account in terms of data log and configuration uploads.
- Accessed via the Hangar page
- Provides detailed information about an upload
  - Number of engine runs, exceedences, auto-trends etc.

After you log in to TurbineTracker you will be presented with:
- Hyperlink to your present Account Status (See Figure 40)

![Figure 39 - Log in page](image-url)
Account Status
Displays a report of Configuration and Log File uploads to your account.

The Account Status Screen will display initially data for one week from the date of access as a default.

You can change the date range of the report by selecting the drop down date boxes.

Reading Description Messages
The Hyperlink under the Description column opens the Upload Summary pop-up window. The reason for the upload error or the upload success summary will be displayed.

Select the description Hyperlink to:
- View a summary of what was contained in the uploaded logs
5.2 Viewing your Uploaded Log Data

After selecting the Data Analysis tab on top, select the View Log Data button on the left. You will be presented with the Summary Data View table. (Figure 42)

You can also filter the table view by Airframe, Engine Type, Unit Type and Date. You can easily View Log Data from the entire fleet by selecting the desired Hyperlink in the table.

The date of Last Upload that was successful will be listed. Select the number of Engine Runs hyperlink to display a chronological list of engine runs (Figure 43).

Figure 42 - Viewing Logs

Figure 43 – Viewing Engine Runs
5.3 Viewing your uploaded DTU Logs

After selecting the DTU tab on top, select the DTU Logs button on the left. You will be presented with the DTU selection page. (Figure 44)

After selecting the Blue DTU Logs button you will be presented with the overview table of your fleets DTU activity for the last 30 day’s

You can also enter the date range to do a custom search. (Defaults is 30 day’s from the current date).

<table>
<thead>
<tr>
<th>DTU Description</th>
<th>Date and local time of last transmission</th>
<th>Last Tx Duration</th>
<th>Engine Rx Count*</th>
<th>Data Retrieval Count</th>
<th>Tx Success Count</th>
<th>Last Signal Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Note: Engine Rx Counts displayed are for when installs are connected to the displayed DTU. Counts may not always match counts displayed on linked View Engine Rx page, where attachment status to DTU is not reflected.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Clicking on your tail number hyperlink open a table containing the associated DTU’s entire log in chronological order. (Figure 45)
All of the selected DTU’s logs are displayed in a chronological order.

You also have the option to select which logs to display.

Figure 45 - Viewing all logs
Selecting the desired Hyperlink opens a chronological list of the associated logs

<table>
<thead>
<tr>
<th>DTU Description</th>
<th>Date and local time of last success</th>
<th>Last Tx Duration</th>
<th>Engine Run Count</th>
<th>Data Retrieval Count</th>
<th>Tx Success Count</th>
<th>Last Signal Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example Tail Number Here</td>
<td>11-Feb-07 10:35:22</td>
<td>01:03:56</td>
<td>209</td>
<td>250</td>
<td>253</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>11-Feb-07 10:54:02</td>
<td>00:48:22</td>
<td>488</td>
<td>240</td>
<td>236</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>11-Feb-07 10:53:30</td>
<td>00:28:30</td>
<td>480</td>
<td>230</td>
<td>230</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>11-Feb-07 10:36:04</td>
<td>01:06:46</td>
<td>386</td>
<td>234</td>
<td>231</td>
<td>88</td>
</tr>
<tr>
<td></td>
<td>11-Feb-07 20:22:57</td>
<td>01:06:46</td>
<td>179</td>
<td>35</td>
<td>73</td>
<td>72</td>
</tr>
</tbody>
</table>

The selected DTU’s MS (Microserver) Transmission Success logs are displayed in a chronological order.

Figure 46 – Viewing Transmission logs

Selecting the desired Hyperlink opens a chronological list of the associated logs

<table>
<thead>
<tr>
<th>DTU Description</th>
<th>Date and local time of last success</th>
<th>Last Tx Duration</th>
<th>Engine Run Count</th>
<th>Data Retrieval Count</th>
<th>Tx Success Count</th>
<th>Last Signal Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example Tail Number Here</td>
<td>11-Feb-07 10:35:22</td>
<td>01:03:56</td>
<td>209</td>
<td>250</td>
<td>253</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>11-Feb-07 10:54:02</td>
<td>00:48:22</td>
<td>488</td>
<td>240</td>
<td>236</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>11-Feb-07 10:53:30</td>
<td>00:28:30</td>
<td>480</td>
<td>230</td>
<td>230</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>11-Feb-07 10:36:04</td>
<td>01:06:46</td>
<td>386</td>
<td>234</td>
<td>231</td>
<td>88</td>
</tr>
<tr>
<td></td>
<td>11-Feb-07 20:22:57</td>
<td>01:06:46</td>
<td>179</td>
<td>35</td>
<td>73</td>
<td>72</td>
</tr>
</tbody>
</table>

Both of the selected DTU’s MS TX Success - ACS Data Retrieval logs are displayed in a chronological order.

Figure 47 – Viewing duration info
Selecting the desired **Hyperlink** opens a chronological list

<table>
<thead>
<tr>
<th>DTU Description</th>
<th>Date and local time of last mission success</th>
<th>Last Tx Duration</th>
<th>Engine Run Count*</th>
<th>Data Retrieval Count</th>
<th>Tx Success Count</th>
<th>Last Signal Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example Tail Number Here</td>
<td>31 Jan 2022 12:35:22</td>
<td>00:00:00</td>
<td>55</td>
<td>203</td>
<td>56</td>
<td>Graph</td>
</tr>
<tr>
<td>Example Tail Number Here</td>
<td>31 Jan 2022 12:49:22</td>
<td>00:00:00</td>
<td>499</td>
<td>240</td>
<td>56</td>
<td>Graph</td>
</tr>
<tr>
<td>Example Tail Number Here</td>
<td>31 Jan 2022 12:59:30</td>
<td>00:00:00</td>
<td>499</td>
<td>237</td>
<td>56</td>
<td>Graph</td>
</tr>
<tr>
<td>Example Tail Number Here</td>
<td>31 Jan 2022 13:09:14</td>
<td>00:00:00</td>
<td>398</td>
<td>234</td>
<td>71</td>
<td>Graph</td>
</tr>
<tr>
<td>Example Tail Number Here</td>
<td>31 Jan 2022 13:10:22</td>
<td>00:00:00</td>
<td>172</td>
<td>93</td>
<td>73</td>
<td>Graph</td>
</tr>
</tbody>
</table>

*Note: Engine Run Counts displayed are based on the ACS that is linked in the DTU config file i.e. if you move the DTU to a different aircraft without updating the DTU config this hyperlink will continue to point to the previous aircraft's engine run logs*

**Figure 48 – Viewing engine run logs**

The selected DTU's Engine Run Logs are displayed in a chronological order.
Selecting the desired **Hyperlink** opens a chronological list of the associated logs.

![Data retrieval info table]

- Shows how many times the DTU has retrieved log data for the last 30 days.
- The selected DTU’s ACS Data Retrieve logs are displayed in a chronological order.
- Note: Number will be close to the number of engine runs but may not match i.e. When you start the engine quickly after shut down or start only one engine, *Dual engine run count should be close to double*.

---

**Figure 49 - Data retrieval info**
Selecting the desired Hyperlink opens a chronological list of the associated logs

<table>
<thead>
<tr>
<th>DTU Description</th>
<th>Date and local time of last access success</th>
<th>Last Tx Duration</th>
<th>Engine Run Count</th>
<th>Data Retrieval Count</th>
<th>Tx Success Count</th>
<th>Last Signal Strength</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example Your Tail Number Here</td>
<td>11-Feb-07 19:36:22</td>
<td>01:03:56</td>
<td>628</td>
<td>320</td>
<td>253</td>
<td>65</td>
<td>Graph</td>
</tr>
<tr>
<td></td>
<td>11-Feb-07 19:56:09</td>
<td>00:46:22</td>
<td>498</td>
<td>240</td>
<td>236</td>
<td>75</td>
<td>Graph</td>
</tr>
<tr>
<td></td>
<td>11-Feb-07 20:00:30</td>
<td>00:52:00</td>
<td>400</td>
<td>227</td>
<td>226</td>
<td>71</td>
<td>Graph</td>
</tr>
<tr>
<td></td>
<td>11-Feb-07 19:36:04</td>
<td>01:16:46</td>
<td>318</td>
<td>234</td>
<td>191</td>
<td>89</td>
<td>Graph</td>
</tr>
<tr>
<td></td>
<td>11-Feb-07 20:00:57</td>
<td>01:00:56</td>
<td>178</td>
<td>88</td>
<td>94</td>
<td>73</td>
<td>Graph</td>
</tr>
</tbody>
</table>

Shows how many times the DTU has successfully uploaded log data to TurbineTracker in the last 30 days

Note: Number will be close to the number of Data Retrieval counts but may not match i.e.: When you start the engine quickly after shut down or when the DTU has no cellular connection.

Figure 50 – Viewing Microserver Transmission Success logs
Selecting the desired Hyperlink opens a chronological list of the associated logs

<table>
<thead>
<tr>
<th>DTU Description</th>
<th>Date and local time of last anna success</th>
<th>Last Tx Duration</th>
<th>Engine Run Count</th>
<th>Data Retrieval Count</th>
<th>Tx Success Count</th>
<th>Last Signal Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example Tail Number Here</td>
<td>11-Feb-07 19:35:22</td>
<td>00:05:56</td>
<td>533</td>
<td>200</td>
<td>253</td>
<td>65</td>
</tr>
<tr>
<td>Example Tail Number Here</td>
<td>11-Feb-07 19:55:09</td>
<td>00:46:22</td>
<td>498</td>
<td>540</td>
<td>236</td>
<td>75</td>
</tr>
<tr>
<td>Example Tail Number Here</td>
<td>11-Feb-07 20:03:30</td>
<td>00:52:50</td>
<td>500</td>
<td>227</td>
<td>236</td>
<td>71</td>
</tr>
<tr>
<td>Example Tail Number Here</td>
<td>11-Feb-07 19:05:04</td>
<td>01:16:46</td>
<td>518</td>
<td>224</td>
<td>191</td>
<td>69</td>
</tr>
<tr>
<td>Example Tail Number Here</td>
<td>11-Feb-07 20:03:37</td>
<td>01:00:56</td>
<td>178</td>
<td>58</td>
<td>24</td>
<td>73</td>
</tr>
</tbody>
</table>

Shows how many times the DTU has successfully uploaded log data to TurbineTracker in the last 30 days

Note: Number will be close to the number of Data Retrieval counts but may not match i.e.: When you start the engine quickly after shut down or when the DTU has no cellular connection.

Figure 51 – Viewing transmission count info
Selecting the desired Hyperlink opens a chronological list of the associated logs

<table>
<thead>
<tr>
<th>DTU Description</th>
<th>Date and local time of last xmm success</th>
<th>Last Tx Duration</th>
<th>Engine Run Count</th>
<th>Data Retrieval Count</th>
<th>Tx Success Count</th>
<th>Last Signal Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example</td>
<td>01:08:56</td>
<td>528</td>
<td>182</td>
<td>76</td>
<td>60</td>
<td>72 (Graph)</td>
</tr>
<tr>
<td>Your Tail Number Here</td>
<td>01:09:56</td>
<td>528</td>
<td>182</td>
<td>76</td>
<td>60</td>
<td>72 (Graph)</td>
</tr>
<tr>
<td>Example</td>
<td>01:09:56</td>
<td>528</td>
<td>182</td>
<td>76</td>
<td>60</td>
<td>72 (Graph)</td>
</tr>
<tr>
<td>Example</td>
<td>01:09:56</td>
<td>528</td>
<td>182</td>
<td>76</td>
<td>60</td>
<td>72 (Graph)</td>
</tr>
</tbody>
</table>

Shows how strong the cellular signal was during the DTU’s last successful Upload to TurbineTracker
GSM
-255 = no signal
-0 = perfect signal
GSM signal of at least -91 recommended for reliable data transfer

Figure 52 – Viewing signal strength info

Selecting the desired Graph button opens a graphical display for the selected Time period (default is the last 30 days)
Engine Run Count Graph
Tx Success and Data Retrieval Count Graph

Figure 53 – Viewing DTU Graph
Figure 54 – DTU Graph display
6 DTU LOG RETRIEVAL when DTU has no GPRS coverage

Aircraft with an operational DTU will not normally require manual download unless the total log exceeds 1 mb (i.e. time history from a failed sensor for the entire flight) or there is no GPRS connection available. The DTU should be monitored in TurbineTracker to ensure that they upload after each flight and be investigated with MLP if regular transmissions are occurring (use the TurbineTracker™ Deficient Data Alert).

Manual transfer time - when using a laptop with wireless internet access and the MLP Synchronize process, from arrival at the aircraft, power up the electrical system, Synchronize to the aircraft, power down the aircraft electrical system and then synchronize the data to TurbineTracker should take twenty (20) minutes.

Using a laptop without internet access, expect to expend forty-five (45) minutes because of the extra steps involved using a disk. (this is only if the laptop cannot connect to the Internet)

One of the benefits of using the synchronize process is the ability to synch to a whole fleet of aircraft at a time convenient for the operator (one at a time) then synch to TurbineTracker and upload the logs all together. Another advantage of using synch is that the binary file transfer of data takes about one tenth of time it takes for manual transfer.

- Ensure that you have the current version of the Monitor link Program (MLP). The current version is available from TurbineTracker™ under the “Support Tab” and “System Updates” button.
- The preferred method for retrieving DTU logs is to use the Synchronize to Aircraft function.
- TurbineTracker is the preferred tool to use for viewing DTU & ACS logs.

6.1 Establish communication & retrieve the log with MLP- steps 1 thru 4

1) Connect the laptop and start MLP
   a) Note: You can use the MLP status function to verify communication and determine Log location.
2) Select Aircraft from the Synchronize dropdown menu.
3) Select the DTU Sync Option All
   a) Note: Refer to your Instruction for Continued Airworthiness and the MLP User Guide for trouble shooting if MLP can not establish a connection.
4) Select Yes to reset the log
   a) You now have created 4 files in your directory C:\MLP\LOG
      i) .BIN.GZ (Monitors Log, compressed)
      ii) .LOG.DTUSYS (Header, ASCII)
      iii) .DTU.GZ (DTU Log, compressed)
      iv) .LOG (Header, binary)
5) Connect the computer to the Internet
6) Select TurbineTracker from the Synchronize dropdown menu.

If you have no internet access to allow viewing of Altair logs on TurbineTracker the user has the option of viewing them with MLP as follows.

7) View the log with MLP - steps 7 thru 13
8) Click View to open the MLP drop down menu
9) Select Data Log File
10) Select Complete
11) Double click the MISC directory
12) Select the desired .MBC.LOG file
13) Select Open
14) View the log data to determine the Fault/Caution condition

NOTE: Don’t forget to upload the .DTU.GZ and the .BIN.GZ files to Turbine Tracker
7 Replace DTU Checklist

Refer to the FAA Approved Instructions for Continued Airworthiness for Maintenance Instructions applicable to your aircraft.

**NOTE:** MLP can not Synchronize DTU config files. Before installing the DTU you will need to manually download the current DTU configuration file from the TurbineTracker™ website.

**OVERVIEW**

- Download DTU Config from TurbineTracker
- Load DTU Config into Processor
- Verify Installation DTU & ACS
- Verify Data Transmission

**NOTE:** ACS (Aircraft Component System) refers to the system connected to the DTU. It could be an IntelliStart+, ADAS®, ADAS+, SmartCycle+ and or third party monitors.

7.1 Download DTU Configuration File

TurbineTracker to Computer

1. Log on to Turbine Tracker using your User ID and Password.
2. Upon successful log on, click the “DTU” Tab.
3. Click “Download Config” button on the left.
4. Select the file to download by clicking on the desired version.
   a. **NOTE:** A File Download Box Will Appear.
5. Save the File onto your computer.

**TIPS AND TRICKS:** Although the File may be saved anywhere on the computer, it is recommended that you save the File in the “c:\mlp\cfg” folder. This folder is the default folder that the Monitor Link Program (MLP) uses to find configuration files for transfer.

**NOTE:** The File Download box will disappear when download is complete.

7.2 Load DTU Configuration from Laptop Computer to DTU Processor

**NOTE:** Ensure you have the current version of the Monitor Link Program (MLP). The current version is available from Turbine Tracker under the “Support Tab” and “Systems Update” button.

**CAUTION:** Ensure you have installed an active SIM card into the DTU (you can use a cell phone to verify).

1) Using MLP, Autodetect to establish a connection to the processor (DTU). If unable to establish connection, accomplish MLP Troubleshooting Procedure.
   a) **TIPS AND TRICKS:** Accomplish “MLU Status” under the MLU Menu to insure you are connected to the DTU (red button). Receiving a response and the “MLU Status Processing Complete” prompt indicates a connection has been established between the computer and the processor.
2) Under the Synchronize dropdown select “Aircraft” or Expert User’s can manually “Retrieve Unit’s Data Log”.
   a) **NOTE:** If you are prompted to “Reset the log, select “Yes”.
3) Select “Configure Unit” under the MLU dropdown Menu.
4) Browse to find the File when the Select Configuration Box appears, if necessary.
   a) **NOTE:** Configuration Files are denoted by the .cfg and extension. .cfg files are the only file types that are loaded into the processor.
5) Select the File and click “Open”
   a) **NOTE:** Configuration File load may take as long as 4 minutes.
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6) A completed configuration file load will be noted by the MLP “Configuration Complete” prompt.

TIPS AND TRICKS: Accomplish “MLU Status” of the DTU again under the MLU Menu to verify your config has been loaded.

7.3 Verify Installation

View Live Data with MLP if using an Altair engine monitor otherwise skip to step 11
1) After you have verified the configuration is complete (verify with MLU Status), Recycle aircraft power.
2) After power on BIT test, establish a connection with MLP and Enter DTU transparent Mode (green button). This is to verify proper communication with the ACS.
   a) TIPS AND TRICKS: Accomplish “MLU Status” of the IntelliStart+ under the MLU Menu to verify you are connected the ACS (IntelliStart+). Receiving the response and a “MLU Status Processing Complete” prompt indicates a connection has been established between the computer and the processor.
3) View live Data from the ACS using “Text View”. This is to verify all Sensors are being displayed correctly (no scrambled symbols) paying particular attention to the engine off state sensors N1 & TOT.
   a) NOTE: “Scrambled symbols are like “X&*” instead of “%” for percent or “{X^” instead of “c” for Celsius units. If you see something other then % or c contact Altair Support.
4) Stop viewing Live Data.
5) Exit DTU Transparent Mode (red button).

7.4 Verify DTU to TurbineTracker Data Transmission

1) Under the Synchronize dropdown select “Aircraft”, then select “All” to retrieve the log file from the ACS & DTU.
   a) NOTE: Retrieving any log data from the ACS & DTU will reduce the upload time in step 2a.
   b) NOTE: If you are prompted to “Reset the log, select “Yes”.
2) Maintenance Mode Transmission
   a) Enter DTU Maintenance Mode by pressing and holding the RF/Fault Lamp Switch for longer then 5 seconds.
      i) NOTE: It can take up to several minutes for the DTU to load the data and the RF Lamp begins to flash during the data transmission.
   b) Check TurbineTracker™ for successful uploading of the DTU and ACS logs (Your Hanger - Account Status hyperlink and the DTU Tab – Log Data Button)
      i) NOTE: It can take up to several minutes for logs to be displayed after transmission.
3) Automatic Transmission
   a) Conduct a normal engine run and shutdown.
      i) NOTE: It can take up to several minutes for the DTU to load the data and the RF Lamp begins to flash during the data transmission.
   b) Check TurbineTracker™ for successful uploading of the DTU and ACS logs (Your Hanger - Account Status hyperlink and the Data Analysis Tab – View Log Data Button)
      i) NOTE: It can take up to several minutes for logs to be displayed after transmission.

If the DTU fails to transmit logs to TurbineTracker
Trouble shooting the DTU is very complex and beyond the scope of this manual. You will need to use your ICA and Contact Altair Avionics Customer Support for guidance.