This Airplane Flight Manual Supplement or Supplemental Flight Manual must be carried on board the aircraft when the KTX2 ADS-B Transponder is installed in accordance with the AML Supplemental Type Certificate SA02525AK.

The information contained herein supplements the FAA approved Airplane Flight Manual or the type design data only in those areas listed herein. For limitations, procedures and performance information not contained in this document, refer to the FAA approved Airplane Flight Manual, manual material, markings, placards, or other information that was required by the applicable regulations under which the aircraft was type certificated.

Make and Model Airplane: __________________________
Airplane Serial Number: __________________________
Airplane Registration Number: __________________________

FAA Approved:

ALAN W WILSON
Digitally signed by ALAN W WILSON
Date: 2019.09.09 14:25:19 -08'00'

For: Manager, Northwest Flight Test Section, AIR-715
Federal Aviation Administration
Seattle, WA

Date: September 9, 2019
FAA APPROVED
AIRPLANE FLIGHT MANUAL SUPPLEMENT
or
SUPPLEMENTAL FLIGHT MANUAL
For The

TQ-Group GmbH
KTX2 ADS-B Transponder
Part Number 304110 (xx)

RECORD OF REVISIONS

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<th>Revision</th>
<th>Date of Revision</th>
<th>Description</th>
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<td>0</td>
<td>9/6/2019</td>
<td>Original Issue</td>
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# TABLE OF CONTENTS

## SECTION 1  GENERAL

1.1 Functional Description ................................................................. 5  
1.2 Capabilities ............................................................................... 5  
1.3 L-Band Antenna ......................................................................... 5  
1.4 GPS Receiver ............................................................................. 5  
1.5 Configuring the KTX2 ................................................................. 6  
   1.5.1 Installation Configuration ................................................... 6  
   1.5.2 Adjustable Parameters in Operation Mode ......................... 6  
1.6 Control and Display Screen ....................................................... 6  
1.7 Interaction of Major Components .............................................. 8  
1.8 Installation Configuration for This Aircraft ............................. 8  

## SECTION 2  LIMITATIONS

2.1 Minimum Documentation .......................................................... 9  
2.2 Minimum Equipment ............................................................... 9  
2.3 ADS-B OUT Compliance ....................................................... 9  
2.4 Anonymous Mode ................................................................. 9  
2.5 IDENT Function ......................................................................... 9  
2.6 ALT Function ........................................................................... 9  
2.7 Traffic Awareness .................................................................... 9  

## SECTION 3  EMERGENCY PROCEDURES

3.1 Emergency Procedures ............................................................. 10  
3.2 Abnormal Procedures .............................................................. 10  
   3.2.1 Abnormal Indications ....................................................... 10  
   3.2.2 Emergency Procedures .................................................... 11  

## SECTION 4  NORMAL PROCEDURES

4.1 Normal Power ON ................................................................. 12  

## SECTION 5  PERFORMANCE

12

## SECTION 6  WEIGHT AND BALANCE

12

## SECTION 7  SYSTEM DESCRIPTIONS

12

### TABLE OF FIGURES

- Figure 1-1: The KTX2 ADS-B Transponder ............................... 5  
- Figure 1-2: KTX2 Control & Display Screen ............................ 7  
- Figure 1-3: System Interface Overview ................................. 8  
- Figure 2-1: Required Equipment ........................................ 9
SECTION 1 GENERAL

1.1 Functional Description
The KTX2 is a panel mount Mode-S(ES) ADS-B OUT transponder that meets the 2020 ADS-B Mandate requirements when connected to a WAAS GPS source and appropriate L-Band antennas.

- ADS-B uses transmissions from ADS-B equipped aircraft to provide surveillance information to ground systems for air traffic control, and to other like-equipped aircraft with ADS-B IN.

- The KTX2 broadcasts the following aircraft information in one-second intervals: an ICAO Mode-S Identification Code, aircraft identification, position, altitude, velocity, and other aircraft status information.

1.2 Capabilities
The KTX2 transponder is usually panel-mounted and provides the Pilot with complete control over the Transponders Mode (OFF, Standby, On Ground, Mode A/C Only, and ADS-B OUT).

1.3 L-Band Antenna
The L-Band antenna is used by the MSS to transmit 1090MHz ADS-B (Mode-S(ES)). It is always located on the bottom of the aircraft.

1.4 GPS Receiver
The KTX2 is interfaced with an external GPS receiver that utilizes signals from Global Positioning System (GPS) satellite constellation and Satellite-Based Augmentation Systems (SBAS). The GPS provides position, velocity, time and integrity information to the KTX2 which then includes this information in each ADS-B message.
1.5 Configuring the KTX2
The KTX2 is configured for permanent parameters such as Mode-S ID (AA), VFR Code, Category, Ground Switch Support and aircraft dimensions only during installation. Flight ID (Callsign), Display Brightness and display of GPS position data are adjustable parameters and may be changed during operation (inflight).

1.5.1 Installation Configuration
The major parameters of the KTX2 are configured by pressing the ID button for one, or more seconds during system startup. No external connections are necessary. Once the configuration parameters have been entered and saved, they will remain in the Transponder’s memory until changed.

1.5.2 Adjustable Parameters in Operation Mode
The Pilot may change or access these parameters inflight. Once FID or Brightness have been changed, they will remain in the Transponder’s memory until changed again.

- To modify the Flight ID (FID) during operation, push the ID button for at least 3 seconds.
- To modify the display brightness during operation, push the VFR button for at least 3 seconds.
- Actual GPS data can be displayed when pushing the Toggle Button for at least 3 seconds.

1.6 Control and Display Screen
The main screen (Figure 1) provides all the necessary command and annunciation functions for normal operations.
Figure 1-2: KTX2 Control & Display Screen
1.7 Interaction of Major Components
Figure 1-3 shows how the major components of the KTX2 connect to other aircraft systems.

![Diagram of KTX2 System Interface](image)

**Figure 1-3: System Interface Overview**

1.8 Installation Configuration for This Aircraft  
(This section should be completed by a licensed installed)

This aircraft has been configured for a: ☐ KTX2

ICAO Mode-S ID (AA-Code): ______________

Aircraft Emitter Category: ☐ FixW <12,500 lbs  
☐ Other: ______________

VFR Code: ☐ 1200  
☐ Other: ______

Air/Ground Switch: ☐ Enabled  
☐ Not Enabled

Interfaced GPS: ☐ NexNav Mini  
☐ Other: __________________________
SECTION 2 LIMITATIONS

2.1 Minimum Documentation
Aircraft Flight Manual Supplement must be carried on board the aircraft at all times.

2.2 Minimum Equipment
The KTX2 must have the following system interfaces fully functional in order to be compliant with the requirements for 14 CFR 91.227 ADS-B OUT operations:

<table>
<thead>
<tr>
<th>Interfaced Equipment</th>
<th>Number Required</th>
<th>Number Installed</th>
</tr>
</thead>
<tbody>
<tr>
<td>KTX2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>An operable WAAS position source</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

![Figure 2-1: Required Equipment](image)

2.3 ADS-B OUT Compliance
The KTX2 only complies with 14 CFR 91.227 when all its required functions are operational as indicated by annunciators not being illuminated and/or ADS-B messages not being present.

2.4 Anonymous Mode
Anonymous Mode must only be operated while operating under VFR and while squawking a VFR code. Anonymous Mode must be turned off when requested by Air Traffic Control.

2.5 IDENT Function
The system must be capable of squawking IDENT when requested by Air Traffic Control.

2.6 ALT Function
While operating within airspace requiring an ADS-B OUT compliant transmitter, Pressure Altitude Broadcast Inhibit (PABI), or “No ALT” shall only be enabled when requested by Air Traffic Control.

2.7 Traffic Awareness
No Traffic Awareness or Traffic Alerting function is included in the KTX2.
SECTION 3 EMERGENCY PROCEDURES

3.1 Emergency Procedures
None.

3.2 Abnormal Procedures

3.2.1 Abnormal Indications

Table 3-1: Abnormal Indications

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Cause / Corrective Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No sign of power and/or Screen blank.</strong></td>
<td>KTX2 is not operating: 1. Verify KTX2 breaker is closed. Check and reset the circuit breaker; 2. Verify power and ground supplied to the KTX2; 3. Replacement of the KTX2 may be required. Contact TQ-G Direct Support before removal of the unit.</td>
</tr>
<tr>
<td><strong>Err FPGA</strong></td>
<td>A severe error has been detected. There is no access to the FPGA: 1. Attempt to restart the unit; 2. Replacement of the KTX2 may be required. Contact TQ-G Direct Support before removal of the unit.</td>
</tr>
<tr>
<td><strong>Intern. Comm. Fail</strong></td>
<td>Severe failure. An internal communications error has occurred: 1. Attempt to restart the unit; 2. Replacement of the KTX2 may be required. Contact TQ-G Direct Support before removal of the unit.</td>
</tr>
<tr>
<td><strong>Do System Restart</strong></td>
<td>An error has been detected and the KTX2 should be restarted: 1. Switch unit off, wait 5 seconds and switch on; 2. If error repeats, contact TQ-G Direct Support for further advice.</td>
</tr>
<tr>
<td><strong>Trans. Output</strong></td>
<td>Severe Failure. The KTX2 is not transmitting. 1. Check all connections; 2. If no root cause can be discovered, replacement of the KTX2 may be required. Contact TQ-G Direct Support before removal of the unit.</td>
</tr>
<tr>
<td><strong>CRC Failure</strong> [GNSS Data Page]</td>
<td>Insufficient data from GPS source. 1. A minimum of 3 GPS satellites must be in view; 2. Check GPS antenna connection; 3. If problem persists, GPS source may have failed. Contact GPS source manufacturer for further details.</td>
</tr>
</tbody>
</table>
### Symptoms

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Cause / Corrective Actions</th>
</tr>
</thead>
</table>
| **BAT LOW**  
[Appears on center of screen] | Voltage is < 11 VDC.  
1. If engine is running, increase RPM;  
2. If engine is off, recharge or replace battery.  
The KTX2 is designed to operate above 9 VDC, but determine cause of low voltage before next flight. |
| **ANT**  
[Appears on right of screen] | Possible L-Band antenna failure.  
1. Check antenna installation (cable & connector);  
2. Resolve problem before next flight. |
| **TRX**  
[Appears on right of screen] | Weak Transmitter – Output power limited.  
1. Check antenna installation (cable & connector);  
2. If no root cause can be discovered, replacement of the KTX2 may be required. Contact TQ-G Direct Support before removal of the unit. |

#### 3.2.2 Emergency Procedures

**Loss Of Aircraft Electrical Power Generation**  
(Loss of Generator)

If the KTX2 is shut down in order to shed load from the aircraft's electrical system, ADS-B will no longer be available. If under ATC control, notify your Controller of loss of ADS-B OUT.

**NOTE**

This guidance is supplementary to any procedure provided in the AFM or POH for the aircraft in Loss of Power situations

**Loss of GPS/SBAS Position Data indicated by a Red “A” on Display and/or “CRC Failure” on GPS page**

If under ATC control, notify your Controller of loss of ADS-B OUT.
SECTION 4 NORMAL PROCEDURES

The procedures described below are specific to the KTX2.

4.1 Normal Power ON

KTX2 Power…….PUSH ON

Display Indication….AFTER 2-SECONDS, NORMAL SCREEN SHOULD APPEAR

NOTE
GPS alignment may take 3 to 4 minutes depending on the aircraft location and distance
the aircraft has been moved since the last alignment. A Red “A” will appear and “CRC
Failure” will be indicated until the GPS source has aligned.

SECTION 5 PERFORMANCE

No change

SECTION 6 WEIGHT AND BALANCE

See current weight and balance data

SECTION 7 SYSTEM DESCRIPTIONS

7.1 Power
Power for the KTX2 is provided through a circuit breaker labeled “ADS-B”. Power for the
GPS source is provided through a circuit breaker labeled “GPS”.

7.2 External Switches, Lights and Controls
The KTX2 has no external switches or controls. Lighting is independent of the instrument
panel lighting rheostat.