BendixKing
by Honeywell

PILOT'S GUIDE

KGX 150/130
ADS-B CERTIFIED TRANSCEIVERS & RECEIVERS

KGX 150/130 ADS‑B Certified Transceivers & Receivers

Pilot's Guide

CUSTOMER SUPPORT

Contact BendixKing customer support at the following:

● 1-855-250-7027 (Toll Free U.S.A./Canada)

● 1-505-903-6148 (International Direct)

● www.bendixking.com/support.

BENDIXKING TECHNICAL PUBLICATIONS

Updates to this pilot guide will be posted on the BendixKing website (www.bendixking.com).

Questions about this publication can be emailed to:

● techsupport@bendixking.com

Record of Revisions

Revision Number	Revision Date	Reason for Revision

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1.   Introduction

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1. **THE KGX PROVIDES WEATHER INFORMATION THAT CAN BE USED AS AN AID FOR SITUATIONAL AWARENESS ONLY. WEATHER INFORMATION PROVIDED MUST BE USED FOR ADVISORY USE ONLY AND MUST NOT BE USED FOR FLIGHT SAFETY CRITICAL INFORMATION AND OPERATION. THE USER IS ADVISED TO EXERCISE CAUTION AND LET COMMON SENSE PREVAIL WHEN CONFRONTED WITH SEVERE WEATHER CONDITIONS.**

2. **THE KGX PROVIDES TRAFFIC INFORMATION THAT CAN BE USED AS AN AID FOR SITUATIONAL AWARENESS ONLY. PILOTS MUST RELY ON AIR TRAFFIC CONTROL GUIDANCE OR VISUAL RULES FOR VISUALLY ACQUIRING TRAFFIC AND MANEUVERING THEIR AIRCRAFT IN TRAFFIC.**
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This document contains instructions for operating the BendixKing KGX Series. The BendixKing KGX Series is a remotely mounted ADS–B solution. There are four models in the KGX Series:

● KGX 150T – Transceiver with internal WAAS GPS (P/N 89000016–151)

● KGX 150R – Receiver with internal WAAS GPS (P/N 89000016–150)

● KGX 130T – Transceiver (P/N 89000016–130)

● KGX 130R – Receiver (P/N 89000016–131).

Highlights of the KGX 150T/130T are:

● Transmits ADS-B Out data on 978 MHz (UAT) frequency

● Receives ADS–B, TIS-B, and FIS-B uplinks for traffic, graphical weather, and other data

● Displays data on iPad® with optional WiFi Module

● Meets the FAA 2020 mandate for ADS-B Out (14 CFR§91.225, AC 90–114)

● Displays data on compatible panel MFD

● Compliance: DO-160G, DO–282B/TSO C154c, TSO–C157a, TSO–C195a, and TSO-145c (KGX 150 only).

Highlights of the KGX 150R/130R are:

- Receives ADS-B, TIS-B, and FIS-B uplinks for traffic, graphical weather, and other data

- Displays data on compatible panel MFD

- Displays data on an iPad® with optional WiFi Module

- Compliance: DO-160G, DO-282B/TSO C154c, TSO-C157a, TSO-C195a, and TSO-145c (KGX 150 only).

2. KGX Control Panel

INTRODUCTION

The KGX 150T/130T models interface to the KGX Control Panel (P/N: 89000016-001) used in-flight by the pilot to control output of ADS-B messages. The KGX Control Panel receives power from and communicates with the KGX 150T/130T. The KGX Control Panel consists of the following components:

● Monochrome liquid crystal display (LCD)

● Mode Selection knob

● Code Knob

● Identification (IDT) button

● Visual flight rules (VFR) button

● Function button

● Enter button.

Each of the KGX Control Panel functions will be explained in the paragraphs that follow. Figure 2-1 shows the available control panel components used for operating the KGX 150T/130T.
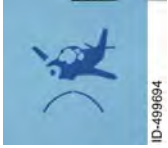

Figure 2-1
KGX Control Panel

DISPLAY

The display in Figure 2-2 shows the operating mode of the KGX 150T/130T, the current squawk code, Flight ID/Call Sign, and the reported pressure altitude in hundreds of feet.

The wave symbol (shown in the pictures below) is active when the KGX 150T/130T transmits or receives ADS-B messages and is displayed on the screen.

The wave symbol under the aircraft image traveling upward indicates that the KGX 150T/130T is receiving ADS-B messages.

The wave symbol under the aircraft image traveling downward indicates that the KGX 150T/130T is transmitting ADS-B messages.

The wave symbol traveling both upward and downward indicates that the KGX 150T/130T is receiving and transmitting ADS-B messages. The KGX 150T/130T receives ADS-B transmissions regardless of the transmission mode.

The pressure altitude is displayed as a Flight Level in hundreds of feet. When non-standard atmospheric conditions apply, this may not match the altimeter indicated altitude but will be correctly reported in the ADS-B message

Figure 2–2 shows the KGX 150T/130T powered on in the Airborne Transmission mode with a pressure altitude of flight level 500 feet being displayed.

**Figure 2–2
Display in ALT Mode**

MODE SELECTION KNOB

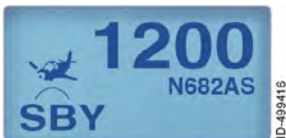The left hand mode selection knob, shown in Figure 2–3, controls the power to the KGX 150T/130T and the operating mode.

**Figure 2–3
Mode Selection Knob**

The mode selection knob rotates between the different operating modes, as defined in the following paragraphs:

OFF – Power is removed from the KGX.

SBY – The KGX 150T/130T is on but will not transmit any ADS-B messages but will still receive ADS-B messages.

ALT -- The KGX 150T/130T is placed in Airborne Transmission Mode or automatically switches between Airborne and Ground Mode if an Air/GND Squat switch is configured and the aircraft velocity meets the criteria described in DO--282B for the specific aircraft configuration. Pressure altitude is reported.

NOTE: There is no functional difference between the two **ALT** knob positions.

ON -- The KGX 150T/130T is placed in Airborne Transmission Mode or automatically switches between Airborne and Ground Mode if an Air/GND Squat switch is configured and the aircraft velocity meets the criteria described in DO--282B for the specific aircraft configuration. Pressure altitude reporting is suppressed.

NOTE: When airborne, the control panel should always be set to either of the two ALT positions, unless otherwise directed by ATC.

CODE KNOB

The Code knob is used to set squawk codes, such as those listed in Table 2--1, and the Flight ID. Push the Function (**FN**) button until either the squawk code or Flight ID is highlighted at the top of the screen. Turning the Code knob, shown in Figure 2--4, will highlight the first digit on the display, and the digit can be changed as required by rotating the Code knob. Push the Enter (**ENT**) button to advance to the next digit. When **ENT** is pushed on the last digit, the new squawk code or Flight ID will replace the previous value. If the code entry is not completed within 7 seconds, the changes are ignored and the previous code is restored.

**Figure 2--4
CODE Knob**

Table 2‑1
List of Common VFR Squawk Codes

Squawk Code Number	Description
1200	VFR code in the USA
7500	Hijack code
7600	Loss of communications
7700	Emergency code

The Call Sign/Flight ID should correspond to the aircraft call sign entered on flight plan. If no flight plan is active, the aircraft registration should be used as the Call Sign/ Flight ID. Use only letters and digits. If the Call Sign/Flight ID is less than 8 characters long, entering a blank character will end it.

PUSH BUTTONS

The push buttons are defined in the following paragraphs:

IDT – Push the **IDT** button to activate the Identification function. The **IDT** button on the KGX Control Panel is disabled when the squawk code is displayed in reverse video. See the External Control subsection later in this section.

VFR – Pushing the **VFR** button sets the ADS‑B to the pre‑programmed code and VFR Flight ID. Pushing the button again restores the previous squawk code and Flight ID.

ENT – The **ENT** button enters a digit in the code selector.

FUNCTION BUTTON

Call Sign/Flight ID Page

FN – Pushing the **FN** button gives access to changing the Call Sign/Flight ID.

Either directly rotate the **Code** knob or push the **ENT** key and the first character of the flight ID will be highlighted. Use the rotary **Code** knob to select choice of alpha-numeric characters. Push **ENT** again and the cursor moves to the next character. You must push **ENT** each time all the way through the 8 characters to save the Call Sign/Flight ID change.

GPS Position Page

Pushing the **FN** button again allows the user to view the present GPS position being transmitted.

Display Brightness Page

Pushing the **FN** button a third time allows the user to adjust the brightness level of the screen. Turning the **Code** knob to the right will make the screen brighter. Turning the knob to the left will decrease the brightness. When the desired brightness is reached, push the **FN** button to lock the brightness setting.

Warning Page

If there are any system messages, the fourth push of the **FN** button displays the Warning page.

EXTERNAL CONTROL

Control inputs such as squawk code, call sign, and mode control (IDENT, Altitude Inhibit, Transmit Standby) are needed by the KGX 150T/130T. The KGX 150T/130T can receive control inputs from the KGX Control Panel, compatible transponder, and/or MFD. If an external controller is configured and functional with the KGX Control Panel installed, the KGX Control Panel displays status, but locks out user control inputs. When control inputs are locked, the KGX Control Panel displays reverse video of the transponder squawk code, as shown in Figure 2-5.

Figure 2-5
Reverse Video of Transponder Squawk Code

If control inputs are received in ARINC format, then the call sign on the Call Sign/Flight ID page cannot be changed and is displayed in reverse video, as shown in Figure 2-6.

Figure 2-6
Call Sign Displayed in Reverse Video

The KGX Control Panel will remain locked for approximately 70 seconds for Mode A/C transponders and 7 seconds for other controllers each time they are interrogated. During this time the **IDENT** and **VFR** buttons on the KGX Control Panel are disabled and the squawk code cannot be changed using the KGX Control Panel. However, the **FN** button can still be used to view other information.

SYSTEM MESSAGES

If the KGX 150T/130T detects a malfunction, the screen will display the **MSG** icon in the center of the LCD. The **MSG** icon will remain as long as the malfunction remains. Depending on the nature of the malfunction, the KGX 150T/130T may not be transmitting ADS-B messages. Figure 2-7 shows the KGX Control Panel display when the system message icon is present.

Figure 2-7
System Messages Icon

To view the system messages on the warning page, push **FN** four times. The warning page is only available when the **MSG** icon is present. When this page is displayed, the KGX Control Panel continually requests the active system messages. The **MSG** icon will remain as shown in Figure 2-7 as long as system messages are still present.

Possible system messages are shown in Table 2-2. When multiple messages are present, the page will automatically scroll through the messages. Push **FN** again to exit this mode and return to normal operation.

Table 2-2
System Messages

KGX Control Panel Display Message	Description
Synth Unlock	Transceiver Diagnostic - Timing fault
Tx Fault	UAT Transceiver fault
Tx Power Low	UAT Transceiver power low during transmit
Tx PSU High	UAT Transceiver power supply output too high
Tx PSU Low	UAT Transceiver power supply output too low
Squitter Fail	System Diagnostic
Remote Hot	KGX 150T/130T internal temperature too high
No ADS-B Pos	GPS position not acquired or satellite tracking lost
GPS Fault	GPS has reported a fault or not responding
Top ant Fault	Top antenna is disconnected
Bot ant Fault	Bottom antenna is disconnected
PSU Fail	Internal DC power supply failure
ADC Fault	ADC or Altitude sensor fault or not responding

NOTE: Troubleshooting:
1. Note the message shown.
2. Cycle power to the KGX using the Mode Control knob on the KGX control panel.
3. If the message persists contact an authorized BendixKing service center.

FAULT ANNUNCIATION

If the KGX 150T/130T detects a catastrophic internal failure the screen will indicate FAULT with a brief statement of the problem. No ADS–B messages will be transmitted when a fault has been detected. If the FAULT persists, contact an authorized BendixKing service center.

NO REMOTE LINK

If the KGX loses communication with the KGX Control Panel DURING power up, the KGX Control Panel display will be as shown in Figure 2–8.
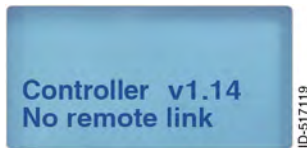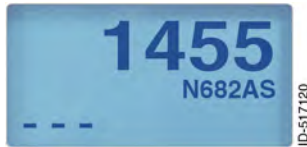

Figure 2–8
No Remote Link During Power Up

If the KGX loses communication with the KGX Control Panel AFTER power up, the KGX Control Panel display will be as shown in Figure 2–9.

Figure 2–9
No Remote Link After Power Up

3. WiFi Module

INTRODUCTION

The BendixKing KGX WiFi module is a complete, standalone embedded wireless LAN access device. The device has onboard TCP/IP stack and applications, requiring only four pins (POWER, 232–TX, 232–RX, GND) to design in for basic usage. The module is pre–loaded with firmware to simplify integration and minimize application–development time.

COMPATIBLE APPS

Go to BendixKing.com for a list of compatible apps.

CONNECTING TO THE WIFI MODULE

The WiFi module can be connected from any device that supports an 802.11 wireless solution or chipset. For example, the WiFi module can be connected using a laptop with a wireless chipset or any of the currently available tablets and pads.

NOTE: The following instructions are not limited to a Windows laptop or an iPad®. They are applicable to other devices as well. The figures are examples to aid in connecting to the WiFi module.

1. Ensure that the WiFi module is powered on.

2. To connect to the WiFi system, ensure that there is a valid wireless connection to the system.

3. If already connected to a WiFi network, disconnect from the current wireless network connection.

4. To connect to the WiFi module wirelessly, select the wireless network that matches the serial number of the WiFi module, and then click Connect. Figure 3-1 shows an example for connecting to a wireless network with Windows.
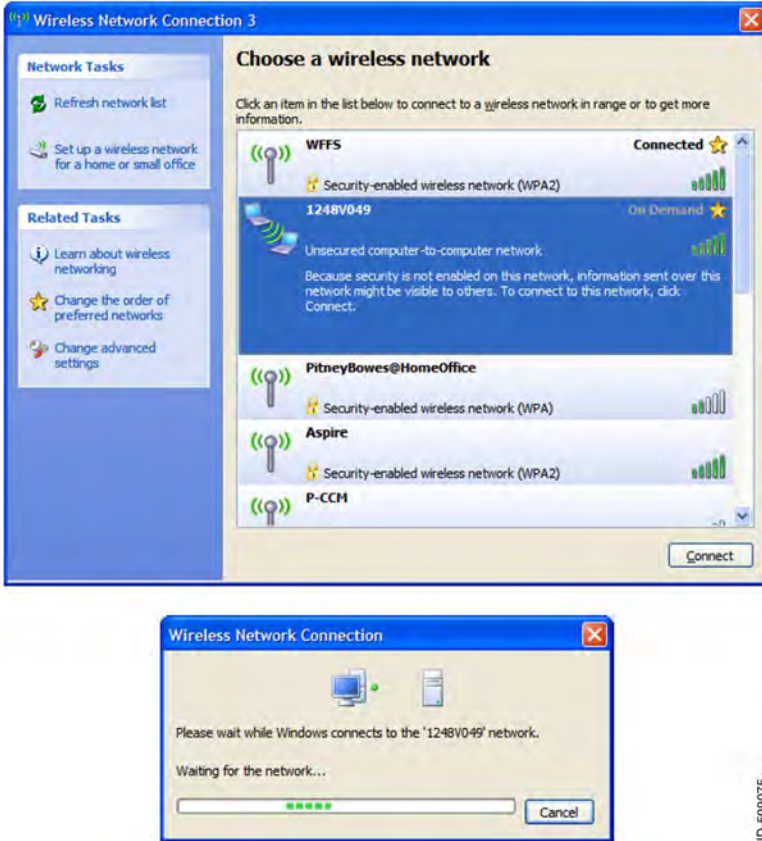

Figure 3-1
Connecting to a Wireless Network With Windows

Figure 3−2 shows an example for connecting to a wireless network with an iPad®.

Figure 3−2
Connecting to a Wireless Network With an iPad®

5. Wait for the WiFi module to acquire a valid network address and state that it is connected. Figure 3-3 shows the connection confirmation with Windows.
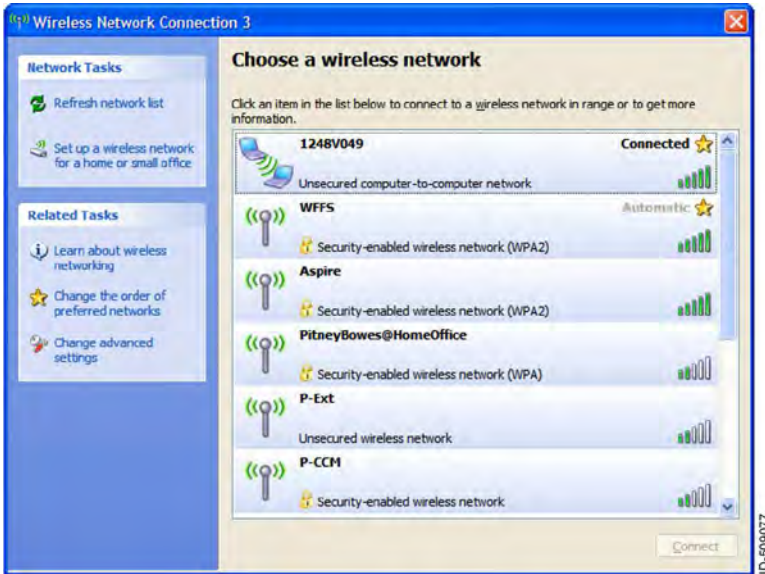
Figure 3-3
Acquiring a Valid Network Address With Windows

Figure 3--4 shows the connection confirmation with an iPad®.

Figure 3--4
Acquiring a Valid Network Address With an iPad®

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Acronyms and Abbreviations

Acronyms and abbreviations used in this guide are defined as follows:

TERMS	DEFINITION
ADC	air data computer
ALT	altitude
ant	antenna
ENT	enter
FN	function
GND	ground
GPS	global positioning system
ID, IDT	identification
LCD	liquid crystal display
MHz	megahertz
MSG	message
PSU	power supply unit
SBY	standby
T	transceiver
TSO	technical standard order
UAT	universal access transceiver
VFR	visual flight rules
WAAS	wide area augmentation system

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