



BKAV-SET

User manual

v.1.0

The functionality described in this manual is the functionality you may expect using the BKAV-SET Radio Stack with Microsoft Flight Simulator 2004 and FSX. Some functions are not yet supported in Flight Simulator, but are already implemented for future FS software updates.

BKAV-SET

The BKAV-SET Radio Stack is a set of radio modules, that contains switches, rotary encoders, LED displays, etc on a Printed Circuit Board.



Each module is connected through daisy chaining to the GSA-55 interface. This interface, that can connect up to 64 modules/gauges, is connected by USB to the PC.

It is necessary to install the driver software prior to connecting the hardware to your PC. Please read the instructions for software installation first.

The interface software, which controls the functionality of the BKAV-SET Radio Stack is running on the background of the Personal Computer where the flight simulator software is running on. This process does not slow down your PC in any way.

BKAV-AUDIO (Audio Panel)

The BKAV-AUDIO simulates the Bendix King audio panel.



Receiver audio is selected through two momentary and six latched, pushbutton, backlit switches. Com 1 and Com 2 are the momentary switches. The latched function is simulated by the LED which is lighted in the IN position and not lighted in the OUT position.

The users can identify which receivers are selected by noting which of the green switch LEDs is illuminated.

Push buttons labeled Nav 1, Nav 2, DME, MKR (Marker), ADF, AUX (auxiliary), and SPR (Speaker) are "latched" type switches. When one of these buttons is pressed, it will stay in the "in" position, illustrated by a LED. Press the switch again and it be in the "out" position and remove that receiver from the audio.

The OMI lights are fully functional and refer to the position of the aircraft in relation with the threshold and the outer (O), Middle(M) and Inner (I) beacons. The lights will light up when the plane crosses the beacon. An audio signal is also produced from within FS.

BKAV-NAVCOM VHF Com/Nav Transceiver

The BKAV-NAVCOM simulates the Bendix King COM/NAV transceiver based on Microsoft Flight Simulator versions 2004 and FSX



The COM module.

In order to operate, you must switch the module on by rotating the VOL knob clockwise from the OFF position. Select the desired operating frequency in the standby display by rotating the Frequency Select Knobs either clockwise or counterclockwise. A clockwise rotation will increment the previous frequency while a counterclockwise rotation will decrement the previous frequency.

- The outer knob will change the MHz portion of the standby display.
- The inner knob will change the kHz portion of the standby display.

To tune the radio to the desired operating frequency, the desired frequency must be entered into the standby display and then the transfer button must be pushed. This will trade the contents of the active and standby displays.

The transceiver is always tuned to the frequency appearing in the ACTIVE display. It is therefore possible to have two different frequencies stored in the ACTIVE and STANDBY displays and to change back and forth between them at the simple push of the transfer button.

The NAV module

The right portion of the display is allocated to NAV receiver information. The frequency channeling is similar to the COMM when operating in the frequency mode.

BKAV-DME Digital Distance measuring equipment

The BKAV-DME simulates the Bendix King DME module.



The 3-position function switch determines both the information displayed and the channeling source. Place the function switch on Frequency (FREQ). The unit is channeled internally with its own two concentric frequency selection knobs. The smaller of the two knobs has an “in” and an “out” position. When in the “in” position, this smaller knob changes the 0.1 MHz digit (0.0, 0.1, 0.2, etc.). When pulled “out”, it changes in 0.05 MHz steps, wrapping around at 0.00 and 0.95 MHz. The outer, larger knob changes the larger digits (1 MHz, 10 MHz). In FREQ mode, the unit will display distance and the selected frequency.

Now move the function switch to the Groundspeed/Time-to-Station (GS/T) position. The unit will hold the internally selected frequency and will display distance, groundspeed and time-to-station.

Note:

The unit electronically converts to distance the elapsed time required for signals to travel to and from the ground station. This distance is then indicated in nautical miles on the Distance/ Speed/Time-to-Station display. This distance, commonly referred to as slant range distance, should not be confused with actual along-the-ground distance.

The difference between actual ground distance and slant range is least at low altitude and/or long range. If the range is three times the altitude or greater, error is negligible.

The effective range of DME depends on many factors, most important being the altitude of the aircraft. Other contributing factors are the location and elevation of the station, DME transmitter power output, and receiver sensitivity.

The groundspeed feature incorporated in the unit measures the rate of change in DME slant range distance with time. This speed is then read from 0 to 999 knots in 1 knot increments. To obtain accurate groundspeed, the aircraft must be tracking directly to or from the station. To obtain accurate time to station, the aircraft must be tracking directly to the station.

BKAV-ADF Automatic direction finder

The BKAV-ADF simulates the Bendix King automatic direction finder module.



Rotate the ON/OFF/VOL knob clockwise from the detented "OFF" position. The unit will be activated and will be ready to operate.

Frequency Selection

The active frequency (to which the ADF is tuned) is displayed in the left side of the window at all times. A standby frequency is displayed in the right side when "FRQ" is annunciated.

With "FRQ" annunciated, the standby frequency is selected using the frequency select knobs which may be rotated either clockwise or counterclockwise.

The standby frequency selected may then be put into the active window by pressing the "FRQ" button. The standby and active frequencies will be exchanged (flip-flopped), the new frequency will become active, and the former active frequency will go into standby.

Operating Modes

When the "ADF" button is in the "out" position, the Antenna (ANT) mode is selected and annunciated

When the "ADF" button is in the depressed position, the ADF mode is selected and annunciated

Operating the Timers

whenever power is interrupted either by the avionics master switch or the units ON/OFF switch, the flight timer will always be automatically reset to :00. Don't forget to read your flight time prior to power shutdown.

You can display Flight time or elapsed time by depressing the FLT/ET button. The flight timer continues to count up until the unit is turned off. You can always reset the elapsed timer to :00 by pressing the SET/RST button. It will then start counting up again.

BKAV-ATC Transponder

The BKAV-ATC simulates the Bendix King transponder module.



Select the proper reply code by pressing the desired code entry buttons. The reply code will be displayed in the code window.

Altitude Display

The KT 76C displays Flight Level Altitude, marked by the letters “FL” and a number in hundreds of feet, on the left side of the display. For example, the reading “FL 065” corresponds to the altitude of 6,500 feet, referenced to 29.92 inches of mercury (or 1013 hP) at sea level. Flight Level Altitude represents “pressure altitude,” and should not be confused with true altitude. Flight Level Altitude is displayed only when altitude reporting is enabled. If the altitude window is blank or shows a series of dashes (as in the case of an invalid altimeter code being reported), altitude reporting will be disabled.

CLR Button

Code entry mistakes are corrected, one digit at a time, by pressing the CLR button and reentering the correct code. The last active code will be displayed if a complete four-digit code has not been entered and there is no activity on any of the code entry buttons, the VFR button, or the CLR button for four seconds.

VFR Button

Momentarily pressing the VFR button will enter a pre-programmed VFR code, typically 1200, in the code window. Pressing and holding the VFR button for two seconds will cause the last active code to be displayed.

BKAV-AP auto-pilot

The BKAV-AP simulates the Bendix King autopilot.



1. AUTOPILOT ENGAGE/DISENGAGE

When pushed for at least 1 second, the autopilot button engages the autopilot if all logic conditions are met. The autopilot will engage in the basic roll (ROL) mode which functions as a wing leveler. When pressed again, will disengage the autopilot.

2. HEADING (HDG) MODE SELECTOR

When pushed, the Heading button will arm the Heading mode, which commands the airplane to turn to and maintain the heading selected by the heading bug on either the DG or HSI. A new heading may be selected at any time and will result in the airplane turning to the new heading. Button can also be used to toggle between HDG and ROL modes.

3. NAVIGATION (NAV) MODE

When pushed, the NAV button will arm the navigation mode. The mode will automatically capture and track the VOR beacon, LOC or GPS as selected for presentation on the HSI or CDI. NAV mode is recommended for enroute navigation tracking.

4. APPROACH (APR) MODE

When pushed, the approach will arm the Approach mode. This mode provides automatic beam capture and tracking of VOR beacon, GPS, LOC, and Glideslope (GS) on an ILS approach. APR mode is recommended for instrument approaches.

5. BACK COURSE APPROACH

When pushed, the button will arm the Back Course approach mode. This mode functions similarly to the approach mode except that the autopilot response to LOC signals is reversed, and GS is disabled.

6. ALTITUDE HOLD (ALT) MODE

SELECT BUTTON - When pushed, will select the Altitude Hold mode. This mode provides tracking of the selected altitude.

7. VERTICAL TRIM (UP/DN) BUTTONS

The action of these buttons is dependent upon the vertical mode present when pressed. If VS mode is active, immediate button strokes will increment the vertical speed commanded either up or down at the rate of 100 ft/min per button press. If ALT mode is active, incremental button strokes will move the altitude hold reference altitude either up or down at 20 feet per press.

8. ALTITUDE HOLD/VERTICAL SPEED DISPLAY

In VS hold, displays the commanded vertical speed. In altitude hold, displays the selected reference altitude.

9. PITCH MODE DISPLAY

Displays the active and armed pitch modes (VS, ALT, ARM and GS).

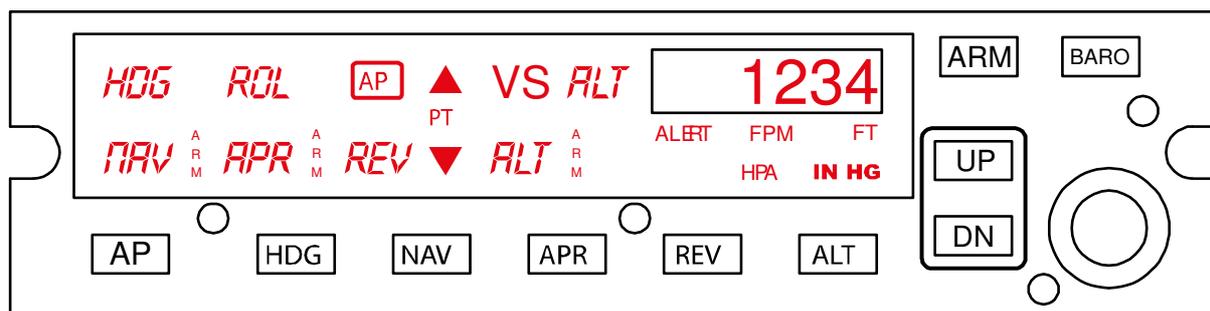
10. ROLL MODE DISPLAY

Displays the active and armed roll modes (ROL, HDG, NAV ARM, NAV, APR ARM, APR, REV ARM, REV, GS ARM).

11. AUTOPILOT ENGAGED (AP)

ANNUNCIATION - Illuminates whenever the autopilot is engaged.

Overview



Knobs:

AP: On/Off AP Master switch. Press min 1 second for set/reset

HDG: Heading Hold mode On/Off

NAV: Nav Hold mode On/Off

APR: APR Hold mode On/Off

REV: Reverse Hold Mode On/Off

ALT: Select Altitude or Vertical speed on display (shown on display by VS and ALT)

- In Altitude display mode the UP-DN will increase/decrease Altitude
- In Vertical speed display mode the UP/DN increase/decrease Vertical speed

ARM: First press enable Altitude setting using Rotary Knobs. FT will blink

Second Press switch Altitude Hold mode on.

Third Press switch Altitude Hold mode off. Back to first press

BARO: Enable Air Pressure setting. Use Rotary to set value. Only possible if AP master switch is Off

Display:

Shows status of AP selections.

PT (Pitch Trim) shows Up/Down actions taken by the AP to correct altitude

Alert will blink for 5 seconds when aircraft reaches Altitude set on

