

# KX 155 and KX 165

Bendix/King TSO'D NAV/COMM Systems



# Innovative "flip-flop" digital displays bring you push button frequency preselection for both NAV and COMM.

It always pays to plan ahead. And with the Bendix/King KX 155 and KX 165 NAV/COMMs, "stay ahead" frequency pre-planning is push button simple.

Both NAV and COMM frequency displays on these units incorporate the popular "flip-flop" preselect feature. So, you can set up en route or approach frequency changeovers well in advance of your actual transition point or ATC handoff sequence for true "stay ahead" flight management.

Just select your upcoming NAV or COMM frequency in the "standby" (STBY) display, and you're all set to "flip-flop" it into "active" status at the press of a button. This function may also be controlled from an optional remote mounted switch.

Both "active" and "standby" frequencies are displayed simultaneously,

so you never have to worry about what's being stored. And there's no chance of inadvertently erasing a frequency just when you need it most.

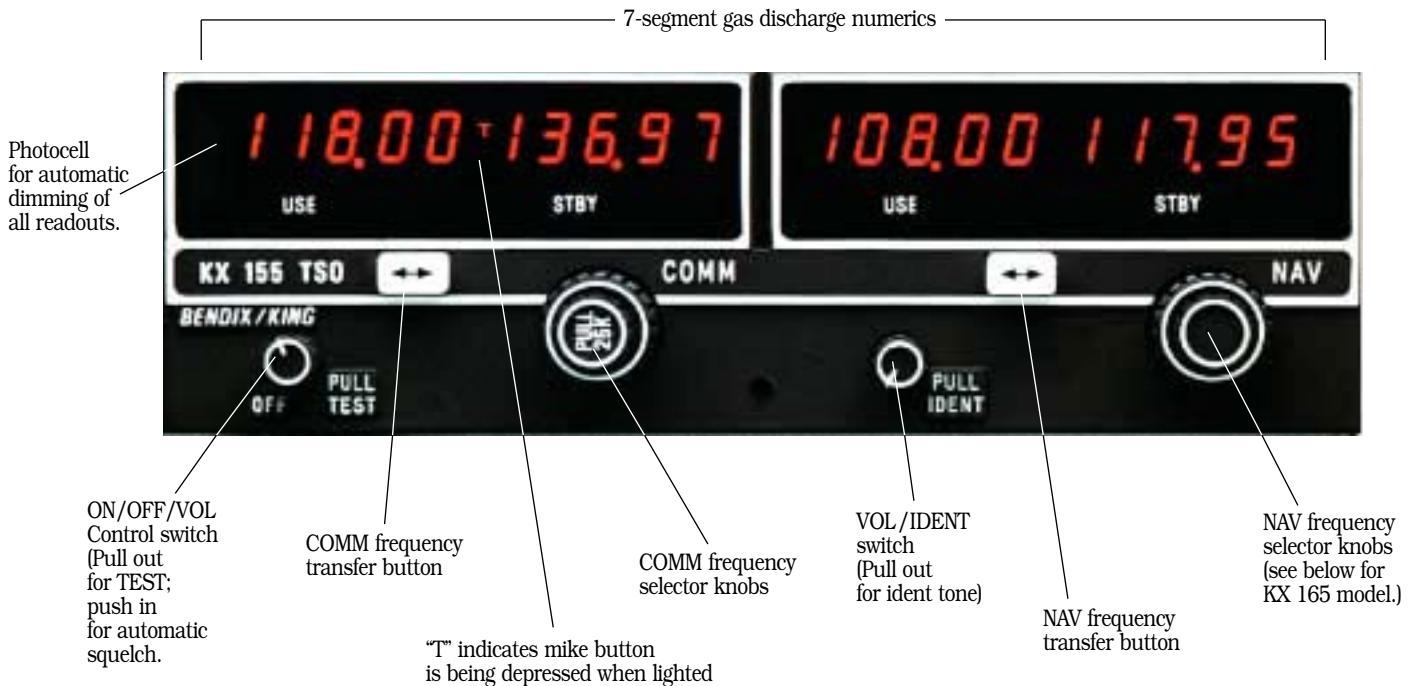
An innovative non-volatile memory circuit holds all the displayed frequencies in storage—through aircraft shutdowns or momentary power interruptions—without the need for battery power of any kind.

Large, self-dimming, microprocessor-controlled gas discharge readouts and solid-state electronic tuning provide fast, accurate selection of all 200 NAV and 760 COMM frequencies—and both the KX 155 and KX 165 feature a built-in 40-channel glideslope receiver. (As an option, they're also available without the glideslope.)

On the COMM side, both the KX 155 and KX 165 systems give you

10 watts minimum transmitter power for maximum range and clarity.

And on the NAV side, the KX 165's useful "Radial" feature offers you an instant readout of the radial you're on (from the "active" VORTAC station), digitally displayed in the "standby" NAV frequency window. This Radial readout doesn't interfere with either your "active" or "standby" NAV frequencies. (However, the NAV "standby" frequency does go into non-displayed storage, and the "active" frequency then becomes linked for direct tuning through the frequency selector knobs.) Thus, with both "active" and "standby" frequencies continuously available, it's easy to perform a quick crossfix check by simply pressing the "flip-flop" button and noting the displayed radial from each of the two selected VORTACs.



On the KX 165 model, a digital readout of the radial you're on (from the "active" VOR station) is displayed in the "standby" NAV frequency window whenever the smaller NAV frequency selector knob is pulled out.



The lower-cost KX 155 system is virtually identical in appearance to the KX 165; however, it doesn't include the digital Radial readout feature. Also, the KX 155 requires an external VOR/LOC converter (usually included in the appropriate Bendix/King NAV indicator) while the KX 165 comes with a built-in VOR/LOC converter designed to interface directly with any ARINC standard CDI or HSI display.

Each of these NAV/COMM units weighs less than 6 lbs. and stands just over 2 inches high in your Silver Crown stack—making them the smallest, most space-efficient TSO'd NAV/COMM packages you can buy anywhere. Both are available in either 14 or 28 volt DC configurations for easy installation in any aircraft.

### TSO'D NAV Indicators for use with the KX 155 and KX 165:



**KI 202/KI 203 VOR/LOC Indicators.** The KI 202 is compatible with the KX 165 without glideslope or other NAV systems which contain their own VOR/LOC converters. The KI 203 is compatible with the KX 155 or other NAV systems which do not contain their own VOR/LOC converter. Both indicators feature rectilinear needle action for left/right course deviation, anti-reflective coated lens, and internal blue-white lighting.



**KI 204 and KI 206 VOR/LOC/Glideslope Indicators.** The KI 204 indicator interfaces with the KX 155 with glideslope or other NAV/GS systems which do not contain their own VOR/LOC converters. The KI 204 provides rectilinear display of VOR/LOC and glideslope deviation, internal blue-white lighting, and an anti-reflective coated glass lens. The KI 206 is identical in appearance to the KI 204 and interfaces with the KX 165 (including GS) or other NAV systems which contain VOR/LOC converters.



**KI 208 VOR/LOC Indicator.** Has a self-contained VOR/LOC converter for use with the KX 155. Left/right course deviation is displayed.



Has pivoted needle action and plastic lens. Internal blue-white lighting.

The **KI 208A VOR/LOC/GS/GPS Indicator**, similar to the KI 208, also adds an interface to the KLN 89/89B GPS receivers.

**KI 209 VOR/LOC Glideslope Indicator.** Has built-in VOR/LOC converter for use with the KX 155 with glideslope receiver. Features pivoted needle action and plastic lens. Independent GS flag. Internal blue-white lighting.

The **KI 209A VOR/LOC/GS/GPS Indicator**, similar to the KI 209, also adds an interface to the KLN 89/89B GPS receivers.



**KI 525A Horizontal Situation Indicator.** As the panel display for the KCS 55A Slaved Gyrocompass System, this indicator combines heading and VOR/LOC deviation information in a single pictorial presentation of the complete navigation situation. It is compatible with the KX 165 (with GS) or other NAV systems with built-in VOR/LOC converters. This instrument also provides glideslope deviation display plus course and heading outputs for Autopilots and Flight Directors.

See how the KX 155 and KX 165 can help build more capability into your new Silver Crown panel.



A complete package for the sophisticated panel. The KX 165 is both the number one and number two NAV/COMM in this configuration. Long-range navigation is provided by the KLN 90B GPS, and Mode S transponder capability is offered by the KT 70. Full IFR performance and a KFC 150 Flight Director/Autopilot make this the most complete avionics package available from one manufacturer.

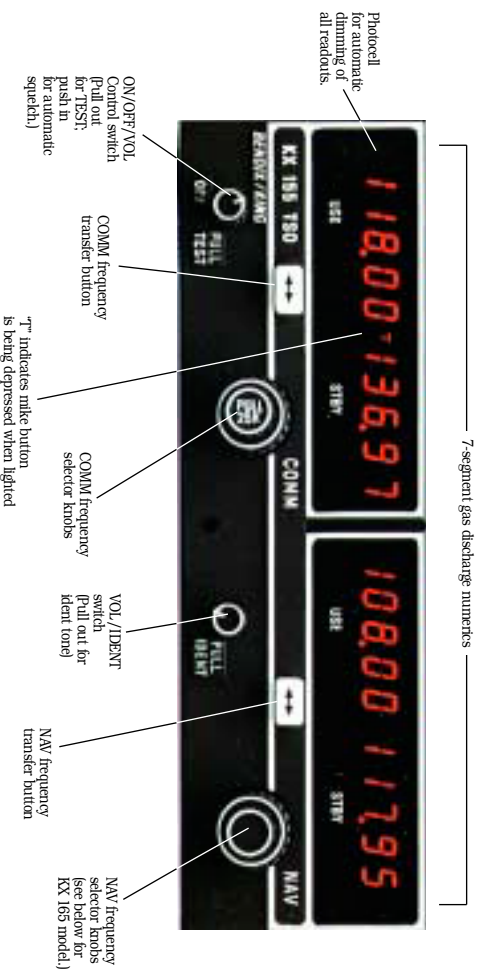


Performance to match your panel and price range. This package features dual KX 155s as the numbers one and two NAV/COMM, with DME channeling for the KN 62A DME receiver. GPS information comes from the KLN 89B GPS receiver, and our KT 76C serves as the transponder. The affordable KAP 150 integrated autopilot combines performance and functionality.



Here's a money-saving Silver Crown system with full IFR capabilities. In this system, dual KX 155 NAV/COMMs are teamed with the KR 87 and KT 76A transponder to provide a basic IFR package in a minimum of panel space. Add the KN 64 panel-mounted DME at a surprisingly low cost.

# How to operate the KX 155 and KX 165 VHF NAV/COMM.



7-segment gas discharge numerics

**TURN ON:** Rotate the ON/OFF/Volume Control knob clockwise from the detented "OFF" position. Power will be activated and the unit will be ready to operate. No warm up time is required.

A non-volatile memory stores the "active" (USE) and "standby" (STBY) frequencies during power shutdown. So, when turned on, the "USE" and "STBY" windows will display the same frequencies that were selected before shutdown.

The KX 165's digital "Radial" readout will only function when receiving a valid VOR signal.

**NOTE:** As with all avionics, the KX 155 and KX 165 should be turned on only after engine start-up. In addition, the KX 155 and KX 165 should be turned off prior to engine shutdown. These simple precautions will help protect the solid-state circuitry and extend the operating life of your avionics equipment.

## TO COMMUNICATE:

**Frequency Selection:** By rotating the concentric COMM frequency selector knobs either clockwise or counterclockwise, the desired operating frequency can be entered in the "STBY" display window. A clockwise rotation of the knobs will increase the displayed frequency number, while a counterclockwise rotation will decrease it. The outer, larger selector knob is used to change the MHz portion of the frequency display; the smaller knob changes the kHz portion. This smaller knob is designed to change the indicated frequency in steps of 50 kHz when it is pushed in, and in 25 kHz steps when it is pulled out. At either band-edge of the 118.00—136.975 MHz frequency spectrum, an off-scale rotation will wrap the display around to the other frequency band-edge (i.e., 136.00 MHz advances to 118.00 MHz).

**COMM Channeling:** To tune the COMM transceiver to the desired operating frequency, the selected frequency must first be entered into the "STBY" display window and then activated by pushing the "flip-flop" transfer button. This will interchange the frequencies in the "USE" and "STBY" displays, and the transceiver will be tuned to the operating frequency appearing in the "USE" display.

As you can see, this feature makes it possible to display two COMM frequencies—one each in the "USE" and "STBY" displays—and then switch back and forth between them just by pressing the transfer button. An additional transfer button may also be remote-mounted in the aircraft.

**Transmit Indicator:** Whenever the microphone is keyed, a lighted "T" will appear between the "USE" and "STBY" displays to indicate that the transceiver is operating in the transmit mode.

**Volume Adjustment Test:** To override the automatic squelch for audio test, or to aid in receiving a distant station, simply pull the volume control knob out and rotate to the desired listening level. Push the knob back in to activate the automatic squelch.

## TO NAVIGATE:

**NAV Frequency Selection:** By rotating the concentric NAV frequency selector knobs either clockwise or counterclockwise, the desired operating frequency can be entered into the "STBY" display window. A clockwise rotation will increase the displayed frequency number, while a counterclockwise rotation will decrease it. As with the COMM frequency selectors, an off-scale rotation of the NAV frequency band-edge (108.00 to 117.95) will wrap the display around to the other edge of the frequency band (i.e., 117.00 advances to 108.00 with MHz knob rotation). Remote DME and internal glideslope channeling are also controlled by these selector knobs.

**NAV Frequency Operation:** To tune the NAV receiver to the desired operating frequency, the selected frequency is first entered into the "STBY" display and then "flip-flopped" into "ACTIVE" status by pushing the transfer button. When the inner knob is pulled out, the active NAV frequency is tuned directly.

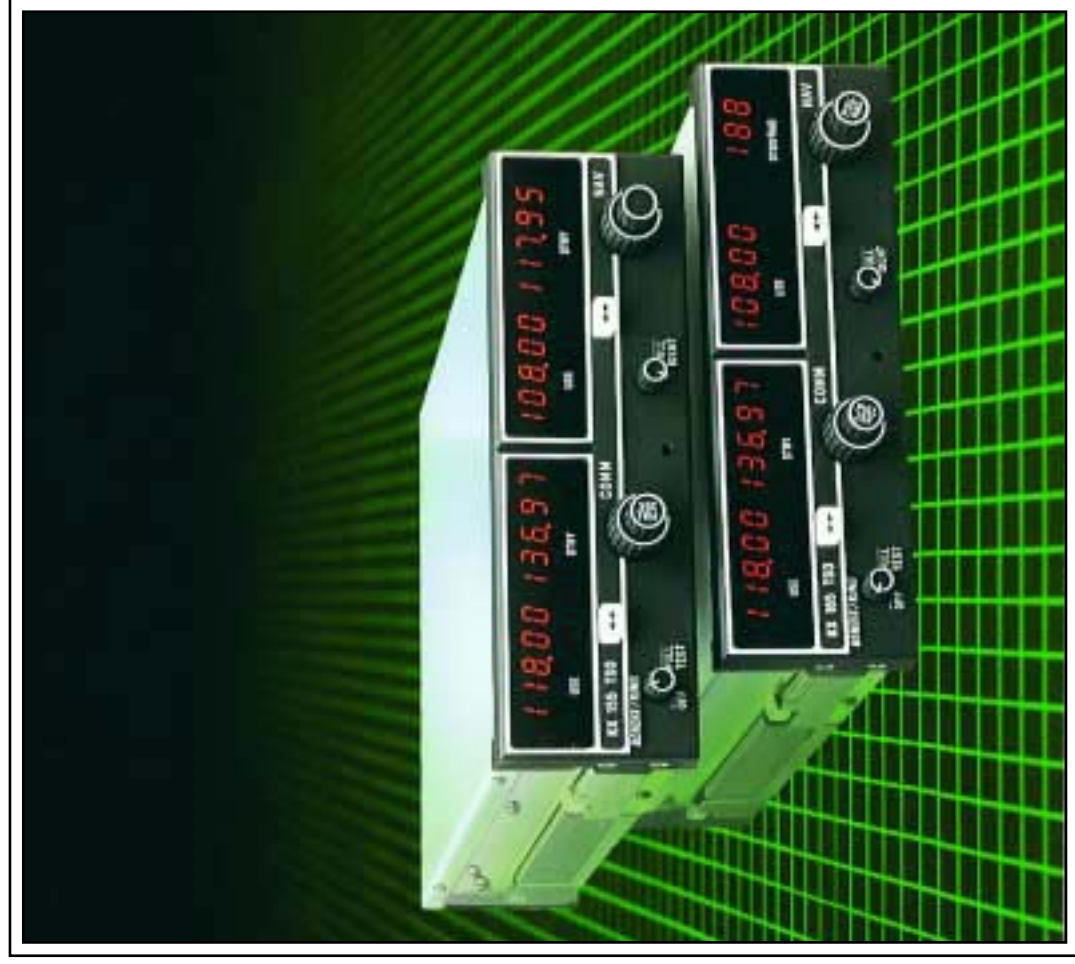
**VOR "Radial" Mode:** When the smaller NAV kHz frequency selector knob is pulled out on the KX 165 model, the VOR Radial FROM the station in "USE" is digitally displayed in the "STBY/RAD" window. The "STBY" frequency will go into non-displayed storage from which it can be "flip-flopped" into "USE" at a press of the transfer button. While in the "RADIAL" mode, rotation of the frequency selector knobs will channel the active frequency directly in the "USE" window display. If the VOR signal is too weak to provide a Radial readout, a "warning flag" is activated consisting of three dashes "- - -" displayed in the "STBY/RAD" window. Also, when an ILS frequency has been selected, the digital flag "- - -" will appear in the "STBY/RAD" window. This digital "RADIAL" mode is not provided on the lower-cost KX 155 model; therefore, with the inner NAV frequency select knob pulled out, three dashes "- - -" will always appear in the right NAV window.



**IDENT:** The NAV "IDENT" knob is activated by pulling it outward, so that both voice and ident can be heard. When this knob is pushed in, the ident tone is muted. Volume of voice/ident can be adjusted by turning this knob—clockwise to increase, counterclockwise to decrease.

# PILOT'S GUIDE KX 155 and KX 165

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**BENDIX/KING**

# Specifications

## TECHNICAL

### CHARACTERISTICS:

#### TSO COMPLIANCE:

COMM Transmit:

C37b (DO-157, Class 4)

COMM Receiver:

C38b (DO-156, Class C and D)

C38b (DO-156, Class A)

50 kHz Selectivity

NAV Receiver:

C40a (DO-153, Cat A and B)

C36c (DO-131, Class D)

#### ENVIRONMENTAL CATEGORIES:

DO-160

A1D1/A/KPS/XXXXXXXXBAAA

#### PHYSICAL DIMENSIONS:

Width: 6.25 inches (15.88 cm)

Height: 2.05 inches (5.21 cm)

Depth: 10.16 inches (25.81 cm)  
including connector

#### WEIGHT:

KX 165 with GS - 5.65 lbs. (2.56 kg)

KX 165 without GS - 5.10 lbs.

(2.31 kg)

KX 155 with GS - 5.30 lbs. (2.40 kg)

KX 155 without GS - 4.75 lbs.

(2.15 kg)

KX 155 with Audio Amp. without

GS - 4.95 lbs. (2.24 kg)

KX 155 with GS and Audio Amp.

5.5 lbs. (2.49 kg)

#### POWER REQUIREMENTS:

KX 165 (27.5VDC) Receive - .4 A.

Transmit - 6.0 A

KX 165 (13.75VDC) Receive - .7 A.

Transmit - 8.5 A

KX 155 (27.5VDC) Receive - .4 A.

Transmit - 6.0 A

KX 155 (13.75VDC) Receive - .7 A.

Transmit - 8.5 A

## COMMUNICATION SECTION

### FREQUENCY RANGE:

118.000 MHz to 136.975 MHz in

25 kHz increments

### FREQUENCY STABILITY:

±0.0015%

### COMM TRANSMITTER

#### POWER OUTPUT:

KX 115/165 - 10 watts minimum

#### SIDETONE OUTPUT:

Adjustable up to 100mW into

500 ohms headphones.

#### MICROPHONE:

Standard carbon or dynamic mike

containing transistorized pre-amp.

(Must provide 100mV RMS into

100 ohm load.)

### COMM RECEIVER

#### RECEIVER SENSITIVITY:

2µV (hard) or less (typically 1µV) for

6dB (S + N)/N with 1,000 Hz tone

modulated 30%

#### RECEIVER SELECTIVITY

KX 155/165 25 kHz SEL:

6dB bandwidth ± 8.1 kHz

60dB bandwidth ± 20.0 kHz

KX 155/165 50 kHz SEL:

6dB bandwidth ± 14.5 kHz

60dB bandwidth ± 43 kHz

#### RECEIVER AUDIO OUTPUT:

100mW into 500 ohms minimum

Audio leveling circuit attacks at

less than 15% modulation.

#### SQUELCH:

Automatic squelch with manual

override.

## NAVIGATION SECTION

### NAV RECEIVER

#### FREQUENCY RANGE:

108.00 MHz to 117.95 MHz in

50 kHz increments

#### FREQUENCY STABILITY:

0.0015%

#### VOR/LOC SENSITIVITY:

1/2 flag sensitivity 2µV (hard) or less

(typically 1µV) on all channels

#### VOR/LOC CONVERTER

##### ACCURACY (KX 165 only):

VOR - Typical bearing error of less

than 0.5° with precision track

selector (2° max. error)

LOC - Typical centering error of less

than 3µA (7µA max. error).

##### RECEIVER SELECTIVITY:

6dB at 34.8 kHz minimum

80dB at 84.0 kHz maximum

##### AUDIO OUTPUT:

With a 1 kHz tone 30% modulation

at least 100mW output into

500 ohm loads.

##### DME CHANNELING

Serial DME channeling provided for

KN 62/62A, KN 63, KN 64,

KDM 706/706A DMEs.

Slip code and 2x5 DME channeling

available using KA 120 channeling

adapter.

##### GLIDESLOPE RECEIVER

###### NUMBER OF CHANNELS

40 (150 kHz spacing)

###### FREQUENCY RANGE

329.15 MHz to 335.00 MHz

##### AUDIO AMP

(Optional on KX 155, N/A on KX 165)

###### 4 OHM OUTPUT:

4 watts minimum (13.75VDC)

8 watts minimum (27.5VDC)

###### INPUTS:

Two (2) 500 ohm auxiliary inputs

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