

KING KMA 24/24H

Silver Crown Audio Control System with 3-Light Marker Beacon Receiver or 5-Station Voice Activated Intercom

These compact TSO'd consoles
make audio control "push-button simple."

Push-button simplicity puts complete, flexible audio control right at your fingertips with King's easy-to-use KMA 24 and KMA 24H systems.

Each is self-contained, all solid-state and stands only 1.3 inches high in your Silver Crown stack. The "slant top" package tailors it for the top slot in your instrument panel.

The KMA 24 controls as many as three transceivers and six receivers, including the internal marker beacon receiver and its automatically dimmed 3-light presentation. The KMA 24H controls up to five transceivers and five receivers, or four transceivers and six receivers.

The KMA 24H replaces the internal marker beacon receiver with an intercom which provides unprecedented flexibility. The intercom features capability for hot mike,

voice activation (VOX) or keyed activation of up to five intercom stations. In hot mike operation all intercom microphones remain active at all times whether the operator is talking on intercom or not. Voice activated operation has the microphone active only when the operator begins to talk. In keyed operation, the operator must depress a separate intercom switch to activate the microphone for intercom useage.

When two KMA 24H's are installed, dual transmit flexibility is provided—allowing the pilot and copilot or another crewmember to talk on different transmitters simultaneously while providing pilot priority if the same transmitter is keyed by both crewmembers at the same time. Other features of the KMA 24H include a voice recorder compatibility and an emergency mode which directly connects the pilot's headphones and microphone directly to COMM 1 in the event of a KMA 24H failure or a power interruption to the KMA 24H.

The KMA 24 and KMA 24H provide transceiver and receiver outputs to speaker or headphones or both. A separate isolation amplifier for headphone maintains constant, noise-free volume levels, even when several receivers are monitored at once. Keying a mike mutes all receivers automatically to eliminate bothersome feedback.

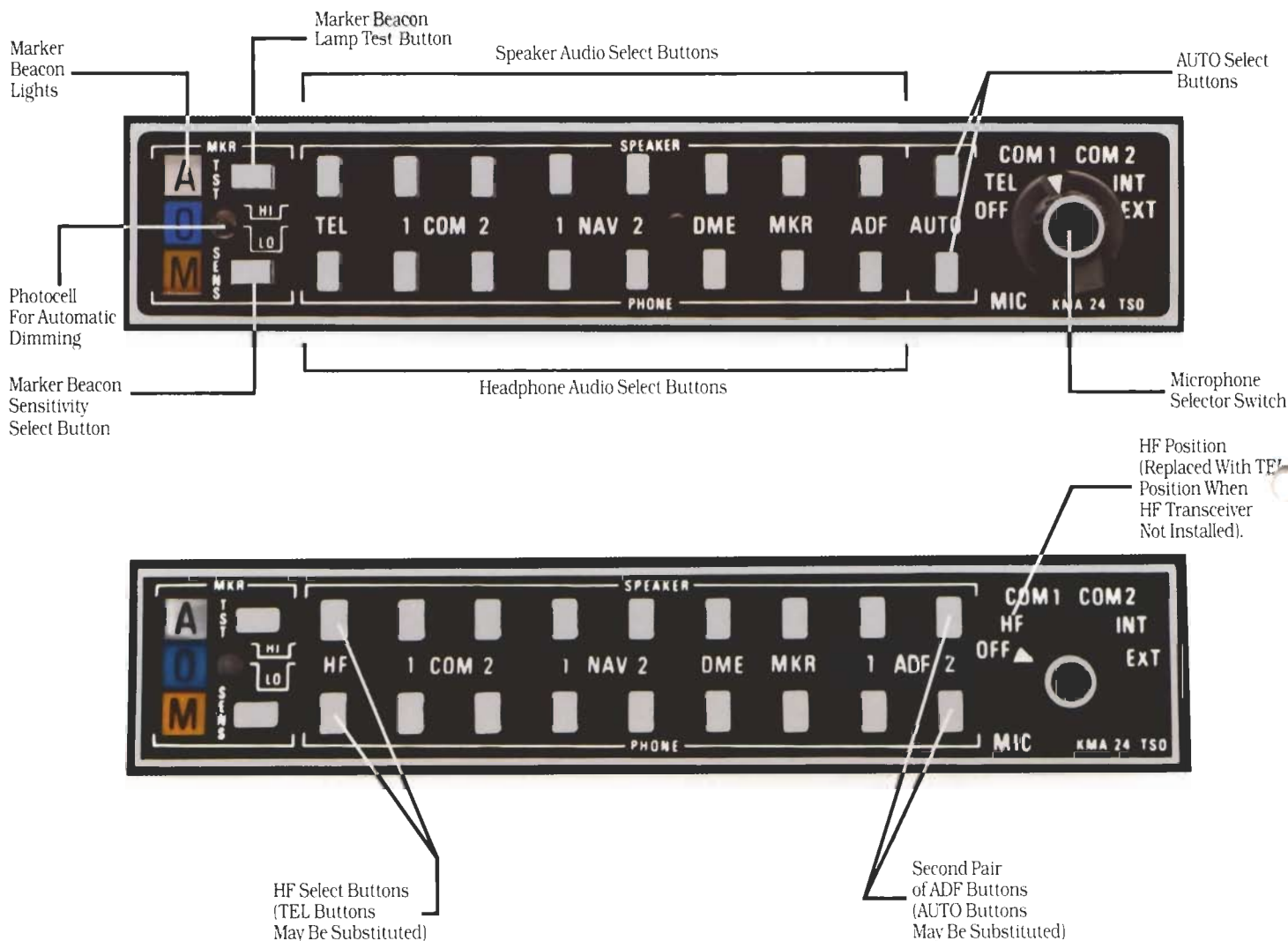
King offers the KMA 24 in four configurations and KMA 24H in two configurations so you can choose the one that best matches your requirements.

You'll find more detailed information, specifications, and a convenient tear-off Pilot's Guide for both units on the following page.

KING



The KMA 24 Audio Control System



Audio Control With The KMA 24

Two rows of alternate-action push-buttons on the KMA 24 console control all receiver audio distribution functions.

The top row of push-buttons selects receivers for the cockpit speaker, the bottom row for headphones. Both rows are completely independent of each other, allowing selection of speaker or headphones, or both, for all combinations of receivers.

The rotary selector switch on the right side of the console connects the microphone to either COMM 1 or COMM 2. An additional switch position allows selection of radiotelephone on some KMA 24 models, or of HF on international models of the KMA 24. Other switch positions are for cabin address and ramp hailer.

Turning the microphone selector switch to OFF cuts power to the speaker amplifier and the marker beacon receiver. The headphone amplifier remains in operation.

The AUTO feature, when engaged, automatically matches the corresponding receiver audio with the selected transmitter, such as COMM 1, COMM 2, TEL or HF transmitter. An option allows the AUTO feature to be replaced by a second ADF receiver position.

The unit operates on either 13.75 volts or 27.5 volts without the use of adapters or converters.

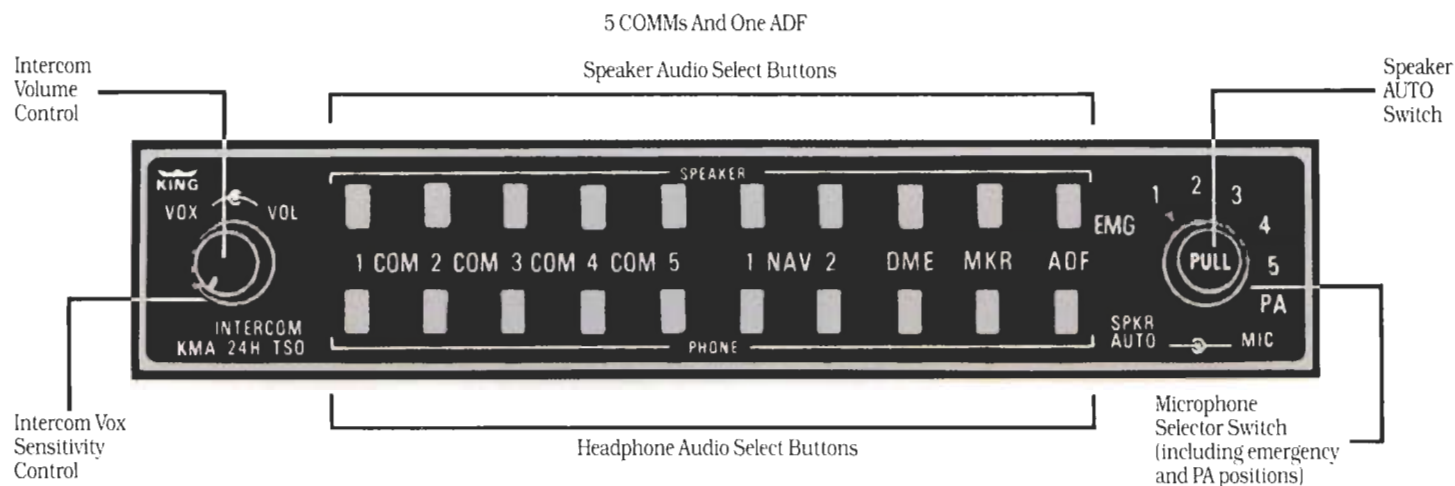
Built-In Marker Beacon

The KMA 24 has a built-in, crystal controlled, superheterodyne marker beacon receiver with a three light display. Its excellent selectivity eliminates interference from FM radio and TV stations. Dimming circuitry automatically adjusts the brightness of the lamps to a level appropriate for ambient cockpit light.

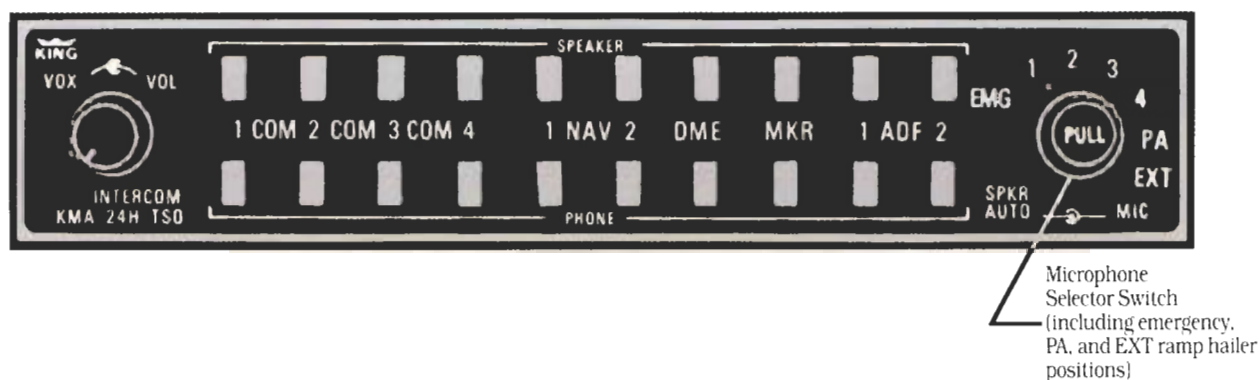
The lower push-button next to the marker lamps selects high and low sensitivity; the upper push button tests the lights.

The unit can also drive remote marker beacon lights, such as those in King Autopilot Annunciator Panels or the KA 40 Remote Marker Light display.

The KMA 24H Audio Control System



4 COMMs And Two ADFs



Five-Station Voice Activated Intercom

In the KMA 24H, a five-station intercom replaces the KMA 24's integral marker beacon receiver and lights. The intercom includes three modes of operation: hot mike, voice activated (VOX) or keyed activation for up to five intercom stations.

In single KMA 24H installations, the pilot's microphone has priority over the crewmember's microphone in the event both are trying to transmit at the same time.

In a dual KMA 24H installation the pilot and a crewmember can talk on different transmitters at the same time; however, the pilot will automatically have priority if he keys the mike while another crewmember is using the same transmitter.

An emergency position (EMG) on the microphone selection switch connects the pilot's mike and headphones directly to

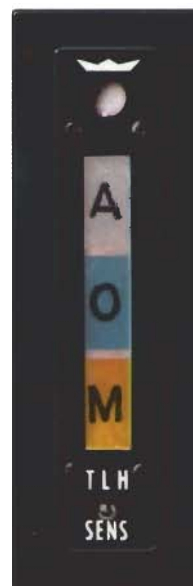
COMM 1 as a means of failsafe communication in the event of a failure within the KMA 24H.

Since the KMA 24H has an integral intercom, a "PA" position replaces the "INT" position on the microphone selection switch. In aircraft equipped with a cabin speaker, this position allows the pilot or copilot to make announcements to the passengers.

KR 21 Marker Beacon Receiver

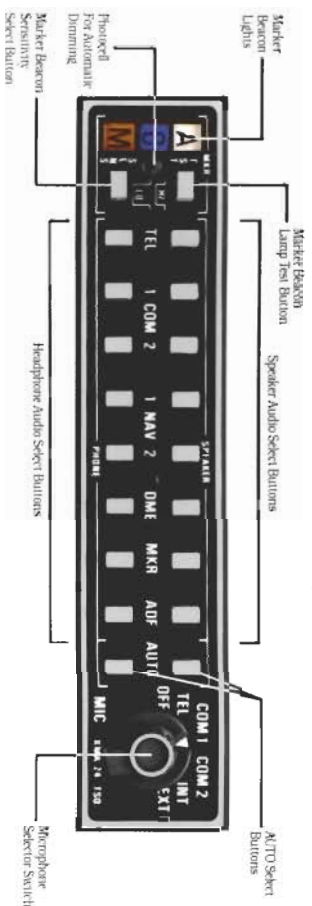
The cockpit can easily have marker beacon reception and display as well as the convenience of the KMA 24H's built-in five-station intercom. The TSO'd King KR 21 MKR Receiver provides marker beacon audio signals to the KMA 24H and has a marker light display similar to that in the KMA 24.

The KR 21 is self-contained and can be mounted anywhere in the panel, either horizontally or vertically. It is all solid-state and has its own self-test and automatic dimming.



Operating the KMA 24/24H Audio Control Systems

KMA 24 With "Auto" Feature And Radiotelephone



"Auto" COMM Select

For KMA 24 models equipped with the "AUTO" COMM select feature, the transmitter selected with the microphone selector switch will be matched automatically with the appropriate COMM receiver audio on either headphone or speaker, or both, by simply pressing the desired headphone and/or speaker "AUTO" push-button. (COMM 1 and COMM 2 push-buttons should be disengaged unless it is desired to additionally listen to a COMM receiver other than the one selected with the microphone selector switch.)

Thus, on "AUTO" you may change the rotary microphone switch back and forth, as needed, without having to reset the corresponding COMM, TEL, or HF receiver buttons in order to hear the receiver.

Both models of the KMA 24H have "AUTO COMM" capability and always provide automatic headphone audio selection to match the transmitter in use. The selection of speaker audio can either be made automatically by pulling out the speaker "AUTO" switch or manually with the row of speaker audio select push-buttons.

Marker Beacon Receiver (KMA 24)

The complete TS04 3-light marker beacon receiver built into the KMA 24 gives you an accurate visual and aural signal when you pass over a 75 MHz beacon. The blue, white, and amber lights on the facplate—as well as the audio tone—identify the beacon type (outer, middle or airway/inner marker).

Either the speaker or headphone MKR buttons or both must be "in" for the marker beacon receiver to provide an audio signal at beacon passage.

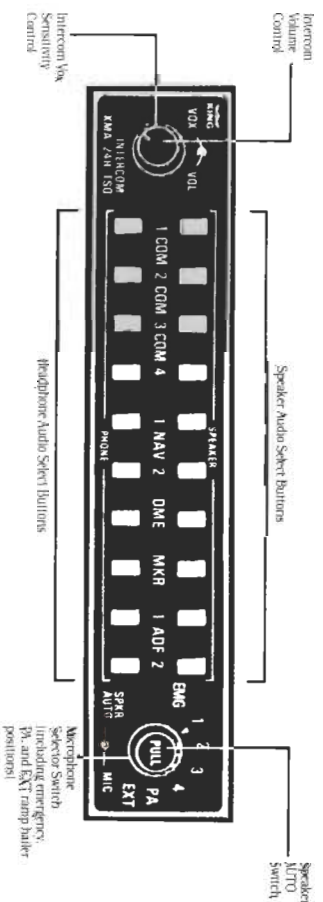
The horizontal push-button labeled SENS on the lower left side of the console gives you the choice of two receiver sensitivities. When the button is "in," the sensitivity is on HI. During an approach, this setting should permit you to hear the outer marker tone about one mile out. At this point you may select LO to dampen the tone. It will start to sound again when you are closer to the marker, giving you a more precise indication of its location.

Pressing the top horizontal button marked "TST" simply applies voltage to all three lamps to show that they are functioning.

Note: The TST button should not be pressed to test the lamps when autopilot coupled on an ILS approach inside the outer marker. This is due to the fact that some autopilots (including King auto-pilots) use marker annunciation to change the sensitivity of the autopilot.

A photocell in the console automatically dims the lamps for night operation.

KMA 24H WITH SECOND ADF AND RAMP HAULER



The "INT" position on the KMA 24 and the PA position on the KMA 24H permit the flight crew to address cabin occupants over the cabin speaker. To do this, select "INT" or "PA" with the microphone switch. When the mike is keyed, the receiver audio is muted and you may talk normally into the microphone to broadcast over the speaker.

The KMA 24H also has an "EMG" position on the microphone selector. This feature bypasses the KMA 24H's three audio amplifiers and directly connects COMM 1 to the pilot's microphone and headphones. This provides a fail-safe method of communication should the unit fail.

The KMA 24 and KMA 24H also have an "EXT" position on the microphone selector switch which connects the microphone to an external ramp hauler speaker, if installed.

KMA 24H Intercom

The KMA 24H has a built-in five station intercom with its own two amplifiers. Intercom operation may be "hot mike" in which the intercom is active all the time, voice activated (VOX) in which the intercom becomes active automatically when a crewmember begins to speak, and keyed activation in which a separate microphone switch must be keyed to activate the intercom. Selection of the desired method of microphone activation is accomplished with the intercom VOX sensitivity control (outer concentric knob on left side of unit).

Turn it to the fully clockwise detent position for hot mike operation. Turn the knob all the way counterclockwise past the detent for keyed microphone operation. (Note: a separate intercom key switch must be included in the installation in order to use keyed intercom operation). In the middle range, the switch selects VOX and the rotation of this knob also adjusts the sensitivity of the voice activated switch.

In order to set the proper VOX sensitivity, first turn the VOX sensitivity control clockwise until a hissing sound is heard in the headphones. Next turn the control counterclockwise until the hissing sound stops. The VOX is now properly set for the present noise environment. It is normal to have to reset the VOX sensitivity level whenever the noise in the cockpit/cabin changes, such as when making large power changes.

The inner concentric knob is the intercom volume control. This adjusts the intercom volume without affecting the volume of the selected receiver audio inputs.

When either the pilot or copilot keys the microphone to transmit, all other intercom microphone inputs are muted, to ensure that the keyed microphone is the single source of transmitted audio. All receiver inputs are also muted during transmissions.

Optional Intercom Modes

The optional installation of a remote, three position switch for intercom operations with the KMA 24H provides three modes: Isolate, Normal (NORM) and Private. In Isolate, the pilot takes himself out of the intercom loop while the other four intercom positions remain active. In Normal, all five intercom positions are tied together. In Private, the pilot and copilot positions are linked together for two station hot mike operation. At the same time the other three intercom positions have independent three station intercom operation.

Receiver Selection

The top row of push-buttons on the console controls the audio selection for the speaker, and the bottom row selects audio for headphones. The selections are independent and any audio input can be selected for speaker or headphones or both. These push-buttons allow audio selection independent of the AUTO feature described earlier.

The KMA 24 and KMA 24H can control as many as six receivers. Both units also have two unswitched inputs for such uses as the radar altimeter audio alert or the ring signal from a Kingphone.

Other Combinations Of Features

KMA 24



KMA 24 with TEL and ADF 1 and 2



KMA 24 with HF and AUTO



KMA 24 with HF and ADF 1 and 2

KMA 24H



KMA 24H with 4 COMMs and 2 ADFs



KMA 24H with 5 COMMs and 1 ADF

To listen to a specific receiver, simply press the corresponding headphone or speaker button "in." To disconnect that receiver, press the button again. It will return to the "out" position.

For both the KMA 24 and KMA 24H, volume of audio input from transmitters and receivers is set with the volume controls of each individual radio.

Transmitter Selection

The rotary switch on the right side of the KMA 24 and KMA 24H consoles selects the desired transmitter for the cockpit microphone. In the KMA 24, the off position shuts off power to the speaker amplifier and marker beacon receiver. (The headphone amplifier operates whenever the aircraft electric power is on).

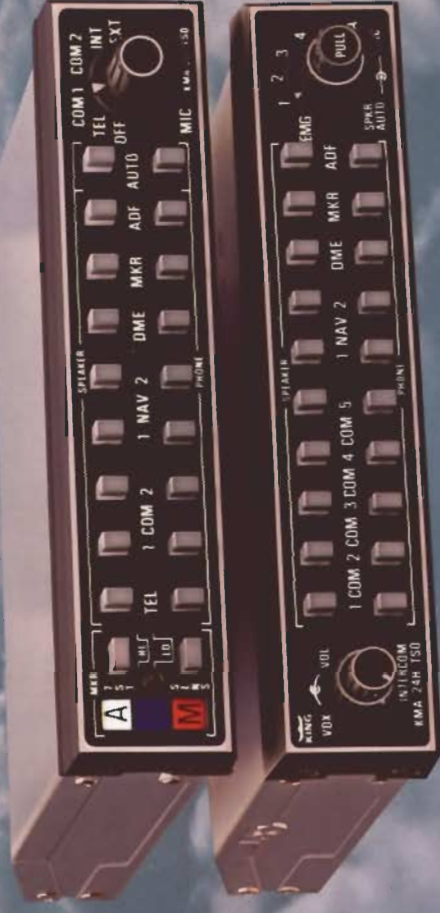
With the KMA 24, the next position of the rotary switch may be either "TEL" (radio-telephone) or "HF" (high frequency transmitter). The former is more likely to be found in aircraft used mostly for domestic operations; the latter for international operations.

The COMM 1 and 2 positions (COMM 1-4 or 1-5 for KMA 24H) are for transmitting on the frequencies set up on those respective communication transmitters.

The "INT", "PA" and "EXT", and "EMG" positions are discussed above.

Pilot's Guide

King KMA 24/24H Audio Control Systems With 3-Light Marker Beacon Receiver Or 5-Station Intercom



King Radio Corporation, 400 North Rogers Road, Olathe, Kansas 66062

(913) 782-0400 • Telex WUD (0) 4-2259 • Cable: KINGRAD

King Radio S.A., P.O.B. No. 6, 80 Ave. Louis Cassal, 1216 Cointrin—Geneva, Switzerland

Tel. Geneva 98 58 80 • Telex 289443 KING CH • Cable: KINGRADIO

Technical Characteristics of the King KMA 24 and KMA 24H Audio Control Systems



TSO Compliance:

Marker Beacon Receiver: TSO C35d, Class A

KMA 24—Env. Cat. A1D1/A/PKS/XXXXXXZBAAA

Audio Amplifier: TSO C50b

KMA 24—Env. Cat. A1D1/A/PKS/XXXXXXZBAAA

KMA 24H—Env. Cat. A2D1/A/KPS/XXXXXXZB/AB/BZ/A

Weight: 1.7 lb (0.77 kg)

Physical Dimensions:

Length behind panel: 6.8 in. (17.30 cm).

Width: 6.25 in. (15.88 cm).

Height: 1.3 in. (3.30 cm).

Duty Cycle: Continuous

Power Requirements (not including instrument lights):

	KMA 24	13.75v	27.5v
Idle current, mike switch on		110 ma	170 ma
Idle current, mike switch off		Less than 8 ma	Less than 16 ma
Max. operating current		1.9 a	1.9 a
KMA 24H			
Idle current		350 ma	500 ma
Max. operating current		1.8 a	1.8 a

Temperature Range: -20 degrees C to +55 degrees with brief operation at +70 degrees C (KMA 24)
-20°C to 70°C continuous (KMA 24H)

Marker Beacon Receiver (KMA 24 only)

Frequency: Crystal-controlled at 75 MHz

Sensitivity: LO 1,000 μ v Hard

HI 200 μ v Hard

Selectivity: 6 db at \pm 10 kHz Min.

40 db at \pm 200 kHz Max.

Input Impedance: 50 ohms

Output: Capable of 4 mw into isolation amplifier impedance of 500 ohms.

Isolation Amplifiers

KMA 24 Inputs: KMA 24 models without AUTO accommodate three transceivers and six external receivers. All models also have two unswitched inputs. (Typical use: radar altimeter, aural warning and radiotelephone ringer.)

KMA 24H Inputs: KMA 24H models accommodate five transceivers and five external receivers (-71) or four transceivers and six receivers (-70). All models also have two unswitched inputs. (Typical use: radar altimeter aural warning and radiotelephone ringer.)

KMA 24 Input Impedance: 500 ohms

KMA 24H Input Impedance: 320 ohms for all ICS inputs
500 ohms for all audio inputs

Input Isolation:

KMA 24: 40 db between inputs

KMA 24H: 60 db between inputs

Input Muting (when mike is keyed):

At least 55db

Speaker Output

With 13.75 v Supply

Into 4 ohm load: 7 w (KMA 24)

6 w (KMA 24H)

Into 8 ohm load: 4 w

Into 8 ohm load
from 8 ohm tap: 6 w (KMA 24H)

With 27.5 v Supply

Into 4 ohm load: 12 w (KMA 24)

10 w (KMA 24H)

Into 8 ohm load: 6.5 w

Into 8 ohm load
from 8 ohm tap: 10 w (KMA 24H)

Headphone Output

KMA 24: 50 mw into 500 ohm load

KMA 24H

With 27.5 v supply: 120 mw into each
500 ohm load

With 13.75 v supply: 20 mw into each
500 ohm load

Output Characteristics

Distortion: Less than 5 percent at rated output

Frequency response:

KMA 24: Within 6 db from 350 hz to 6,000 hz

KMA 24H: Within 3 db from 350 hz to 6000 hz

Warning: Avionics installations require special skills, tools and test equipment. The King full year warranty is valid only for equipment installed by an Authorized King Sales and Service Center.

In keeping with King Radio Corporation's policy of continual product improvement, design and specifications described herein may be altered without notice.



King Radio Corporation, 400 North Rogers Road, Olathe, Kansas 66062
(913) 782-0400 • Telex WUD (0) 4-2299 • Cable: KINGRAD

King Radio S.A., P.O.B. No. 6, 80 Ave. Louis Casali, 1216 Cointrin—
Geneva, Switzerland • Tel. Geneva 98 58 80 • Telex 289445 KING CH
Cable: KINGRADIO