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Installation and Operation Manual

KX 200 NAV/COM Transceiver

Part Number	CAGE
89000002-120	55939

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Preface

Note to KX 200 NAV/COM Radio Customers:

Thank you for the purchase of the Honeywell General Aviation (GA) Next-Generation KX 200 NAV/COM Radio.

General Aviation’s newest and most advanced NAV/COM radio is pilot-friendly by design. That’s because we consulted pilots at every phase of a development process that started with a blank CAD screen and ended with the creation of a groundbreaking new radio for the 2020s and beyond.

The KX 200 is an easy direct replacement with the same footprint as your current KX 155 radio. But that is where the similarity ends. The KX 200 features:

- High-resolution color LCD
- 50-channel memory presets
- 25kh or 8.33kh channel spacing
- Full featured digital NAV/COM with VOR, LOC, ILS, and glide slope
- Compatible with existing indicators and installed equipment
- Compatible with 14- and 28-volt systems
- Possibility to expand capabilities with future Honeywell AnthemTM cockpit connectivity
- Two-year warranty.

TRANSMITTAL INFORMATION

THIS IS AN INITIAL RELEASE OF KX 200 NAV/COM TRANSCEIVER IOM ATA No. 34-24-61 AND IS ISSUED FOR USE IN SUPPORT OF THE FOLLOWING:

Table TI-1 shows the applicable components.

Table TI-1. Applicable Components

Component PN	Nomenclature
89000002-120	KX 200 NAV/COM Transceiver

Revision History

Table TI-2 shows the revision history of this IOM.

Table TI-2. Revision History

Revision Number	Revision Date
0	23 Jan 2025

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RECORD OF REVISIONS

For each revision, write the revision number, revision date, date put in the manual, and your initials in the applicable column.

Revision Number	Revision Date	Date Put in Manual	By		Revision Number	Revision Date	Date Put in Manual	By
0	23 Jan 2025							

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RECORD OF TEMPORARY REVISIONS

Instructions on each page of a temporary revision tell you where to put the pages in your manual. Remove the temporary revision pages only when discard instructions are given. For each temporary revision, put the applicable data in the record columns on this page.

Definition of Status column: A TR may be active, incorporated, or deleted. “Active” is entered by the holder of the manual. “Incorporated” means,a TR has been incorporated into the manual and includes the revision number of the manual when the TR was incorporated. “Deleted” means a TR has been replaced by another TR, a TR number will not be issued, or a TR has been deleted.

Temporary Revision Number	Status	Page Number	Issue Date	Date Put In Manual	By	Date Removed From Manual	By

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SERVICE BULLETIN LIST

Service Bulletin/ Revision Number	Title	Modification	Date Put in Manual

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INTRODUCTION

1. How to Use This Manual

A. General

(1) This publication describes the equipment shown on the Title page.

(2) The type plate on your device shows the part number for identification purposes. Refer to Figure 2-1 for nameplate identification data.

(3) Standard maintenance procedures that technicians must know are not given in this manual.

(4) This publication is written in agreement with the ATA Specification.

(5) Warnings, cautions, and notes in this manual give the data that follows:

- A WARNING gives a condition or tells personnel what part of an operation or maintenance procedure, which if not complied with, can cause injury or death.
- A CAUTION gives a condition or tells personnel what part of an operation or maintenance procedure, which if not complied with, can cause damage to the equipment.
- A NOTE gives data, not commands. The NOTE helps personnel when they do the related instruction.
- DANGER indicates a hazardous situation which, if not prevented, will result in death or serious injury.
- SAFETY INSTRUCTIONS (or equivalent) signs indicate specific safety-related instructions or procedures.

(6) Warnings and cautions go before the applicable paragraph or step. Notes follow the applicable paragraph or step.

B. Symbols

(1) The symbols and special characters are in agreement with IEEE Publication 260 and IEC Publication 27. Special characters in text are spelled out.

(2) The signal mnemonics, unit control designators, and test designators are shown in capital letters.

(3) The signal names followed by an “*” show an active low signal.

(4) Some figures in this manual incorporate standard geometric characteristic symbols. Refer to Figure INTRO-1 for the geometric characteristic symbols.

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INSTALLATION AND OPERATION MANUAL
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CHARACTERISTIC SYMBOLS

FLATNESS	PERPENDICULARITY
STRAIGHTNESS	PARALLELISM
CIRCULARITY	ANGULARITY
CYLINDRICITY	CIRCULAR RUN OUT
PROFILE OF A SURFACE	POSITION
PROFILE OF A LINE	SYMMETRY
CONCENTRICITY	

MODIFYING SYMBOLS

- (M) MAXIMUM MATERIAL CONDITION (MMC)
- (S) REGARDLESS OF FEATURE SIZE (RFS)
- (P) PROJECTED TOLERANCE ZONE

OTHER SYMBOLS

- ⌀ DIAMETER
- NEGATIVE NOTATION

FEATURE CONTROL FRAME

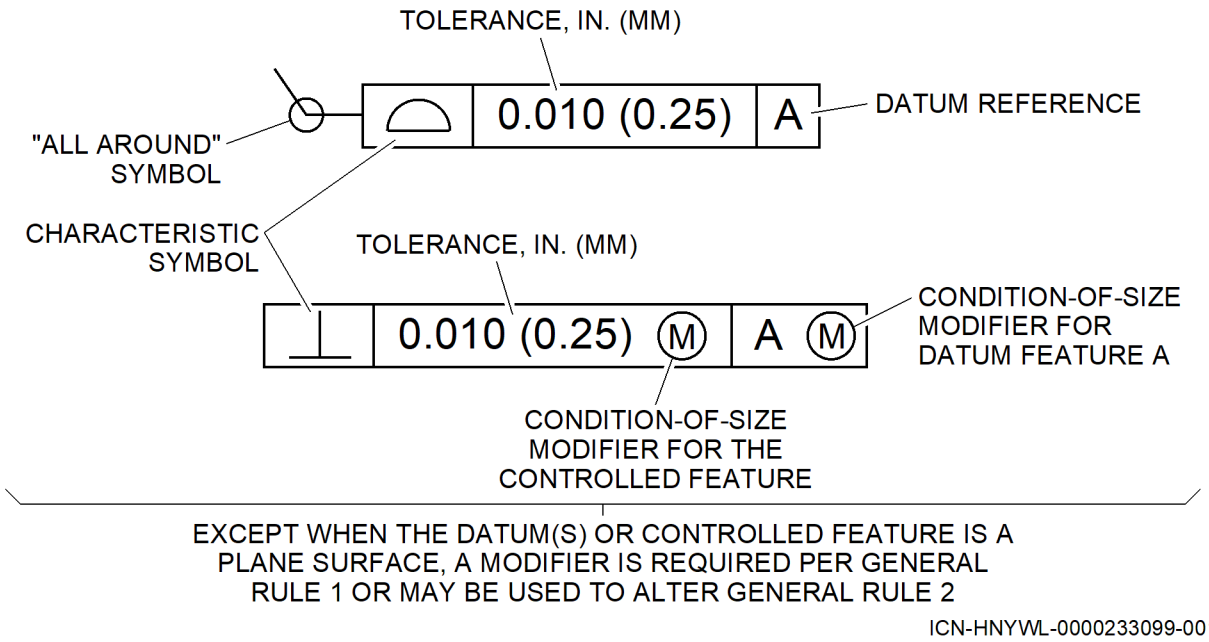

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Figure INTRO-1. (Sheet 1 of 2) Geometric Tolerance Symbols

GENERAL RULES

1. POSITION (⌖) TOLERANCES AND THEIR RELATED DATUMS APPLY AT MMC OR RFS AS SPECIFIED IN THE FEATURE CONTROL FRAME.
2. EXCEPT FOR POSITION (⌖), ALL TOLERANCES AND THEIR RELATED DATUMS APPLY RFS UNLESS OTHERWISE SPECIFIED.
3. ALL GEOMETRIC TOLERANCES ARE SPECIFIED AS TOTAL VALUES (TOTAL DIAMETER, TOTAL THICKNESS, TOTAL WIDTH, OR TOTAL ON RADIUS).
4. WHEN TWO DATUM FEATURES ARE REFERENCED IN HYPHENATED FORM, [A-B], A SINGLE DATUM IS ESTABLISHED BY THE TWO FEATURES.
5. WHEN TWO OR THREE DATUMS ARE REFERENCED IN SUCCEEDING FRAMES, [A][B][C], THE ORDER OF PRECEDENCE IS LEFT TO RIGHT.

SAMPLE INTERPRETATIONS

[-A-] THIS IS DATUM FEATURE A WHICH IS USED TO CREATE DATUM A IN THE PROCESSING EQUIPMENT.

[▱ | 0.010 (0.25)] THIS SURFACE MUST BE FLAT WITHIN 0.010 IN. (0.25 MM) TOTAL (MEETING EITHER SYSTEM WILL ACCEPT THE PART).

[// | 0.010 (0.25) | B] THIS IS DATUM FEATURE C AND, RFS MUST BE PARALLEL TO DATUM B, RFS, WITHIN 0.010 IN. (0.25 MM) TOTAL.
[-C-]

[↗ | 0.0005 (0.013) | A-B] EACH CIRCULAR ELEMENT OF THIS FEATURE, RFS, MUST NOT RUN OUT MORE THAN 0.0005 IN. (0.013 MM) FIM, WITH RESPECT TO THE DATUM ESTABLISHED BY FEATURES A AND B, BOTH RFS.

[⌖ | Ø 0.010 (0.25) Ⓜ | A | B Ⓜ | C Ⓜ] THE AXIS OF THIS FEATURE, WHEN THIS FEATURE IS AT MMC, MUST BE LOCATED WITHIN 0.010 IN. (0.25 MM) DIAMETER OF THE TRUE (BASIC) LOCATION ESTABLISHED IN RELATION TO THE PRIMARY SURFACE DATUM A, SECONDARY DATUM B AT MMC, AND TERTIARY DATUM C AT MMC.

[⊥ | Ø 0.010 (0.25) Ⓜ | A]
[0.500 (12.7) Ⓟ]
THE AXIS OF THIS FEATURE, WHEN THIS FEATURE IS AT MMC, MUST BE PERPENDICULAR TO DATUM A, RFS, WITHIN A 0.010 IN. (0.25 MM) DIAMETER TOLERANCE ZONE PROJECTED 0.500 IN. (12.7 MM) ABOVE THE SURFACE.

[∠ | ▱] THE ANGULAR ORIENTATION OF THIS FEATURE NEED NOT BE CONTROLLED WITH RESPECT TO ANY OTHER FEATURE.

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Figure INTRO-1. (Sheet 2 of 2) Geometric Tolerance Symbols

(5) Some figures in this manual incorporate standard weld symbols. Refer to Figure INTRO-2 for the weld symbols.

BASIC WELD SYMBOLS AND THEIR LOCATION SIGNIFICANCE								
LOCATION SIGNIFICANCE	FILLET	PLUG OR SLOT	SPOT OR PROJECTION	SEAM	BACK OR BACKING	SURFACING	FLANGE	
							EDGE	CORNER
ARROW SIDE					GROOVE WELD SYMBOL	NOT USED		
OTHER SIDE					GROOVE WELD SYMBOL	NOT USED		
BOTH SIDES		NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED
NO ARROW SIDE OR OTHER SIDE SIGNIFICANCE	NOT USED	NOT USED			NOT USED		NOT USED	NOT USED

BASIC WELD SYMBOLS AND THEIR LOCATION SIGNIFICANCE							
LOCATION SIGNIFICANCE	GROOVE (FLASH OR UPSET)						
	SQUARE	V	BEVEL	U	J	FLARE V	FLARE BEVEL
ARROW SIDE							
OTHER SIDE							
BOTH SIDES							
NO ARROW SIDE OR OTHER SIDE SIGNIFICANCE	NOT USED EXCEPT FOR FLASH OR UPSET WELDS	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED

SUPPLEMENTARY SYMBOLS					
WELD ALL AROUND	FIELD WELD	MELT-THRU	CONTOUR		
			FLUSH	CONVEX	CONCAVE

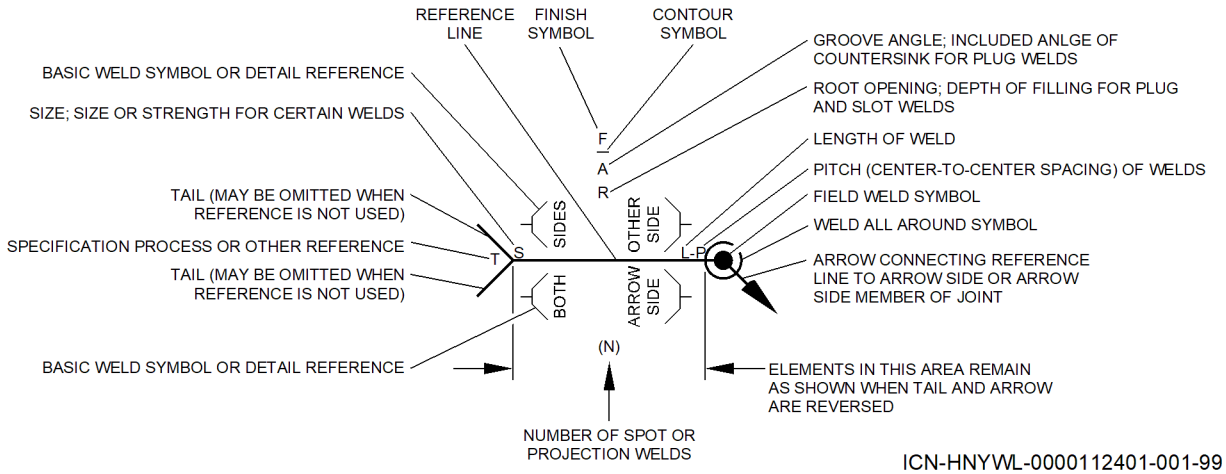

Figure INTRO-2. Weld Symbols

(6) The symbols in Figure INTRO-3 show ESDS and moisture sensitive devices.

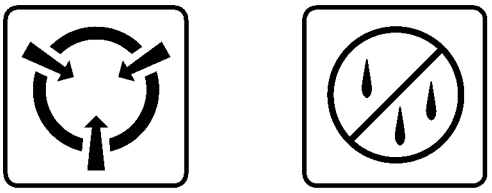

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Figure INTRO-3. Symbols

C. Disposal

CAUTION: THE PACKAGING MATERIAL IS INFLAMMABLE, BY BURNING, TOXIC FUMES MAY DEVELOP.

(1) This product contains materials that fall under the special disposal regulation. We recommend the disposal of such materials in accordance with the current environmental laws.

(a) Dispose circuit boards by a technical waste dump which is approved to take on e.g. electrolytic aluminum capacitors. Do under no circumstances dump the circuit boards with normal waste dump.

D. Warranty Conditions

CAUTION: THE DEVICE(S) MAY BE INSTALLED ON AN AIRCRAFT ONLY BY AN APPROVED AERONAUTICAL COMPANY (E.G. PART 145) WHICH SHALL ALSO EXAMINE THE INSTALLATION.

(1) Any change made by the user excludes any liability on our part (excluding the work described in this manual).

(a) The device must not be opened.

(b) Do not make any modifications to the device, except for those described in the manual.

(c) Make connections to the inputs, outputs and interfaces only in the manner described in the manual.

(d) Install the devices related to the instructions. We cannot give any guarantee for other methods.

E. Conditions of Utilization

(1) With this device you bought a product which was manufactured and tested before delivery with the utmost care.

(2) Please take your time to read the instructions which you ought to follow closely during installation and operation.

(3) Otherwise all claims under the warranty will become void and a decreased service life or even damages must be expected.

CAUTION: THE USER IS RESPONSIBLE FOR PROTECTIVE COVERS AND/OR ADDITIONAL SAFETY MEASURES IN ORDER TO PREVENT DAMAGES TO PERSONS AND ELECTRIC ACCIDENTS.

F. Additional Conditions of Utilization

(1) Please refer to Section 1, Paragraph G.

G. Non-Warranty Clause

(1) We checked the contents of this publication for compliance with the associated hard and software. We can, however, not exclude discrepancies and do thus not accept any liability for the exact compliance. The information in this publication is regularly checked, necessary corrections will be part of the subsequent publications.

2. Customer Support

A. Honeywell Aerospace Contact Team

(1) The Honeywell Aerospace Contact Team is available 24/7 to support customers around the world.

Contact Us: https://aerospace.honeywell.com/us/en/support-and-resources/contact-us

B. Warranty Registration, Technical Support and Sales Support

(1) Tech Support - techsupport@bendixking.com or call 1-505-903-6148 and Press 2.

(2) Warranty Registration -

https://aerospace.honeywell.com/us/en/support-and-resources/contact-us/forms/bendixking/bk-warranty-registration.

(3) Warranty Claims, Repairs and Exchanges are required to go through an authorized Honeywell General Aviation (aka BendixKing) Dealer. If the end customer goes straight to Honeywell, it will cause delays and you will be referred to an Authorized Dealer.

(4) To locate a Honeywell GA Dealer, go to https://www.bendixking.com/en/buy/locate-dealer.

(5) Honeywell Sales Representative - https://www.bendixking.com/en/buy/sales-team

(6) For information about any Honeywell General Aviation products or legacy BendixKing products - https://www.bendixking.com/en/buy/locate-dealer.

3. Acronyms and Abbreviations

A. General

(1) The abbreviations are used in agreement with ASME Y14.38.

(2) Acronyms and non-standard abbreviations used in this publication are as follows:

Table INTRO-1. List of Acronyms and Abbreviations

Term	Full Term
A	Ampere
AlMg	Aluminum-Magnesium Alloy
ASME	American Society of Mechanical Engineers
ATA	Air Transport Association

Table INTRO-1. List of Acronyms and Abbreviations (Cont)

Term	Full Term
AWG	American Wire Gauge
BNC	Bayonet Neill Concelman
CH	Channel, Control Head
COM	Communication area (display), Communication port
ESDS	Electrostatic Discharge Sensitive
ETSO	European Technical Standard Order
EUROCAE	European Organization for Civil Aviation Equipment
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FREQ	Frequency
GS	Glide Slope
HMI	Human Machine Interface
HW	Hardware
Hz	Hertz
IC	Intercom
ID	Identifier
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
ILS	Instrument Landing System
IOM	installation and operation manual
LOC	Localizer
MHz	Megahertz
N/A	Not Applicable
NAV	Navigation, Navigation area (display), Navigation port
Nm	Newton Meter
No.	number
PBIT	Power-On Built-In Test
PN	Part Number
PTT	Push-To-Talk
PWR	Power
RCENT	Recent
RX	Receive, Receiver
SQ	Squelch

Table INTRO-1. List of Acronyms and Abbreviations (Cont)

Term	Full Term
STB	Standby (frequency)
SW	Software
TF	TufLok®, self-locking screws and threads
TR	temporary revision
TSO	Technical Standard Order
TX	Transmit, Transmission, Transmitter, Transceiver
V	Volt
VDC	Voltage Direct Current
VHF	Very High Frequency
VOL	Volume
VOR	VHF Omnidirectional Radio Range Localizer
VOX	Voice Operated Switch
VSWR	Voltage Standing Wave Ratio
W	Watt
cd/m²	Candela Per Square Meter
dB	Decibel
dBm	Power Ratio in Decibel referenced to 1 mW
in-lb	Inch-Pound
kHz	Kilohertz
kg	Kilogram
km	kilometer
lb	Pound
mA	Milliampere
mV	Millivolt
mW	Milliwatt
mm	Millimeter
°C	Degree Celsius
°F	Degree Fahrenheit
Ω	Resistance in Ohm

SECTION 1 – GENERAL DESCRIPTION

A. General

(1) This manual describes the components of the KX 200 NAV/COM transceiver. The type plate on your device shows the part number for identification purposes. (Refer to Figure 2-1).

(2) Before starting operation of the device(s) please read this manual carefully, with particular attention to the description referring to your device(s).

(3) Components of the KX 200 NAV/COM Transceiver(1)

NOTES:

(1) Some figures in this manual are for basic understanding and can be different to the design.

B. Purpose of Equipment

(1) The KX 200 series is a modern family of navigation and communication equipment.

(2) The KX 200 is a single block device with control panel and combines a navigation receiver (NAV) and a VHF communication transceiver (COM) in one device.

(a) The NAV subsystem and the COM subsystem work independently each other.

(b) The control head with modern HMI design works as interface between the pilot and the NAV/COM subsystems.

(c) All control elements and indicators are on the front panel.

(d) The devices(s) are made for cockpit installation in fixed wing or rotary wing aircraft.

(e) The devices(s) are compatible with 14 and 28 V systems.

(3) Features COM subsystem:

(a) The devices are for voice communication between aircraft or between aircraft and ground. The devices use the VHF-band between 118.000 - 136.9916 MHz respectively 136.9750 MHz with a selectable channel spacing of 8.33 or 25 kHz.

(b) The sensitive receiver complies with the most recent requirements of ED-23C.

1 It includes the ability to work in the offset-carrier (climax) operation in 25 kHz and 8.33 kHz channel spacing.

(c) The receiver includes a monitoring mode (dual watch). This is for monitoring two different VHF frequency channels at the same time while the communication on the active frequency.

(d) The squelch function prevents unwanted audio noise.

(e) The intercom function is for voice communication between aircraft crew and passengers.

(f) The extended built-in intercom can work as:

1 4-way intercom with isolation mode - passengers could continue conversation or listen to the music from a MP3 player at the same time while pilots talk through intercom or communicate with the tower.

(g) The device has a non-volatile memory for the storage of:

1 50 channels for storage of VHF frequencies with customized labels.

2 10 recently selected VHF frequencies (LAST).

(4) Features NAV subsystem:

(a) The NAV subsystem includes the VHF omnidirectional receiver (VOR), localizer (LOC) and glide slope (GS).

1 The VOR receiver tunes frequencies between 108.00 - 117.95 MHz.

a The VOR receiver provides a demodulated composite signal. It can be connected to the external converter or directly to the analog indicator with embedded composite signal converter.

2 The localizer receiver provides a demodulated composite signal. It can be connected to the external converter or directly to the analog indicator with embedded composite signal converter.

3 The glide slope receiver tunes frequencies between 329.15 - 335.00 MHz.

a The receiver includes an internal converter to change the composite signals to digital and analog signals up, down and flag.

4 The device has a serial interface to tune the external DME equipment.

5 The device has a non-volatile memory for the storage of:

a 50 channels for storage of NAV frequencies.

b 10 recently selected NAV frequencies (LAST).

C. General Notices

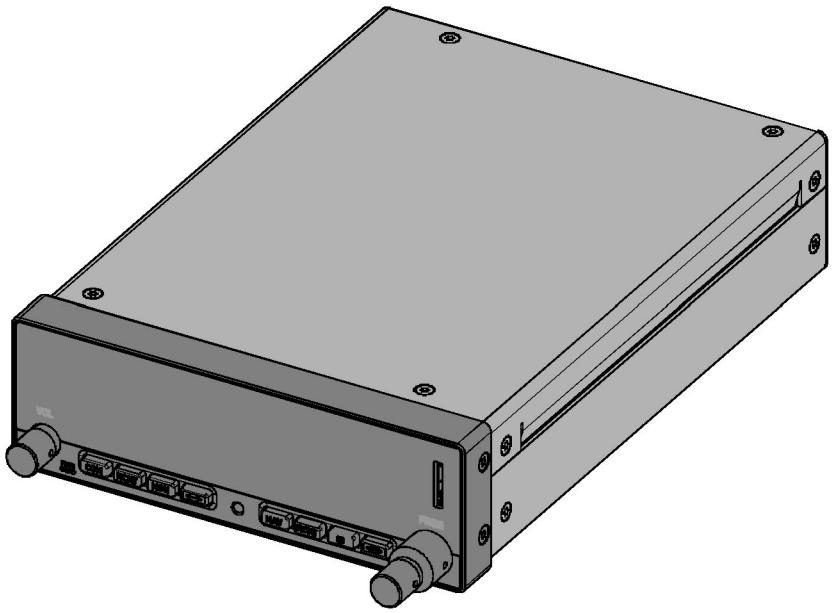
(1) The word "frequency" is also used in the sense of "channel name", as defined in EUROCAE, document ED 23C chapter 1.3.2, Volume II.

(2) In this document the word "memory channel" or "channel" is also used in the sense of a memory position identified by a channel number, where a frequency is stored for later use.

D. Variants Overview

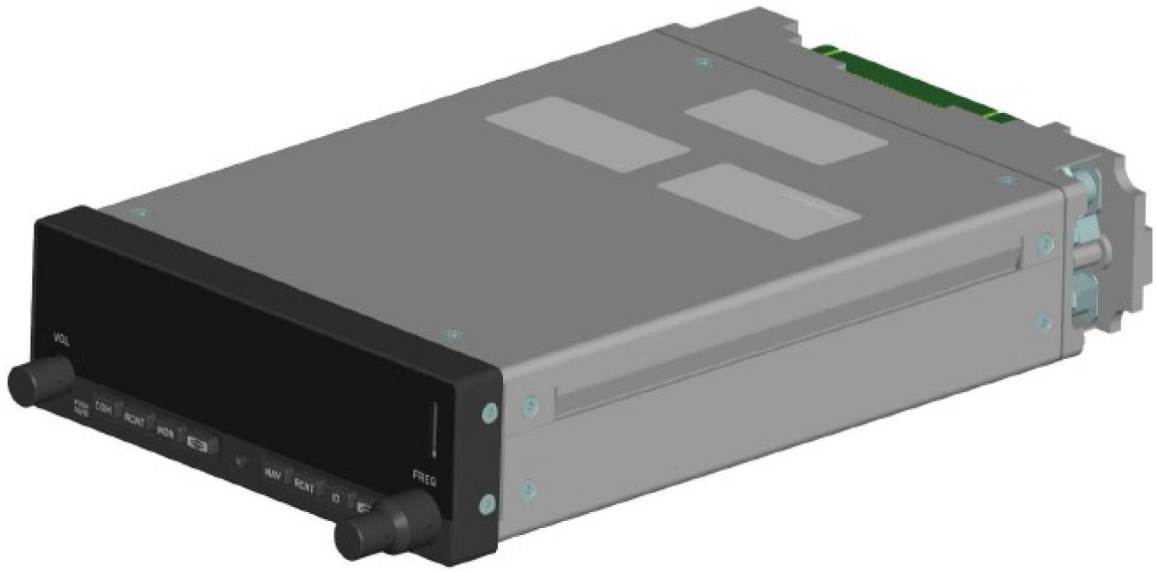
(1) Device for panel installation.

NOTE: Install Kit and Tray for panel installation will be offered in future release.



ICN-55939-1000092219-001-01

Figure 1-1. KX 200 without Mounting Equipment



ICN-55939-1000092220-001-01

Figure 1-2. KX 200 with Retrofit Adapter

(2) Software Status

(a) Refer to Section 2, Paragraph C., Step (7) for description.

E. Associated Devices

(1) These devices can operate with KX 200:

Device	Function
Headset	Aviation headsets (div. manufacturers)

(2) This manual describes the components of the KX 200 NAV/COM transceivers. For other devices please refer to the related manuals.

F. Scope of Functionality

(1) The KX 200 is a single block device with control panel. It combines a navigation receiver (NAV) and a VHF communication transceiver (COM) in one device.

(2) HMI Functionality

(a) The front panel with display is divided into a COM area and a NAV area with:

1 Display (LCD)

2 1 single rotary knob with pushbutton (VOL)

3 1 dual rotary knob with pushbutton (FREQ)

4 8 pushbuttons for dedicated operation:

a COM, RCNT, MON and CTR (COM transfer)

b NAV, RCT, ID and NTR (NAV transfer).

5 Ambient light sensor

6 MicroSD card slot (future functionality for prepared channel database)

7 Access to the locking mechanism.

(b) HMI & Illumination

1 The front panel has illuminated and non-illuminated inscriptions.

2 The display and front panel illumination are dimmable.

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Figure 1-3. HMI Illumination

(3) Operating Modes

(a) The device has different modes for settings and operation:

1 Pilot Mode - for operation during flight

2 Installation Mode - for configuration of the device parameters and read out of device and software identification data

3 Database Update Mode - for updating database with named channels for COM and NAV operation (future functionality)

4 Maintenance Mode - (factory only)

5 Software Update Mode - (factory only).

(4) COM Functionalities

(a) Audio Outputs

1 The transceivers have four configurable outputs:

a Headphone 1 output:

(1) Rated output power is 300 mW into 75 Ω.

b Headphone 2 output:

(1) Rated output power is 200 mW into 75 Ω.

c Speaker output:

(1) Rated output power is 4 W into 4 Ω.

d LINE-OUT output:

(1) For ground station use only.

(b) Mike Inputs

1 The transceivers have four microphone inputs:

a Standard microphone input 1 (STD_MIKE1)

b Standard microphone input 2 (STD_MIKE2)

c Standard microphone input 3 (STD_MIKE3)

d Dynamic microphone input (DYN_MIKE).

2 Each input can operate with one single microphone or with two microphones of the same type connected in parallel.

(c) AF Auxiliary Input

1 The AF auxiliary input is the interface to connect an external audio source (e.g. other radio services, music-player).

a The interconnection of multiple external audio sources on this port makes an additional external decoupling/isolation resistor necessary.

b The external audio is audible only when the transceiver is in receiving mode.

c The individual audio volume is set directly at the external equipment.

(d) PTT Management

1 Stuck PTT detection.

a The transmission time is limited to avoid uninterrupted transmission because of a stuck PTT and to prevent damage because of overheating.

b A message “STUCK PTT” (transmission was interrupted) is shown on the display.

(e) Sidetone

1 The sidetone is available on the headphone output during transmission.

2 The sidetone volume depends on to the intercom volume adjustment.

(f) Squelch Operation

1 The squelch (muting) circuit suppresses signals with strong signal noise.

2 There are two kinds of squelch methods implemented, carrier- and noise-squelch.

a The carrier-squelch depends on the signal strength and is adjustable in configuration setup.

b The noise-squelch depends on the noise level and is adjustable in the user menu.

(g) Frequency Monitoring

1 The frequency monitoring is a dual watch function.

a The device monitors frequencies on two different channels, active & standby frequency at the same time.

b The signal of the active frequency is always audible it has priority at all times.

(h) Intercom Operation

1 The built-in intercom circuit is for internal communication between pilots and passengers with connected headsets.

2 The COM subsystem has two intercom circuits:

a "Front row" and "Back row".

b You can connect a maximum of four headsets, e.g. the pilot & copilot headsets to the first circuit and two passenger headsets to the second circuit.

(i) Memory Channels (NAV/COM)

1 The device can store 50+10 frequencies each for the COM and NAV subsystem.

a The user can give a defined text label to each stored frequency.

2 The last 10 (active) frequencies selected are automatically stored as "Recent" channels.

(5) NAV Functionalities

(a) VOR/LOC/GS

1 The NAV subsystem has one or two receivers (optional):

a VOR/LOC receiver: frequency range 108 - 117.95 MHz

b GS (Glide Slope) receiver frequency range 328.6 - 335.4 MHz.

2 The VOR/LOC system, on the base of the VOR/LOC antenna signal, supplies:

a Horizontal deviation from the pilot's selected course or deviation from the localizer path

b Validity of the shown horizontal deviation

c If an aircraft is flying toward or away from an omnirange station.

3 The GS system, on the base of the GS antenna signal, supplies:

a Vertical deviation from the selected glide path

b Validity of the shown vertical deviation.

(b) ILS Energize

1 ILS energize output - active when ILS frequency is selected on KX 200 NAV/COM transceiver.

(c) DME Channel Line

1 The device has a serial interface to tune the external DME equipment.

2 Example: When the pilot changes the radio channel on the device front panel, the DME equipment change automatically to the related DME channel.

3 The NAV subsystem supports DME transponder channel control with use of DME channel lines.

- DME_CLOCK_OUT
- DME_DATA_OUT
- DME_COMM_IN
- RNAV_MODE_IN
- RNAV_CHREQ_IN

(d) NAV Audio Interface

1 NAV volume regulation

2 NAV audio mode functions selectable as "Voice Only", "Ident Only" and "Voice and Ident".

(6) Self-Tests (NAV/COM)

(a) The tests monitor most of the internal circuits against failures.

1 PBIT (Power-ON Built-In Test):

a Self-test upon power-on.

2 CBIT (Continuous Built-In Test):

a Self-test runs continuously in the background.

(7) Replacement of KX155

(a) The KX 200 NAV/COM transceiver with related retrofit adapter is compatible with:

- KX155.

(8) Configuration Setup - Installation Mode (NAV/COM)

(a) The password-protected configuration setup is for the configuration of installation and device parameters such as mike sensitivity, mike type selection, speaker enable/disable and other parameters.

(9) Software Update Mode and Maintenance Mode (NAV/COM)

(a) The software update mode and maintenance mode are special modes.

(b) These modes are for use by authorized maintenance organizations only.

G. Safety-Conscious Utilization

Safety Instructions

- Use the product only in the specified conditions, refer to Section 1, Paragraph J.
- Power supply:
  - Do not connect the device to AC sources.
  - Make sure that the device is connected to the mandatory DC source, refer to Paragraph J.
  - Do not connect the device with reversed polarity to the DC source.
- Circuit breaker:
  - Use the recommended fuses in the power supply line for the protection of the application, refer to Paragraph J.

NOTE : Excessive pulses on the DC bus of the aircraft can cause damage on electrical circuits of any installed instrument.

NOTE : Do not turn on the device during engine start or shutdown.

H. Cleaning and Disinfection of Devices

(1) Cleaning:

(a) Within the framework of officially prescribed or recommended protective measures, it makes sense that devices and systems that are directly accessible to people, are disinfected as required. This particularly applies to the controls on avionics devices.

NOTE: Not all commercially available cleaning agents/disinfectants are suitable for use on the surfaces of our devices. Many of the agents contain solvents or greasing components that can cause undesired effects on the controls and the display.

Example:

- Do not use aggressive cleaning agents e.g. Acetone.
  - These cleaning agents can cause damages.

(2) Procedure:

NOTE: Do not clean/disinfect the device(s) during operation.

(a) Device body and the controls:

1 Clean the device body and the controls with a clean, soft, lint free cloth moistened with clean water.

(3) Disinfection:

(a) To reduce the risk of infection:

1 As a disinfectant, we recommend diluted monohydric alcohols such as Isopropanol or Ethanol.

a Wear suitable protective gloves that are disinfected.

b Moisten a clean, soft, lint free cloth with the related liquid to clean all controls.

c Please comply with the usual protective measures when using monohydric alcohols for cleaning purposes.

2 Do not use spray bottles or evaporators to apply disinfectants or cleaning liquids to the Honeywell devices. Liquids could penetrate the devices and can result in damage.

(b) LCD screen:

1 Clean the LCD screen with a clean, soft, lint free cloth moistened with clean water and take care not to scratch the surface.

2 Cleaning agents suitable for cleaning TFT screens and LCD displays can also be used. Comply with the related instructions from manufacturer.

I. Restriction for Use

Safety Instructions The product is to be used inside the declared limits.

J. Technical Data

(1) General Characteristics

KX 200	Specification (General)
Nominal supply voltage	11.0 - 30.2 V
Emergency operation	min. 9.0 V

KX 200	Specification (General)
Current consumption	≤ 600 mA @ 14 VDC RX stand-by mode, no external equipment supplied from the device
	≤ 500 mA @ 28 VDC RX stand-by mode, no external equipment supplied from the device
	≤ 2000 mA @ 14 VDC RX stand-by mode, max. audio level on speaker output, 500 mA consumed by an external equipment supplied from the device
	≤ 1500 mA @ 28 VDC RX stand-by mode, max. audio level on speaker output, 500 mA consumed by an external equipment supplied from the device
	≤ 3500 mA @ 14 VDC TX mode (VSWR = 1.5:1 max., m ≥70%, 1 kHz), 500 mA consumed by an external equipment supplied from the device
	≤ 3000 mA @ 28 VDC TX mode (VSWR = 1.5:1 max., m ≥70%, 1 kHz), 500 mA consumed by an external equipment supplied from the device
	≤ 5500 mA @ 14 VDC TX mode (VSWR = 3:1 max., m ≥70%, 1 kHz), 500 mA consumed by an external equipment supplied from the device
	≤ 4500 mA @ 28 VDC TX mode (VSWR = 3:1 max., m ≥70%, 1 kHz), 500 mA consumed by an external equipment supplied from the device
Dimming control	0 - 5 V, 0 - 14 V or 0 - 28 V
Operating temperature	-4 to 131°F (-20 to 55°C)
Storage temperature	-22 to 158°F (-30 to 70°C)
Recommended external fuse protection in the application	10 A

(a) Display

KX 200	Specification (Display)
Display size	2 x 2.0 inch (51 X 51 mm) TFT LCD screen
Brightness	> 600 cd/m²
Contrast ratio	800:1

KX 200	Specification (Display)	
Viewing angle	right/left	80°
	upper	80°
	lower	80°

(b) Speaker

KX 200	Specification (Speaker)
Usage	Speaker output
Type	Analog
Load impedance	4 Ω
Output power @4 Ω	4 W

(c) Dimensions & Weight

KX 200	Specification (Dimensions & Weight)	
Dimensions KX 200 HxWxD	2.1 x 6.3 x 10.5 inch (52.1 x 158.8 x 268 mm)	
Installation depth	8.8 inch (224 mm)	
Dimensions KX 200 with Retrofit Adapter HxWxD	2.1 x 6.3 x 11.1 inch (52.1 x 158.8 x 282.9 mm)	
Installation depth	9.4 inch (239.1 mm)	
Weight	KX 200:	3.2 ±0.2 lb (1.45 ±0.1 kg)
	Retrofit Adapter:	0.5 ±0.04 lb (0.23 ±0.02 kg)
Installation method	Panel mount 6.3 inch (160 mm), lock mechanism	
Case material	AlMg	

(d) Device Connectors - KX 200

KX 200	Specification (Device Connectors - KX 200)
COM P1	D-SUB 25 male
COM J1	D-SUB 25 female
NAV P1	D-SUB 25 male
COM antenna	BNC jack
NAV antenna	SMA jack
GS antenna	SMA jack
GND	M4 stud

(e) Device Connectors - KX 200 with Retrofit Adapter

KX 200 with Retrofit Adapter	Specification (Device Connectors - KX 200 with Retrofit Adapter)
J401	Edge connector male 2x15 pin
J901	Edge connector male 2x18 pin
COM antenna (J801)	BNC jack w/o bayonet
NAV antenna (J301)	BNC jack w/o bayonet
GS antenna (J902)	BNC jack w/o bayonet

(2) COM Subsystem

KX 200	Specification (General)
Number of channel memory	50 + 10 Last
Channel labeling	Yes
Number of channels	8.33/25 kHz: 2280/760

(a) Receiver Data (COM)

KX 200	Specification (Receiver Data - COM)
Frequency range	118.000-136.991666 MHz
Channel spacing	8.33 / 25 kHz
Modulation	AM, A3E
Audio frequency response	350 - 2500 Hz @ 8.33 kHz channel spacing 350 - 3000 Hz (typically 300 - 3400 Hz) @ 25 kHz channel spacing
Sensitivity	≤ -93 dBm (typically -101 dBm) for AM 30%, 1000 Hz
Spurious response	≥ -33 dBm
Dual watch (MON)	YES
Climax operation	YES, Class H2 receiver
Frequency change notification	YES
Squelch threshold	6 - 26 dB
Single / multicarrier distortions	≤ 25% (typically ≤ 15%) for AM 85%

(b) Transmitter Data (COM)

KX 200	Specification (Transmitter Data - COM)
Transmitting power	≥ 8 W @ 14 VDC, ≥ 10 W @ 28 VDC
Modulation capability	≥ 70%, ≤ 95%
Frequency stability better than	± 5 ppm
Modulated audio distortion	≤ 15%

KX 200	Specification (Transmitter Data - COM)
Modulated audio response	350 - 2500 Hz
Stuck PTT	35 s

(c) Audio In-/Outputs (COM)

KX 200	Specification (Audio In-/Outputs - COM)
Number of headset outputs	2 (capable for 2 headsets in parallel)
Headset output power	100 mW @ 600 Ω
Number of speaker outputs	1
Speaker output power	≥ 4 W @ 4 Ω @ 14 V
Standard mike inputs	3
Dynamic mike inputs	1
Auxiliary audio inputs	1
Simple intercom	Number of audio paths: 2 Isolation mode: Yes

(d) Antenna (COM)

KX 200	Specification (Antenna - COM)
Direction	Bidirectional
Type	RF signal
Nominal impedance	50 Ω
Operating frequency	118 - 137 MHz

(3) NAV Subsystem

(a) Receiver Data (NAV)

KX 200	Specification (Receiver Data - NAV)
Number of channel memory	50 + 10 Last
Frequency range	VOR/LOC: 108 - 117.95 MHz
	GS: 328.6 - 335.4 MHz
Sensitivity	-93 dBm, -107 dBm (typically)
VOR/LOC output	Composite signal for external VOR/LOC converter and indicator
Auxiliary power supply output	up 500 mA
ILS energize output	Open collector to ground discrete output
DME channeling	Serial DME channeling provided for KN 62A, KN 63, KN 64

KX 200	Specification (Receiver Data - NAV)
Audio output power	≥ 100 mW @ 500 Ω, ≥ 100 mW @ 600 Ω
Audio output mode	VOICE/IDENT/AUDIO

(b) Antennas (NAV)

KX 200	Specification (Antennas - NAV)
Direction	Input
Type	RF signal
Nominal impedance	50 Ω
Operating frequency	VOR/LOC: 108 - 117.95 MHz GS: 328.6 - 335.4 MHz

(4) Software

(a) The design and development processes used for device software follow the rules given in EUROCAE/RTCA Document ED-12C/DO-178C; "Software Considerations in Airborne System and Equipment Certification".

COM subsystem: Design Assurance Level (DAL) "C"

NAV subsystem: Design Assurance Level (DAL) "B"

Control Head: Design Assurance Level (DAL) "B"

(5) Hardware

(a) The devices do not contain Complex Electronic Hardware (CEH).

(6) Continued Airworthiness

(a) A regular maintenance of the devices is not necessary:

1 The maintenance is specified as "on condition" only.

2 It is recommended to make a test of the frequency accuracy of the airborne transceiver after 7 years.

(7) Environmental Conditions KX 200

(a) The tests were done in accordance with EUROCAE/RTCA ED-14G/DO-160G under consideration of the recorded environmental categories and conditions:

Environmental Condition	Section	Cat.	Remarks
Temperature / Altitude	4	C4	-
Ground Survival Low Temperature	4.5.1	C4	-67°F (-55°C)
Short-Time Operating Low Temperature	4.5.1	C4	-4°F (-20°C)
Operating Low Temperature	4.5.2	C4	-4°F (-20°C)
Ground Survival High Temperature	4.5.3	C4	185°F (85°C)

Environmental Condition	Section	Cat.	Remarks
Short-Time Operating High Temperature	4.5.3	C4	158°F (70°C)
Operating High Temperature	4.5.4	C4	131°F (55°C)
In-Flight Loss of Cooling	4.5.5	X	No forced cooling required
Altitude	4.6.1	C4	35000 ft (11 km)
Decompression	4.6.2	C4	-
Overpressure	4.6.3	C4	N/A
Temperature Variation	5	B	41°F (5°C) per minute
Humidity	6	A	standard
Shock & Crash Safety	7	B	Fixed-wing and helicopter, standard
Vibration	8	S+U	Curve M for fixed wing aircraft Curve G for helicopter or U2 (F&F1)
Explosion Atmosphere	9	X	-
Waterproofness	10	X	-
Fluids Susceptibilities	11	X	-
Sand and Dust	12	X	-
Fungus Resistance	13	X	-
Salt Fog	14	X	-
Magnetic Effect	15	Z	≤ 1° deflection at 0.3 m
Power Input	16	B	DC installations with battery of significant capacity
Voltage Spike	17	A	High degree of protections against voltage spikes
Audio Freq. Conducted Susceptibility	18	B	DC installations with battery of significant capacity
Induced Signal Susceptibility	19	AC	Primary power DC
Radio Frequency Susceptibility	20	TT	High intensity radiated fields for systems with moderate criticality
Emission of Radio Frequency Energy	21	B	Equipment where interference should be controlled to a tolerable level
Lightning Induced Transients Susceptibility	22	A1E3X	Pin test waveform A, level 1 Cable bundle test waveform E, level 3
Lightning Direct Effects	23	X	-
Icing	24	X	-

Environmental Condition	Section	Cat.	Remarks
Electrostatic Discharge (ESD)	25	A	Equipment operated in an aerospace environment
Fire, Flammability	26	C	-

(8) FCC Approval

(a) Radiofrequency radiation exposure information:

1 The approved equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. The equipment should be installed and operated with minimum distance of 20 inch (51 cm) between the radiator and your body.

2 This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

NOTE: The approved equipment has been tested and found to comply with the limits for a 'Licensed Non- Broadcast Station Transmitter' (VHF-Transceiver), pursuant to Part 87 of the FCC Rules. It is designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

NOTE: This device complies with Part 87 of the FCC Rules [and with Industry Canada license-exempt RSS standard(s)].

3 Operation is subject to the two conditions that follow:

a This device may not cause harmful interference, and

b This device must accept any interference received, including interference that may cause undesired operation.

NOTE: Changes or modifications made to the approved equipment not expressly approved by Honeywell may void the FCC authorization to operate this equipment.

SECTION 2 – INSTALLATION

A. General

(1) This manual must be available during performance of all tasks.

(2) The installation of the device(s) depends on the type of aircraft and its equipment and thus only general information can be given in this section.

(3) Any deviations from the instructions in this document are the installer's responsibility.

B. Packaging, Transport, Storage

(1) Visually inspect the package contents for signs of transport damage.

CAUTION: THE PACKAGING MATERIAL IS INFLAMMABLE, BY BURNING, TOXIC FUMES MAY DEVELOP.

(2) Keep the packaging material and use it in the case of a return shipment. Improper or faulty packaging may lead to transport damages.

(3) Make sure to transport the device always in a safe manner and with the aid of suitable lifting equipment if necessary. Do never use the electric connections for lifting. Before the transport, a clean, level surface should be prepared to put the device on. The electric connections may not be damaged when placing the device.

(4) First Device Checkup

(a) Do a check for signs of transport damages.

(b) Please make sure that the indications on the type plate agree with your purchase order.

(c) Make sure that the equipment is complete (Refer to Section 2, Paragraph C., Step (2)).

(5) Storage

(a) If you do not install the device immediately, make sure to store it in a dry and clean environment. Make sure that the device is not stored near strong heat sources and that no metal chippings can get into the device.

C. Device Assignment

(1) This manual is valid for the devices:

(a) KX 200 and applicable retrofit adapter.

(2) Scope of Delivery

(a) Manuals

1 Operating Instructions.

(b) For KX 200:

1 Device in accordance with your order

2 Authorized Release Certificate (EASA Form 1).

(3) State of Delivery

(a) The device is delivered with a default configuration.

(4) Additional Required Equipment

(a) Connectors + cables

(b) Antennas for NAV and COM

(c) Headset

(d) Power supply

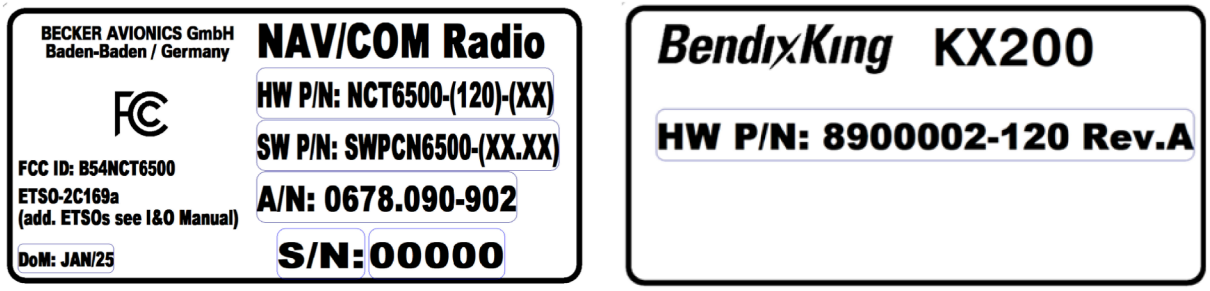
(5) Registration of the Device

(a) Comply with the national requirements for the operation of radio equipment.

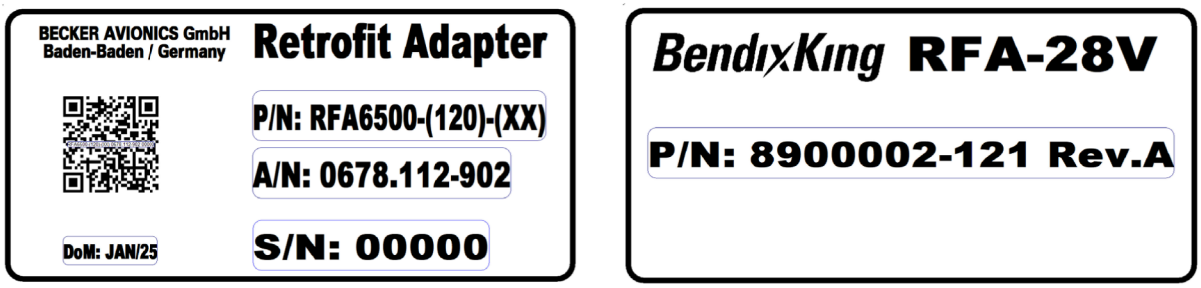
(6) Type Plate

(a) The device type is specified by the type plate (on the housing):

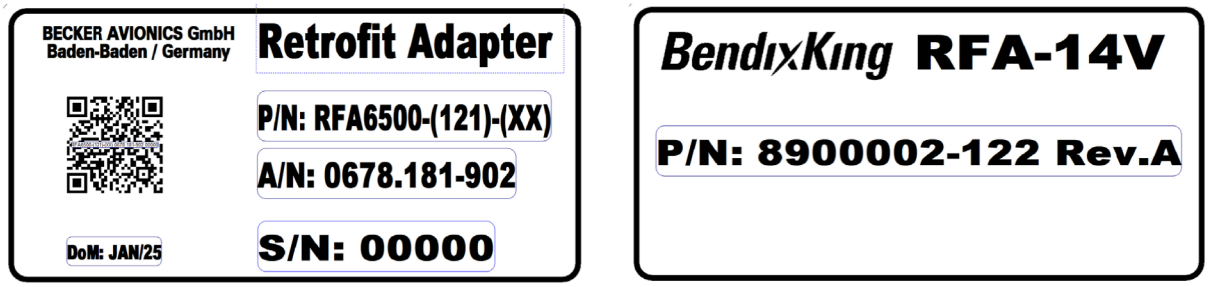
1 Example:



Name Plates used for the KX 200.



Name Plate used for the Retrofit Adapter 28V



Name Plate used for the Retrofit Adapter 14V

NOTE:
THE DATA PLATE EXAMPLES ABOVE ARE A CROSS REFERENCE BETWEEN THE HONEYWELL HARDWARE (HW) PART NUMBER (P/N) AND THE BECKER AVIONICS HW P/N.

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Figure 2-1. Type Plate (Example)

(7) Software

(a) The software version is available in the configuration setup, installation mode→ "Software Identification - Control Head (CH), COM, NAV". Refer to Section 2, Paragraph N., Step (6).

(b) The software versions are subject to change without notice.

D. Default Configuration

(1) The device is delivered with a default configuration.

(2) The default configuration guarantees an easy first start-up of the device without detailed configuration effort.

(3) Before any changes are made to any default configuration settings, it is highly recommended to takes pictures of the applicable KX 200 screens for easy reference to default settings.

E. Installation Requirements

(1) The installation of the device(s) depends on the type of aircraft and its equipment and thus only general information can be given in this section.

Safety Instructions

- The installation of the components into an aircraft may be carried out by an authorized installation company. The country regulations always must be complied with.
  - The device(s) must not be opened.
  - Keep enough distance around the equipment to ensure free circulation of cooling air and cables exit.
  - Keep enough distance to devices with integrated ventilator fans to ensure free circulation of cooling air.
  - The installation area must have a minimum distance of 12 inch (30 cm) from the magnetic aircraft compass, to prevent any interference to the magnetic compass.
  - Forced cooling is not required.

Safety Instructions

- The devices are for installations in general aviation and rotary wing aircraft. The devices are made for installation in cockpit environment.
- These limitations apply for the installation:
  - The device must be installed with mounting tray to comply with the conditions for certification.
  - The installation must be in accordance with the local aviation authority approved guidelines.
  - The installation must be in accordance with the ETSO/TSO standards applicable for the specific type or class of aircraft.
  - The conditions and tests for ETSO/TSO approval of this article are minimum performance standards.
  - The COM transceiver must be connected to a VHF antenna in order to satisfy FAA TSO-C169a.
  - The equipment is not qualified for installation in areas with fluid contamination.
  - Changes or modifications made to this equipment not expressly approved in written form by Honeywell may void the authorization to operate this equipment.

Safety Instructions

- Use only cables which are qualified for aircraft use (self-extinguishing).
- Fit sleeves over the solder joints on the equipment connector.
- Use AWG 18 (0.75 mm^2) for power supply and speaker and AWG 22/24 (0.25 - 0.34 mm^2) for other cables.
- Use 2-core twisted and shielded cables for interface lines TX and RX.
- Each single cable harness of a device connector must have separate shielding.
- Connect each cable shield individually to the related ground signal (prevent series connections).
  - Wire cross-section min. 0.0004 $inch^2$ (0.25 mm^2), wire length ≤ 3 inch (75 mm).
- HF cable should not be included in the cable harnesses.
- Use the recommended fuses in the power supply line for the protection of the application, Refer to Section 1, Paragraph J.

Safety Instructions

- Antennas:
  - Comply with the antenna manufacturer's recommendations for antenna installation.
- Antenna cable/connections:
  - Use RF coaxial cables (impedance 50 Ω) for antenna connections.
    - The use of low-attenuation cables is recommended.
    - Do not route antenna cables near to interference sources, e.g. RF transmitters, ignition cables, etc.
    - Make antenna connections as short as practical but prevent sharp bends of antenna cables.

CAUTION: RADIATION RISK: A SAFE DISTANCE TO THE INSTALLED ANTENNA MUST BE ENSURED BY CORRESPONDING INSTALLATION MEASURES AROUND HUMAN BODY DAMAGE (E.G. AT THE EYES) AND/OR PREVENT THE INFLAMMATION OF COMBUSTIBLE MATERIALS BY RADIATED ENERGY.

CAUTION: CHECK THE WIRING CAREFULLY BEFORE POWER UP THE DEVICE(S) AND CHECK PARTICULARLY CORRECT CONNECTION OF THE POWER SUPPLY LINES.

(2) Prevent Hearing Damage

CAUTION: LISTENING AT HIGH VOLUMES THROUGH HEADPHONES, HEADSETS OR IN CLOSE DISTANCE TO A LOUDSPEAKER CAN CAUSE HEARING DAMAGE.

CAUTION: THE LONGER YOU ARE EXPOSED TO A HIGH ACOUSTIC SOUND LEVEL, THE MORE QUICKLY YOUR HEARING CAN BE DAMAGED.

Safety Instructions

- Comply with the operating instruction of the used equipment.
- Do not increase the volume to suppress ambient noise.
- Recommendation: Use noise-canceling headphones (reduces ambient noise, volume can be turned down to minimum).
- Slowly increase the volume until you can hear the sound clearly and without distortion.

(3) Display - Viewing Angle and Readability

(a) The readability of the display depends on the viewing angle.

(b) During installation, make sure that the viewing angle on the display is as straight as possible.

(c) We recommend the installation in the pilot's direct field of view and the smallest possible distance between the view to the outside and the view to the display.

NOTE: Polarizing sunglasses can reduce the readability of the display.

(4) Cockpit Panel Installation

(a) KX 200 with Retrofit Adapter

1 The KX 200 with retrofit adapter is made for cockpit panel installation.

2 Install the retrofit adapter to the KX 200 (Refer to Figure 2-2 and Figure 2-3).

3 Deinstallation of KX155 from the Aircraft:

a Locate the lock down screw access at the bottom center of the faceplate and using a 3/32” Allen wrench, turn the lock-down screw counter-clockwise until the unit disengages from the mounting rack. Pull the unit out of the mounting rack by pulling the metal tabs located behind the front panel on each side of the rack.

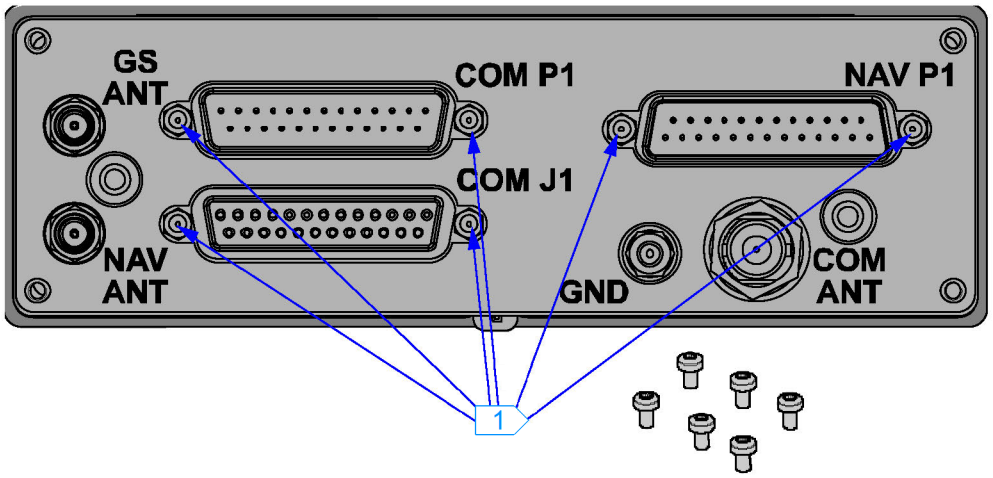
b Take care to prevent damage to the existing wiring and mounting tray.

4 Use the existing mounting tray of the previously installed device for the new device installation.

5 Move the device with retrofit adapter straight and flush to bottom and rear side into the mounting tray.

6 Use an Allen wrench (3/32") to tighten the device to its final position (access to the locking mechanism on the front panel).

7 For more information please refer to Section 2, Paragraph F., Step (2) and Section 2, Paragraph F., Step (3).



KX 200 REAR VIEW

NOTE:

1 REPLACE 6x LATCH PINS WITH 6x PAN HEAD SCREWS ISO14583-M3x5-A2 TF.

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Figure 2-2. KX 200 - Preparation for Retrofit Adapter Installation

8 Installation Retrofit Adapter - KX 200

a Tool: Hexagon socket wrench M4.5

- Max. torque: 9 in-lb (1 Nm).

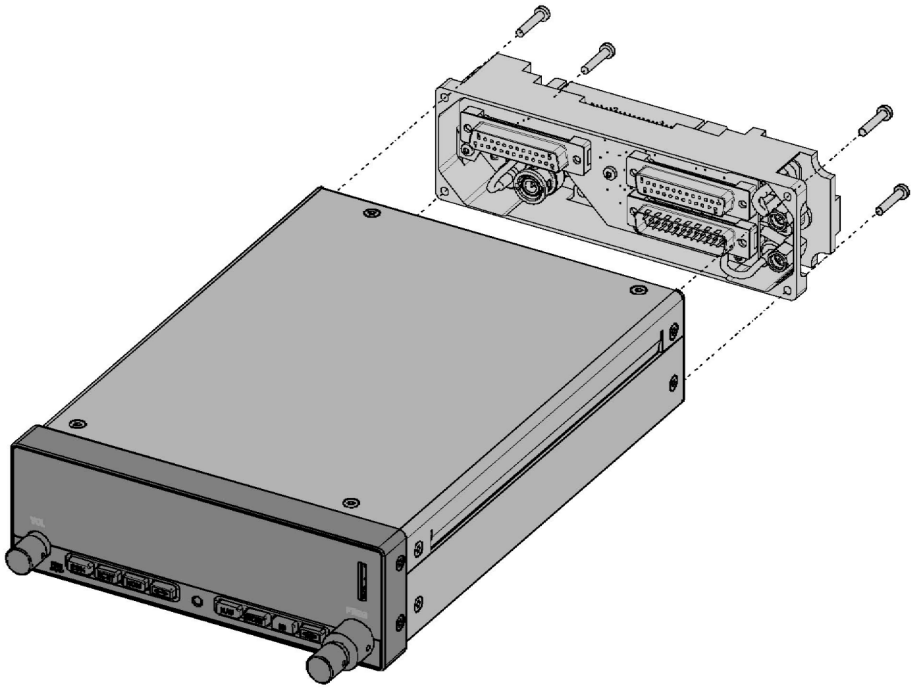

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Figure 2-3. KX 200 - Retrofit Adapter Installation

9 Tools: Open-end wrench M8, Torx screwdriver T10

a Move the Retrofit Adapter onto the device connectors.

b Connect and lock the COM antenna connector (Retrofit Adapter - device connector).

c Screw the related antenna adapters of the Retrofit Adapter (GS, NAV) onto the device antenna connectors (GS, NAV).

(1) If the connection is screwed in correctly, the thread is no longer visible.

(2) Be careful not to overtighten.

d Use pan head screws (4x) ISO14583-M3x16- A2 TF to install Retrofit Adapter to the KX 200.

(1) Max. torque: 9 in-lb (1 Nm).

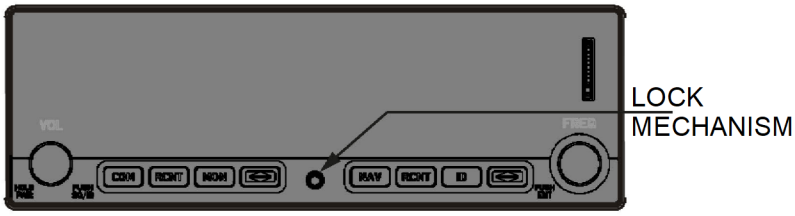

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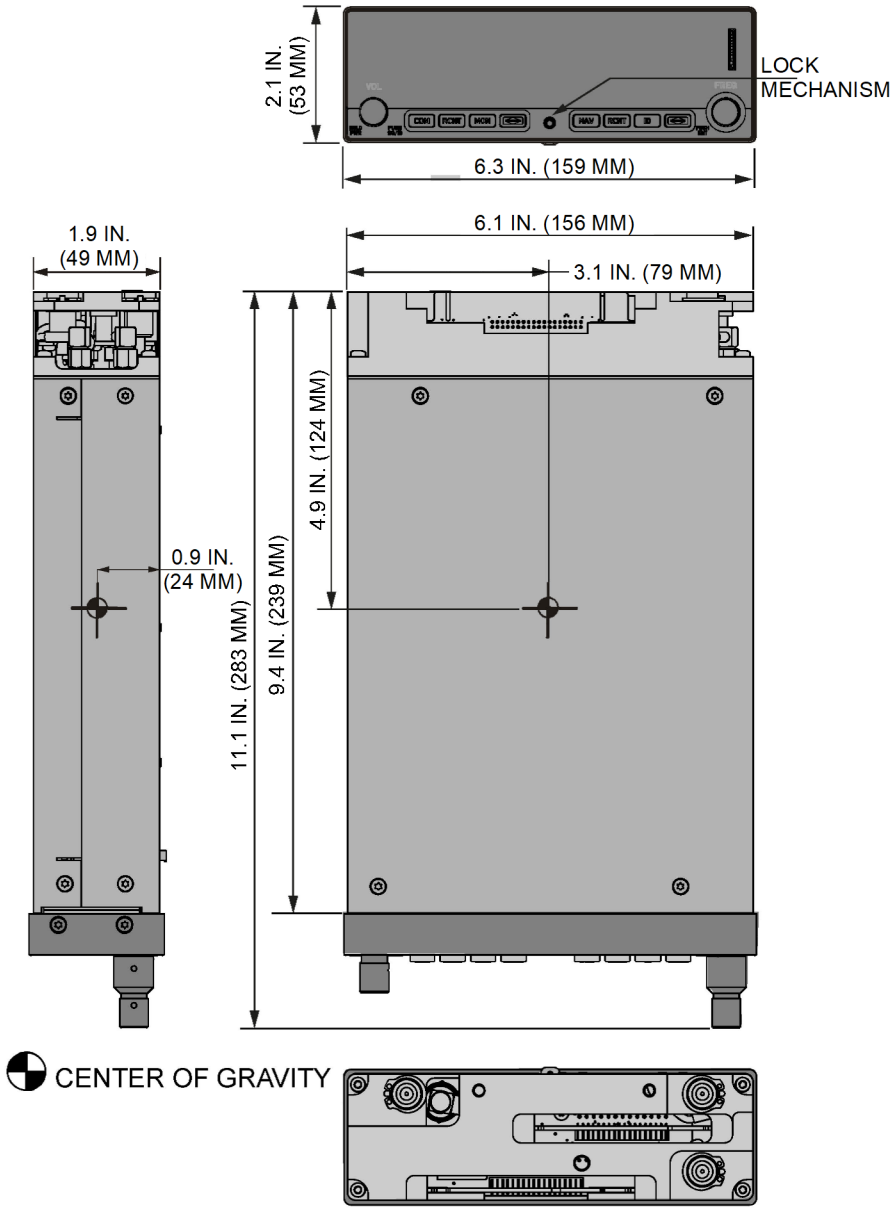
Figure 2-4. KX 200 - Locking Mechanism

10 Tool: Allen wrench 3/32".

F. Dimensions

(1) KX 200 with Retrofit Adapter



NOTES:
1. "CENTER OF GRAVITY" FOR KX 200 WITH RETROFIT ADAPTER.
2. TOLERANCE: ±0.2 IN. (±5 MM).

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Figure 2-5. Dimensions KX 200 with Retrofit Adapter

Dimensional Limits for Figure 2-5

Permitted deviation for dimensions without tolerances: DIN ISO 2768 T1 C (dimensions in inch (mm))		
≤0.2 (±0.01) (≤ 6 (±0.3))	>1.2 - 4.7 (±0.03) (> 30 - 120 (±0.8))	>16 - 39 (±0.08) (> 400 - 1000 (±2.0))
>0.2 - 1.2 (±0.02) (> 6 - 30 (±0.5))	>4.7 - 16 (±0.05) (> 120 - 400 (±1.2))	>39 - 79 (±0.12) (> 1000 - 2000 (±3.0))

(2) Retrofit Adapter

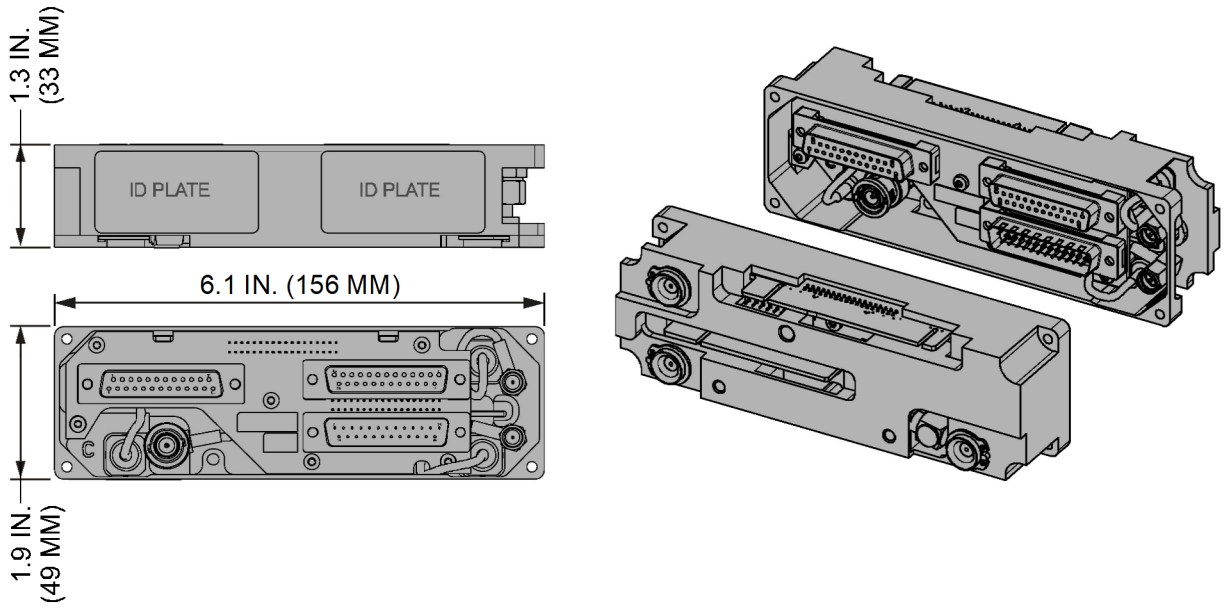

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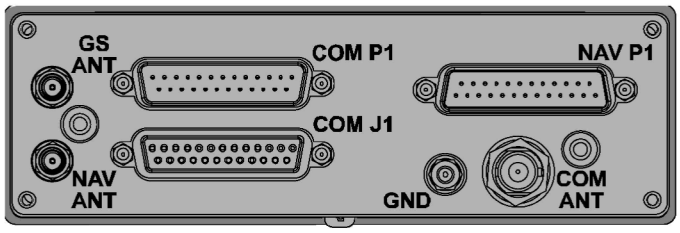
Figure 2-6. Dimensions - Retrofit Adapter

Dimensional Limits for Figure 2-6

Permitted deviation for dimensions without tolerances: DIN ISO 2768 T1 C (dimensions in inch (mm))		
≤0.2 (±0.01) (≤ 6 (±0.3))	>1.2 - 4.7 (±0.03) (> 30 - 120 (±0.8))	>16 - 39 (±0.08) (> 400 - 1000 (±2.0))
>0.2 - 1.2 (±0.02) (> 6 - 30 (±0.5))	>4.7 - 16 (±0.05) (> 120 - 400 (±1.2))	>39 - 79 (±0.12) (> 1000 - 2000 (±3.0))

G. Connector Pin Assignments - KX 200



COM P1: Device connector
NAV P1: Device connector
COM J1: Device connector
COM ANT: COM antenna connector
GS ANT: GS antenna connector
NAV ANT: NAV antenna connector
GND: Grounding bolt

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Figure 2-7. KX 200 - Connector Layout (Rear)

Safety Instructions

- Use only cables which are qualified for aircraft use (self-extinguishing).
- Fit sleeves over the solder joints on the equipment connector.
- Use AWG 18 (0.75 mm^2) for power supply and speaker and AWG 22/24 (0.25 - 0.34 mm^2) for other cables.
- Use 2-core twisted and shielded cables for interface lines TX and RX.
- Each single cable harness of a device connector must have separate shielding.
- Connect each cable shield individually to the related ground signal (prevent series connections).
  - Wire cross-section min. 0.0004 $inch^2$ (0.25 mm^2), wire length ≤ 3 inch (75 mm).
- HF cable should not be included in the cable harnesses.
- Use the recommended fuses in the power supply line for the protection of the application, refer to Section 1, Paragraph J.

Safety Instructions

- Antennas:
  - Comply with the antenna manufacturer's recommendations for antenna installation.
- Antenna cable/connections:
  - Use RF coaxial cables (impedance 50 Ω) for antenna connections.
    - The use of low-attenuation cables is recommended.
    - Do not route antenna cables near to interference sources, e.g. RF transmitters, ignition cables, etc.
    - Make antenna connections as short as practical but prevent sharp bends of antenna cables.

(1) COM Connector P1

(a) Type: 25pin D-Sub male connector with slide-in fastener.

COM P1, Pin	Signal Name	Function (Details)
1	COMM_SPKR_HI	Speaker output signal
2	COMM_HDPH1_A	Symmetrical output for headphone(s). (Use with COMM_HDPH1_B)
3	COMM_HDPH1_B	Symmetrical output for headphone(s). (Use with COMM_HDPH1_A)
4	COMM_AUXIN_HI	Auxiliary audio input. (Use with COMM_AUXIN_LO)
5	COMM_DYNMIKE_A	Symmetrical input for dynamic microphone(s)
6	COMM_DYNMIKE_B	Symmetrical input for dynamic microphone(s)

COM P1, Pin	Signal Name	Function (Details)
7	COMM_IC_IN	Intercom key input
8	COMM_STDMIKE_LO	Standard microphone return. (Common for STD1MIKE, STD2MIKE, STD3MIKE)
9	COMM_STD2MIKE_HI	Standard microphone 2 input. (Use with COMM_STDMIKE_LO)
10	COMM_ILLUM_LO	Illumination input ground **NOTE :** This is input pin. Connect the pin to ground potential.
11	COMM_PSUPP	Power supply
12	COMM_PSUPP	Power supply
13	COMM_PGND	Power supply return
14	COMM_SPKR_LO	Speaker output return
15	COMM_AUXOUT_HI	Auxiliary audio output
16	COMM_TEST_OUT	Reserved, do not connect
17	COMM_PTT1_IN	Push-To-Talk key input
18	COMM_STD1MIKE_HI	Standard microphone 1 input. (Use with COMM_STDMIKE_LO)
19	COMM_STD3MIKE_HI	Standard microphone 3 input. (Use with COMM_STDMIKE_LO)
20	COMM_HDPH2_A	Floating BTL output together with. (COMM_HDPH2_B) **Do not connect to any GND**
21	COMM_AUXIN_LO	Auxiliary audio return. (Use with COMM_AUXIN_HI)
22	COMM_HDPH2_B	Floating BTL output together with. (COMM_HDPH2_A) **Do not connect to any GND**
23	COMM_ILLUM_IN	Illumination input
24	COMM_PWR_STATUS	Reserved, do not connect
25	COMM_PGND	Power supply return

(2) COM Connector J1

(a) Type: 25pin D-Sub female connector with slide-in fastener.

COM J1, Pin	Signal Name	Function (Details)
1	--	Reserved, do not connect
2	COMM_COM2_TXP	Reserved, do not connect
3	COMM_COM2_RXP	Reserved, do not connect

COM J1, Pin	Signal Name	Function (Details)
4	COMM_RX_STATUS	Reserved, do not connect
5	COMM_PTT2_IN	Push-To-Talk key input
6	COMM_DGND	Reserved, do not connect
7	COMM_COM1_TXP	Reserved, do not connect
8	COMM_COM1_RXP	Reserved, do not connect
9	COMM_COM2_TXN	Reserved, do not connect
10	COMM_COM2_RXN	Reserved, do not connect
11	COMM_DGND	Reserved, do not connect
12	COMM_EXCH_IN	External COMM "Exchange" key
13	COMM_SRVEN_IN	Reserved, do not connect
14	COMM_COM1_TXN	Reserved, do not connect
15	COMM_COM1_RXN	Reserved, do not connect
16	COMM_CHUP_IN	Reserved, do not connect
17	COMM_SQLSW_IN	Squelch Force-OFF input
18	--	Reserved, do not connect
19	--	Reserved, do not connect
20	COMM_ISOLSW_IN	ISOL input
21	COMM_DGND	Discrete lines ground
22	COMM_DGND	Discrete lines ground
23	COMM_DGND	Discrete lines ground
24	COMM_MIKESW_IN	Intercom configuration selector input
25	COMM_PON_IN	Reserved, do not connect

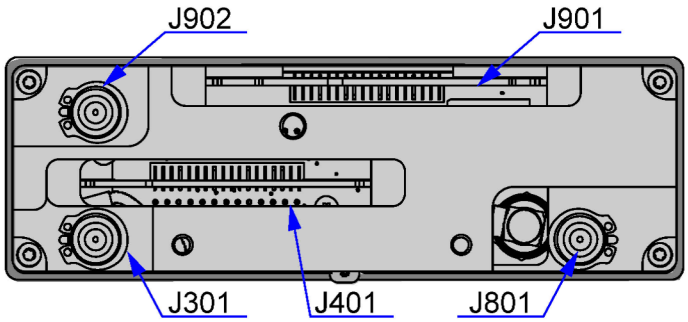
(3) NAV Connector P1

(a) Type: 25pin D-Sub male connector with slide-in fastener.

NAV P1, Pin	Signal Name	Function (Details)
1	NAV_VLCOMP_OUT	Composite output for an external VOR/LOC converter
2	NAV_GND	Aircraft ground
3	NAV_AFOUT_LO	Symmetrical audio output. (Use with NAV_AFOUT_HI)
4	NAV_AFOUT_HI	Symmetrical audio output. (Use with NAV_AFOUT_LO)
5	NAV_ILLUM_IN	Illumination input
6	NAV_BOOT_IN	Reserved, do not connect
7	NAV_RNAV_CHREQ_IN	RNAV channel request input
8	NAV_DME_COMM_IN	Gating input for DME interface
9	NAV_RNAV_MODE_IN	RNAV mode input

NAV P1, Pin	Signal Name	Function (Details)
10	NAV_EXCH_IN	External NAV "Exchange" key
11	NAV_PON_IN	Reserved, do not connect
12	NAV_AUXSUPP_OUT	Auxiliary power supply output
13	NAV_PGND	Power supply return (ground)
14	NAV_GS_DOWN_OUT	GS deviation DOWN output. (Use together with NAV_GS_UP_OUT)
15	NAV_GS_UP_OUT	GS deviation UP output. (Use together with NAV_GS_DOWN_OUT)
16	NAV_GS_NFLAG_OUT	GS flag negative output. (Use together with NAV_GS_PFLAG_OUT)
17	NAV_GS_PFLAG_OUT	GS flag positive output. (Use together with NAV_GS_NFLAG_OUT)
18	NAV_ILSEN_OUT	ILS ENERGETIZE output
19	NAV_DME_CLOCK_OUT	Clock line for DME channeling
20	NAV_DME_DATA_OUT	Data line for DME channeling
21	NAV_COM1_422TXP	Reserved, do not connect
22	NAV_COM1_422TXN	Reserved, do not connect
23	NAV_COM1_422RXN	Reserved, do not connect
24	NAV_COM1_422RXP	Reserved, do not connect
25	NAV_PSUPP	Power supply

H. Connector Pin Assignments - KX 200 with Retrofit Adapter



J401: Device connector
J901: Device connector
J801: COM antenna connector
J902: GS antenna connector
J301: NAV antenna connector

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Figure 2-8. KX 200 with Retrofit Adapter - Connector Layout (Rear)

Safety Instructions

- Use only cables which are qualified for aircraft use (self-extinguishing).
- Fit sleeves over the solder joints on the equipment connector.
- Use AWG 18 (0.75 mm^2) for power supply and speaker and AWG 22/24 (0.25 - 0.34 mm^2) for other cables.
- Use 2-core twisted and shielded cables for interface lines TX and RX.
- Each single cable harness of a device connector must have separate shielding.
- Connect each cable shield individually to the related ground signal (prevent series connections).
  - Wire cross-section min. 0.0004 $inch^2$ (0.25 mm^2), wire length ≤ 3 inch (75 mm).
- HF cable should not be included in the cable harnesses.
- Use the recommended fuses in the power supply line for the protection of the application, refer to Section 1, Paragraph J.

Safety Instructions

- Antennas:
  - Comply with the antenna manufacturer's recommendations for antenna installation.
- Antenna cable/connections:
  - Use RF coaxial cables (impedance 50 Ω) for antenna connections.
    - The use of low-attenuation cables is recommended.
    - Do not route antenna cables near to interference sources, e.g. RF transmitters, ignition cables, etc.
    - Make antenna connections as short as practical but prevent sharp bends of antenna cables.

(1) Connector J401 - Retrofit Adapter

(a) Type: 2x15pin edge connector male.

J401, Pin	Signal Name	Function (Details)
1	COMM_PON_IN	Reserved, do not connect
2	COMM MIC AUDIO	Standard microphone 1 Input
3	CLOCK BUS	Clock Line for DME channeling
4	COMM_IC_IN	COMM Intercom activation input
5	DATA BUS	Data Line for DME channeling
6	COMM MIC KEY	Push-To-Talk line (transmission activation) COMM
7	COMM_SRVEN_IN	Reserved, do not connect
8	ILS ENTERGIZE	LOC/NAV status

J401, Pin	Signal Name	Function (Details)
9	COMM AUDIO HI	Symmetrical output for headphone(s) Use with COMM AUDIO LO)
10	NAV AUDIO HI	Symmetrical audio output Use with NAV AUDIO LO
11	-	Reserved, do not connect
12	SWITCHED POWER OUT	Auxiliary power supply output
13	+27.5VDC POWER IN	Power supply
14	NAV REMOTE TRANSFER	External NAV “Exchange” key
15	A/C GROUND	Power supply return (ground)
A	RNAV MODE	RNAV Mode input
B	INTERCOM MIC	Standard microphone 1 input
C	N/C	Reserved, do not connect
D	DME COMMON	Gating input for DME interface
E	N/C	Reserved, do not connect
F	RNAV/CHAN REQUEST	RNAV channel request input
H	VOR/LOC COMPOSITE OUT	Composite output for an external VOR/LOC converter
J	COMM_CHUP_IN	Reserved, do not connect
K	COMM AUDIO LO	Symmetrical output for headphone(s) Use with COMM AUDIO HI
L	NAV AUDIO LO	Symmetrical audio output Use with NAV_AUDIO_HI
M	SWITCHED POWER IN	Reserved, do not connect
N	SWITCHED POWER OUT	Auxiliary power supply output
P	+27.5VDC POWER IN	Power supply
R	COMM REMOTE TRANSFER	External COMM “Exchange” key
S	A/C GROUND	Power supply return (ground)

(2) Connector J401 - 14 V Retrofit Adapter

(a) Refer to Step (1) and comply with the listed differences:

J401, Pin	Signal Name	Function (Details)
14	+13.75VDC POWER IN	Power supply
R	+13.75VDC POWER IN	Power supply
P	COMM REMOTE TRANSFER	External COMM “Exchange” key
13	NAV REMOTE TRANSFER	External NAV “Exchange” key

(3) Connector J901 - Retrofit Adapter

(a) Type: 2x18pin edge connector male.

J901, Pin	Signal Name	Function (Details)
1	--	Reserved, do not connect
2	COMM_COM1_422RXP	Reserved, do not connect
3	COMM_COM1_422TXP	Reserved, do not connect
4	COMM_COM2_422RXP	Reserved, do not connect
5	COMM_COM2_422TXP	Reserved, do not connect
6	NAV_COM1_422TXN	Reserved, do not connect
7	NAV_COM1_422RXN	Reserved, do not connect
8	-	Reserved, do not connect
9	N/C	Reserved, do not connect
10	N/C	Reserved, do not connect
11	-	Reserved, do not connect
12	NAV_BOOT_IN	Reserved, do not connect
13	-	Reserved, do not connect
14	GS - FLAG	GS Flag output (used together with GS+FLAG)
15	GS + UP	GS deviation UP output
16	GS + DOWN	GS deviation DOWN output
17	GS + FLAG	GS Flag output (used together with GS-FLAG)
18	NCT_PON_IN	Reserved, do not connect
A	-	Reserved, do not connect
B	COMM_COM1_422RXN	Reserved, do not connect
C	COMM_COM1_422TXN	Reserved, do not connect
D	COMM_COM2_422RXN	Reserved, do not connect
E	COMM_COM2_422TXN	Reserved, do not connect
F	NAV_COM1_422TXP	Reserved, do not connect
H	NAV_COM1_422RXP	Reserved, do not connect
J	-	Reserved, do not connect
K	N/C	Reserved, do not connect
L	N/C	Reserved, do not connect
M	N/C	Reserved, do not connect
N	-	Reserved, do not connect
P	-	Reserved, do not connect

J901, Pin	Signal Name	Function (Details)
R	GS - FLAG	GS Flag output (used together with GS+FLAG)
S	GS + UP	GS deviation UP output
T	GS + DOWN	GS deviation DOWN output
U	GS + FLAG	GS Flag output (used together with GS-FLAG)
V	N/C	Reserved, do not connect

(4) Connector J901 - 14 V Retrofit Adapter

(a) Refer to Step (3).

I. Antenna Connectors

CAUTION: RADIATION RISK: A SAFE DISTANCE TO THE INSTALLED ANTENNA MUST BE ENSURED BY CORRESPONDING INSTALLATION MEASURES AROUND HUMAN BODY DAMAGE (E.G. AT THE EYES) AND/OR PREVENT THE INFLAMMATION OF COMBUSTIBLE MATERIALS BY RADIATED ENERGY.

Safety Instructions

Antenna cable/connections:

- Use RF coaxial cables (impedance 50 Ω) for antenna connections.
  - Do not route antenna cables near to interference sources, e.g. RF transmitters, ignition cables, etc.
  - The use of low-attenuation cables is recommended.
  - Make antenna connections as short as practical but prevent sharp bends of antenna cables.

(1) COM Antenna

(a) The antenna connector on the rear of the KX 200 is a BNC type.

(b) The antenna connector on the rear of the Retrofit Adapter is a BNC type w/o bayonet.

(c) The antenna port is made for operating with a nominal impedance of 50 Ω.

(2) VOR/LOC Antenna

(a) The antenna connector on the rear of the KX 200 is a SMA type.

(b) The antenna connector on the rear of the Retrofit Adapter is a BNC type w/o bayonet.

(c) The antenna port is made for operating with a nominal impedance of 50 Ω.

(3) GS Antenna

(a) The antenna connector on the rear of the KX 200 is a SMA type.

(b) The antenna connector on the rear of the Retrofit Adapter is a BNC type w/o bayonet.

(c) The antenna port is made for operating with a nominal impedance of 50 Ω.

J. Grounding Bolt

Safety Instructions Make sure that the grounding contact area is sufficient and that the connection has low resistance and low inductance. Never use a grounding point on paint-coated surfaces.

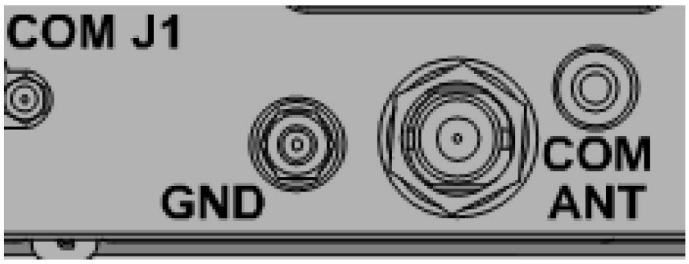

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Figure 2-9. Grounding Bolt

(1) The KX 200 has a grounding stud at the connector side (rear) of the housing.

(a) Use this point as grounding contact for low impedance grounding of the device to the airframe.

1 Wire cross section: min. 0.01 inch^2 (4 mm^2)

2 Length: as short as possible

3 Type: Screw thread M4

4 Max. torque for grounding bolt: 14 in-lb (1.5 Nm).

K. Aircraft Wiring - KX 200 with Retrofit Adapter

Safety Instructions The installation of the device(s) depends on the type of aircraft and its equipment and thus only general information can be given in this section.

NOTE: For the related connector and pin numbers please see connector tables at Section 2, Paragraph H.

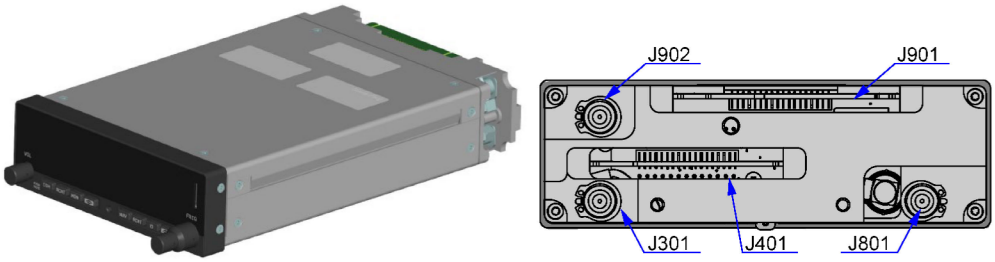

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Figure 2-10. KX 200 with Retrofit Adapter - Connector Layout (Rear)

Safety Instructions

- Use only cables which are qualified for aircraft use (self-extinguishing).
- Use AWG 18 (0.75 mm^2) for power supply and speaker and AWG 22/24 (0.25 - 0.34 mm^2) for other cables.
- Refer to Section 2, Paragraph E. for details.
- Use the recommended fuses in the power supply line for the protection of the application, refer to Section 1, Paragraph J.

(1) Electrical Bonding and Grounding

Safety Instructions

- Make sure that the device is correctly connected to aircraft ground (structure).
- Make sure that the electrical bonding area is protected in order to prevent corrosion.
- Make sure that you do not exceed the resistance of 10 mΩ between the chassis and the reference ground platform.
- Refer to Section 2, Paragraph J. and Section 2, Paragraph E., Step (4).

NOTE: There are differences in the wiring of devices with Retrofit Adapter, 14 V Retrofit Adapter

- For detailed differences, refer to related information Section 2, Paragraph H.

(2) Block Diagram - Aircraft Installation KX 200 with Retrofit Adapter

(a) Example of equipment installation for a two-seat aircraft with:

1 Headphones and hand microphones with PTTs for pilot and copilot

2 External VOR/LOC converter and VOR/LOC/glideslope indicator

3 DME interrogator.

(b) Aircraft Installation KX 200 with Retrofit Adapter

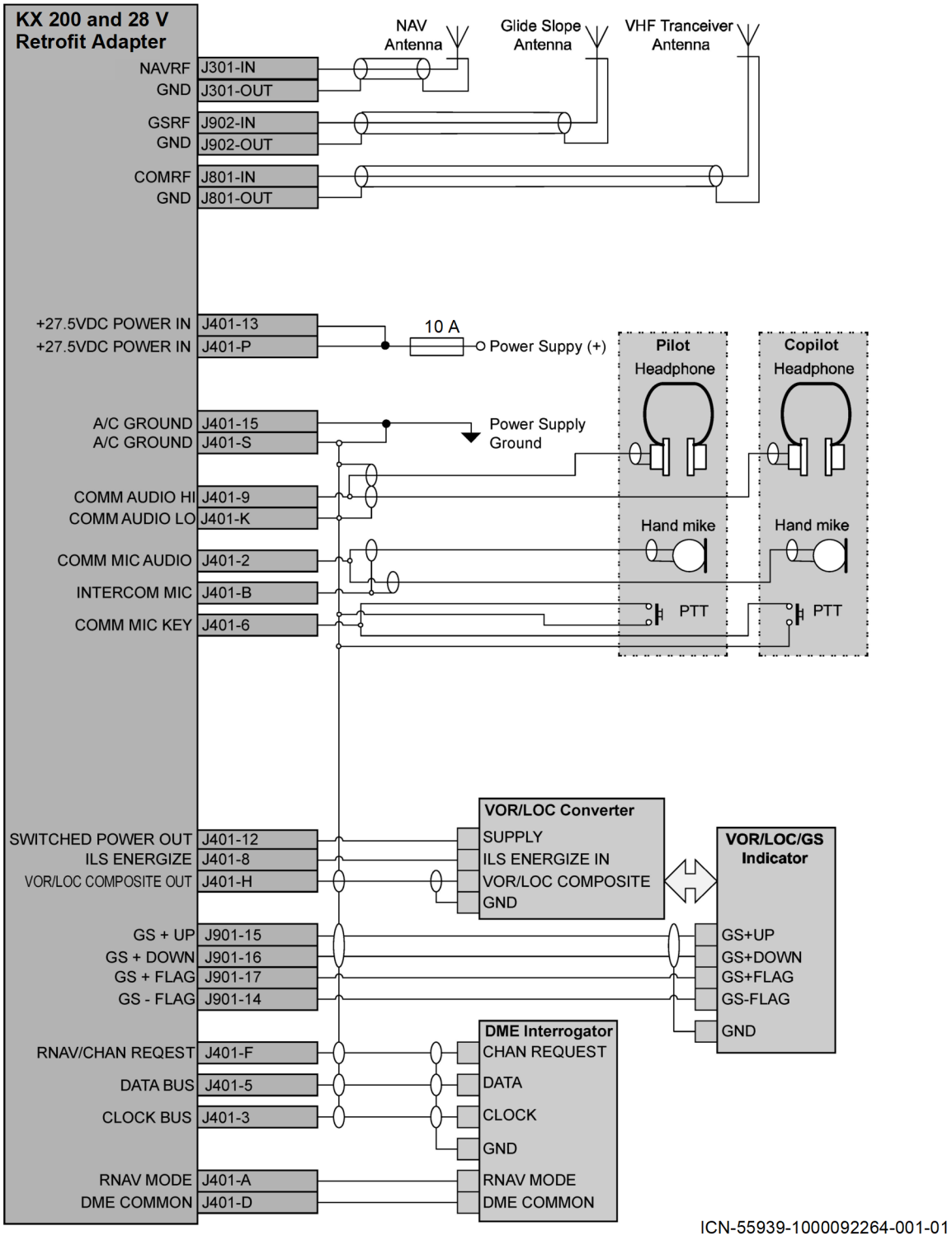

Figure 2-11. Wiring KX 200 with Retrofit Adapter - Aircraft Installation (Example)

(c) Aircraft Installation KX 200 with 14 V Retrofit Adapter

1 Differences with 14 V Retrofit Adapter

KX 200 with 14 V Retrofit Adapter	Pin J401 14 V Retrofit Adapter
+13.75VDC POWER IN	J401-14
+13.75VDC POWER IN	J401-R

2 For detailed differences between 14 V Retrofit Adapter and 28 V Retrofit Adapter, refer to Section 2, Paragraph H.

(3) Dimming

(a) The backlight of the display is controlled by the integrated light sensor (front panel).

(b) The control method is selected during installation (installation mode).

(c) The brightness can be controlled through the pilots menu for COM and NAV subsystems (depends on the configuration setting).

(d) Refer to Section 2, Paragraph N., Step (7) for installation mode details.

(4) Power Supply

(a) Each pin must be connected to the power supply with a separate cable.

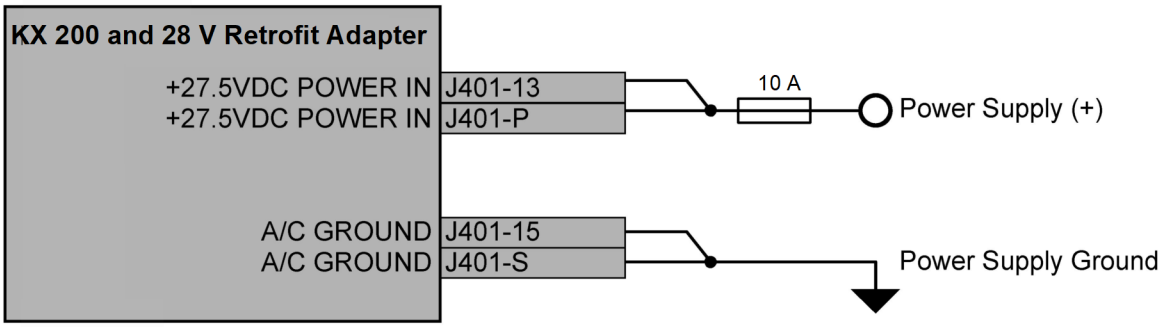

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Figure 2-12. Wiring KX 200 and Retrofit Adapter - Power Supply

Retrofit Adapter Pin	Signal Name	Type	I/O	Function
J401-13	+27.5VDC POWER IN	Supply	IN	Power supply (+)
J401-P	+27.5VDC POWER IN	Supply	IN	Power supply (+)
J401-15	A/C GROUND	Ground	-	Power supply return (-)
J401-S	A/C GROUND	Ground	-	Power supply return (-)

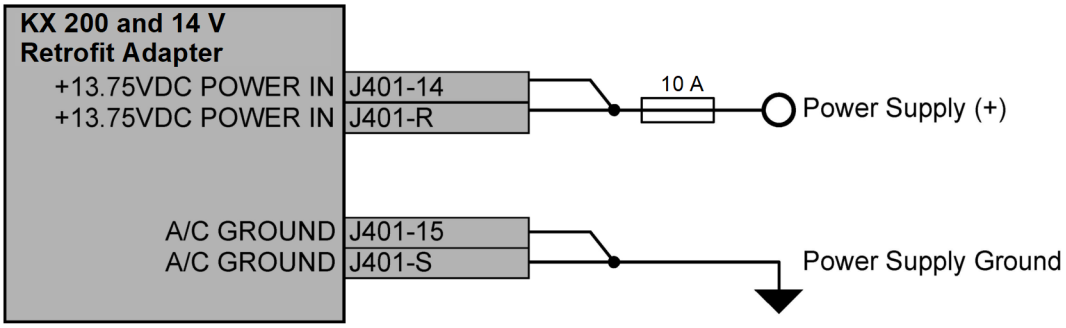

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Figure 2-13. Wiring KX 200 and 14 V Retrofit Adapter - Power Supply

14 V Retrofit Adapter Pin	Signal Name	Type	I/O	Function
J401-14	+13.75VDC POWER IN	Supply	IN	Power supply (+)
J401-R	+13.75VDC POWER IN	Supply	IN	Power supply (+)
J401-15	A/C GROUND	Ground	-	Power supply return (-)
J401-S	A/C GROUND	Ground	-	Power supply return (-)

(5) Antennas

(a) For antennas connections use an RF coaxial cable with 50 Ω impedance. For details refer to Section 2, Paragraph I.

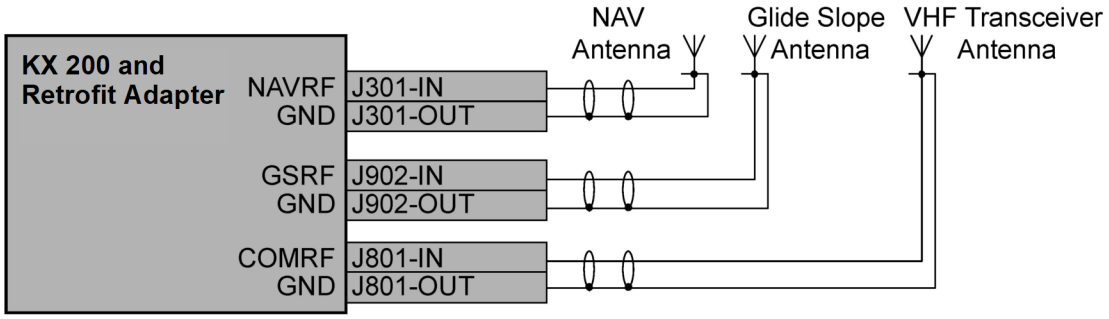

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Figure 2-14. Wiring KX 200 and Retrofit Adapter - Antennas

Retrofit Adapter Pin	Signal Name	Type	I/O	Function
J801-IN	COMRF	RF	IN/OUT	VHF transceiver antenna port
J801-OUT	GND	Ground	-	
J902-IN	GSRF	RF	IN	Glide slope receiver antenna port
J902-OUT	GND	Ground	-	
J301-IN	NAVRF	RF	IN	NAV receiver antenna port
J301-OUT	GND	Ground	-	

(6) Headphones

(a) The headphones port supplies a balanced signal with transformer separation.

1 The headphones port supports balanced and unbalanced operation.

2 The headphones port supports connection of:

a Single headphones with impedance of min. 75 Ω or

b Two headphones with impedance of min. 150 Ω each.

Retrofit Adapter Pin	Signal Name	Type	I/O	Function
J401-9	COMM AUDIO HI	Analog	OUT	Symmetrical headphones output
J401-K	COMM AUDIO LO	Analog	OUT	Symmetrical headphones output

(b) Headphones, Balanced

NOTE: It is recommended to install headphones generally isolated from aircraft ground. This helps to prevent ground loops and ensures a good audio quality.

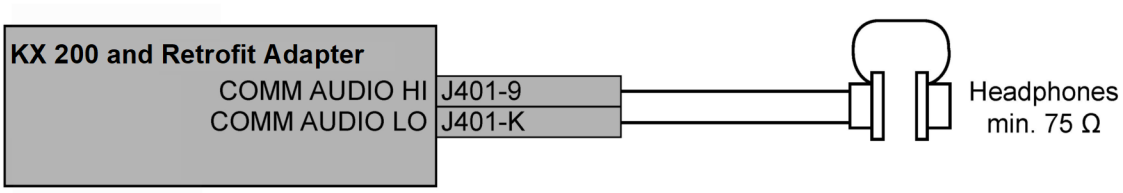

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Figure 2-15. Wiring KX 200 and Retrofit Adapter - Single Headphones, Balanced

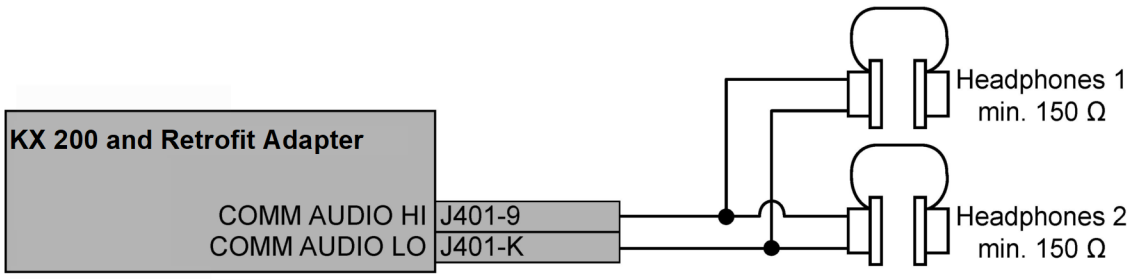

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Figure 2-16. Wiring KX 200 and Retrofit Adapter - Two Headphones, Balanced

(c) Headphones, Unbalanced

NOTE: If a single shielded cable is used to connect headphones, it is possible to ground one end of the connection to simplify installation, but this can result in decreased audio quality.

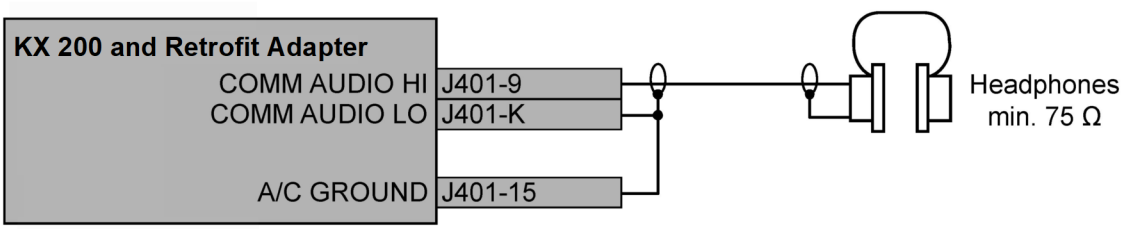

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Figure 2-17. Wiring KX 200 and Retrofit Adapter - Single Headphones, Unbalanced

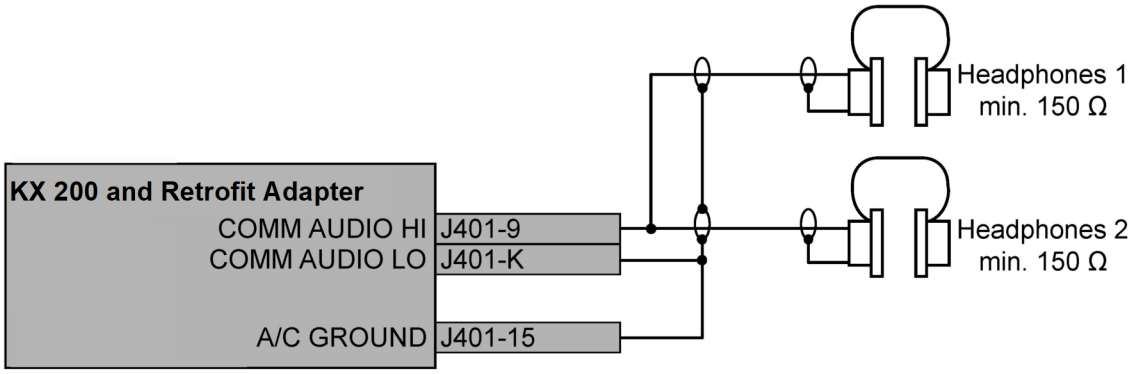

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Figure 2-18. Wiring KX 200 and Retrofit Adapter - Two Headphones, Unbalanced

(7) Standard Microphone

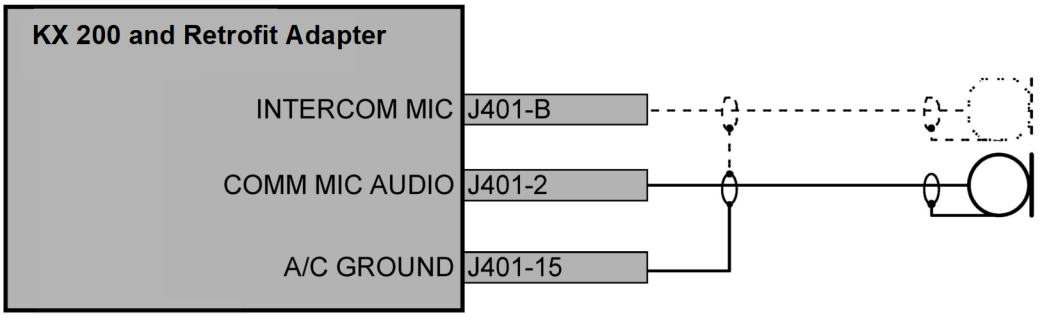
(a) Standard microphone signals are single-ended signals with reference to a dedicated return signal and supply excitation voltage for standard microphone operation.

1 The port supports the connection of one or two standard microphones with impedance of min. 120 Ohm each.

2 If two microphones are connected to the same microphone port, it is recommended to use microphones of the same type/impedance.

3 The sensitivity level is adjustable in the configuration setup for each of the microphones, refer to Section 2, Paragraph M.

Retrofit Adapter Pin	Signal Name	Type	I/O	Function
J401-2	COMM MIC AUDIO	Analog	IN	Standard microphone input
J401-B	INTERCOM MIC			



ICN-55939-1000092272-001-01

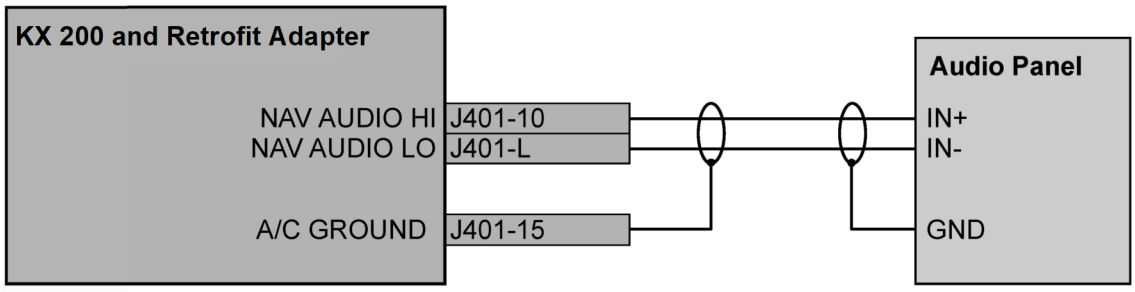
Figure 2-19. Wiring KX 200 and Retrofit Adapter - Standard Microphone

(8) NAV Audio Output

(a) The NAV audio output signal is a balanced signal with transformer separation.

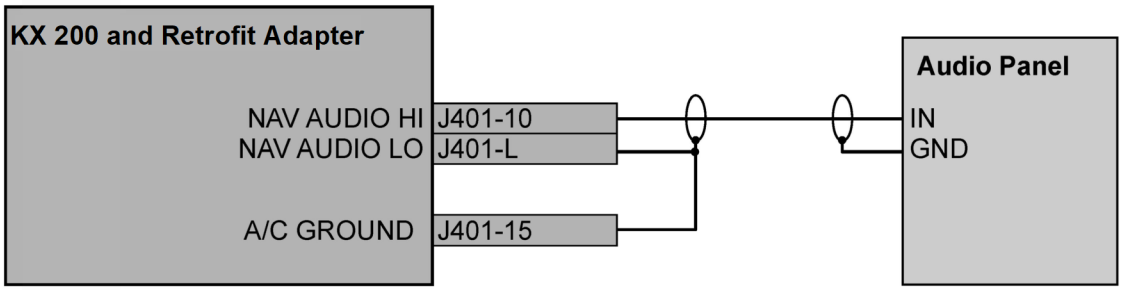
1 The NAV audio output supports balanced and unbalanced operation.

Retrofit Adapter Pin	Signal Name	Type	I/O	Function
J401-10	NA AUDIO HI	Analog	OUT	Symmetrical NAV audio output
J401-L	NAV AUDIO LO	Analog	OUT	Symmetrical NAV audio output



ICN-55939-1000092273-001-01

Figure 2-20. Wiring KX 200 and Retrofit Adapter - NAV Audio Output, Balanced



ICN-55939-1000092274-001-01

Figure 2-21. Wiring KX 200 and Retrofit Adapter - NAV Audio Output, Unbalanced

(9) VOR/LOC/Glide Slope Interface

(a) The glide slope deviation and the glide slope flag are differential signals with reference to NAV ground.

(b) The VOR/LOC composite signal is a single ended signal with reference to NAV ground.

(c) The LOC/NAV status output shows the current operating mode of the NAV subsystem.

Retrofit Adapter Pin	Signal Name	Type	I/O	Function
J401-12	SWITCHED POWER OUT	Supply	OUT	VOR/LOC converter supply output
J401-N	SWITCHED POWER OUT			
J401-H	VOR/LOC COMPOSITE OUT	Analog	OUT	VOR/LOC composite output
J401-8	ILS ENERGIZE	Discrete	OUT	LOC/NAV status
J901-16	GS + DOWN	Analog	OUT	Glide slope deviation output A
J901-T	GS + DOWN			
J901-15	GS + UP	Analog	OUT	Glide slope deviation output B
J901-S	GS + UP			
J901-17	GS + FLAG	Analog	OUT	Glide slope flag output A
J901-U	GS + FLAG			
J901-14	GS - FLAG	Analog	OUT	Glide slope flag output B
J901-R	GS - FLAG			

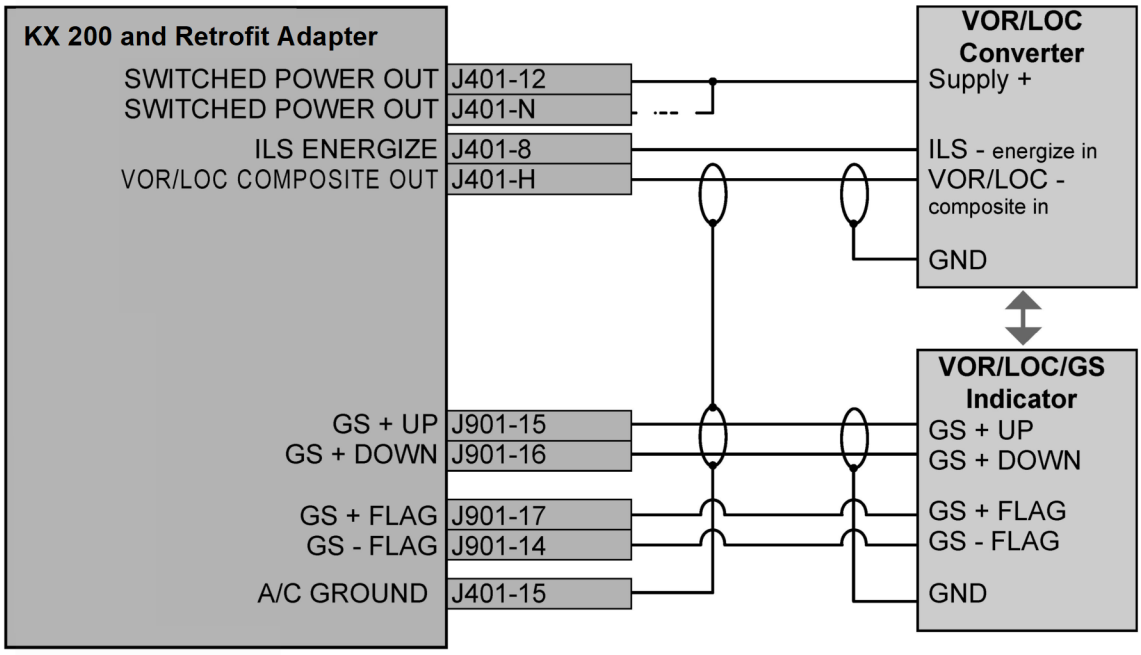


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Figure 2-22. Wiring KX 200 and Retrofit Adapter - VOR/LOC/Glide Slope Interface

(10) DME Tuning

(a) The external DME equipment can get information about the currently selected NAV frequency. This frequency is used by a DME interrogator to tune to the operating frequency of DME ground station co-located with VOR (VOR-DME).

(b) To initiate frequency data transfer, the external equipment must:

1 Set DME COMMON signal to active state (CLOSED, logic LOW).

2 Set RNAV MODE signal to inactive state (OPEN, logic HIGH).

3 Supply a HIGH pulse on RNAV/CHAN REQUEST signal. Pulse time (tf) min. 48 ms.

(c) The device then outputs the transmission at the CLOCK BUS signal and the transmission data at the DATA BUS signal.

(d) Supplied data:

Bit(s)	**Description**
9	Set it to 0
8 - 5	BCD value of 1 MHz digit of current NAV frequency
4 - 1	BCD value of 0.1 MHz digit of current NAV frequency
0	0 if the value of 0.01 MHz digit is 0
	1 if the value of 0.01 MHz digit is 5
Example 1: If the current NAV frequency is 108.15, the binary data value is 0100000011. Example 2: If the current NAV frequency is 112.40, the binary data value is 0001001000.	

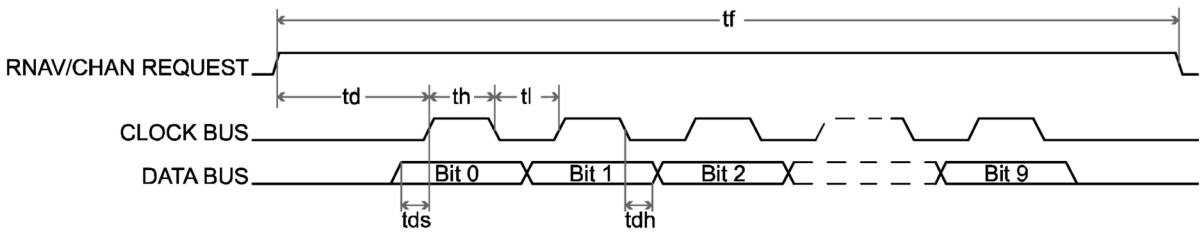

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Figure 2-23. Diagram - DME Tuning (Waveform)

Retrofit Adapter Pin	Signal Name	Type	I/O	Function
J401-D	DME COMMON	-	IN	DME mode
J401-A	RNAV MODE	-	IN	RNAV mode
J401-F	RNAV/CHAN REQUEST	-	IN	DME data request
J401-3	CLOCK BUS	-	OUT	Clock for DME channeling
J401-5	DATA BUS	-	OUT	Data line for DME channeling

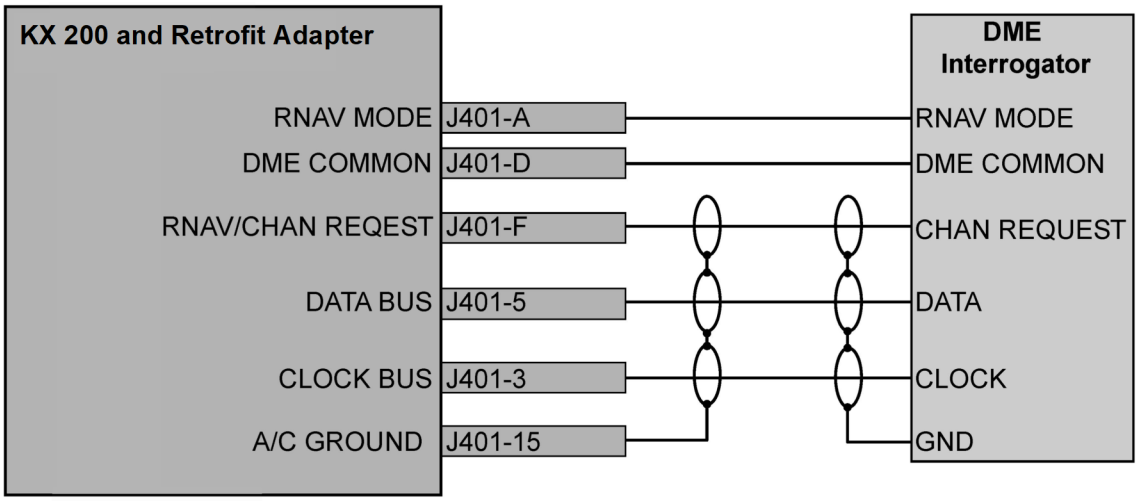

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Figure 2-24. Wiring KX 200 and Retrofit Adapter - DME Tuning

(11) Discrete Inputs/Outputs

(a) Push-To-Talk (PTT)

1 There are two inputs for connection of PTT buttons.

a Each input can be connected to one or more pushbuttons.

b The activation of the pushbutton (PTT) starts the COM subsystem transmission mode.

(1) The transmission is automatically terminated if a time limit for continuous transmission is exceeded.

c The PTT button can be a stand-alone button or integrated into a microphone, etc.

Retrofit Adapter Pin	Signal Name	Type	I/O	Function
J401-6	COMM MIC KEY	Switch NO	IN	PTT input

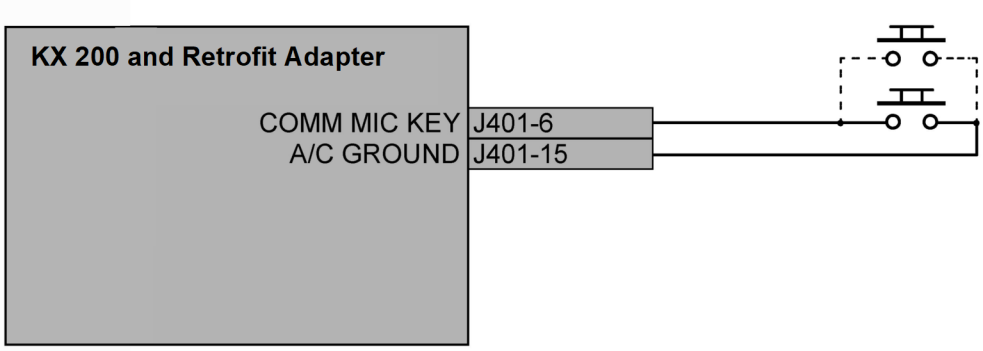

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Figure 2-25. Wiring KX 200 and Retrofit Adapter - PTT

(b) Intercom Control

1 The intercom operation is normally controlled through the VOX function (automatic intercom activation by monitoring audio level in microphones).

2 The VOX function cannot operate in:

a Installations with high level of ambient noise.

b Operation when speaker is enabled.

Retrofit Adapter Pin	Signal Name	Type	I/O	Function
J401-4	COMM_IC_IN	Switch	IN	Intercom mode activation

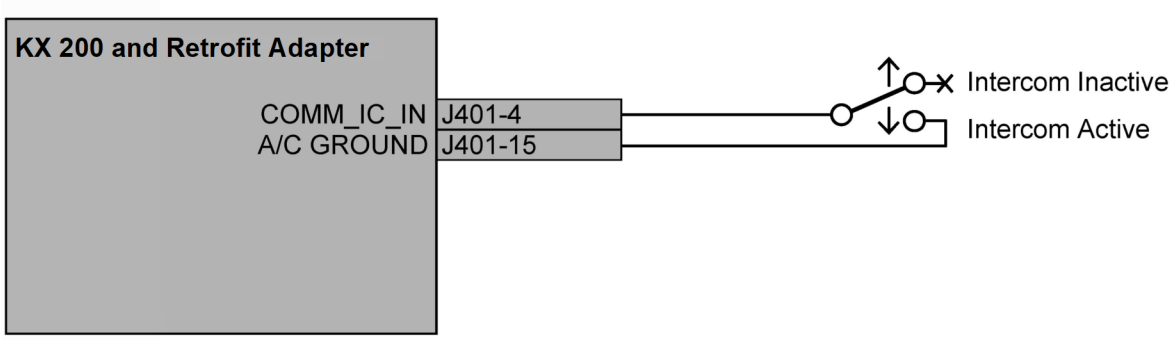

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Figure 2-26. Wiring KX 200 and Retrofit Adapter - Intercom Control

3 An external switch makes it possible to select the intercom operation manually.

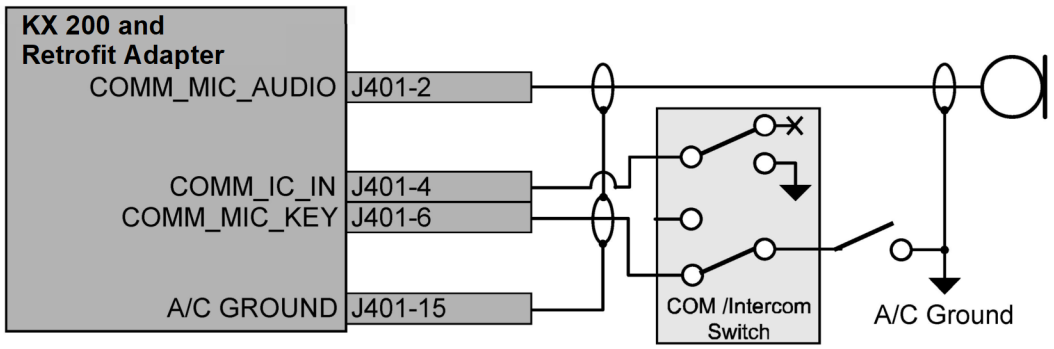

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Figure 2-27. Wiring KX 200 and Retrofit Adapter - Manual Intercom Operation

(c) Frequency Exchange

1 The active/standby frequency exchange for COM and NAV frequencies is normally controlled through the related pushbuttons on the front panel.

a External switches make it possible to do the exchange manually.

Retrofit Adapter Pin	Signal Name	Type	I/O	Function
J401-R	COMM REMOTE TRANSFER	Switch NO	IN	COM active/standby frequency exchange
J401-14	NAV REMOTE TRANSFER	Switch NO	IN	NAV active/standby frequency exchange

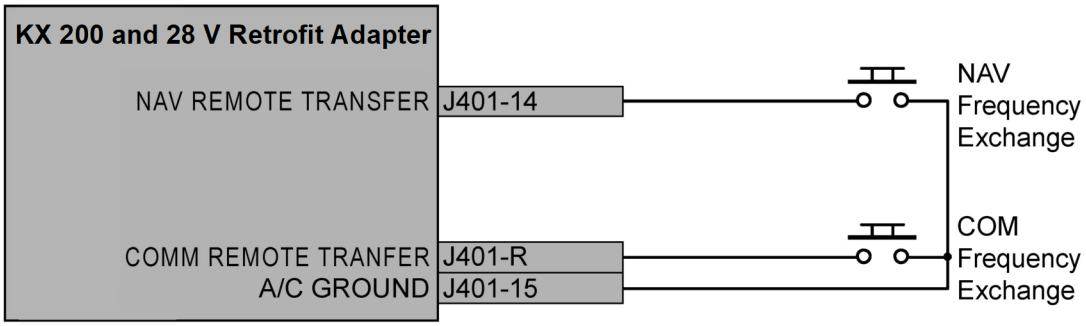

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Figure 2-28. Wiring KX 200 and Retrofit Adapter - Frequency Exchange

14 V Retrofit Adapter Pin	Signal Name	Type	I/O	Function
J401-P	COMM REMOTE TRANSFER	Switch NO	IN	COM active/standby frequency exchange
J401-13	NAV REMOTE TRANSFER	Switch NO	IN	NAV active/standby frequency exchange

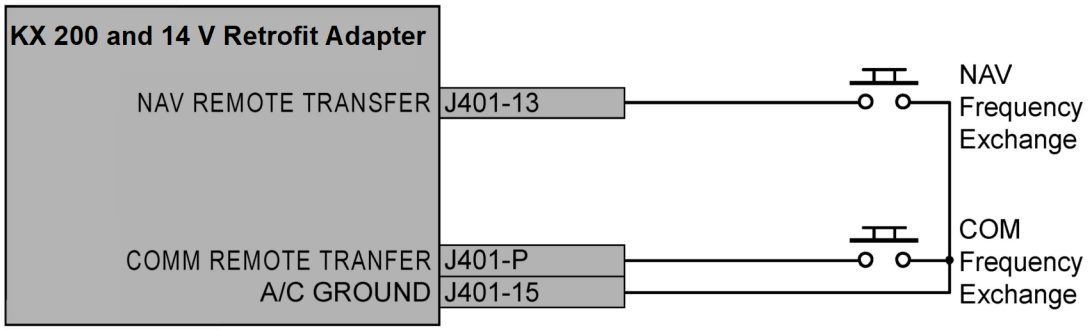

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Figure 2-29. Wiring KX 200 and 14 V Retrofit Adapter - Frequency Exchange

L. Configuration Setup

(1) The configuration setup is for the configuration of installation and device parameters.

NOTE: It is not recommended to make changes during the flight.

(2) The device has different modes for settings and operation:

(a) Pilot Mode - for operation during flight

(b) Installation Mode - for configuration of the device parameters and read out of device and software identification data (password protected)

(c) Database Update Mode - for updating database with named channels for COM and NAV operation (future functionality)

(d) Maintenance Mode - (factory only)

(e) Software Update Mode - (factory only).

M. Installation Mode

(1) In the installation mode it is possible to adjust device parameters and read out device and software identification data. The installation mode is divided in submenus to make the settings for the control head/display (CH), the COM and NAV subsystem.

NOTE: Some settings are not applicable for KX 200 with Retrofit Adapter.

NOTE: Before any changes are made to any default parameter settings, it is highly recommended to take pictures of the applicable KX 200 screens for easy reference to default settings.

NOTE: In the next several pages, there will be many settings listed. Table 2-1 is intended to be a quick reference summary of any settings that have a default value predefined. This is not a summary of all settings, only those settings with a default value.

Table 2-1. Summary of Installation Mode Default Settings

Reference	Installation Mode Setting	KX 200 with Retrofit Adapter
Section M. (7)	Control Head - Brightness Control (Dimming Input)	Set it to PILOT in all installations
Section M. (9)	Control Head - Dimming Curve for Display	Applicable to this/these device(s).
Section M. (10)	Control Head - Dimming Curve for Rotary Knob	Control Head - Dimming Curve for Rotary knobs is not applicable to this/these device(s).
Section M. (11)	Control Head - Dimming Curve for System Buttons	Control Head - Dimming Curve for System Buttons is not applicable to this/these device(s).
Section M. (12)	Control Head - Dimming Curve for Function Buttons	Control Head - Dimming Curve for Function Buttons is not applicable to this/these deivce(s).
Section M. (13)	Control Head - Dimming Curve for Transfer Buttons	Control Head - Dimming Curve for Transfer Buttons is not applicable to this/these device(s).

Table 2-1. Summary of Installation Mode Default Settings (Cont)

Reference	Installation Mode Setting	KX 200 with Retrofit Adapter
Section M. (15)	COM - Auxiliary Audio Input Enable	Set it to OFF in all installations.
Section M. (16)	COM - Automatic Muting of Auxiliary Audio Input	Set it to OFF in all installations.
Section M. (17)	COM - Automatic Isolation during Transmission	Set it to OFF in all installations.
Section M. (20)	COM - Swap Mike IC	Set it to OFF in all installations.
Section M. (21)(b)	COM - Microphone Path 1 Selection	Set it to STD1 in all installations.
Section M. (21)(c)	COM - Microphone Path 2 Selection	Set it to NONE in all installations.
Section M. (21)(d)	COM - Microphone Activation	Set it to OFF in all installations.
Section M. (21)(e)	COM - Output 1 Selection	Set it to HDPH1 in all installations.
Section M. (21)(f)	COM - Output 2 Selection	Set it to NONE in all installations.
Section M. (22)(b)	COM (Cfg2) - Microphone Path 1 Selection	Set it to NONE in all installations.
Section M. (22)(c)	COM (Cfg2) - Microphone Path 2 Selection	Set it to NONE in all installations.
Section M. (22)(d)	COM - Microphone Activation	Set it to OFF in all installations.
Section M. (22)(e)	COM - Output 1 Selection	Set it to NONE in all installations.
Section M. (22)(f)	COM - Output 2 Selection	Set it to NONE in all installations.
Section M. (24)	COM - Standard Microphone 2 Sensitivity	Applicable to this/these device(s).
Section M. (25)	COM - Standard Microphone 3 Sensitivity	Applicable to this/these device(s).
Section M. (26)	COM - Dynamic Microphone Sensitivity	Applicable to this/these device(s).
Section M. (27)	COM - Auxiliary Audio Input Sensitivity	Applicable to this/these device(s).
Section M. (28)	COM - Automatic Attenuation of Auxiliary Input	COM - Automatic Attenuation of Auxiliary Input is not applicable to this/these device(s).
Section M. (30)	COM - Scan Hold Time	Set it to 01 in all installations.
Section M. (32)	COM - Speaker Volume Source	Set it to PRIM in all installations.
Section M. (34)(a)	NAV - VOR Response Time	Set it to 2.0 in all installations.
Section M. (34)(b)	NAV - LOC Response Time	Set it to 0.6 in all installations.

(2) Start Installation Mode

(a) Control Elements / User Interface refer to Section 3, Paragraph C.

	Start Installation Mode
 Push = power up  NAV Transfer Knob (right side)  Inner/ Outer Rotary Knob (Right side)	To start installation mode push and hold the "NAV transfer" pushbutton (right) during power up. - Push and hold the "NAV transfer" pushbutton (right). - Short push to rotary knob "HOLD PWR" (left side). Power up device: - Short push to the rotary knob (left) or power ON signal of the aircraft installation. • The installation mode starts. • The word "PASSWORD" is shown on the display (left). - Insert the 4-digit numerical code password "6435" by turning the right rotary knob. • Turn the inner rotary knob to change the value of the digit. • Turn the outer rotary knob to move between the digits. - Push (long push) to the right rotary knob to confirm the entry.

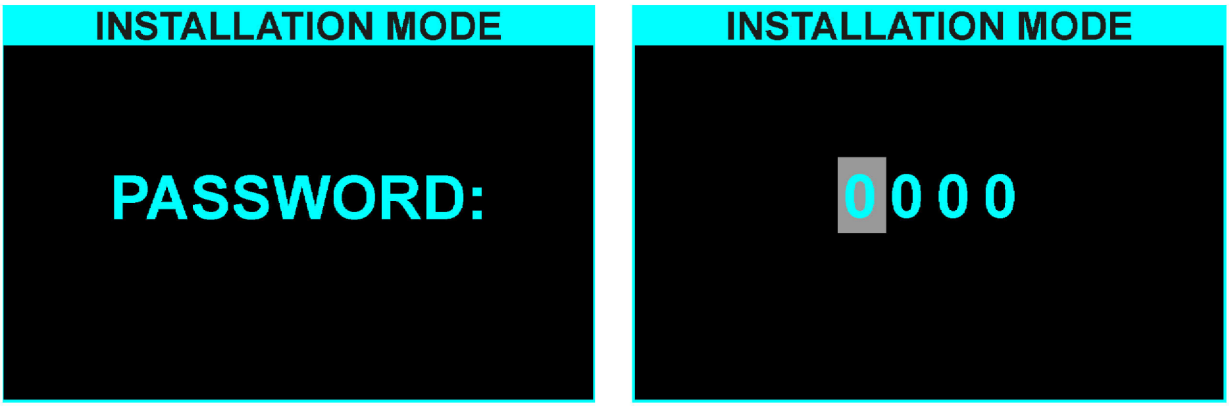

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Figure 2-30. "PASSWORD"

- The main screen of installation mode is shown on the display (left).
- The related menu screen of installation mode is shown on the display (right).

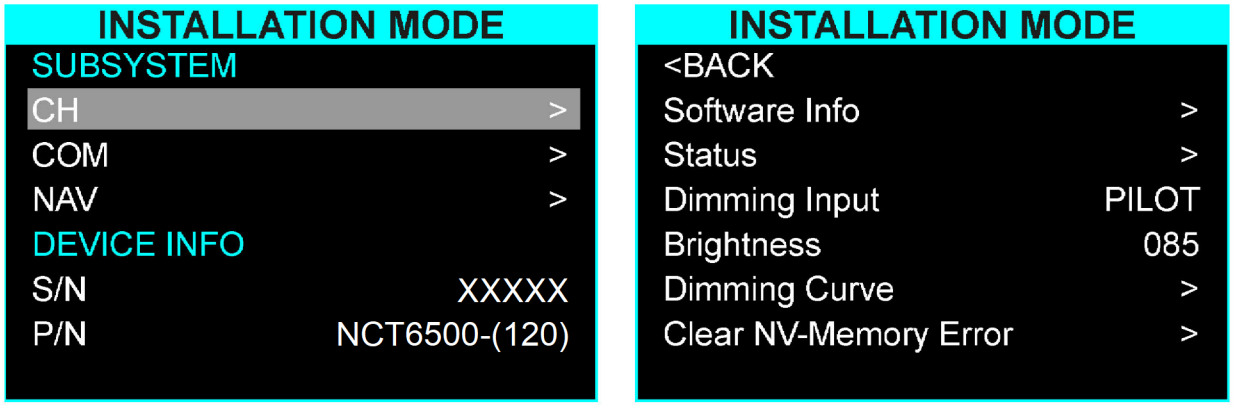

Figure 2-31. Installation Mode - Main and Menu Screen (CH)

NOTE : Refer to Figure 2-1 for a cross reference between the Honeywell hardware (HW) part number (P/N) and the Becker Avionics HW P/N which is displayed on the Installation Mode Screen.

(3) Navigation between (Sub-) Menus

	Menu Navigation
 Rotary knob (Right side)	- Use the right rotary knob for navigation in the submenu (CH, COM, NAV). - Push to the right rotary knob to confirm the selection. • The related menu is shown on the display (right).

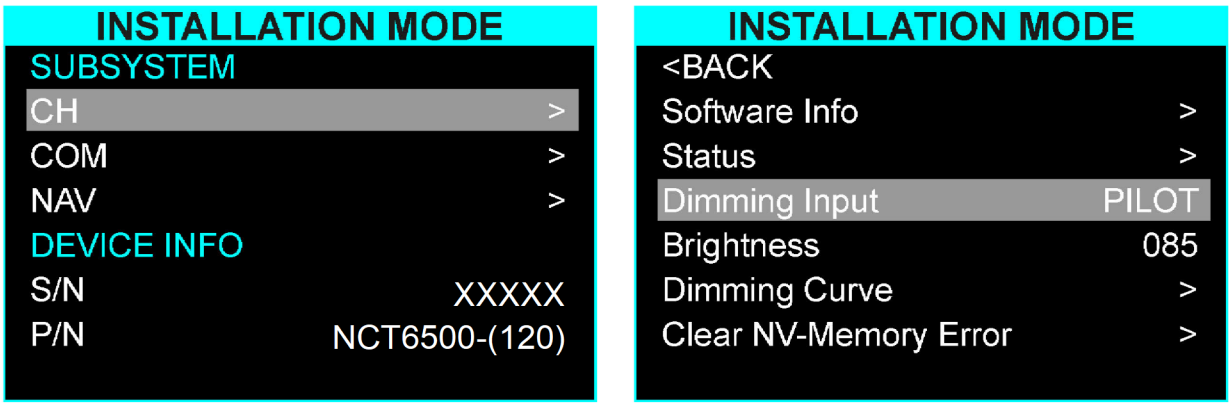

Figure 2-32. Installation Mode - Main and Menu Screen (CH)

Go to previous menu:

- Select the top-level entry in the menu (right) e.g. <BACK, <CH, <COM.
- Push to the right rotary knob to confirm the selection.
  - The previous menu, submenu is shown.
- Select the top-level entry <BACK.
  - The navigation moves to the main menu (left).

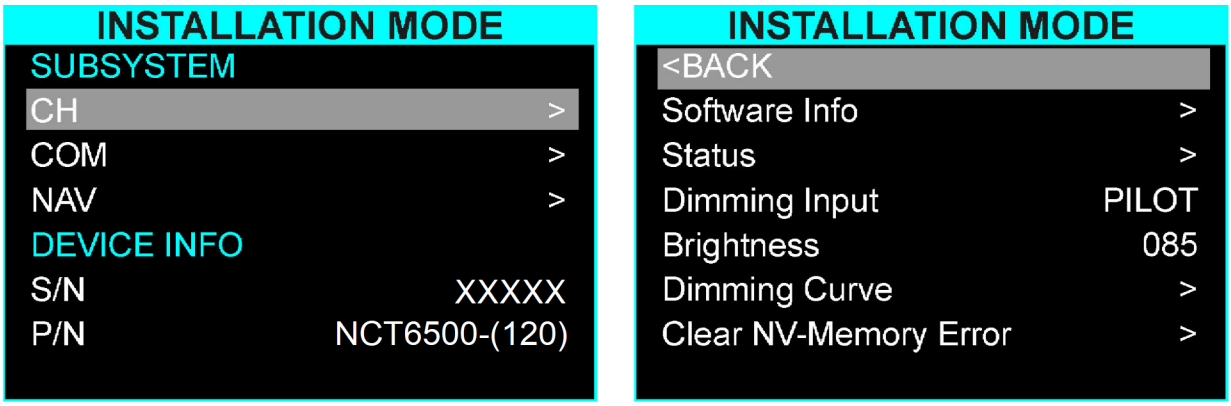

Figure 2-33. Installation Mode - Main and Menu Screen (CH)

(4) Store Settings

(a) The change of any parameter is stored immediately.

(5) Leave the Installation Mode

(a) Turn "OFF" the device to leave this mode (long push > 2 s to the left rotary knob).

(b) All changes made up to this time are automatically stored.

(6) Software Identification - Control Head (CH), COM, NAV

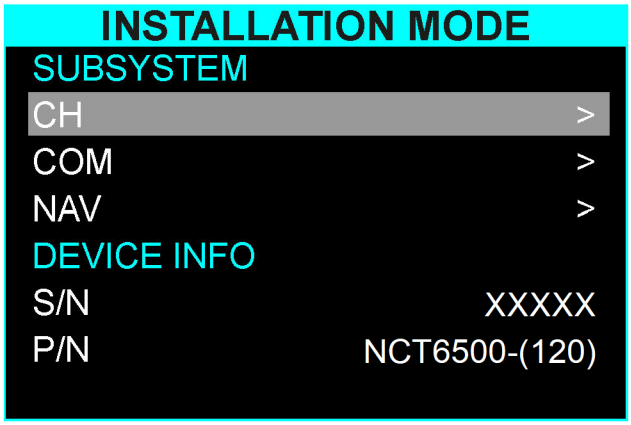

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Figure 2-34. Software Identification - Control Head

Control Head, COM, NAV - Software Identification
Access: INSTALLATION MODE> - Device Info on display left. - Selection of the subsystem for data read out (display left). • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection.

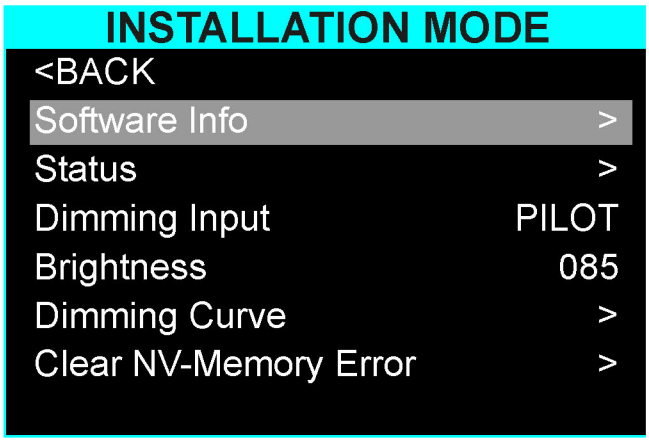

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Figure 2-35. Example CH Subsystem Software Info

- The menu of the related selection is shown on the display (right).
- Select "Software Info" and confirm with push to the right rotary knob.

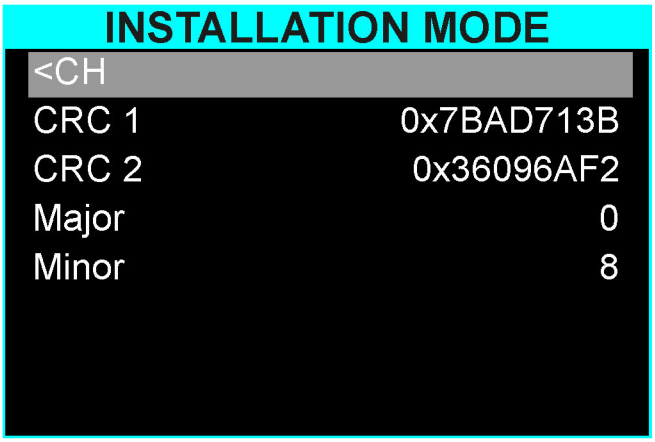

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Figure 2-36. Example CH Software Info

- The data of the related subsystem is shown on the display (right).
- Select <CH to go to the previous menu.

(7) Control Head - Brightness Control (Dimming Input)

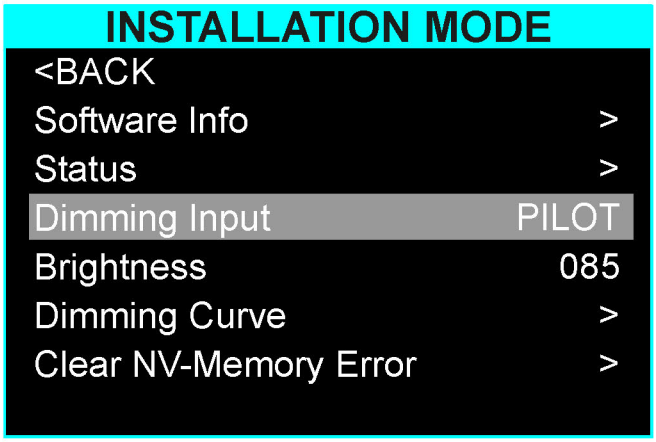

Figure 2-37. Brightness Control (Dimming Input)

Control Head - Brightness Control
Access: INSTALLATION MODE>CH>Dimming Input - Selection of the source for display and pushbutton backlighting. • Turn the right rotary knob to select the entry dimming input. • Push to the right rotary knob to confirm the selection. • Turn the right knob to scroll through the dimming input parameters. • Push to the right rotary knob to confirm the selected parameter and leave the selection mode.
- Settings: • SENSOR: The brightness is controlled through the light sensor. • PILOT: The brightness is set to a fixed level selected with configuration, refer to Control Head - Brightness Level. • 0-28V: The brightness is controlled through an external dimming bus with voltage range 0 - 28 V. • 0-14V: The brightness is controlled through an external dimming bus with voltage range 0 - 14 V. • 0-5V: The brightness is controlled through an external dimming bus with voltage range 0 - 5 V.
NOTE : KX 200 with Retrofit Adapter - Set it to PILOT in all installations.

(8) Control Head - Brightness Level

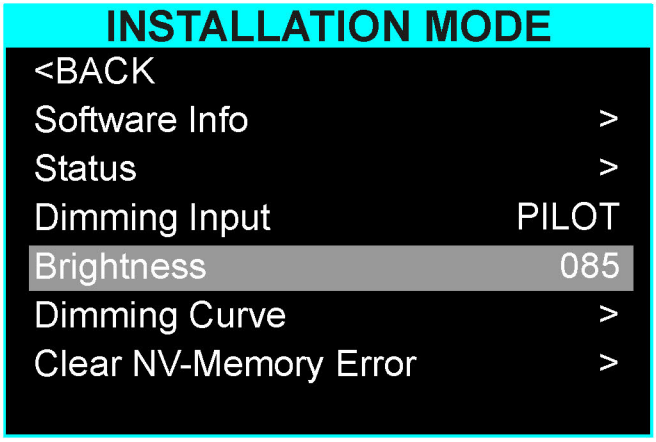

Figure 2-38. Change Brightness Level

Control Head - Brightness Level
Access: INSTALLATION MODE>CH>Brightness - Selection of the brightness level when the brightness control is set to PILOT. • Turn the right rotary knob to select the entry brightness. • Push to the right rotary knob to confirm the selection. • Turn the right knob to scroll through the brightness parameters. • Push to the right rotary knob to confirm the selected parameter and leave the selection mode. • Range: 0 - 100

(9) Control Head - Dimming Curve for Display

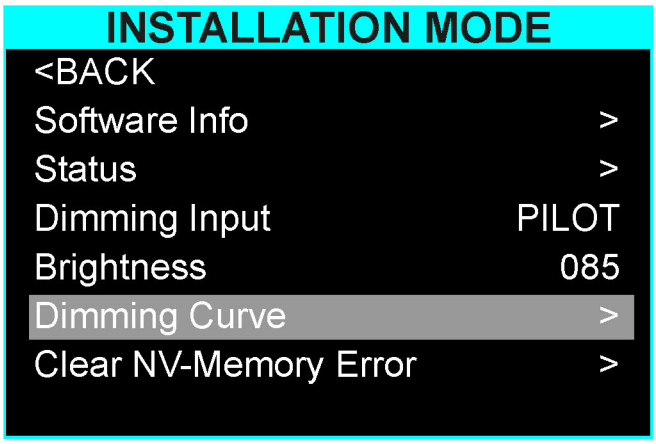

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Figure 2-39. Dimming Curve for Display

Control Head - Dimming Curve for Display
Access: INSTALLATION MODE>CH>Dimming Curve>Display - Used to adjust the brightness characteristics for the display backlight. • Turn the right rotary knob to select the entry dimming curve. • Push to the right rotary knob to confirm the selection.
- Select the parts to be configured e.g. Display, Knob, etc.,.

. . . .

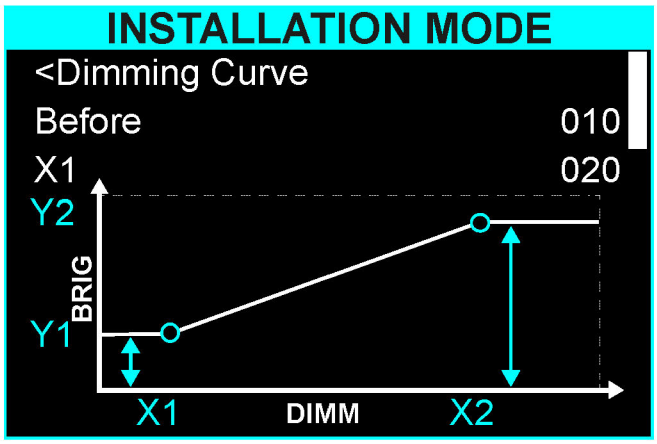

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Figure 2-40. Dimming Curve Parameter

- Dimming curve parameter:
  - Before: Brightness level(1) when control voltage is < X1 value
    - Range: 25 - 100.
  - X1: Low-end value of control voltage in % of full-range voltage.(2)
    - Range: 0 - 20.
  - Y1: Brightness level(1) when control voltage is equal X1.
    - Range: 0 - 25.
  - X2: High-end value of control voltage in % of full-range voltage.(2)
    - Range: 70 - 100.
  - Y2: Brightness level(1) when control voltage is equal X2.
    - Range: 25 - 100.
  - After: Brightness level(1) when control voltage is > X2 value.
    - Range: 25 - 100.
  - If the control voltage is between X1 and X2, brightness level is interpolated using Y1 and Y2 values.
  - This setting is used when the brightness control source is set to light sensor or the external dimming bus.
  - This setting is not used if brightness control is set to PILOT.

NOTE : KX 200 and Retrofit Adapter

- Control Head - Dimming Curve for Display is not applicable to this/these device(s).

NOTES:

(1) Brightness level 0 = min. intensity; 100 = max. intensity.

(2) Full-range control voltage value depends on brightness control configuration, Control Head - Brightness Control.

(10) Control Head - Dimming Curve for Rotary Knobs

Control Head - Dimming Curve for Rotary Knob

Access: INSTALLATION MODE>CH>Dimming Curve>Knobs

- Used to adjust the brightness characteristics for the rotary knob backlight.
  - Turn the right rotary knob to do the selection.
  - Push to the right rotary knob to confirm the selection.

Dimming curve parameter:

- For details refer to Step (9).

NOTE : KX 200 and Retrofit Adapter

- Control Head - Dimming Curve for Rotary knobs is not applicable to this/these device(s).

(11) Control Head - Dimming Curve for System Buttons

Control Head - Dimming Curve for Rotary Knob
Access: INSTALLATION MODE>CH>Dimming Curve>System Buttons - Used to adjust the brightness characteristics for COM and NAV pushbuttons. • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection.
Dimming curve parameter: - For details refer to Step (9).
NOTE : KX 200 and Retrofit Adapter - Control Head - Dimming Curve for System Buttons is not applicable to this/these device(s).

(12) Control Head - Dimming Curve for Function Buttons

Control Head - Dimming Curve for Function Buttons
Access: INSTALLATION MODE>CH>Dimming Curve>Function Buttons - Used to adjust the brightness characteristics for RCNT, MON and ID pushbuttons. • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection.
Dimming curve parameter: - For details refer to Step (9).
NOTE : KX 200 and Retrofit Adapter - Control Head - Dimming Curve for Function Buttons is not applicable to this/these device(s).

(13) Control Head - Dimming Curve for Transfer Buttons

Control Head - Dimming Curve for Transfer Buttons
Access: INSTALLATION MODE>CH>Dimming Curve>Transfer Buttons - Used to adjust the brightness characteristics for the transfer pushbuttons. • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection.
Dimming curve parameter: - For details refer to Step (9).
NOTE : KX 200 and Retrofit Adapter - Control Head - Dimming Curve for Transfer Buttons is not applicable to this/these device(s).

(14) Control Head - Clear NV-Memory Error

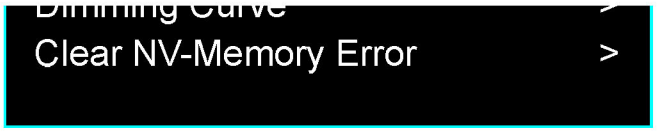

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Figure 2-41. Clear NV-Memory Error

Control Head - Clear NV-Memory Error
Access: INSTALLATION MODE>CH>Clear NV-Memory Error - Possibility to delete the related memory errors. • Turn the right rotary knob to select the entry NV memory error. • Push to the right rotary knob to confirm the selection. - The submenu shows "PRESS ENT TO CLEAR". • A short push to the right rotary knob deletes the related non-volatile memory errors and goes back to the previous menu.

(15) COM - Auxiliary Audio Input Enable

COM - Auxiliary Audio Input Enable
Access: INSTALLATION MODE>COM>Configuration>Aux Input - Used to adjust the auxiliary audio input. • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection.
Settings: - OFF: Auxiliary audio input disabled. - ON: Auxiliary audio input enabled.
NOTE : KX 200 with Retrofit Adapter - Set it to OFF in all installations.

(16) COM - Automatic Muting of Auxiliary Audio Input

COM - Automatic Muting of Auxiliary Audio Input
Access: INSTALLATION MODE>COM>Configuration>Aux Auto Mute - Used to adjust the automatic muting of auxiliary audio input when the VHF receiver receives a signal. • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection.
Settings: - OFF: Automatic muting disabled. - ON: Automatic muting enabled.
NOTE : KX 200 with Retrofit Adapter - Set it to OFF in all installations.

(17) COM - Automatic Isolation during Transmission

COM - Automatic Isolation during Transmission
Access: INSTALLATION MODE>COM>Configuration>Auto Isol In TX - Used to adjust the intercom isolation mode during transmission. • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection.
Settings: - OFF: Automatic isolation disabled. - ON: Automatic isolation of intercom audio paths when transmission is pending.
NOTE : KX 200 with Retrofit Adapter - Set it to OFF in all installations.

(18) COM - Scan Function Beep

COM - Scan Function Beep
Access: INSTALLATION MODE>COM>Configuration>Scan Beep - Used to generate an acoustic signal when the monitoring function receives a signal on the standby frequency. • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection.
Settings: - OFF: Audio signal disabled. - ON: Audio signal enabled.

(19) COM - Active Frequency Change Beep

COM - Active Frequency Change Beep
Access: INSTALLATION MODE>COM>Configuration>Freq Change Beep - Used to generate an acoustic signal when active frequency changes. • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection.
Settings: - OFF: Audio signal disabled. - ON: Audio signal enabled.

(20) COM - Swap Mike IC

COM - Swap Mike IC
Access: INSTALLATION MODE>COM>Configuration>Swap Mike IC - Turn the right rotary knob to do the selection. - Push to the right rotary knob to confirm the selection.
Settings: - Set it to OFF in all installations.
NOTE : KX 200 with Retrofit Adapter - Set it to OFF in all installations.

(21) COM I/O Configuration 1

(a) The COM I/O configuration 1 settings are active when COMM_MIKESW_IN input (configuration selector) is inactive or not connected.

(b) COM (Cfg1) - Microphone Path 1 Selection

COM - Microphone Path 1 Selection
Access: INSTALLATION MODE>COM>In/Out Cfg1>Microphone 1 - Used to adjust the microphone port used as microphone path 1. • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection.
Settings: - NONE: No microphone selected. - STD1: Standard microphone 1 input selected. - STD2: Standard microphone 2 input selected. - STD3: Standard microphone 3 input selected. - DYN: Dynamic microphone input selected.
NOTE : KX 200 with Retrofit Adapter - Set it to STD1 in all installations.

(c) COM (Cfg1) - Microphone Path 2 Selection

COM - Microphone Path 2 Selection
Access: INSTALLATION MODE>COM>In/Out Cfg1>Microphone 2 - Used to adjust the microphone port used as microphone path 2. • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection.

COM - Microphone Path 2 Selection
Settings: - NONE: No microphone selected. - STD1: Standard microphone 1 input selected. - STD2: Standard microphone 2 input selected. - STD3: Standard microphone 3 input selected. - DYN: Dynamic microphone input selected.
NOTE : KX 200 with Retrofit Adapter - Set it to NONE in all installations.

(d) COM (Cfg1) - Microphone Activation

COM - Microphone Activation
Access: INSTALLATION MODE>COM>In/Out Cfg1>Both Mikes Active - Used to adjust the PTT ports. • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection.
Settings: - OFF: • If the PTT 1 input is activated, the audio signal of microphone path 1 is transmitted. • If the PTT 2 input is activated, the audio signal of microphone path 2 is transmitted. - ON: • If PTT 1 or PTT 2 input is activated, the audio signal is transmitted from both microphone path 1 and path 2.
NOTE : KX 200 with Retrofit Adapter - Set it to OFF in all installations.

(e) COM (Cfg1) - Output 1 Selection

COM - Output 1 Selection
Access: INSTALLATION MODE>COM>In/Out Cfg1>Output 1 - Used to adjust the audio output for output path 1. • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection.
Settings: - NONE: No audio output selected. - HDPH1: Headphones 1 port selected.

COM - Output 1 Selection
NOTE : KX 200 with Retrofit Adapter - Set it to HDPH1 in all installations.

(f) COM (Cfg1) - Output 2 Selection

COM - Output 2 Selection
Access: INSTALLATION MODE>COM>In/Out Cfg1>Output 2 - Used to adjust the audio output for output path 2. • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection.
Settings: - NONE: No audio output selected. - HDPH2: Headphones 2 port selected. - SPKR: Speaker port selected.
NOTE : KX 200 with Retrofit Adapter - Set it to NONE in all installations.

(22) COM I/O Configuration 2

(a) The COM I/O configuration 2 settings are active when COMM_MIKESW_IN input (configuration selector) is active.

(b) COM (Cfg2) - Microphone Path 1 Selection

COM (Cfg2) - Microphone Path 1 Selection
Access: INSTALLATION MODE>COM>In/Out Cfg2>Microphone 1 - Used to adjust the microphone port used as microphone path 1. • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection.
Settings: - NONE: No microphone selected. - STD1: Standard microphone 1 input selected. - STD2: Standard microphone 2 input selected. - STD3: Standard microphone 3 input selected. - DYN: Dynamic microphone input selected.
NOTE : KX 200 with Retrofit Adapter - Set it to NONE in all installations.

(c) COM (Cfg2) - Microphone Path 2 Selection

COM (Cfg2) - Microphone Path 2 Selection
Access: INSTALLATION MODE>COM>In/Out Cfg2>Microphone 2 - Used to adjust the microphone port used as microphone path 2. • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection.
Settings: - NONE: No microphone selected. - STD1: Standard microphone 1 input selected. - STD2: Standard microphone 2 input selected. - STD3: Standard microphone 3 input selected. - DYN: Dynamic microphone input selected.
NOTE : KX 200 with Retrofit Adapter - Set it to NONE in all installations.

(d) COM (Cfg2) - Microphone Activation

COM - Microphone Activation
Access: INSTALLATION MODE>COM>In/Out Cfg2>Both Mikes Active - Used to adjust the PTT ports. • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection.
Settings: - OFF: • If the PTT 1 input is activated, the audio signal of microphone path 1 is transmitted. • If the PTT 2 input is activated, the audio signal of microphone path 2 is transmitted. - ON: • If PTT 1 or PTT 2 input is activated, the audio signal is transmitted from both microphone path 1 and path 2.
NOTE : KX 200 with Retrofit Adapter - Set it to OFF in all installations.

(e) COM (Cfg2) - Output 1 Selection

COM - Output 1 Selection
Access: INSTALLATION MODE>COM>In/Out Cfg2>Output 1 - Used to adjust the audio output for output path 1. • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection.
Settings: - NONE: No audio output selected. - HDPH1: Headphones 1 port selected.
NOTE : KX 200 with Retrofit Adapter - Set it to NONE in all installations.

(f) COM (Cfg2) - Output 2 Selection

COM - Output 2 Selection
Access: INSTALLATION MODE>COM>In/Out Cfg2>Output 2 - Used to adjust the audio output for output path 2. • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection.
Settings: - NONE: No audio output selected. - HDPH2: Headphones 2 port selected. - SPKR: Speaker port selected.
NOTE : KX 200 with Retrofit Adapter - Set it to NONE in all installations.

(23) COM - Standard Microphone 1 Sensitivity

NOTE: Usage of microphones that require a microphone sensitivity of more than 30 dB for standard microphones is not allowed.

COM - Standard Microphone 1 Sensitivity
Access: INSTALLATION MODE>COM>Std1 Mike Sens - Used to adjust the sensitivity of standard microphone 1 input. • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection.
Settings: - Setting depends on the connected microphone and ambient noise level. • Range: 0 - 30 dB

(24) COM - Standard Microphone 2 Sensitivity

COM - Standard Microphone 2 Sensitivity
Access: INSTALLATION MODE>COM>Std2 Mike Sens - Used to adjust the sensitivity of standard microphone 2 input. • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection.
Settings: - Setting depends on the connected microphone and ambient noise level. • Range: 0 - 44 dB
NOTE : KX 200 with Retrofit Adapter - COM - Standard Microphone 2 Sensitivity is not applicable to this/these device(s).

(25) COM - Standard Microphone 3 Sensitivity

COM - Standard Microphone 3 Sensitivity
Access: INSTALLATION MODE>COM>Std3 Mike Sens - Used to adjust the sensitivity of standard microphone 3 input. • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection.
Settings: - Setting depends on the connected microphone and ambient noise level. • Range: 0 - 44 dB
NOTE : KX 200 with Retrofit Adapter - COM - Standard Microphone 3 Sensitivity is not applicable to this/these device(s).

(26) COM - Dynamic Microphone Sensitivity

NOTE: Usage of microphones that require a microphone sensitivity of more than 28 dB for standard microphones is not allowed.

COM - Dynamic Microphone Sensitivity
Access: INSTALLATION MODE>COM>Dyn Mike Sens - Used to adjust the sensitivity of dynamic microphone input. • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection.
Settings: - Setting depends on the connected microphone and ambient noise level. • Range: 0 - 28 dB

COM - Dynamic Microphone Sensitivity
NOTE : KX 200 with Retrofit Adapter - COM - Dynamic Microphone Sensitivity is not applicable to this/these device(s).

(27) COM - Auxiliary Audio Input Sensitivity

COM - Auxiliary Audio Input Sensitivity
Access: INSTALLATION MODE>COM>AuxIn Sensitivity - Used to adjust the sensitivity of auxiliary audio input. • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection.
Settings: - Setting depends on the audio signal level at the auxiliary audio input. • Range: 0 - 44 dB
NOTE : KX 200 with Retrofit Adapter - COM - Auxiliary Audio Input Sensitivity is not applicable to this/these device(s).

(28) COM - Automatic Attenuation of Auxiliary Input

COM - Automatic Attenuation of Auxiliary Input
Access: INSTALLATION MODE>COM>AutoAux Att [dB] - Used to adjust the attenuation level for the auxiliary audio input when the intercom function is active (active via VOX or COMM_IC_IN). • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection.
Settings: - Range: 0 - 34 dB
NOTE : KX 200 with Retrofit Adapter - COM - Automatic Attenuation of Auxiliary Input is not applicable to this/these device(s).

(29) COM - Squelch Threshold

COM - Squelch Threshold
Access: INSTALLATION MODE>COM>Squelch Thr [dB] - Used to adjust the squelch level required to accept an audio signal from the radio receiver. • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection.
Settings: - Range: 6 - 26 - Minimum adjustment of 6: • Weak RF signals can trigger the squelch threshold but the audio signal might be low combined with a noisy background. - Maximum adjustment of 26: • Only strong RF signals will trigger the squelch threshold. The audio signal is audible very clear with very low background noise. • Weak RF signals cannot trigger the squelch threshold, so the user cannot hear the audio.

(30) COM - Scan Hold Time

COM - Scan Hold Time
Access: INSTALLATION MODE>COM>Scan Hold Time [s] - Used to adjust the scan function. • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection.
Settings: - Set it to 01 in all installations.

(31) COM - Sidetone Attenuation

COM - Scan Hold Time
Access: INSTALLATION MODE>COM>Sidetone Att [dB] - Used to adjust the attenuation level applied to sidetone signal intercom. • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection.
Settings: - Range: 0 - 12 dB - The attenuation relates to the intercom volume: • 0 dB: sidetone as loud as intercom signal. • 12 dB: sidetone lower than the intercom signal.

(32) COM - Speaker Volume Source

COM - Speaker Volume Source
Access: INSTALLATION MODE>COM>Speaker Vol Src - Used to select the source of the speaker volume control. • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection.
Settings: - Set it to PRIM in all installations.

(33) NAV - Glide Slope Adjustment

NAV - Glide Slope Adjustment
Access: INSTALLATION MODE>NAV>GS Adjustment> - - Used to select the calibration point for glide slope signal adjustment. • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection.
Cal. Point: - OFF: No point selected. The device does not generate calibration conditions for the glide slope outputs. - ScaleUp: The device generates at glide slope deflection output voltage for full scale up condition. - Center: The device generates at glide slope deflection output voltage for full center condition. - ScaleDown: The device generates at glide slope deflection output voltage for full scale down condition. - FullFlag: The device generates at glide slope flag output voltage for full flag visible condition. - HalfFlag: The device generates at glide slope flag output voltage for half flag visible condition. - NoFlag: The device generates at glide slope flag output voltage for no flag visible condition. Full Scale Up: - The device generates at glide slope deflection output voltage for full scale up condition. - Range: -128 - 127 Full Center: - The device generates at glide slope deflection output voltage for full center condition. - Range: -128 - 127 Full Scale Down: - The device generates at glide slope deflection output voltage for full scale down condition. - Range: -128 - 127 Full Flag Visible: - The device generates at glide slope flag output voltage for full flag visible condition. - Range: -128 - 127 Half Flag Visible: - The device generates at glide slope flag output voltage for half flag visible condition. - Range: -128 - 127 No Flag Visible: - The device generates at glide slope flag output voltage for no flag visible condition. - Range: -128 - 127

(34) NAV - VOR/LOC Adjustment

(a) NAV - VOR Response Time

NAV - VOR Response Time
Access: INSTALLATION MODE>NAV>VOR/LOC Adjustment>VOR Respond Tim [s] - Used to adjust the VOR response time in seconds. • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection.
Settings: - Set it to 2.0 in all installations.

(b) NAV - LOC Response Time

NAV - LOC Response Time
Access: INSTALLATION MODE>NAV>VOR/LOC Adjustment>LOC Respond Tim [s] - Used to adjust the LOC response time in seconds. • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection.
Settings: - Set it to 0.6 in all installations.

(c) NAV - VOR/LOC Composite Signal Output Level

NAV - VOR/LOC Composite Signal Output Level
Access: INSTALLATION MODE>NAV>VOR/LOC Adjustment>Comp Output Lev [mV] - Used to adjust the VOR/LOC composite signal output level in mV. • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection.
Settings: - Range: 300 - 500.

(d) NAV - Clear NV-Memory Error

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Figure 2-42. Clear NV-Memory Error

NAV - Clear NV-Memory Error
Access: INSTALLATION MODE>NAV>Clear NV-Memory Error - Possibility to delete the related memory errors. • Turn the right rotary knob to do the selection. • Push to the right rotary knob to confirm the selection. - The submenu shows "PRESS ENT TO CLEAR". • A short push to the right rotary knob deletes the related non-volatile memory errors and goes back to the previous menu.

N. DME - Transfer Protocol

(1) Refer to Section 2, Paragraph L., Step (10).

O. Post Installation Check

(1) After the device/system is installed completely do a test to make sure the system is functioning. Make sure that the compliance with the authority required procedures is complied with. The description that follows gives guidance for such tests.

(2) Mechanical Installation and Wiring Check

(a) Make sure that all cables are fixed securely and shields connected properly to related ground.

(b) Examine the movement of controls to make sure that there is no interference.

(c) Make sure that all screws are tight and the connectors on the rear side of the device are secured.

(d) Make sure that the device is correctly attached to the mounting tray.

(3) Power Supply

(a) Examine the power supply lines and the correct polarity.

(b) Make sure that the power supply is in the specified limits, with and without a running engine.

(4) Power-On Check

(a) Power-up the aircraft systems and accept normal operation of all functions of the components.

(5) Test - Transmit and Receive via Transceivers (COMs)

(a) Comply with the safety instructions, refer to Section 2, Paragraph E., Step (2).

(b) Connect a headset.

(c) Power up the device/system and tune it to a local station for a communication test.

1 Make sure that the output supplies a clear and readable audio and ask the local station for proper readability for the transmit signal of the device.

2 Make sure the quality of clear audio from the microphone when selected for transmission and PTT key is pushed.

(d) Repeat this communication test with an airborne station in ≈ 20-40 NM (Nautical Miles) (37-74 km).

(6) Test - Audio from RX Sources

(a) Comply with the safety instructions, refer to Section 2, Paragraph E., Step (2).

(b) Connect a headset.

1 Make sure that you can hear/receive all the installed RX-devices (NAV/ADF/DME). Use test signal generators/transmitters when necessary.

2 Make sure that you can hear all the installed alert source when they send an alert/message.

(7) Test - Speaker Output (if installed)

(a) Comply with the safety instructions, refer to Section 2, Paragraph E., Step (2).

(b) Select the speaker output.

1 Make sure that all messages are heard clearly.

(8) Antenna Check

(a) Examine the VSWR (voltage standing wave ratio) over the complete frequency band.

(b) The VSWR ratio should be less than 2:1 and is not acceptable when exceeding 3:1.

(9) Test - VOR/ILS System

(a) Select a VOR frequency in a 40 NM (74 km) range.

(b) Listen to the VOR audio and ensure that there is no electrical interference such as magneto noise.

(c) Check the tone identifier filter operation.

(d) Fly inbound and outbound on the selected VOR radial and check for correct LEFT-RIGHT and TO-FROM indications.

(e) Check the VOR accuracy.

NOTE: VOR ground station scalloping must be available.

(10) Interference Check

(a) Check the device/system while engine is running and powered on all other avionics/ electrical systems on the aircraft, to make sure that no significant interference exists.

(b) Check also that the device does not cause significant interference with other systems.

(c) The installer´s standard test procedure may used for the interference check and the table that follows can be taken as a reference.

(d) Depending on the individual avionic systems installed in the aircraft, it might be necessary to extend the checklist.

	Function	
Aircraft System Checklist	**OK**	**NOT OK**
DME		
Audio		
Generators / Inverters		
GPS System		
Compass 1		
ADF		
VHF / NAV1 all channels		
VHF / NAV 2 all channels		
Marker Receiver		
Motor(s)		
Engine Instruments		
Storm scope		
Transponder		
Air Data Computer		
Autopilot and Servos		

(e) Power the GPS and make sure that not less than 5 satellites are tracked.

(f) Check the interference between the VHF-COM and the GPS receiver (when activated in NAV mode).

(g) Select the channels/frequencies as follows on the device and on each frequency stay in TX and RX mode for at least 30 seconds.

(h) Make sure that the GPS integrity flag is always out of view.

Channel	**Frequency (MHz)**		**Channel**	**Frequency (MHz)**
121.140	121.1416		131.240	131.2416
121.150	121.1500		131.250	131.2500
121.155	121.1500		131.255	131.2500
121.160	121.1583		131.260	131.2583
121.165	121.1666		131.265	131.2666

121.175	121.1750		131.275	131.2750
121.180	121.1750		131.280	131.2750
121.185	121.1833		131.285	131.2833
121.190	121.1916		131.290	131.2916
121.200	121.2000		131.300	131.3000
121.205	121.2000		131.305	131.3000
121.210	121.2083		131.310	131.3083

For the other avionic equipment repeat all interference tests during a flight and include all equipment not before examined on ground. A communication performance check in the low, mid and high frequency band of the device should be included.

(i) Make sure that the receiver output supplies a clear and understandable audio output.

(j) Make sure that the transmitter supplies a report of reliable communications by contacting another station.

(k) Do a range test with a station at least 328 ft (100 m) from your own position.

(l) Examine the intercom function by talking in the microphone, while the engine is running at cruising speed. You should hear yourself and/or your co-pilot loud and clear.

(m) Turn "ON" the squelch and make sure that the normal radio noise, without a present carrier signal, it will be constantly suppressed. The threshold of the squelch can be set in the user menu.

(11) Flight Test Check

(a) It is recommended to do a flight test as final installation verification.

(b) The performance of the device may be examined by contacting a ground station at a range of at least 50 NM (93 km) while maintaining an appropriate altitude and over all normal flight attitudes.

(c) Examine the performance in the low, mid and high band frequencies.

P. Error / Failure Indication

(1) It is possible to read out error codes.

(2) For read out refer to:

(a) Section 3, Paragraph C., Step (3)(b) and Section 3, Paragraph E., Step (17).

(b) Section 3, Paragraph C., Step (4)(b) and Section 3, Paragraph F., Step (12).

(3) Failure description refer to: Section 3, Paragraph H., Step (2).

Q. Troubleshooting

(1) General:

(a) If you cannot correct the problem, stop the use of the device(s) and contact authorized maintenance shop for assistance, please.

(2) Details about operation while there is an error refer to:

(a) Section 3, Paragraph C., Step (3)(d) and Step (4)(d).

SECTION 3 – OPERATION

A. General

(1) This chapter contains general information and instructions for safe operation of the device(s).

(a) All control and display elements are on the front side.

NOTE: Some functions and adjustments are only available in the password-protected configuration setup - installation mode(1)

NOTE: Some functions are only available when they are enabled for the user in the password-protected configuration setup - installation mode.(1)

NOTE:

(1) Refer to Section 2, Paragraph N.

(2) Registration of the Device

(a) Comply with the national requirements for operation of radio equipment.

B. Device Description

(1) The KX 200 is a single block device with control panel. It combines a navigation receiver (NAV) and a VHF communication transceiver (COM) in one device.

(2) Device Assignment

(a) This manual is valid for the devices:

1 Refer to Section 2, Paragraph C.

(3) Packing, Transport, Storage

(a) Refer to Section 2, Paragraph B.

(4) Scope of Delivery

(a) Refer to Section 2, Paragraph C., Step (2).

(5) State of Delivery

(a) Refer to Section 2, Paragraph C., Step (3).

(6) Type Plate

(a) Refer to Section 2, Paragraph C., Step (6).

C. Controls and Indications

(1) The front panel with display is divided in a COM area and a NAV area.

(2) User Interface

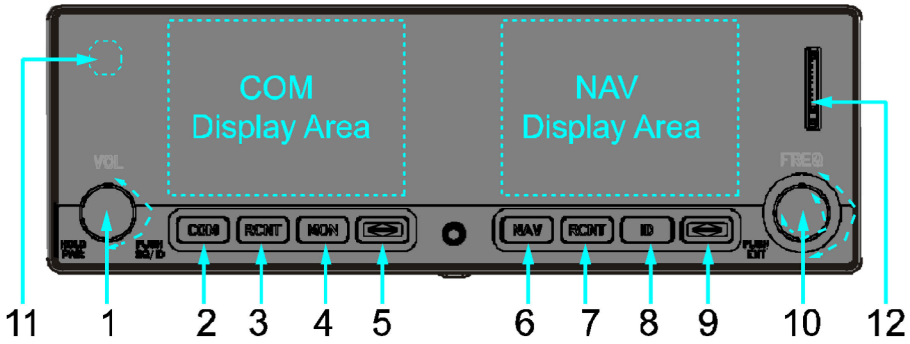

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Figure 3-1. KX 200 User Interface

	Element	Description	Function
1		Rotary knob, left side Single rotary knob +push function	Power ON/OFF, volume, functions ON/OFF - Short push to power up the device. - Long push to turn off the device. - Rotate to adjust the COM and NAV volume level of received signals. During COM mode: - Short push starts/stops the COM squelch function. - The squelch function remains active when NAV mode is selected. During NAV mode: - Short push to toggles between ID, voice, audio mode (For details refer to description no. 8).
2	COM	Pushbutton	- Short push starts the COM mode. During COM mode: - Long push shows the list "MENU".
3	RCNT (COM)	Pushbutton, "Recent" (frequency)	During COM mode: - Short push to toggle and leave the lists "RCNT" and "USER". • "RCNT" list, with up to ten recently selected active COM frequencies. • "USER" list with up to 50 stored COM frequencies. During NAV mode: - Short push starts the COM mode and the list of recently selected active COM frequencies.
4	MON	Pushbutton, "Monitoring"	During COM and NAV mode: - Short push starts/stops the COM frequency monitoring function. - The monitoring function remains active when NAV mode is selected.
5	 (COM)	Pushbutton, "COM transfer"	During COM and NAV mode: - Short push toggles between active and standby frequency.
6	NAV	Pushbutton	- Short push starts the NAV mode. During NAV mode: - Long push shows the list "MENU".

	Element	Description	Function
7	RCNT (NAV)	Pushbutton, "Recent" (frequency)	During NAV mode: - Short push to toggle and leave the lists "RCNT" and "USER". • "RCNT" list with the recently selected active NAV frequencies. • "USER" list with up to 50 stored NAV frequencies. During COM mode: - Short push starts the NAV mode and the list of recently selected active NAV frequencies.
8	ID	Pushbutton	During COM and NAV mode: - Short push to ID toggles between ID, voice, audio mode. • ID: To hear only the ident signal (morse-code identification of the station). • V (voice): To hear only voice (ID is cut from signal). • No icon (audio): To hear both voice and ident signal.
9	 (NAV)	Pushbutton, NAV transfer	During COM and NAV mode: - Short push toggles between active and standby frequency.
10	 inner rotary	Rotary knob, inner and outer rotary knob+push function	- Turn the rotary knob to change the selected parameters (frequency, -). - Push to the rotary knob to select the entry. - Push to the rotary knob to confirm the adjustment.
11		Light sensor	Light sensor for brightness control (depends on configuration).
12		SD card slot	Used to update the channel database with external prepared settings (future functionality and additional equipment necessary).

(a) HMI Operation

1 The device identifies a:

- "Long push": when you push and hold a key for > 2 seconds.
- "Short push": when you push and hold a key for < 2 seconds.

(3) Description - COM Display

NOTE: The view and colors of the elements depend on the system status.

(a) COM Main View

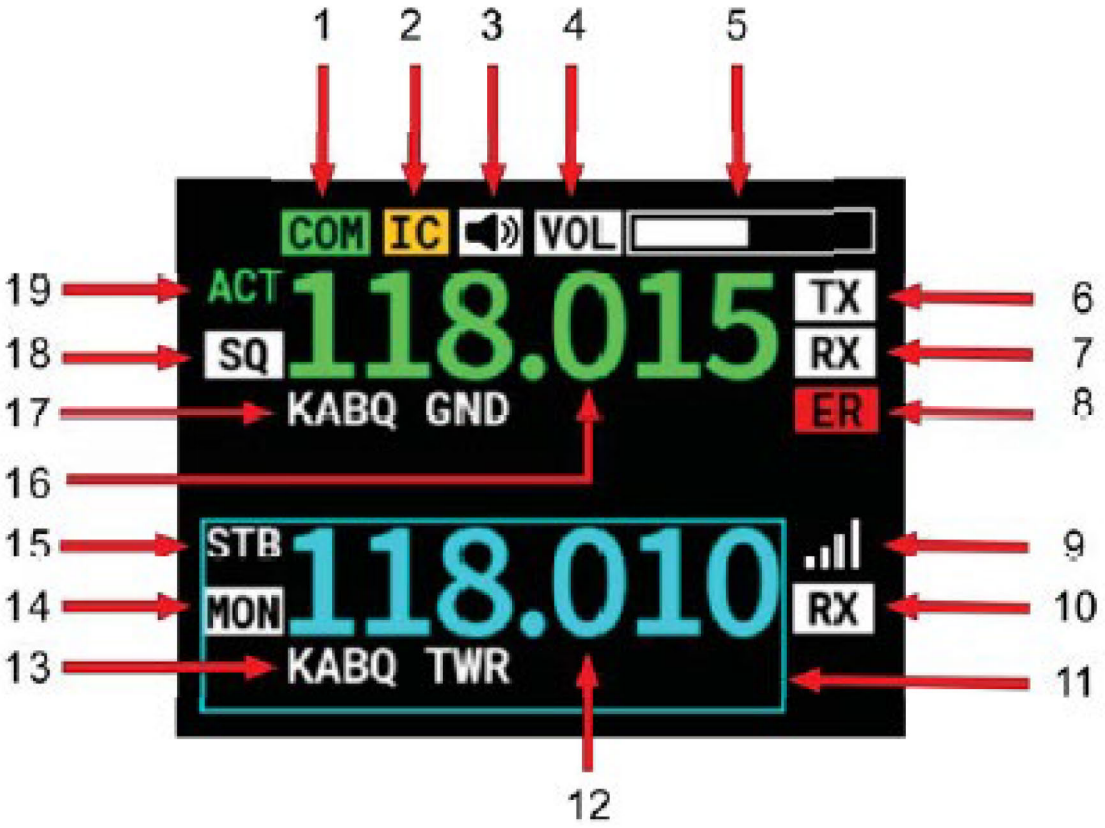

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Figure 3-2. KX 200 - COM Main View

Key to Figure 3-2

1. COM MODE STATUS
2. INTERCOM STATUS
3. SPEAKER STATUS
4. VOLUME
5. VOLUME LEVEL
6. TRANSMIT MODE
7. RECEIVE MODE
8. ERROR (ER) OR WARNING (WR)
9. SIGNAL DETECTION
10. RECEIVE FOR MONITORED FREQUENCY
11. FRAME
12. STANDBY FREQUENCY
13. STATION IDENTIFIER OF STANDBY FREQUENCY
14. MONITORING STATUS
15. STANDBY FREQUENCY LABEL
16. ACTIVE FREQUENCY
17. STATION IDENTIFIER OF ACTIVE FREQUENCY
18. SQUELCH STATUS
19. ACTIVE FREQUENCY LABEL

(b) COM Menu Mode

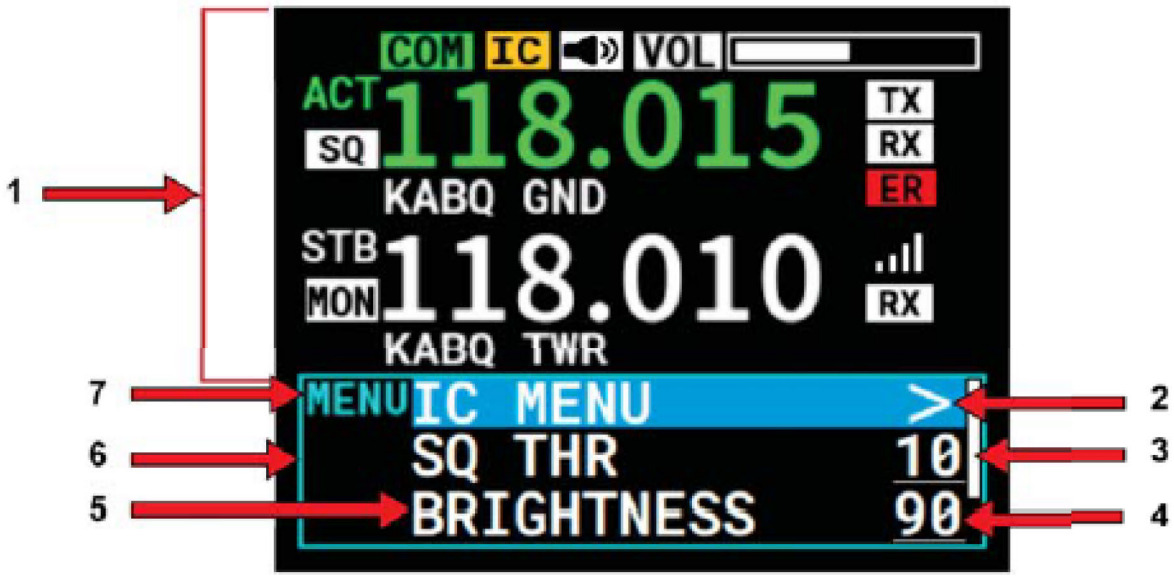

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Figure 3-3. KX 200 - COM Menu View

Key to Figure 3-3

1. ELEMENTS OF THE COM MAIN SCREEN, REFER TO Step (3)(a)
2. SELECTED LIST ENTRY
3. SCROLL BAR
4. PARAMETER VALUE
5. PARAMETER NAME
6. FRAME
7. LIST LABEL "MENU"

(c) COM Recent and User Frequency Menu

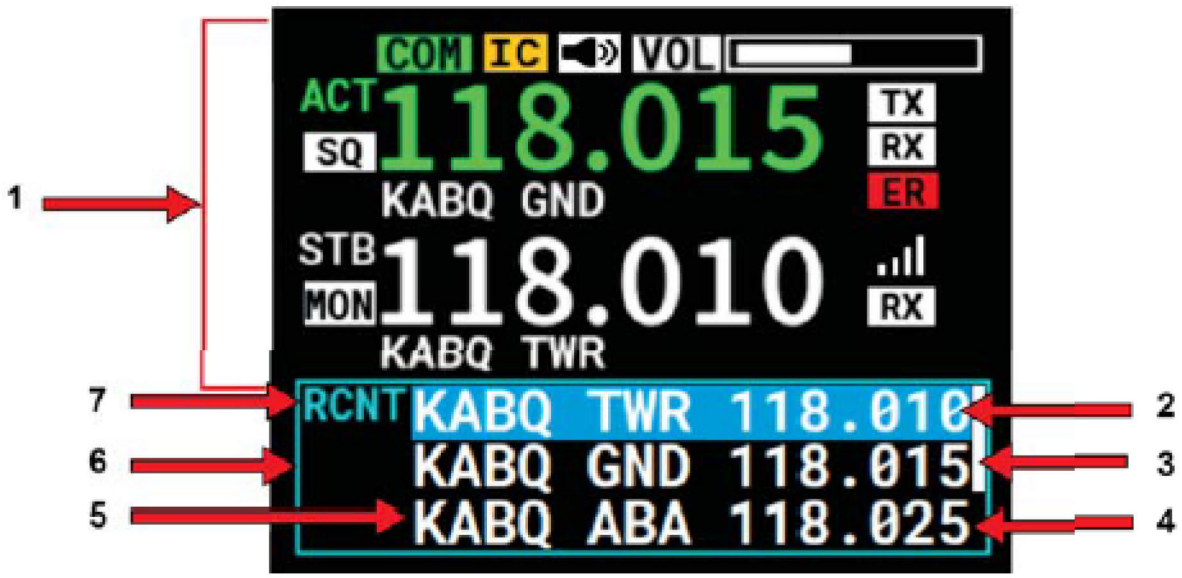

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Figure 3-4. KX 200 - COM Recent Frequency View

Key to Figure 3-4

1. ELEMENTS OF THE COM MAIN SCREEN, REFER TO Step (3)(a)
2. SELECTED LIST ENTRY
3. SCROLL BAR
4. FREQUENCY VALUE
5. STATION IDENTIFIER
6. FRAME
7. LIST LABEL "RCENT", "USER"

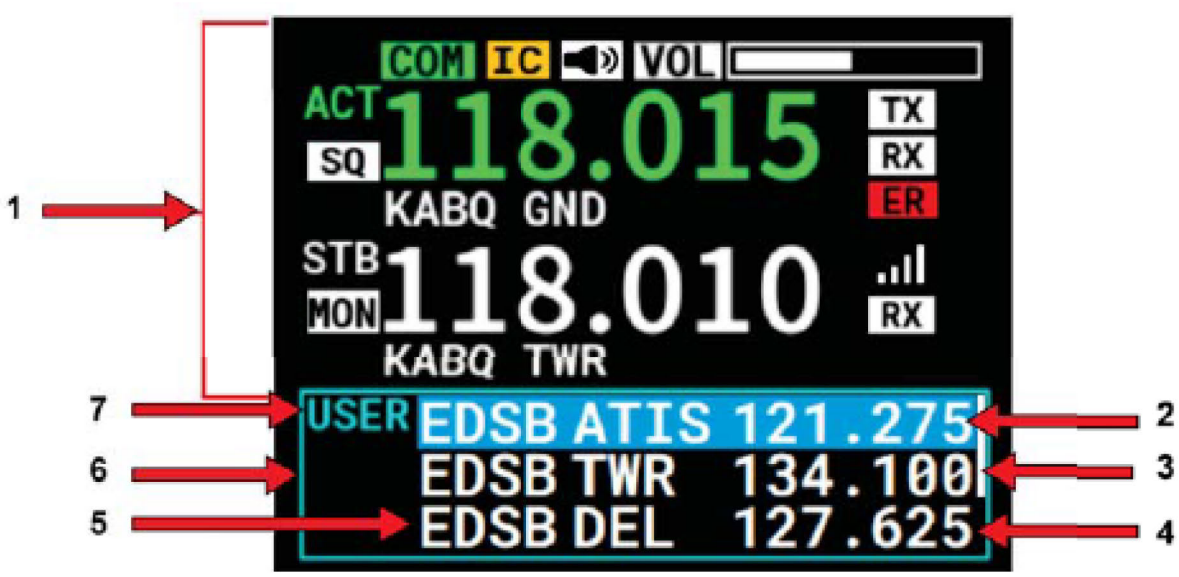

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Figure 3-5. KX 200 - COM User Frequency View

Key to Figure 3-5

1. ELEMENTS OF THE COM MAIN SCREEN, REFER TO Step (3)(a)
2. SELECTED LIST ENTRY
3. SCROLL BAR
4. FREQUENCY VALUE
5. STATION IDENTIFIER
6. FRAME
7. LIST LABEL "RCENT", "USER"

(d) COM Error and Warning View

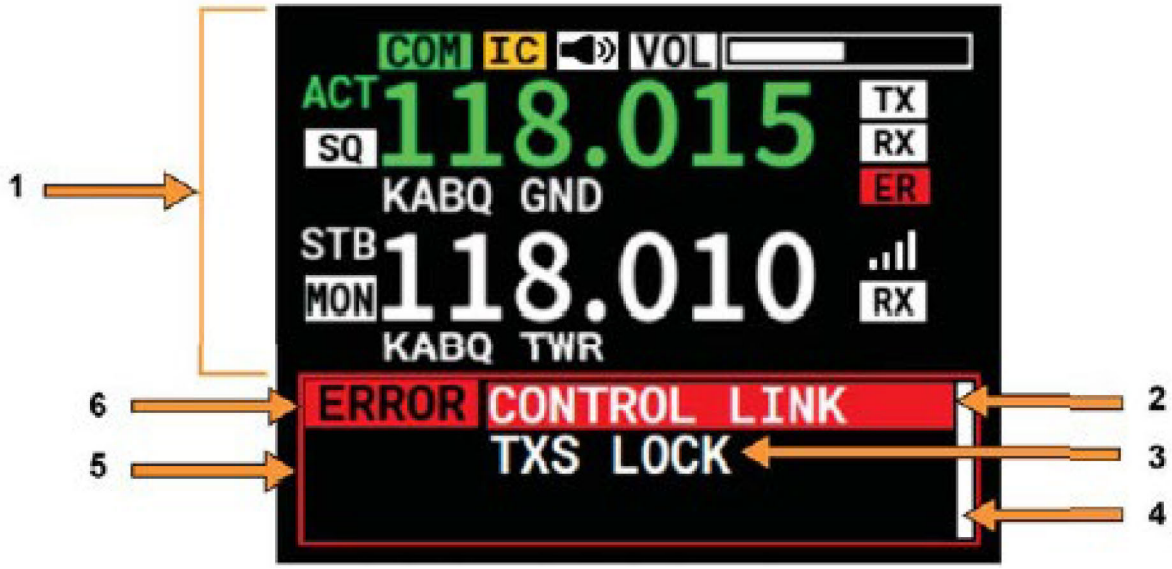

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Figure 3-6. KX 200 - COM Error View

Key to Figure 3-6

1. ELEMENTS OF THE COM MAIN SCREEN, REFER TO Step (3)(a)
2. SELECTED LIST ENTRY
3. ERROR NAME, WARNING NAME
4. SCROLL BAR
5. FRAME
6. LIST LABEL "ERROR", "WARN"

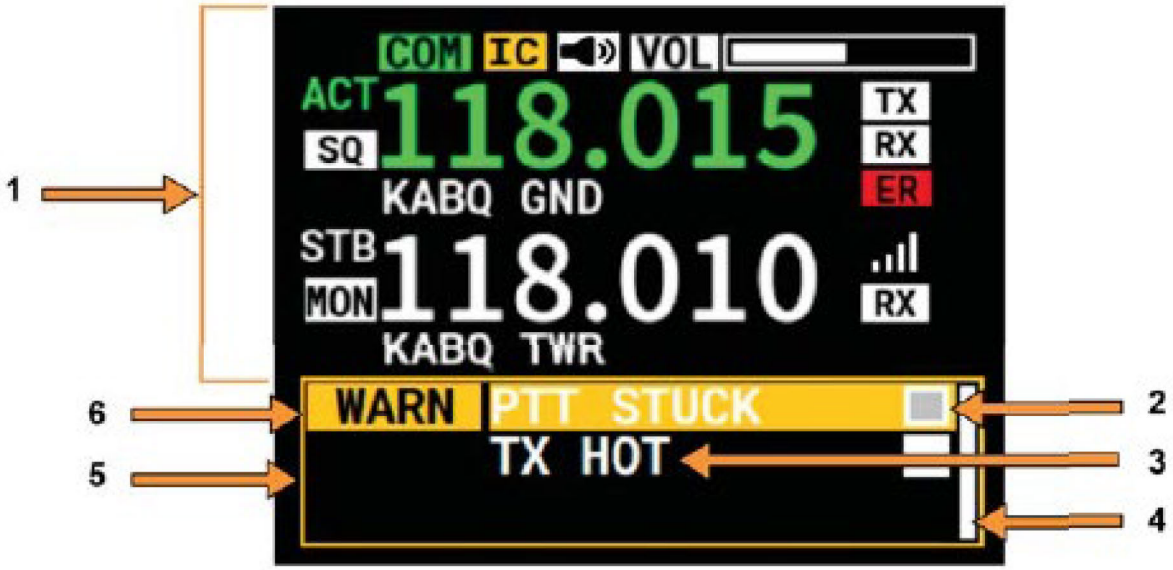

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Figure 3-7. KX 200 - COM Warning View

Key to Figure 3-7

1. ELEMENTS OF THE COM MAIN SCREEN, REFER TO Step (3)(a)
2. SELECTED LIST ENTRY
3. ERROR NAME, WARNING NAME
4. SCROLL BAR
5. FRAME
6. LIST LABEL "ERROR", "WARN"

(e) COM Incorrect Parameter (Example)

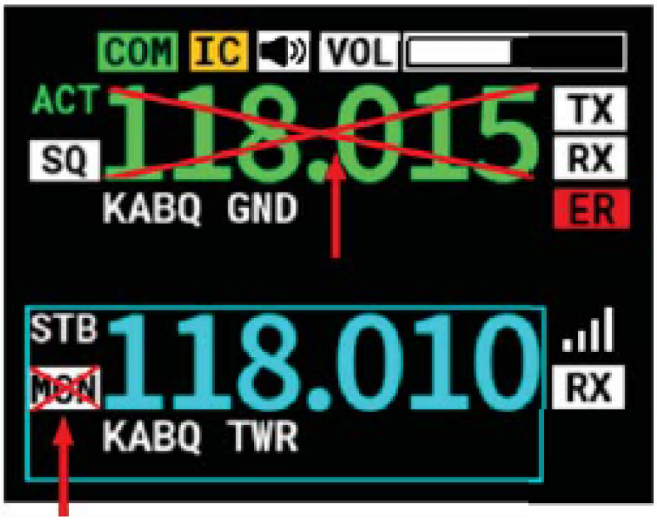

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Figure 3-8. KX 200 - COM Incorrect Parameter View

Key to Figure 3-8

. INCORRECT SETTINGS ARE CROSSED OUT WITH A RED "X"

(4) Description - NAV Display

NOTE: The view and colors of the elements depend on the system status.

(a) NAV Main View

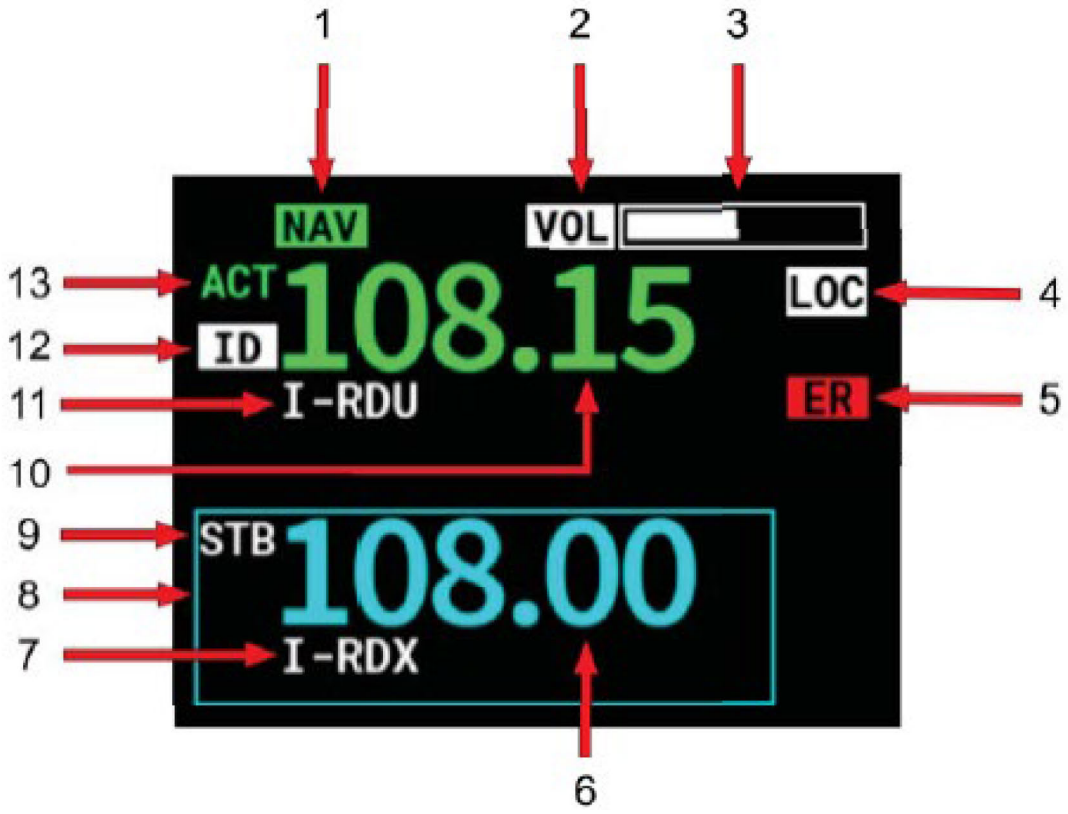

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Figure 3-9. KX 200 - NAV Main View

Key to Figure 3-9

1. NAV MODE STATUS
2. VOLUME
3. VOLUME LEVEL
4. LOCALIZER MODE
5. ERROR (ER) OR WARNING (WR)
6. STANDBY FREQUENCY
7. STATION IDENTIFIER OF STANDBY FREQUENCY
8. FRAME
9. STANDBY FREQUENCY LABEL
10. ACTIVE FREQUENCY
11. STATION IDENTIFIER OF ACTIVE FREQUENCY
12. NAV AUDIO MODE STATUS (ID, V, EMPTY INDICATION)
13. ACTIVE FREQUENCY LABEL

(b) NAV Menu Mode

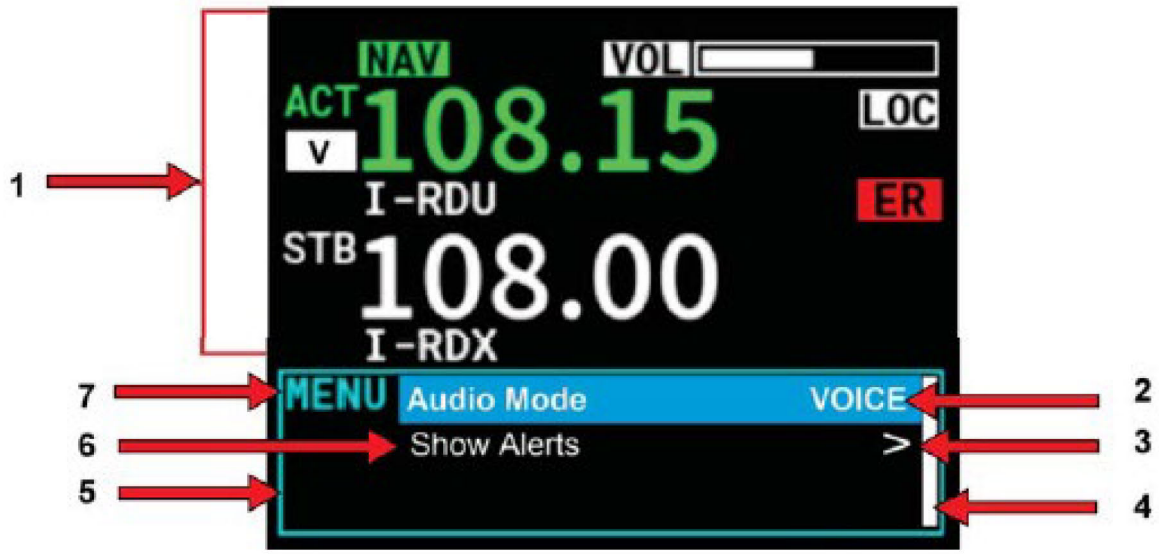

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Figure 3-10. KX 200 - NAV Menu View

Key to Figure 3-10

1. ELEMENTS OF THE NAV MAIN SCREEN, REFER TO Step (4)(a)
2. SELECTED LIST ENTRY
3. PARAMETER VALUE
4. SCROLL BAR
5. FRAME
6. PARAMETER NAME
7. LIST LABEL "MENU"

(c) NAV Recent and User Frequency Menu

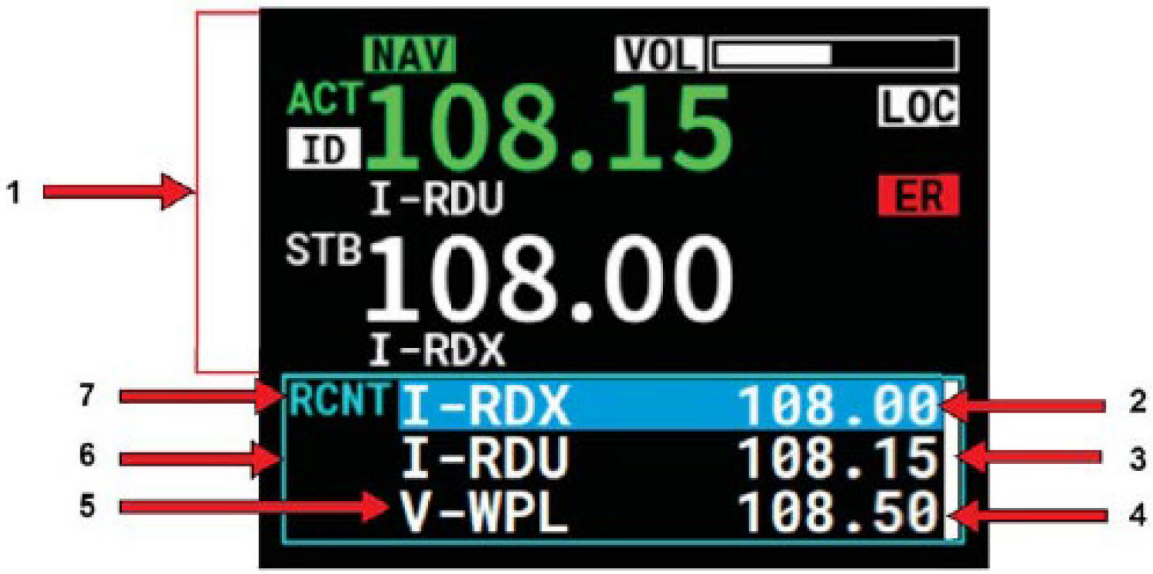

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Figure 3-11. KX 200 - NAV Recent Frequency View

Key to Figure 3-11

1. ELEMENTS OF THE NAV MAIN SCREEN, REFER TO Step (4)(a)
2. SELECTED LIST ENTRY
3. SCROLL BAR
4. FREQUENCY VALUE
5. STATION IDENTIFIER
6. FRAME
7. LIST LABEL "RCENT", "USER"

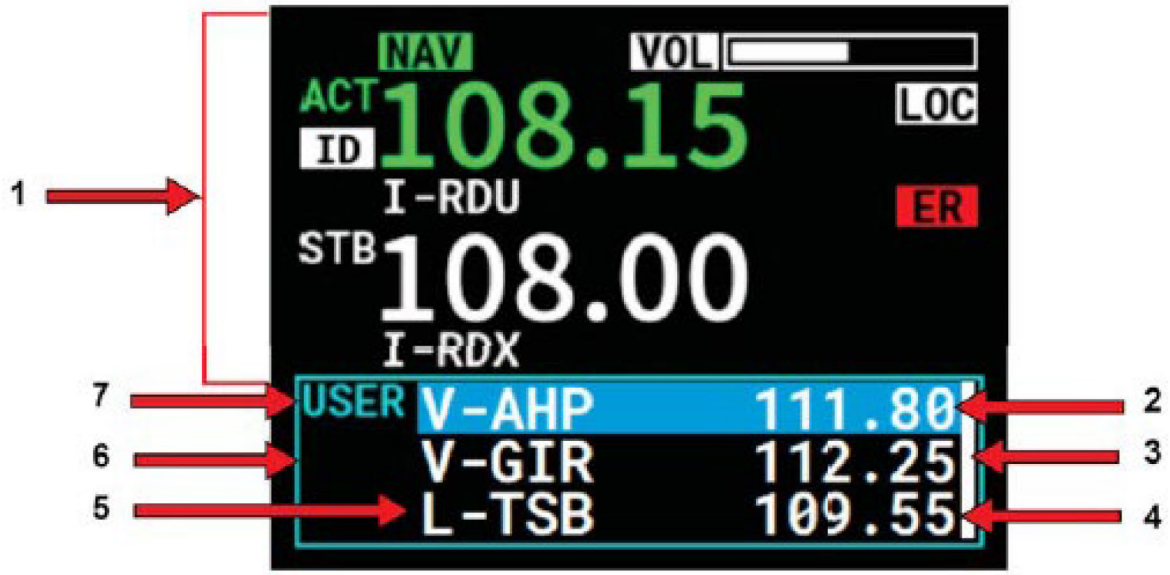

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Figure 3-12. KX 200 - NAV User Frequency View

Key to Figure 3-12

1. ELEMENTS OF THE NAV MAIN SCREEN, REFER TO Step (4)(a)
2. SELECTED LIST ENTRY
3. SCROLL BAR
4. FREQUENCY VALUE
5. STATION IDENTIFIER
6. FRAME
7. LIST LABEL "RCENT", "USER"

(d) NAV Error and Warning View

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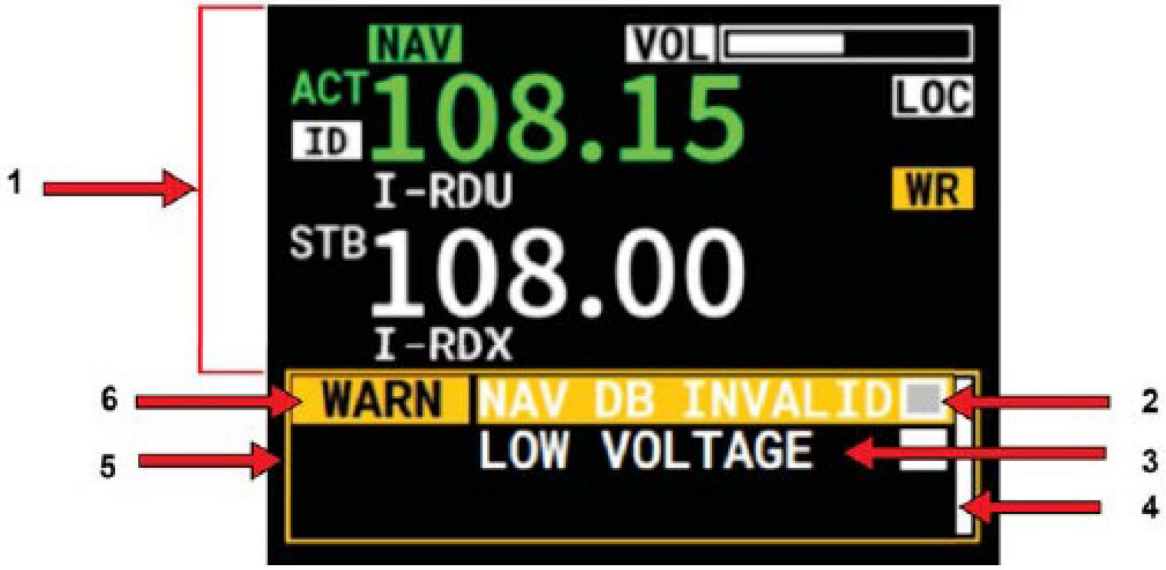
Figure 3-13. KX 200 - NAV Error View

Key to Figure 3-13

1. ELEMENTS OF THE NAV MAIN SCREEN, REFER TO Step (4)(a)
2. SELECTED LIST ENTRY
3. ERROR NAME, WARNING NAME
4. SCROLL BAR
5. FRAME
6. LIST LABEL "ERROR", "WARN"



ICN-55939-1000092319-001-01

Figure 3-14. KX 200 - NAV Warning View

Key to Figure 3-14

1. ELEMENTS OF THE NAV MAIN SCREEN, REFER TO Step (4)(a)
2. SELECTED LIST ENTRY
3. ERROR NAME, WARNING NAME
4. SCROLL BAR
5. FRAME
6. LIST LABEL "ERROR", "WARN"

D. Start-Up

Safety Instructions - Excessive pulses on the DC bus of the aircraft can cause damage on electrical circuits of any installed instrument.

- Do not turn on the device during engine start or shutdown.

NOTE : Polarizing sunglasses can reduce the readability of the display.

(1) Power up the device:

(a) Short push to the rotary knob (left) or power ON signal of the aircraft installation.

1 The initialization and self-test (PBIT) start.

2 The display shows the start screen with the company logo and the device/system name.

(b) After successful start-up the device is ready to use.

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Figure 3-15. KX 200 - Ready for Operation (Example)

NOTE: Some functions and adjustments are only available in the password-protected configuration setup - installation mode(1)

NOTE: Some functions are only available when they are enabled for the user in the password-protected configuration setup - installation mode.(1)

NOTE:

(1) Refer to Section 2, Paragraph N.

(2) Prevent Hearing Damage

CAUTION: LISTENING AT HIGH VOLUMES THROUGH HEADPHONES, HEADSETS OR IN CLOSE DISTANCE TO A LOUDSPEAKER CAN CAUSE HEARING DAMAGE.

CAUTION: THE LONGER YOU ARE EXPOSED TO A HIGH ACOUSTIC SOUND LEVEL, THE MORE QUICKLY YOUR HEARING CAN BE DAMAGED.

Safety Instructions

- Comply with the operating instruction of the used equipment.
- Do not increase the volume to suppress ambient noise.
- Recommendation: Use noise-canceling headphones (reduces ambient noise, volume can be turned down to minimum).
- Slowly increase the volume until you can hear the sound clearly and without distortion.

E. COM Operation

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Figure 3-16. KX 200 - COM Mode Active (Example)

(1) Start COM Mode

COM Pushbutton

- Short push to COM pushbutton starts the COM mode.
  - The backlight color of the pushbutton is green (intensity depends on the brightness settings).
  - The COM mode status icon is highlighted in green.

Display Status Icon

(2) COM - Volume Adjustment

CAUTION: OBEY THE SAFETY INSTRUCTIONS. REFER TO PREVENT HEARING DAMAGEPREVENT HEARING DAMAGE.

Volume Control

- Turn the left rotary knob to adjust the volume level.
- If the volume level is set to the minimum, the color of the volume elements changes to amber.

Minimum Level

(3) COM - Receive Operation Mode

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Figure 3-17. Receive Mode

(a) If no PTT (Push To Talk) button is active, the transceiver stays in receive mode.

1 The "RX" symbol shows that the device is in receive mode.

(b) A mixed signal is supplied on the headphone(s) outputs (if enabled), it is mixed of the:

1 Received signal from antenna.

2 Intercom signal from intercom circuit one and two (depends on configuration).

3 Signal from auxiliary input (depends on configuration).

(c) A mixed signal is supplied on the speaker output (if enabled), it is mixed of the:

1 Received signal from antenna.

2 Signal from auxiliary input (depends on configuration).

(4) COM - Transmit Operation Mode

ICN-55939-1000092327-001-01

Figure 3-18. Transmit Mode

(a) If a PTT (Push To Talk) button is active (Push To Talk button is pushed) the transceiver is set to transmit mode.

1 The "TX" symbol shows that the device is in transmit mode.

2 The PTT 1 input starts transmission from microphone path 1.

3 The PTT 2 input starts transmission from microphone path 2.

4 If "BOTH MIKES" is enabled in the configuration, each input (PTT 1 or 2) can start the transmission from both microphone paths at the same time.

(b) The sidetone (demodulated audio of the emitted signal) is available on the headphone output.

(c) The transmit mode automatically deactivates the speaker.

(d) For transmission is always the active frequency (ACT) used, also if the monitored frequency is currently audible.

(e) If TX on the standby frequency (STB) is required, push the COM transfer pushbutton to change active and standby frequency.

COM Transfer Pushbutton

NOTE: KX 200 with Retrofit Adapter

- Functions "PTT 2 on microphone path 2" and "BOTH MIKES" are not applicable to this/these device(s).

NOTE:

- In transmit mode some user actions are blocked which are normally permitted in receive mode.
- Changes e.g. the standby frequency are possible during transmission.
- In transmit mode the intercom operation behavior depends on configuration.
  - If the PTT1 input is started and ISOL is active the passenger intercom operation on second intercom circuit is still possible.
- The transmit mode is automatically terminated (return to receive mode) after 35 seconds of continuous transmitting.
  - The display shows " PTT STUCK", refer to Section 3, Paragraph H., Step (2).
  - For the start of a new transmission first it is necessary to set the PTT line inactive.

(5) COM - Channel Spacing

(a) The transceiver can operate in 25 kHz frequency channel spacing or in 8.33/25 kHz mixed mode.

(b) The channel spacing for operation is adjustable, refer to Step (16).

(6) COM - Select a Standby Frequency

COM Pushbutton

ICN-55939-1000092328-001-01

Figure 3-19. Select a Standby Frequency

(a) Condition: The COM area is selected. The standby frequency frame is in view.

1 Turn the right rotary knob (inner and outer) to adjust a standby frequency.

Inner/Outer Rotary Knob (Right side)

2 Turn the outer rotary knob clockwise/counterclockwise to change the values in one MHz steps.

a Range: MHz steps between 118 - 136 MHz.

3 Turn the inner rotary knob clockwise/counterclockwise to change the values in 25/8.33 kHz steps.

a Range: 25 kHz steps between 000 - 975 kHz.

b Range: 8.33 kHz steps between 000 - 990 kHz.

NOTE: Changes of the standby frequency is possible during transmission.

NOTE: If the selected frequency is available in the user frequency list, the related station ID is shown below the frequency.

NOTE: If more than one station IDs are assigned to the selected frequency, the first station ID from the list is shown.

(7) COM - Select an Active Frequency

COM Transfer Pushbutton

(a) During COM and NAV mode:

1 Push the COM transfer pushbutton to change active and standby frequency.

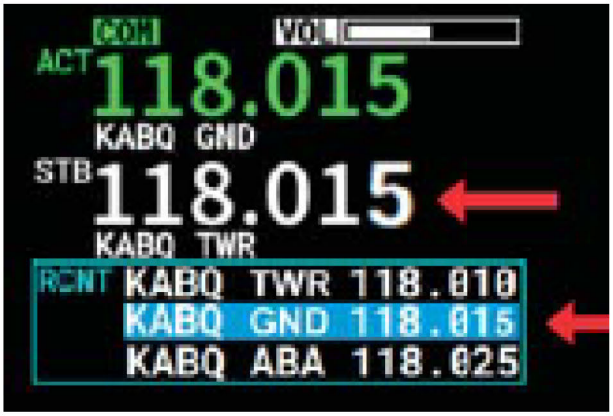
ICN-55939-1000092329-001-01

Figure 3-20. Select an Active Frequency

2 For conditions and procedure, refer to COM - Select a Standby Frequency.

NOTE: It is not possible to toggle between the active and standby frequencies during transmission.

(8) COM - Select a Recent Frequency



ICN-55939-1000092330-001-01

Figure 3-21. Recent Frequency List

(a) During COM and NAV mode:

1 Push on the COM "RCNT" pushbutton starts the recent frequency list.

2 Turn the right rotary knob to scroll through the entries.

3 A short push to the right rotary knob confirms the selection.

a The frequency with the related station identifier is set as the standby frequency.

(b) Menu content:

1 List of the recent 10 (active) frequencies.

(c) Leave menu:

1 A short push on the "COM" pushbutton leaves the menu.

a The COM main view is shown.

(9) COM - Select a User Frequency

ICN-55939-1000092331-001-01

Figure 3-22. User Frequency List

(a) During COM mode:

1 Push on the "RCNT" pushbutton starts the recent frequency list.

2 Push on the COM "RCNT" pushbutton:

a The user frequency list is shown.

3 Turn the right rotary knob to scroll through the entries.

4 A short push to the right rotary knob confirms the selection.

a The frequency with the related station identifier is set as the standby frequency.

(b) Menu content:

1 List with up to 50 stored user frequencies with an assigned station identifier.

(c) Leave menu:

1 A short push on the "COM" pushbutton leaves the menu.

a The COM main view is shown.

NOTE: If no frequencies are stored only the entry "Add New" is listed. To add, edit, delete and store user frequencies refer to Step (10) and Step (11).

(10) COM - Edit, Add, Store a User Frequency

ICN-55939-1000092333-001-01

Figure 3-23. User Frequency List

(a) It is possible to store up to 50 user frequencies with related station identifier for each of them in the COM user frequency list.

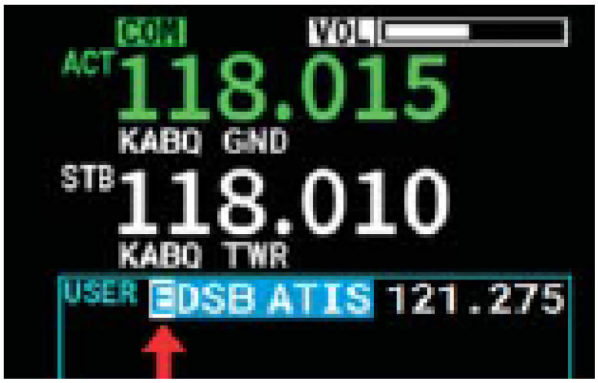
(b) During COM mode:

1 Push on the "RCNT" pushbutton starts the recent frequency list.

2 Push on the "RCNT" pushbutton again:

a The user frequency list is shown.

3 Turn the right rotary knob to scroll through the entries and select one list entry to change it or select "Add New" to add one more.



ICN-55939-1000092334-001-01

Figure 3-24. Confirm the Selection

4 A short push to the right rotary knob confirms the selection.

a The user frequency edit mode is shown.

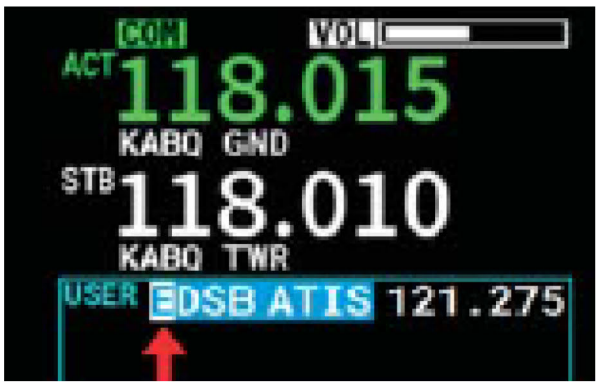
b The digits of the station identifier are highlighted.

Inner/Outer Rotary Knob (Right side)

5 Turn the inner rotary knob to move between station ID and frequency and select the entry to edit.

6 A short push to the right rotary knob confirms the selection.

a The adjustable value is shown inverted.



ICN-55939-1000092335-001-01

Figure 3-25. Edit Station ID

(c) Edit the station ID:

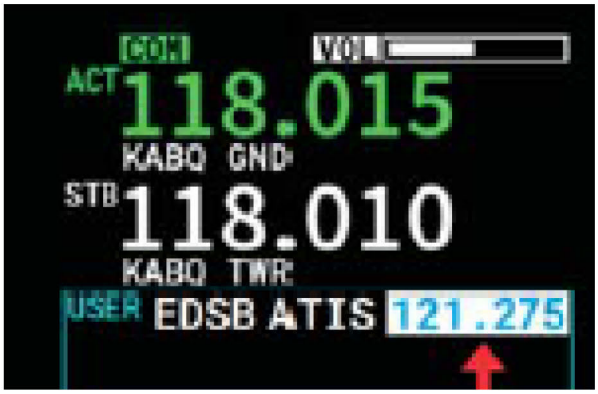
1 Turn the outer rotary knob to change the value of the digit.

a Max. 8 digits are possible for the station ID label.

b The possible values are: blank space , A - Z, 0 - 9, ., _, :, <, >, =.

2 Turn the inner rotary knob to move between the digits.

3 A short push to the right rotary knob confirms the completed setting.



ICN-55939-1000092336-001-01

Figure 3-26. Edit Frequency

(d) Edit the frequency:

1 Turn the inner rotary knob to select the frequency.

2 A short push to the right rotary knob confirms the selection.

a The adjustable value is shown inverted.

3 Turn the outer rotary knob clockwise/counterclockwise to change the values in one MHz steps.

a Range: MHz steps between 118 - 136 MHz.

4 Turn the inner rotary knob clockwise/counterclockwise to change the values in 25/8.33 kHz steps.

a Range: 25 kHz steps between 000 - 975 kHz.

b Range: 8.33 kHz steps between 000 - 990 kHz.

5 A short push to the right rotary knob confirms the selection.

NOTE: The adjustable frequency range and the frequency steps depend on the set channel spacing.

(e) Leave the mode:

1 A long push to the right rotary knob leaves the edit mode.

a The user frequency list is shown.

b The new and/or the changed entries are available.

(11) COM - Delete a User Frequency

ICN-55939-1000092337-001-01

Figure 3-27. Delete List Entry

During COM mode:

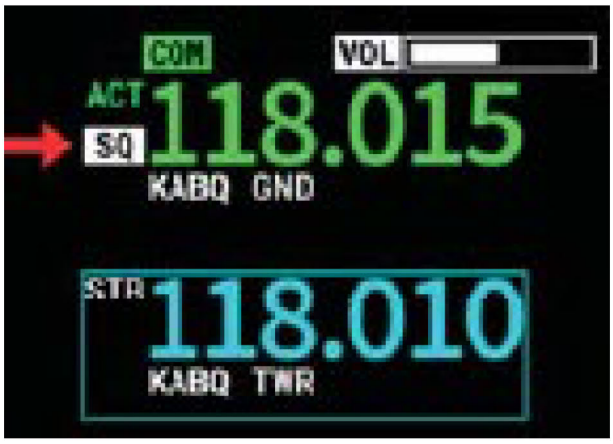
1 Push on the "RCNT" pushbutton starts the recent frequency list.

2 Push on the "RCNT" pushbutton again:

a The user frequency list is shown.

3 Turn the right rotary knob to scroll through the entries and select the list entry to delete.

4 A long push to the "RCNT" pushbutton deletes the selected list entry.



ICN-55939-1000092338-001-01

Figure 3-28. Squelch ON

(12) COM - Squelch

(a) Condition: The COM area is selected.

1 Push the left rotary knob toggles between squelch ON/OFF.

a The "SQ" symbol shows that squelch is on.

2 If the received signal is too weak, it is muted when squelch is on. This prevents interference noise.

a The signal suppression depends on the set squelch threshold.

NOTE: The squelch threshold is adjustable, refer to Step (16).

(13) COM - Frequency Monitoring

COM Monitoring Pushbutton

(a) The function enables monitoring of the COM standby frequency, while listening to the COM active frequency.

(b) Push the MON pushbutton toggles between monitoring ON/OFF.

1 The "MON" symbol shows that the device is in monitoring mode.

Monitoring ON

NOTE: It is possible to toggle between monitoring ON/OFF during the device is in NAV operation.

(c) Signal detected on the monitored frequency:

1 A symbol shows that a signal is detected on the standby frequency.

2 Conditions:

a Monitoring function is ON.

b A signal is detected on the active frequency and is heard through the speaker or headphone.

c A signal is detected on the standby frequency.

(d) Receive mode of the monitored frequency:

1 A "RX" symbol shows that a signal is detected on the standby frequency.

2 Conditions:

a Monitoring function is ON.

b Squelch function is ON.

c A signal is detected on the standby frequency and is heard through the speaker or headphone.

NOTE: If the active and standby frequency detects a signal at the same time, the active frequency has priority.

NOTE: For transmission the active frequency is always used, also if the monitored standby frequency is currently audible.

NOTE: If transmission on the standby frequency is required, push the COM transfer pushbutton to change active and standby frequency.

COM Transfer Pushbutton

(14) COM - Intercom (IC)

(a) The intercom operation depends on device intercom settings and wiring.

1 The intercom operation can be started automatically with VOX (with adjustable threshold) or externally with an intercom switch.

(b) The VOX function cannot operate in:

1 Installations with high level of ambient noise.

2 Operation when speaker is enabled.

(c) If installed:

1 An external switch makes it possible to select the intercom operation manually.

NOTE: NOTICE: The settings of VOX ON/OFF, IC volume and VOX threshold are adjustable, refer to COM - Menu Mode.

2 Condition: The COM area is selected.

ICN-55939-1000092344-001-01

Figure 3-29. Intercom Active

a The white "IC" symbol shows that intercom is active.

ICN-55939-1000092345-001-01

Figure 3-30. Intercom Inactive

b The amber "IC" symbol shows that intercom is inactive.

c The automatic start through VOX is off.

(15) COM - Speaker

ICN-55939-1000092347-001-01

Figure 3-31. Speaker Active

(a) The speaker operation depends on configuration and wiring (one or more speakers).

1 The speaker symbol shows that the speaker is active.

Speaker Symbol

NOTE: KX 200 with Retrofit Adapter

- The operation with speaker is not applicable to this/these device(s).

ICN-55939-1000092348-001-01

Figure 3-32. KX 200 - COM Menu View

(16) COM - Menu Mode

(a) During COM mode:

1 A long push on the "COM" pushbutton starts the user menu.

2 Turn the right rotary knob to scroll through the entries.

3 A short push to the right rotary knob selects the highlighted entry or starts the related submenu.

a The adjustable value is shown inverted.

4 Turn the right rotary knob to adjust/select the function.

5 A short push to the right rotary knob confirms the setting.

(b) Menu content:

1 Intercom Menu: Submenu for intercom settings.

a IC volume, VOX on/off, VOX threshold.

2 Squelch Thr (dB): Squelch threshold level.(1)

NOTE:

(1) SQ TRH:

- Minimum adjustment of 6:
  - Weak RF signals can trigger the squelch threshold but the audio signal might be low combined with a noisy background.
- Maximum adjustment of 26:
  - Only strong RF signals will trigger the squelch threshold. The audio signal is audible very clear with very low background noise.
  - Weak RF signals cannot trigger the squelch threshold, so the user cannot hear the audio.

3 SPACING: Channel spacing.

a 25 kHz only or 8.33 kHz (=25 +8.33 kHz).

4 Brightness: Display and pushbutton brightness (function depend on configuration).

5 SHOW ALERTS: List of COM errors and warnings, check if errors are active.

(c) Leave menu:

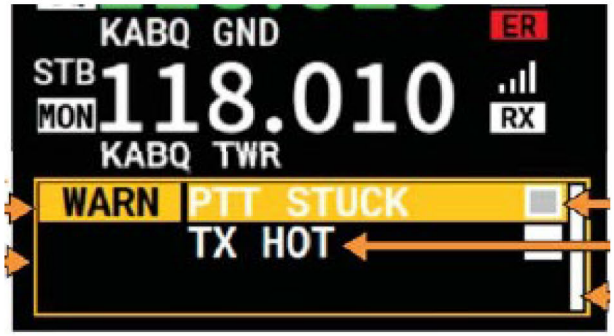
1 A short push on the "COM" pushbutton leaves the menu.

a The COM main view is shown.

(17) COM - Error and Warning Message

ICN-55939-1000092349-001-01

Figure 3-33. KX 200 - COM Error View



ICN-55939-1000092350-001-01

Figure 3-34. KX 200 - COM Warning View

(a) The COM error or COM warning list comes into view if at least one COM error/warning is found.

1 Error (ER) or Warning (WR) is shown on the COM display.

2 Some messages can be reset manually.

(b) Move through the list:

1 Turn the right rotary knob to scroll through the entries.

2 A short push to the right rotary knob selects the highlighted entry.

a The adjustable entry is shown inverted.

3 A short push to the right rotary knob reset the message.

a Errors/warning messages are removed from the list if they are reset manually or are no longer active.

(c) Leave view:

1 All active acknowledgeable errors/warnings are confirmed.

2 All active errors/warnings become inactive.

(d) Possible content:

1 For details refer to Section 3, Paragraph H.

F. NAV Operation

ICN-55939-1000092351-001-01

Figure 3-35. KX 200 - NAV Mode Active (Example)

(1) Start NAV Mode

(a) Short push to NAV pushbutton starts the NAV mode.

NAV Pushbutton

1 The backlight color of the pushbutton is green (intensity depends on the brightness settings).

2 The NAV mode status icon is highlighted in green.

Display Status Icon

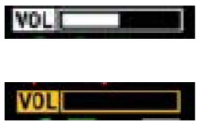
(2) NAV - Volume Adjustment

CAUTION: OBEY THE SAFETY INSTRUCTIONS. REFER TO PREVENT HEARING DAMAGE.

(a) Turn the left rotary knob to adjust the volume level.

Volume Control

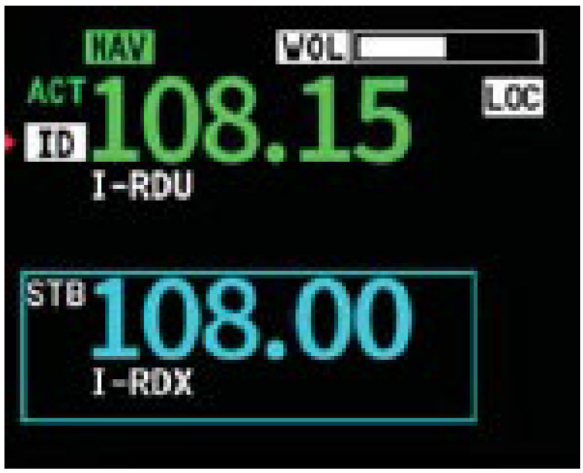
(b) If the volume level is set to the minimum, the color of the volume elements changes to amber.



Minimum Level

(3) NAV - VOR/LOC/GS Mode

(a) The VOR/LOC/GS operation depends on configuration and the installed navigation equipment.



ICN-55939-1000092354-001-01

Figure 3-36. Localizer Channel Selected

(4) NAV - Audio Mode Control

(a) During COM and NAV mode:

ICN-55939-1000092355-001-01

Figure 3-37. Audio Mode Control

1 Short push to ID toggles between ID, voice, audio mode.

a ID: To hear only the ident signal (morse-code identification of the station).

b V (voice): To hear only voice (ID is cut from signal).

c No icon (audio): To hear both voice and ident signal.

2 During NAV mode:

a Short push to the left rotary knob or the ID pushbutton toggles between ID, voice, audio mode.

(5) NAV - Select a Standby Frequency

(a) Condition: The NAV area is selected. The standby frequency frame is in view.

NAV Pushbutton

1 Turn the right rotary knob (inner and outer) to adjust a standby frequency.

ICN-55939-1000092356-001-01

Figure 3-38. Standby Frequency Frame

2 Turn the outer rotary knob clockwise/counterclockwise to change the values in one MHz steps.

a Range: MHz steps between 108 - 117 MHz.

3 Turn the inner rotary knob clockwise/counterclockwise to change the values in 50 kHz steps.

Inner/Outer Rotary Knob (Right side)

a Range: kHz steps between 0 - 950 kHz.

NOTE: If the selected frequency is available in the user frequency list, the related station ID is shown below the frequency.

NOTE: If more than one station IDs are assigned to the selected frequency, the first station ID from the list is shown.

(6) NAV - Select an Active Frequency

NAV Transfer Pushbutton

(a) During COM and NAV mode:

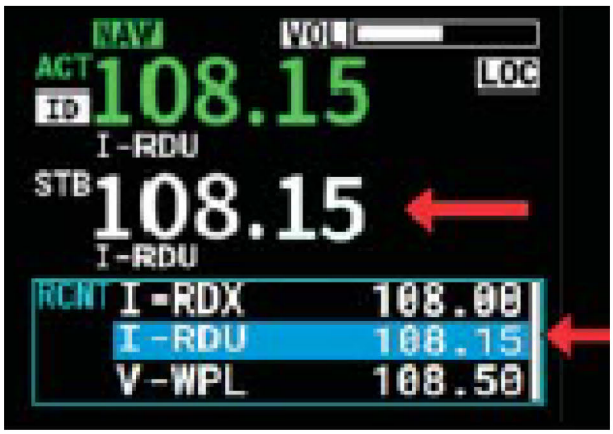
1 Push the NAV transfer pushbutton to change active and standby frequency.

ICN-55939-1000092357-001-01

Figure 3-39. Change Active and Standby Frequency

2 For conditions and procedure refer to Step (5).

(7) NAV - Select a Recent Frequency



ICN-55939-1000092359-001-01

Figure 3-40. Recent Frequency List

(a) During COM and NAV mode:

1 Push on the NAV "RCNT" pushbutton starts the recent frequency list.

2 Turn the right rotary knob to scroll through the entries.

3 A short push to the right rotary knob confirms the selection.

a The frequency with the related station identifier is set as the standby frequency.

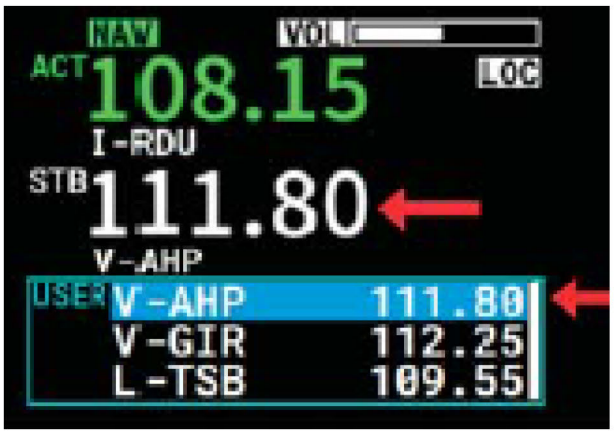
(b) Menu content:

1 List of the recent 10 (active) frequencies.

(c) Leave menu:

1 A short push on the "NAV" pushbutton leaves the menu.

a The NAV main view is shown.



ICN-55939-1000092360-001-01

Figure 3-41. User Frequency List

(8) NAV - Select a User Frequency

(a) During NAV mode:

1 Push on the "RCNT" pushbutton starts the recent frequency list.

2 Push on the "RCNT" pushbutton again:

a The user frequency list is shown.

3 Turn the right rotary knob to scroll through the entries.

4 A short push to the right rotary knob confirms the selection.

a The frequency with the related station identifier is set as the standby frequency.

(b) Menu content:

1 List with up to 50 stored user frequencies with an assigned station identifier.

(c) Leave menu:

1 A short push on the "NAV" pushbutton leaves the menu.

a The NAV main view is shown.

NOTE: If no frequencies are stored only the entry "Add New" is listed. To add, edit, delete and store user frequencies refer to

- Step (9).
- Step (10).

ICN-55939-1000092361-001-01

Figure 3-42. User Frequency List

(9) NAV - Edit, Add, Store a User Frequency

(a) It is possible to store up to 50 user frequencies with related station identifier for each of them in the NAV user frequency list.

(b) During NAV mode:

1 Push on the "RCNT" pushbutton starts the recent frequency list.

2 Push on the "RCNT" pushbutton again:

a The user frequency list is shown.

3 Turn the right rotary knob to scroll through the entries and select one list entry to change it or select "Add New" to add one more.

ICN-55939-1000092362-001-01

Figure 3-43. Confirm Selection

4 A short push to the right rotary knob confirms the selection.

a The user frequency edit mode is shown.

b The digits of the station identifier are highlighted.

Inner/Outer Rotary Knob (Right side)

5 Turn the inner rotary knob to move between station ID and frequency and select the entry to edit.

6 A short push to the right rotary knob confirms the selection.

a The adjustable value is shown inverted.

ICN-55939-1000092363-001-01

Figure 3-44. Edit Station ID

(c) Edit the station ID:

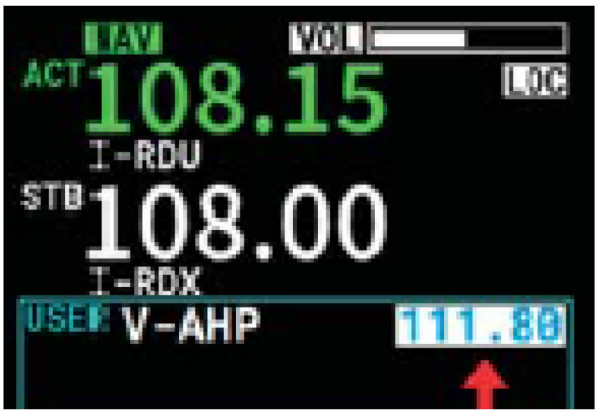
1 Turn the outer rotary knob to change the value of the digit.

a Max. 8 digits are possible for the station ID label.

b The possible values are: blank space , A - Z, 0 - 9, ., _, :, <, >, =.

2 Turn the inner rotary knob to move between the digits.

3 A short push to the right rotary knob confirms the completed setting.



ICN-55939-1000092364-001-01

Figure 3-45. Edit Frequency

(d) Edit the frequency:

1 Turn the inner rotary knob to select the frequency.

2 A short push to the right rotary knob confirms the selection.

a The adjustable value is shown inverted.

3 Turn the outer rotary knob clockwise/counterclockwise to change the values in one MHz steps.

a Range: MHz steps between 108 - 117 MHz.

4 Turn the inner rotary knob clockwise/counterclockwise to change the values in 50 kHz steps.

a Range: kHz steps between 0 - 950 kHz.

5 A short push to the right rotary knob confirms the selection.

(e) Leave the mode:

1 A long push to the right rotary knob leaves the edit mode.

a The user frequency list is shown.

b The new and/or the changed entries are available.

(10) NAV - Delete a User Frequency

ICN-55939-1000092365-001-01

Figure 3-46. Delete List Entry

During NAV mode:

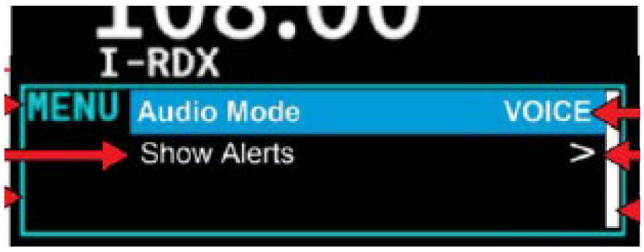
1 Push on the "RCNT" pushbutton starts the recent frequency list.

2 Push on the "RCNT" pushbutton again:

a The user frequency list is shown.

3 Turn the right rotary knob to scroll through the entries and select the list entry to delete.

4 A long push to the "RCNT" pushbutton deletes the selected list entry.



ICN-55939-1000092366-001-01

Figure 3-47. KX 200 - NAV Menu View

(11) NAV - Menu Mode

(a) During NAV mode:

1 A long push on the "NAV" pushbutton starts the user menu.

2 Turn the right rotary knob to scroll through the entries.

3 A short push to the right rotary knob selects the highlighted entry or starts the related submenu.

a The adjustable value is shown inverted.

4 Turn the right rotary knob to adjust/select the function.

5 A short push to the right rotary knob confirms the setting.

(b) Menu content:

1 AUDIO MODE: Selection of filters for the NAV audio output.

a ID: To hear only the ident signal (Morse-code identification of the station).

b V (voice): To hear only voice (ID is cut from signal).

c No icon (audio): To hear both voice and ident signal.

2 BRIGHTNESS: Display and pushbutton brightness (Function depend on configuration).

3 SHOW ALERTS: List of NAV errors and warnings, check if errors are active.

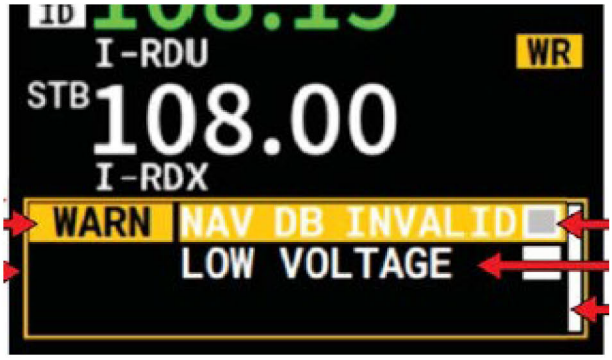
(c) Leave menu:

1 A short push on the "NAV" pushbutton leaves the menu.

a The NAV main view is shown.

ICN-55939-1000092367-001-01

Figure 3-48. KX 200 - NAV Error View



ICN-55939-1000092368-001-01

Figure 3-49. KX 200 - NAV Warning View

(12) NAV and Control Head - Error and Warning Messages

(a) The NAV error or NAV warning list comes into view if at least one COM error/warning is found.

(b) The failure messages from control head (CH) are also shown on the NAV display.

1 Error (ER) or Warning (WR) is shown on the NAV display.

2 Some messages can be reset manually.

(c) Move through the list:

1 Turn the right rotary knob to scroll through the entries.

2 A short push to the right rotary knob selects the highlighted entry.

a The adjustable entry is shown inverted.

3 A short push to the right rotary knob reset the message.

a Errors/warning messages are removed from the list if they are reset manually or are no longer active.

(d) Leave view:

1 All active acknowledgeable errors/warnings are confirmed.

2 All active errors/warnings become inactive.

(e) Possible content:

1 For details refer to Section 3, Paragrph H., Step (2).

G. Troubleshooting

(1) General:

(a) If you cannot correct the problem, stop the use of the device(s) and contact authorized maintenance shop for assistance, please.

(2) Error List

(a) For details about operation while there is an error refer to:

1 Section 3, Paragraph C., Step (3)(d) and Step (4)(d).

Table 3-1. Error List

Error/Warning List	Symptom / Action / Check
COM	
INTERNAL IC	Error: Acknowledgeable Problem communicating with internal circuits. Possible cause: - HW or SW failure inside the transceiver.

Table 3-1. Error List (Cont)

Error/Warning List	Symptom / Action / Check
RECEIVER	Error: Acknowledgeable The receiver test failed. During the test the receiver board input is disconnected from antenna. The internal loop is active. Possible cause: - HW failure inside the transceiver.
PWR SUPPLY	Error: Acknowledgeable The internal voltages are out of range. Possible cause: - HW failure inside the transceiver.
RXS LOCK	Error: Acknowledgeable The receiver's synthesizer failed to lock. Possible cause: - HW or SW failure inside the transceiver.
TXS LOCK	Error: Acknowledgeable The transmitter's synthesizer failed to lock. Possible cause: - HW or SW failure inside the transceiver.
TX POWER	Error: Acknowledgeable The power at the antenna output is too low. Possible cause: - The transmitter is damaged - The power detection circuit is damaged.
TX OVERLOAD	Error: Acknowledgeable The power at the antenna output is too high. TX overload protection procedure reduces signal power 50 times during single transmission. Possible cause: - The transmitter is damaged.
NV-MEMORY	Error: Acknowledgeable Factory setup and configuration data block missing. Possible cause: - Main board configuration data missing - Main board factory data missing - Transmitter board factory data missing - Receiver board factory data missing.

Table 3-1. Error List (Cont)

Error/Warning List	Symptom / Action / Check
DATABASE (future functionality)	Error: Acknowledgeable COM channels base data block missing. Possible cause: - Error in non-volatile memory occurs during data block initialization.
CONTROL LINK	Error: Non- Acknowledgeable Communication error with COM subsystem. Possible cause: - Problem with the interwiring - No COM power supply
PTT STUCK	Warning: Acknowledgeable Possible cause: - Transmission continues more than 35 seconds. Frequent overriding can decrease the MTBF - PTT key is stuck - PTT line permanently grounded (short circuit in installation). **NOTE :** For the start of a new transmission it is necessary to set the /PTT line inactive (open).
TX HOT	Warning: Acknowledgeable Possible cause: - Very high environmental temperature, long transmissions times and airflow conditions are not sufficient.
NAV	
NO GS	Error: Acknowledgeable GS subsystem malfunction. Possible cause: - Problem with the interwiring - HW or SW failure.
NO VOR/LOC	Error: Acknowledgeable VOR/LOC subsystem malfunction. Possible cause: - Problem with the interwiring - HW or SW failure.
NV-MEMORY	Error: Acknowledgeable (not all) Operational memory error. Possible cause: - HW or SW failure.

Table 3-1. Error List (Cont)

Error/Warning List	Symptom / Action / Check
DATABASE (future functionality)	Error: Acknowledgeable NAV channels base data block missing. Possible cause: - Error in non-volatile memory occurs during data block initialization.
CONTROL LINK	Error: Non- Acknowledgeable Communication error with NAV subsystem. Possible cause: - Problem with the interwiring - No NAV power supply.
NAV FAILURE	Error: Non- Acknowledgeable NAV subsystem malfunction. Possible cause: - HW or SW failure.
NV-MEMORY	Error: Non- Acknowledgeable (not all) Factory setup data block missing. Possible cause: - Main factory data missing.
CALIBRATION	Error: Non- Acknowledgeable The GS subsystem is in calibration mode; the analog output is not reliable. Possible cause: - SW failure.
NAV MAINTENANCE	Warning: Acknowledgeable Non-critical issue in the device. Possible cause: - Operation log section is incorrect - Temperature sensor malfunction - Defensive software restart error - Communication error with NAV subsystem.
CH (on NAV error screen)	
CH MAINTENANCE	Error: Acknowledgeable Non-critical issue in the device. Possible cause: - The internal voltages are out of range - Light sensor malfunction - Error in non-volatile memory.

Table 3-1. Error List (Cont)

Error/Warning List	Symptom / Action / Check
CH NV-MEMORY	Error: Acknowledgeable Communication error in non-volatile memory Possible cause: - HW or SW failure.
CH OVERHEAT	Warning: Acknowledgeable The head temperature has exceeded 100 degrees Possible cause: - Very high environmental temperature - HW failure.