



**UNIVERSAL** AVIONICS  
SYSTEMS CORPORATION

# ***OPERATOR'S MANUAL***

---

## **RADIO CONTROL UNIT**



The information contained herein is subject to the Export Administration Regulation ("EAR"), 15 C.F.R. Parts 730-774. Diversion contrary to U.S. law is prohibited.

This publication is available at [www.uasc.com](http://www.uasc.com).

© 2004, 2013 UNIVERSAL AVIONICS SYSTEMS CORPORATION  
ALL RIGHTS RESERVED

**UNIVERSAL** AVIONICS  
SYSTEMS CORPORATION

3260 E. Universal Way  
Tucson, AZ 85756-5097 USA  
(520) 295-2300 (800) 321-5253

Report No. 23-80-01.01  
15 November 2013



## **APPLICATION**

---

This Operator's Manual,  
**23-80-01.01**  
is applicable to all

RADIO CONTROL UNIT (RCU)  
possessing:

**Software Control Number (SCN) 1016.X**

Refer to approved  
Airplane Flight Manual Supplement  
for certified version.











## LIST OF EFFECTIVE PAGES

---

<b>Page No.</b>	<b>Date</b>	<b>Page No.</b>	<b>Date</b>
Cover.....	11/15/13	15.....	11/15/13
Application-i .....	11/15/13	16.....	11/15/13
ROR-1 .....	11/15/13	17.....	11/15/13
ROTC-1 .....	11/15/13	18.....	11/15/13
ROTC-2 .....	11/15/13	19.....	11/15/13
LOEP-1.....	11/15/13	20.....	11/15/13
LOEP-2.....	11/15/13	21.....	11/15/13
TOC-1.....	11/15/13	22.....	11/15/13
TOC-2.....	11/15/13	23.....	11/15/13
TOC-3.....	11/15/13	24.....	11/15/13
1.....	11/15/13	25.....	11/15/13
2.....	11/15/13	26.....	11/15/13
3.....	11/15/13	27.....	11/15/13
4.....	11/15/13	28.....	11/15/13
5.....	11/15/13	29.....	11/15/13
6.....	11/15/13	30.....	11/15/13
7.....	11/15/13	31.....	11/15/13
8.....	11/15/13	32.....	11/15/13
9.....	11/15/13	33.....	11/15/13
10.....	11/15/13	34.....	11/15/13
11.....	11/15/13	35.....	11/15/13
12.....	11/15/13	36.....	11/15/13
13.....	11/15/13	37.....	11/15/13
14.....	11/15/13	38.....	11/15/13
		39.....	11/15/13
		40.....	11/15/13
		41.....	11/15/13
		42.....	11/15/13
		43.....	11/15/13
		44.....	11/15/13
23-80-01.01			LOEP-1
15 November 2013			

<b>Page No.</b>	<b>Date</b>	<b>Page No.</b>	<b>Date</b>
45 .....	11/15/13	78 .....	11/15/13
46 .....	11/15/13	79 .....	11/15/13
47 .....	11/15/13	80 .....	11/15/13
48 .....	11/15/13	81 .....	11/15/13
49 .....	11/15/13	82 .....	11/15/13
50 .....	11/15/13	83 .....	11/15/13
51 .....	11/15/13	84 .....	11/15/13
52 .....	11/15/13	85 .....	11/15/13
53 .....	11/15/13	86 .....	11/15/13
54 .....	11/15/13	87 .....	11/15/13
55 .....	11/15/13	88 .....	11/15/13
56 .....	11/15/13	89 .....	11/15/13
57 .....	11/15/13	90 .....	11/15/13
58 .....	11/15/13	91 .....	11/15/13
59 .....	11/15/13		
60 .....	11/15/13		
61 .....	11/15/13		
62 .....	11/15/13		
63 .....	11/15/13		
64 .....	11/15/13		
65 .....	11/15/13		
66 .....	11/15/13		
67 .....	11/15/13		
68 .....	11/15/13		
69 .....	11/15/13		
70 .....	11/15/13		
71 .....	11/15/13		
72 .....	11/15/13		
73 .....	11/15/13		
74 .....	11/15/13		
75 .....	11/15/13		
76 .....	11/15/13		
77 .....	11/15/13		

## TABLE OF CONTENTS

---

<b>APPLICATION</b> .....	<b>i</b>
<b>RECORD OF REVISIONS</b> .....	<b>1</b>
<b>RECORD OF TEMPORARY CHANGES</b> .....	<b>1</b>
<b>LIST OF EFFECTIVE PAGES</b> .....	<b>1</b>
<b>TABLE OF CONTENTS</b> .....	<b>1</b>
<b>INTRODUCTION</b> .....	<b>1</b>
General .....	1
<b>OPERATION</b> .....	<b>2</b>
Normal Display.....	2
VHF Communication (VHF COM) Radios .....	3
VHF Navigation (VHF NAV) Receivers .....	4
Distance Measuring Equipment (DME) Receivers .....	4
Automatic Direction Finder (ADF) Radios .....	4
Air Traffic Control (ATC) Transponders.....	4
Traffic Alerting and Collision Avoidance System (TCAS) Computers .....	4
RCU Operation.....	5
Control and Display.....	7
Select Knob .....	7
DETAIL Key .....	8
XTUNE (Cross Tune) Key .....	8
DME Hold Key .....	9
ID (IDENT) Key.....	9
Line Select Keys (LSKs).....	9
Brightness Control Rocker Key.....	9
ACTV (Active) Key.....	9
EMER (Emergency) Key.....	9
NEXT Key .....	10
PREV (Previous) Key .....	10
TOP Key .....	10
PRESET Key .....	10
Software CRCS.....	11
Software Version Verification.....	11
RCU Color Set .....	12
AC25.1322-1 Compliant Alerting .....	15
Direct Active Tuning.....	17
Recall/Selected Frequency Tuning .....	19
Preset Frequency Tuning.....	21
FMS Suggested Preset Frequencies.....	21

Pilot Defined Preset Frequencies.....	21
Tuning a Preset Frequency.....	22
Cross-Side (XTUNE) Frequency Tuning.....	24
TCAS/ATC Modes and Settings.....	25
Transponder Mode Selection.....	25
<b>RCU FUNCTIONS AND DISPLAYS .....</b>	<b>28</b>
RCU Preset Pages.....	28
Accessing Preset Pages.....	29
Tuning a Preset from Preset Pages.....	33
Entering and Editing Pilot-Defined Presets.....	34
Cross-Tuned Radio Preset Pages.....	36
RCU Details Pages.....	37
COM Details Page.....	38
Self-Test.....	41
NAV Radio Details Page.....	42
ADF Radio Details Page.....	43
Transponder/ATC, TCAS, Flight ID, and ADS-B Details Page.....	44
ADS-B Status Indication.....	51
Cross-Tuned Radio Details Page.....	53
COM Frequency Tuning Mode.....	55
DME Hold Function.....	57
RCU Display Information.....	60
Radio Type Identifier.....	60
Radio Side.....	61
Active Frequency.....	61
COM Frequency Tuning Mode Identifier.....	61
Page Indication.....	61
Select Box.....	62
RCL/SEL Indicator.....	62
RCL/SEL Frequency.....	62
RCL/SEL Frequency Identifier.....	62
Transmit Keyed Annunciation.....	63
Preset Number.....	63
Preset Identifier.....	63
Preset Frequency.....	63
Transponder (XPDR) Mode.....	63
TCAS Modes.....	64
ATC Code.....	64
Active Transponder Side.....	65
IDENT/REPLY Annunciator.....	65
DME Identifier.....	65

Separator Line .....	66
Communication/Frequency Identifier Acronyms .....	66
RCU Warning Annunciations .....	67
Loss of Radio Feedback .....	67
Radio Command Failures .....	71
Radio Feedback Frequency Set as Invalid .....	73
Built In Test Features .....	74
Initiated Radio Tests and Diagnostic Codes .....	76
Tuning with Failed RCU .....	77
Dual RCU Installation – Tuning With Single Failed RCU .....	77
Dual RCU Installation – Tuning With Both RCUs Failed .....	80
Single RCU Installation – Tuning With RCU Failed .....	81
<b>CLEANING</b> .....	<b>82</b>
<b>ACRONYMS</b> .....	<b>83</b>
<b>INDEX</b> .....	<b>85</b>



## **INTRODUCTION**

### **General**

This manual covers the operation of Universal Avionics Systems Corporation (UASC) Radio Control Unit (RCU).

The RCU system provides the flight crew with a primary means of controlling all onboard radios and is designed to operate in a dual or single RCU environment, providing radio tuning (frequencies and preset frequencies) and mode control functions.

The RCU is a single Line Replaceable Unit (LRU) that will tune radios that conform to Commercial Standard Data Bus (CSDB) or the Aeronautical Radio, Incorporated (ARINC) characteristic 720-1 interface standard. A Configuration Module stores operational data such as optional functions supported by installed radios, selection of side 1 or 2 radios, and other operational configuration options.

Six FMS-suggested preset frequencies are displayed for each of the VHF COM, NAV, HF, and ADF radios. FMS-suggested presets are updated periodically. The RCU also displays and tunes 18 pilot-defined preset frequencies per radio. Tuning capability includes VHF COM, VHF NAV receiver (DME, VOR, and ILS Receivers), ADF Receiver, ATC transponder, Tactical Air Navigation (TACAN) radios, Multi-Mode Receivers with Microwave Landing Systems (MMR) and TCAS computer.

## OPERATION

### Normal Display

When power is applied, the RCU will display the Top Page. The Top Page display contains the most common information needed by the flight crew during the majority of flight operations and has all primary VHF COM, VHF NAV, ADF, DME, ATC, and TCAS information that is typically needed at a glance for normal flight. When on any RCU page, pressing the TOP Key will return the RCU to the Top Page.

**NOTE:** For SCNs 1016.0.1 and earlier, displayed information may differ slightly. The display functionality is the same for all SCN formats, except as noted. The arrangement of the information has been modified to permit additional information to display.



### RCU Top Page

If more than one Top Page is present, pressing the TOP Key will display the next Top Page. When the last Top Page has been reached, pressing the TOP Key will return the display to Top Page PG 1.

For SCN 1016.0.3 and subsequent, the RCU has additional display features for single-RCU installations:

- A magenta triangle is positioned to the left of the ACTIVE indicator when side-1 (pilot side) radios are selected or to the right of ACTIVE when side-2 (copilot side) radios are selected.
- When XMIT is active for the COM radio on the side not being displayed, the RCU will annunciate COM1-TX or COM2-TX in the header accordingly. Similar to the dual-RCU installation COM radio TX indication, the RCU will flash the COM1/2-TX indication in yellow after the configured TX WARNING duration has expired and for as long as the COM radio is transmitting.
- If the RCU is configured to “blind-tune” the ADF radio, the RCU will display NO FDBK (no feedback) next to the ADF radio Type Identifier.



## VHF Communication (VHF COM) Radios

The RCU tunes VHF COM frequencies over the ranges of 118.000-135.975 MHz, 118.000-136.975 MHz, or 118.000-151.975 MHz. It also provides control of COM radio Squelch and Self-Test.

Both 25 kHz and 8.33 kHz tuning are supported. Refer to the Aircraft Flight Manual (AFM) for applicability.

## **VHF Navigation (VHF NAV) Receivers**

The RCU provides flight crew control and display of VOR and ILS frequency selection over the range of 108-117.95 MHz.

Marker Sensitivity Mode (Low/High) may be selected (see the NAV Radio Details Page section).

## **Distance Measuring Equipment (DME) Receivers**

The RCU controls two DME flight crew channels for each directly interfaced DME. When DME HOLD is selected, the RCU displays the NAV radio frequency as it is adjusted by the flight crew, but will not retune the DME in response to operator commands until DME HOLD is selected OFF.

The flight crew can initiate a DME self-test (see Self-Test in the COM Details Page section).

## **Automatic Direction Finder (ADF) Radios**

The RCU provides flight crew control and display of the ADF frequency selection over ranges of 190.0 - 1799.5 kHz and 2179.0 - 2185.0 kHz, in increments of 0.5 kHz. The RCU provides the flight crew display and control over the ADF/ANTENNA Mode Selection, Beat Frequency Oscillation (BFO), and ADF Self-Test.

## **Air Traffic Control (ATC) Transponders**

The RCU provides the flight crew display and control of active ATC Transponder selection (ATC 1 or ATC 2), ATC mode (STBY, ON, ALT), ATC code, Flight ID, ADS-B, and Self-Test

## **Traffic Alerting and Collision Avoidance System (TCAS) Computers**

The RCU provides flight crew display and control of Intruder Altitude Display Mode (Absolute and Relative), TCAS Coverage Mode (Normal, Below, Above, or Above + Below), TCAS Advisory Status (Standby, 'Traffic Advisory' only, 'Traffic Advisory and Resolution Advisory') and TCAS Self-Test.

## RCU Operation

When power is applied to the RCU, a self-test (power-up BIT) will check the RCU operational status and all LRU interfaces. Upon successful completion of the self-test, the Top Page will display. At this point, the flight crew can directly tune a frequency, recall a frequency, and/or tune a preset frequency.

Information flow on the Top Page of the RCU is setup into three columns. Each column represents an area of operation. These areas are:

- Preset Frequencies – Left column: displays the Preset Identifier, Frequency, and Preset Number for each radio.
- Active Frequencies – Center column: displays the Radio Type and the Frequency. The NAV Station Identifier is displayed next to the Active Frequency.
- Recall/Select Frequencies – Right column: displays the selected (SEL or ready-selected) or recalled (RCL, or Recall) designator and frequency for each radio. A selected or recalled frequency may be loaded in this area at any time.

For VHF COM, NAV, and ADF radios: Preset frequencies, whether suggested by the FMS or preset by the crew, appear on the left side.

For VHF COM, NAV, ADF radios, and ATC Code: Active tuned data appear in the center column.

For VHF COM, NAV, ADF radios, and ATC Code: Selected/Recall data appear on the right side.



RCU Top Page 1 Display Columns

The RCU Top Page Display separates radio information into four fields. These fields are laid out into four rows. The fields are:

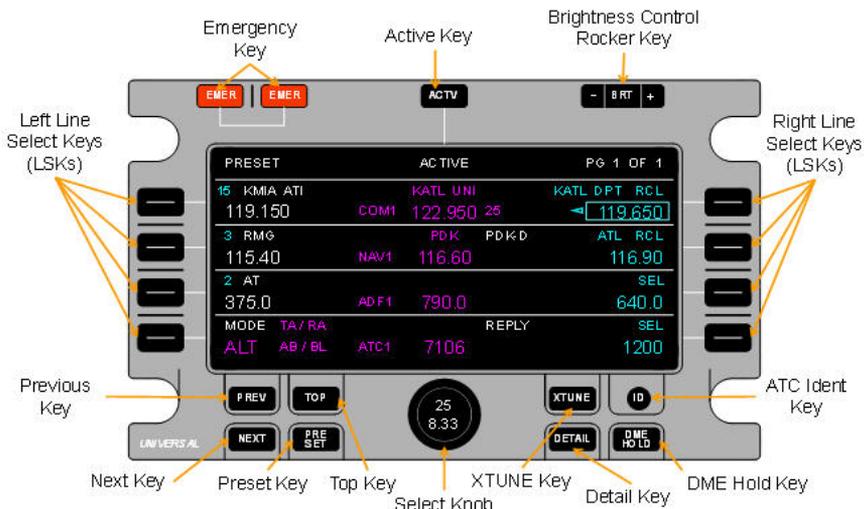
- COM Field
- NAV Field
- ADF Field
- TCAS-ATC Field



### RCU Top Page 1 Display Fields

**NOTE:** For SCNs 1016.1.0 and earlier the Radio Type identifier will appear over the frequency.

## Control and Display



### RCU Bezel Controls

#### Select Knob

The Select Knob is a Dual Concentric Knob that adjusts frequencies and sets modes. The Select Knob consists of three distinct controls:

- Outer Ring
- Inner Knob
- Com Frequency Increment Select Pushbutton (activated by pressing the Inner Knob)

Both Inner Knob and Outer Ring of the Select Knob have 32 rotational detents, but no physical stops. Both knobs operate in the same manner while being used to select radio modes or scroll through radio presets.

#### Outer Ring

The Outer Ring is used to set the left hand digits (before the decimal point) for frequencies and transponder codes, one count per detent. Also, it moves the Pilot Preset position cursor inside the frequency and identifier fields (when adjusting Pilot Presets).

## Inner Knob

The Inner Knob is used to set the right hand digit (after the decimal point) for frequencies and transponder codes. Also, selects a numeral for Pilot Preset Frequency in the position indicated by the cursor, and an alphanumeric for the Pilot Preset Identifier and Flight-ID in the position indicated by the cursor (when adjusting Pilot Presets).

## COM Frequency Tuning Mode Increment Pushbutton

The COM Frequency Tuning Mode Increment pushbutton, when pressed for a least two seconds, alternates the COM Frequency Tuning Mode Increment setting from 25kHz increments to 8.33kHz increments or vice versa. The RCU 8.33 kHz frequency incrementing is configurable. If 8.33 kHz is selected, but not configured, the RCU will briefly display a FUNCTION NOT AVAILABLE annunciator

**NOTE:** Selection box must be over a VHF Comm radio frequency field for option to activate.

## DETAIL Key

The DETAIL Key is only active on the Top Page. When pressed, it accesses the Details Page for the radio selected by the Select Box. If no radio is selected, pressing the DETAIL key will result in a NO RADIO SELECTED annunciation.

## XTUNE (Cross Tune) Key

The XTUNE Key is only active on the Top Page. When pressed, it switches the RCU into cross-tune mode. In cross-tune mode, the RCU tunes the cross-side radio VHF COM, VHF NAV, and ADF Radio's only. When the XTUNE Key is pressed again, this will switch the RCU back to the regular tuning mode.

For Example, if the Side 1 RCU is switched to cross-tune mode it will now tune the Side 2 Radio's. Once the XTUNE Key is pressed again the Side 1 RCU will tune the Side 1 Radio's.

For single-RCU installations, pressing the XTUNE Key will toggle the displayed radio side controls between side-1 and side-2.

## **DME Hold Key**

The DME Hold Key initiates or releases the DME Hold mode if an active DME is tuned. If DME Hold is selected and no DME controls are configured, the RCU will briefly annunciate FUNCTION NOT AVAILABLE.

## **ID (IDENT) Key**

The transponder IDENT (ID) Key initiates the ATC Special Position Identifier (SPI). ID Key selection is available when the RCU is displaying any page. If ID is selected and no transponder controls are configured, the RCU will briefly annunciate FUNCTION NOT AVAILABLE.

If the RCU is displaying Details or Preset Pages when the ID Key is pressed, the RCU will return to the TOP PG 1. Only the RCU where Ident has been commanded returns to the Top Page.

## **Line Select Keys (LSKs)**

The Line Select Keys (LSKs) provide selection of the adjacent radio feature on the various RCU pages. In this manual they are referenced as from upper (1) to lower (4) and designated by Right (R) or Left (L).

For Example, the LSK on the top and left of the display is referenced as LSK [1L]. The LSK on the bottom and right of the display is referenced as LSK [4R].

## **Brightness Control Rocker Key**

The Brightness Control Rocker Key adjusts the display backlight brightness. The default intensity is set to medium.

## **ACTV (Active) Key**

The ACTV (Active) Key initiates direct tuning of Active frequencies. Successive presses of the ACTV Key will move the Select Box down the Active Column.

## **EMER (Emergency) Key**

When both of the EMER Keys are pressed simultaneously, for at least one second, the RCU will tune the VHF COM RCL/SEL frequency to 121.500 MHz and the standby Transponder Code to 7700. A finger guard is located between the keys to avoid inadvertent operation.

## **NEXT Key**

The NEXT Key is used to select the next page of information or data, assuming the information or radio being viewed has more than one page. The number of pages available is indicated in the upper right corner of the LCD display.

## **PREV (Previous) Key**

The PREV Key is used to select the previous page of information or data, assuming the information or radio being viewed has more than one page. The number of pages is indicated in the upper right corner of the LCD display.

## **TOP Key**

The TOP Key is used to return to the Top Page. When pressed, the display will return to the Top Page regardless of what page the RCU is displaying.

If more than one Top Page is present, pressing the TOP Key will display the next Top Page. When the last Top Page has been reached, pressing the TOP Key returns the display to Top Page PG 1.

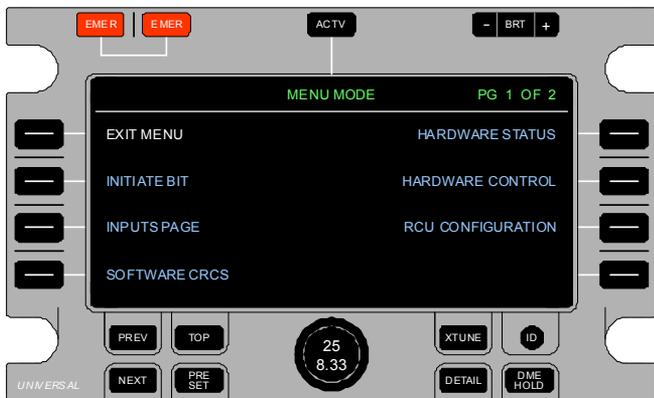
## **PRESET Key**

The PRESET Key accesses the Presets Page for the radio indicated by the cyan select box. If no radio is selected, pressing the PRESET key will result in a NO RADIO SELECTED annunciation.

## Software CRCS

### Software Version Verification

The current RCU Software Control Number (SCN) can be verified by accessing the Software CRCS page. From the Top Page, press the ACTV key and the -BRT key simultaneously to access the Menu Mode Page.



#### Menu Mode Page

At the Menu Mode page, press LSK [4L] SOFTWARE CRCS to access the Software CRCS Page.



#### Software CRCS Page

The current Software Control Number (SCN) listed under the CPU column. To return to the Top Page, press the PREV key or the TOP key to access the MENU MODE page then press the PREV key or LSK [1L] EXIT MENU.

## RCU Color Set

The RCU is designed with a specific color set. For instance, tuned frequencies and control options will be a particular color; RCL/SEL frequencies will be a particular color, etc.

**NOTE:** RCUs with SCN 1016.0.7 and later provide an additional color set in accordance with FAA Advisory Circular AC25.1322-1. Unless otherwise noted, color sets in this manual refer to the RCU basic color set. Refer to the Color Set Table below and AC25.1322-1 Compliant Alerting section of this manual for AC25.1322-1 Color Set changes.

The basic color set is:

- **Magenta:** Active and modifiable.
- **Cyan:** Selectable to modify and/or make active.
- **White:** Not modifiable, but can be selected to make active. Also used for information text.
- **Yellow:** Denotes an abnormal operating condition that requires flight crew awareness (such as cross-tune mode active, DME-Hold active, radio self-test active, radio diagnostic codes other than 00, Transponder set to STBY with the aircraft airborne, invalid frequency status, caution indications, etc.)
- **Red:** RCU confirmed failure.

Screen Information or Annunciation	Basic Color Set	AC25.1322-1 Color Set
PRESET Column Indicator	White	White
ACTIVE Column Indicator	White	White
PG X OF Y Indicator	White	White
Separator Lines	Grey	Gray
Select Box and Arrow	Cyan	Cyan
Preset Frequencies & Station Identifiers, Top Page	White	White

<b>Screen Information or Annunciation</b>	<b>Basic Color Set</b>	<b>AC25.1322-1 Color Set</b>
Preset Numbers, Top Page	Cyan	Cyan
Radio Type Identifier for Onside Radios	Magenta	Magenta
Radio Type Identifier for Cross-Tuned Radios	Yellow	Magenta
Radio Type Identifier for radio failure (tuning mismatch or no feedback)	Red	Yellow
Active Frequencies, ATC Code, and/or Modes tuned as commanded	Magenta	Magenta
Active Frequencies, ATC Code, and/or Modes tuning mismatch	Red & Dashed	Yellow & Dashed
Active Frequencies, ATC Code, and/or Modes with no radio feedback	Red & Dashed	Yellow & Dashed
Offside Active Frequencies & ATC Code with no radio feedback	Yellow	Yellow
Radio feedback of Active Frequencies / ATC Code is set as invalid	Yellow	Yellow & Dashed
Transponder Mode, set to STBY and WOW = Not on Ground	Yellow & Flashing	Yellow & Flashing
Preset Frequency Identifier in Active column	Magenta	Magenta
Preset Frequency Identifier in Active column with tuning mismatch or no radio	Red	Yellow
RCL/SEL Frequency, ATC Code and Flight ID	Cyan	Cyan
Preset Frequency Identifier in RCL/SEL column	Cyan	Cyan
Transmit Indicator (TX)	White	White
Transmit Indicator (TX) when mic keyed too long	Yellow & Flashing	Yellow & Flashing
DME Identifier	White	White
DME Hold Indicator	Yellow	White
Transponder REPLY Indicator	White	White
Transponder IDENT Indicator	White	White
Active TCAS Mode Indicator(s)	Magenta	Magenta

<b>Screen Information or Annunciation</b>	<b>Basic Color Set</b>	<b>AC25.1322-1 Color Set</b>
Active Flight ID	Magenta	Magenta
Flight-ID, inactive TCAS modes, HF OFF Indicator	Cyan	Cyan
Flight-ID OFF Indicator	Cyan	Magenta
Flight-ID mismatch or no feedback	Red	Yellow
ADS-B Fail indication, selected transponder (SCN 1016.0.7 and Later)	Yellow	Yellow
ADS-B Fail indication, unselected transponder (SCN 1016.0.7 and Later)	White	White
Preset Page Type and Radio Type text on Preset Pages	White	White
Pilot Preset Frequencies / ATC Codes & Identifiers, Preset Pages	Cyan	Cyan
Pilot Preset Identifier alphanumeric character, selected for edit	White	White
Preset Numbers, all Preset Pages	White	White
FMS Preset Page Frequencies & Station Identifiers	White	White
INACTIVE Test Status Indicator (Details Pages)	White	White
INHIBIT Test Status Indicator (Details Pages)	White	White
ACTIVE Test Status Indicator (Details Pages)	Yellow	White
NO FDBK Test Status Indicator (Details Pages)	Red	Yellow
Diagnostic Codes = "00" (Details Pages)	White	White
Diagnostic Codes ≠ "00" (Details Pages)	Yellow	White Dashes
Flight ID alphanumeric character, selected for edit	White	White
No feedback of Diagnostic Codes = "--" (Details Pages)	Red Dashes	Yellow Dashes

Screen Information or Annunciation	Basic Color Set	AC25.1322-1 Color Set
Caution Indications (XTUNE, XTUNE MSG, RCU-x XBUS, FUNCTION NOT AVAILABLE, etc.)	Yellow	White
NO FDBK Indication	Yellow	Yellow
XTUNE MSG Page Text	Yellow	White
TACAN identifiers	Yellow	White

## AC25.1322-1 Compliant Alerting

RCU software version 1016.0.7 and later provides additional display features and color changes in order to comply with AC 25.1322-1. These operations are enabled via configuration option. In general, AC 25.1322-1 prescribes what colors should be used and what information should be presented for alerts.

Information in the numbered items 1-3 below are per AC 25.1322-1:

1. **Red for warning (time critical) alert indications.**
2. **Yellow for caution-alert indications** (The alert elements used for caution are typically identical to those used for warnings, as both require immediate flight crew awareness. Some caution alerts are related to conditions that are precursors to potential time-critical warning conditions).
3. **Any color except red or green for advisory alert indications** (Advisory information should be located in an area where the flight crew is expected to periodically scan for information. Advisory information does not require immediate flight crew awareness. Therefore, it does not require alerting that uses a combination of two senses).

No failure detected and annunciated only on the RCU is considered to be time critical, requiring immediate action by the flight crew. When AC 25.1322-1 compliant alerting is enabled, red alert indications are changed to yellow.

No failure detected and annunciated only by the RCU requires immediate pilot awareness. RCU detected failures are not considered to be cautionary either. However, AC 25.1322-1 does not exclude the use of yellow for advisory alert indications. When AC 25.1322-1 compliant alerting is enabled, yellow is used for RCU detected failures alert indications. Yellow is also used for the XPDR "STBY" mode selection indication when airborne (an abnormal operating condition). This should not be easily confused with failure indication.

When AC 25.1322-1 compliant alerting is enabled, the use of yellow for infrequently used control indications (XTUNE, DME Hold, etc.) is changed to white to avoid confusion with RCU detected failure alert indications. White is used for alert indications that occur through the normal course of events during flight, such as XPDR "REPLY", COM "TX", displayed DME identifiers, etc. remains unchanged.

The RCU displays alert messages on radio Details Pages in a consistent format with content that includes the following three elements when AC 25.1322-1 alerting operations are enabled:

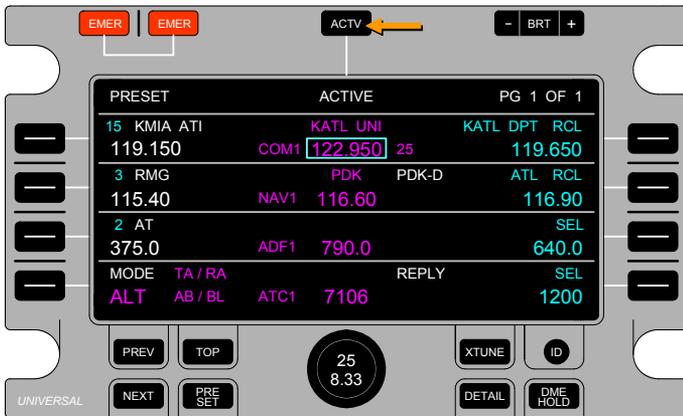
- The general heading of the alert (COM, NAV, etc.).
- The specific subsystem or location (1, 2, 3).
- The nature of the condition (for example, FAIL, INVALID, MISMATCH, etc.).

In accordance with AC25.1322-1, alert messages displayed by the RCU Details pages can be inhibited manually by the flight crew.

## Direct Active Tuning

The RCU provides the capability to tune the active frequency from the Top page. The following section relies on the Top Page to set the frequency.

Pressing the ACTV Key causes the Select Box to appear around the ACTIVE COM frequency.



The flight crew can tune a new frequency by rotating the Select Knob. Rotating the Outer Ring of the Select Knob changes the left-hand digits (before the decimal point) of the COM frequency. Rotating the Inner Knob changes the right-hand digits (after the decimal point) of the COM frequency.



When the Select Box is moved to the Active COM frequency, pressing the ACTV Key again will move the Select Box down to the Active NAV Radio frequency. The NAV Radio frequency can now be direct-tuned with the Select Knob as previously described with the COM frequency.



With each subsequent press of the ACTV Key, the Select Box will move down the Active Column to the next selection. At any of these selections (Active COM, Active NAV, Active ADF, or Active TCAS/ATC) frequencies can be tuned in the same manner described for Active COM Frequency.

With TCAS/ATC selected, pressing the ACTV Key will return the Select Box to the top of the Active Column at Active COM Frequency.

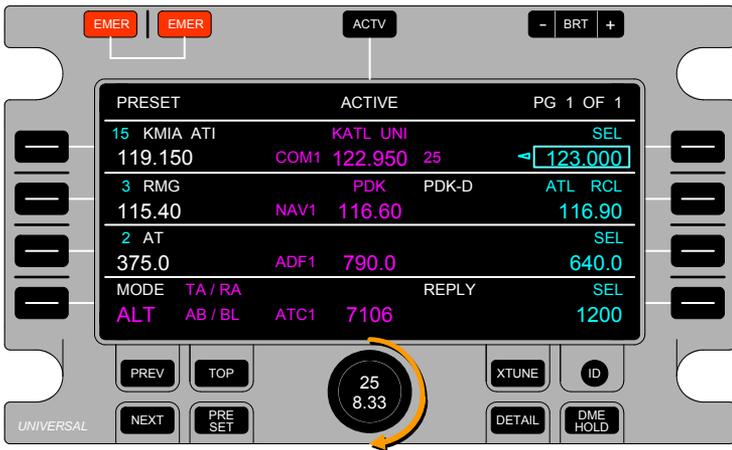
## Recall/Selected Frequency Tuning

The Recall/Selected column holds the last active frequency or holds a frequency for future use.

Press LSK [1R] to move the Select Box to the COM Frequency Recall/Selected column (if the Select Box is not already there).



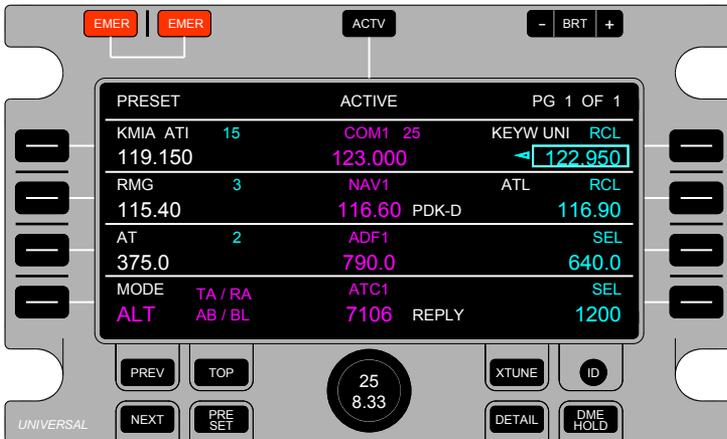
The frequency in the RCL/SEL column can be changed if needed. Once the frequency is changed, it will be labeled SEL (Selected).



Press LSK [1R] to swap the Active COM with the SEL COM frequency.



Once the Active and Selected frequencies are swapped, the frequency in the RCL/SEL column will be labeled RCL. If needed, the flight crew can switch the frequencies back by pressing LSK [1R].



NAV and ADF frequencies can be tuned in the same manner described for COM frequency.

## Preset Frequency Tuning

The RCU provides tuning for six FMS Suggested Preset Frequencies for each VHF COM, NAV, and ADF radio. The RCU also displays and tunes up to 18 Pilot-Defined Preset Frequencies per radio for a total of up to 24 Preset frequencies with compatible FMS or 18 without.

### FMS Suggested Preset Frequencies

Preset Frequencies 1-6 are FMS Suggested frequencies. These Presets are updated periodically by the FMS.

FMS Suggested Frequencies and associated preset numbers display on Preset Page 1. If no reference FMS is selected or FMS data is not received, the RCU does not display these presets. Therefore, when the preset key is pressed, Preset Page 2 is displayed with Pilot-Defined Preset frequencies 7-18.

### Pilot Defined Preset Frequencies

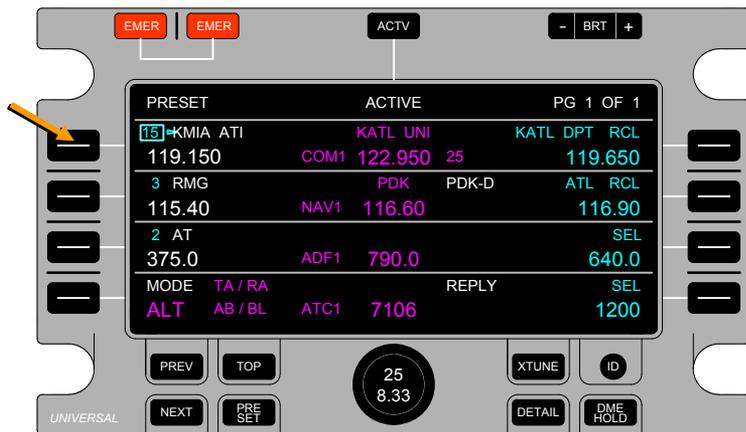
Preset Frequencies 7-24 are Pilot-Defined radio frequencies. These Presets are created and edited by the user and stored in non-volatile memory. Presets 7-12, 13-18, and 19-24 are displayed on Pages 2, 3, and 4 respectively.

Pilot-defined presets contain the frequency, identifier, and preset number. The preset number is assigned numerically. The pilot alphanumeric identifier can contain up to 8 characters.

The Pilot-Defined Presets are loaded in the PRESET, ACTIVE, and RCL/SEL fields as is done with FMS suggested presets. Refer to the Operation section for further information.

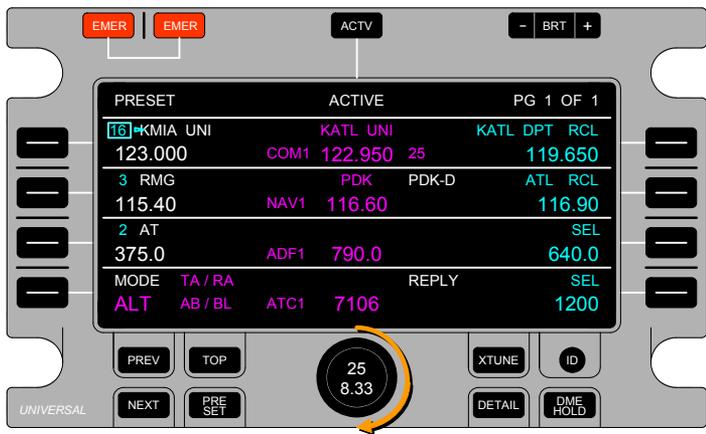
## Tuning a Preset Frequency

Pressing the associated LSK brings the Select Box to the selected COM, NAV, or ADF Preset Number. For Example, Pressing LSK [1L] will move the Select Box to the COM Preset Number.

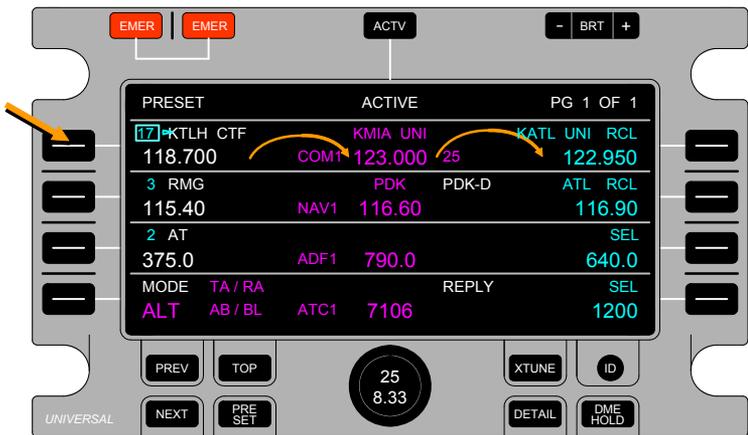


The Select Box does not appear on the COM frequency because the frequency is not adjustable from the Top Page. All available presets can now be selected by turning the Select Knob (Both the Inner Knob and Outer Ring can be used).

A clockwise (CW) turn of the Select Knob will increase the Preset Number until it reaches 18 or 24 if the RCU is receiving the FMS Suggested Preset Frequencies. Turning the Select Knob counterclockwise (CCW) decreases the Preset Number. Unless the RCU is configured, the Preset Numbers do not wrap; the user can only increase the Preset Number to 18 or 24 respectively, and decrease the Preset Number to 1. If the RCU is configured to wrap through numerical selections, a CW turn of the Select Knob while on Preset 18 or 24 will bring up Preset 1, and the same applies for a CCW turn for Preset 1 to Preset 18 or 24.



Pressing LSK [1L] moves the COM Preset frequency to Active COM frequency and the previously Active COM frequency to the RCL/SEL column.

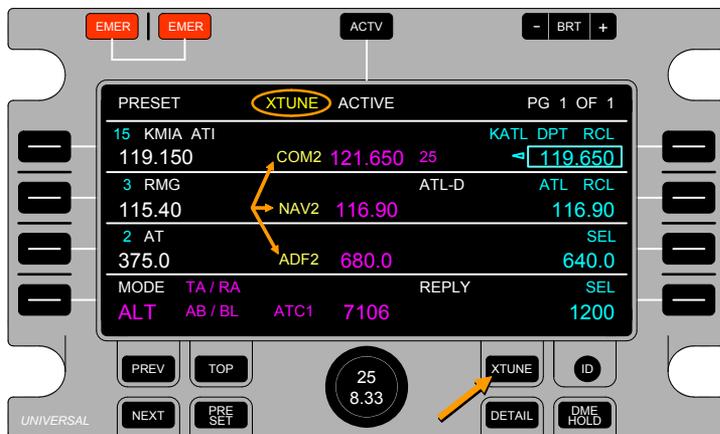


The RCU will automatically select another preset to be displayed. If the next sequential Preset is 2-6 (FMS suggested), the next sequential preset will display. If the next sequential Preset is 7-24 (Pilot preset) then Preset 1 will display. This is because tuning of FMS Suggested Presets always cycles through the presets.

NAV, ADF, and ATC (on the ATC Preset page) can be tuned in the same manner as described for the COM frequency.

## Cross-Side (XTUNE) Frequency Tuning

When the XTUNE Key is pressed, tuning for all VHF COM, VHF NAV, and ADF radio is switched to the next offside group (offside ATC control is not available to XTUNE operations). The Radio Indicators will reflect the radio numbers the RCU is controlling. In the following example, the Side 1 RCU (Captains/Left) is indicating control of the Side 2 (Co-Pilot/Right) Radios.



If a particular aircraft installation has only one radio of a particular type, both RCUs will share control of that radio and display the same indications. When XTUNE is selected, there will be no change in operation or display of the radio shared by all sides.

If the aircraft has only a single RCU installed it will be RCU1. Pressing XTUNE will allow setting of the second set of radios.

Once XTUNE is selected, the flight crew can tune the selected radio as described in the Direct Active Tuning, Recall/Selected Frequency Tuning, and Preset Frequency Tuning sections in this chapter.

## TCAS/ATC Modes and Settings

The last line of the Top Page display is the Transponder Field. The Transponder Mode field contains the ATC Mode, TCAS Vertical Coverage Mode, TCAS Advisory Mode, and ATC Transponder side number and Code.

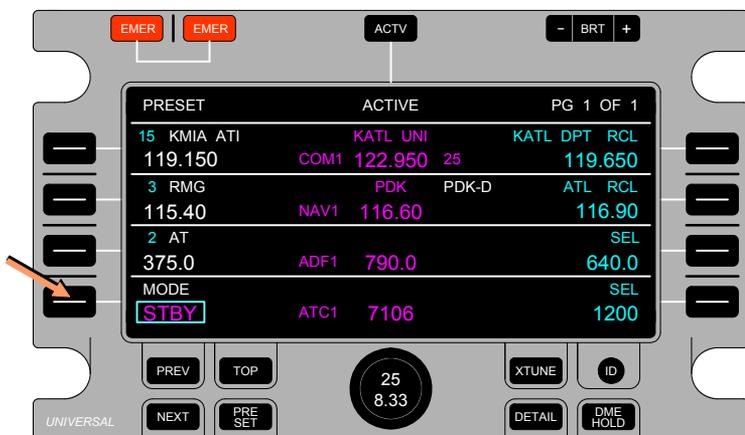
The area next to LSK [4L] displays the Transponder Mode. The Transponder Mode is displayed as STBY (Standby), ON (Transponder On), or ALT (Transponder On with Altitude reporting). The TCAS Vertical Coverage Mode and Advisory Status is displayed next to the Transponder Mode. TCAS Vertical Coverage Mode is displayed as NORM (Normal), BLW (Below), ABV (Above), or AB/BL (Above and Below). TCAS Advisory Status is displayed as STBY, TA only, or TA/RA. If TCAS is off, this field is blank.

The Active Transponder Code is displayed in the active column at the center of the transponder field. The Active Transponder Side is displayed above the Active Transponder Code.

The area adjacent to LSK [4R] displays the last active Transponder Code in the RCL/SEL column. This code can be recalled or changed and selected in the same manner described in the Recall and Selected Frequency Tuning section of this manual.

### Transponder Mode Selection

Pressing LSK [4L] causes the Select Box to appear around the Transponder Mode.



The Transponder Modes can be switched by subsequent presses of the LSK [4L] Key (one increment per key press). The example below shows the Transponder Mode after LSK [4L] is pressed again. Once ALT mode is reached, and LSK [4L] pressed again, the modes will wrap to the beginning of the transponder modes (STBY).



Also, the Select Knob can be used to change Transponder Modes (one increment per knob detent). The example below shows the Transponder Mode when the Select Knob is turned to the next detent.

When using the Select Knob to select transponder modes, the modes will not wrap through. This allows for quick selection of STBY and ALT modes.



The following table is a list of available Transponder Modes and indications. The Transponder Modes are the same for aircraft that require or do not require TCAS controls.

Transponder Mode Indication	Transponder Mode
STBY	Standby
ON	Transponder ON
ALT	Transponder On with Altitude Reporting. TCAS mode indicators are displayed on the Top Page, if configured

For aircraft that require TCAS controls, TCAS mode selections are available on the ATC Details Page. TCAS Vertical Coverage and Traffic/Resolution Advisory mode settings are indicated on the Top Page next to the Transponder Mode.

When the RCU detects the aircraft is airborne and the Transponder Mode is set to STBY, the RCU annunciates an abnormal condition by indicating the Transponder Mode flashing in Yellow.



## RCU FUNCTIONS AND DISPLAYS

### RCU Preset Pages

The RCU can be used to store up to 18 Presets for the COM, HF, NAV, ADF, and TACAN radios, and up to 6 preset frequencies for the TCAS/ATC Transponder. These Presets remain stored within the RCU in which they are entered. When set to XTUNE, the presets are not transferred to the Offside RCU.

The FMS determines and sets frequencies and identifiers for Presets 1 through 6 for COM, NAV, and ADF radios. These are called "Suggested Presets." The FMS Suggested Presets are displayed on Page 1 of the Preset Pages. The FMS transmits the 6 FMS Suggested Presets (per radio) and the RCU displays the presets on Preset Page 1. When the FMS updates the list of FMS Suggested Presets, the RCU updates the associated Preset Page and the Top Page immediately. The FMS suggested frequencies and identifiers are displayed in white to indicate that they cannot be modified.

Presets 7 through 24 for COM, NAV, and ADF, and Presets 1 through 6 for the TCAS/ATC transponder, are programmable presets. These programmable presets can be created or edited on the Pilot-Defined Preset Page.

There are 4 Preset Pages for COM, NAV, and ADF. Preset Page 1 shows the frequency and identifier for Preset Frequencies 1 thru 6, which are the FMS Suggested Frequencies. Preset Page 2 shows the frequency and identifier for Preset Frequencies 7 thru 12. Preset Page 3 shows the frequency and identifiers for Preset Frequencies 13 thru 18. Preset Page 4 shows the frequency and identifiers for Preset Frequencies 19 thru 24.

There is only 1 Preset Page for TCAS/ATC. Unlike the COM, NAV, and ADF Presets, there are no FMS Suggested Presets and only six Pilot Defined Presets. Preset Page 1, shows the frequency and identifier for Preset Frequencies 1 thru 6.

When the RCU is displaying a radio's Preset Page, pressing the **DETAIL** key will drive the RCU to display that same radio's Details Page, and vice-versa. For the COM, NAV, and ADF radios, the Select Box will remain around the same field in the Radio Window when moving between the Details and Preset pages. When the Select Box is located outside the Radio Window, it will be dropped when moving between the Details and Preset Pages.

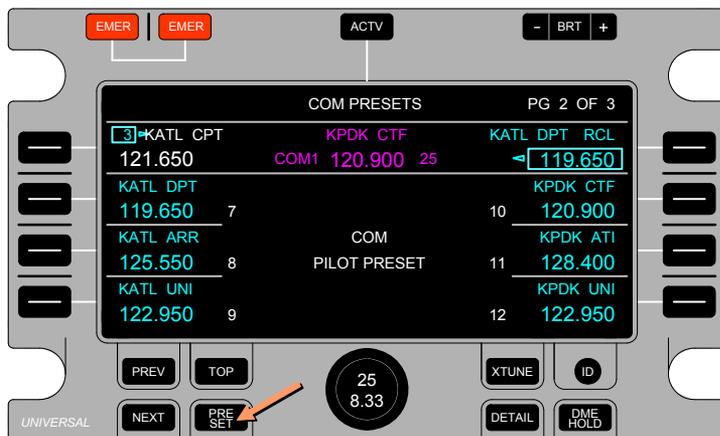
The RCU display will return to the Top Page after the Top Page Timeout expires (if configured) or when the **TOP** key is pressed on any Preset Page. In addition, pressing the **PREV** Key when on Preset Page 1 of (X) pages will cause the RCU to display the Top Page. Upon exiting the Preset Page to display the Top Page, the Select Box will locate to the homing position. Select Box homing does not occur on any Preset Page.

### Accessing Preset Pages

Preset Pages can be accessed by placing the Select Box in the radios field and pressing the **PRESET** Key. In the following example, the Select Box is in the COM field highlighting the RCL/SEL frequency.



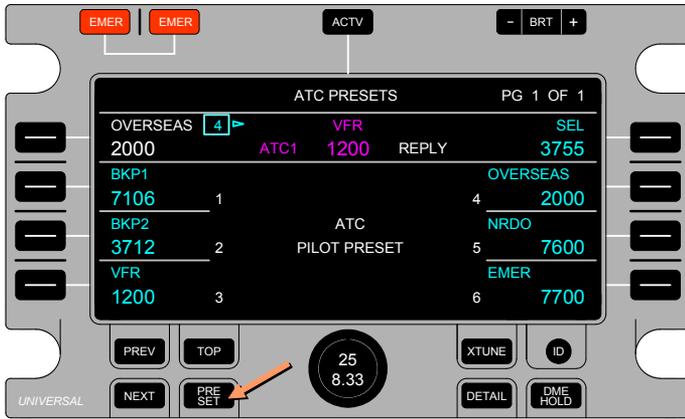
When the PRESET Key is pressed, the RCU will display the COM Preset Page 2.



The RCU displays Preset Page 2 because page 2 is the first page of Pilot Defined Presets and page 1 contains FMS Suggested Frequencies that are not editable by the flight crew.

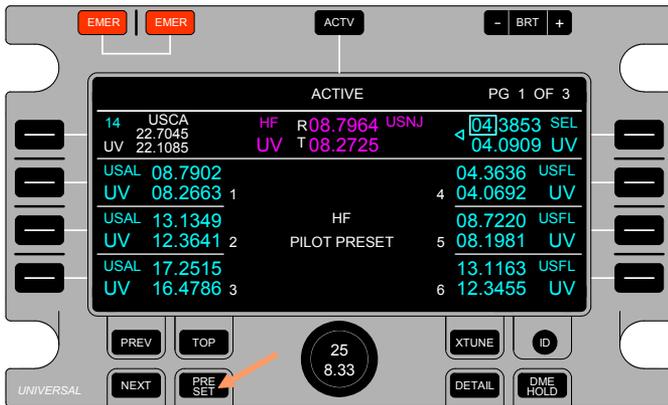
Preset Page 2 allows the flight crew to view, tune, and edit Preset Frequencies 7 thru 12. Preset Page 3 allows the flight crew to view, tune, and edit Preset Frequencies 13 thru 18. Preset Page 4 allows the flight crew to view, tune, and edit Preset Frequencies 19 thru 24. Preset Page 1 allows the flight crew to view and tune Preset Frequencies 1-6.

The NAV and ADF radio Preset Pages can be accessed in the same manner as previously described for the COM Preset Pages. Since there are only six ATIS Preset codes there will only be one page of preset codes displayed.



### ATC Preset Page

HF and TACAN Preset Pages are likewise accessed in the same manner as the COM Preset Page; however, Preset PG 1 is the first page displayed.



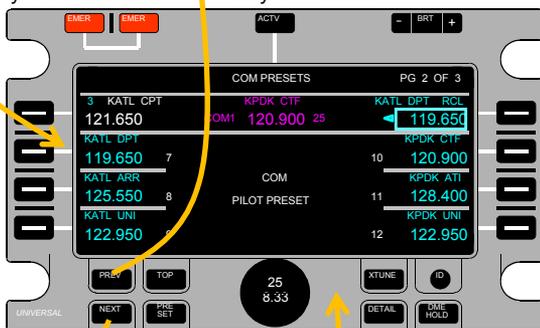
### HF Preset Page

When on a Preset Page, all other Preset Pages are accessible by using the PRESET, NEXT or PREV keys. There is a wrap through option on the Preset Pages. If Preset Page 1 is displayed, and the NEXT Key is pressed, Preset Page 2 will be displayed. If the NEXT Key is pressed while on the last Preset Page, the RCU will wrap through to Preset Page 1. On Page 1 pressing the PREV Key will display Top Page.



When NEXT Key Is Pressed

When PREV Key Is Pressed



When NEXT Key Is Pressed

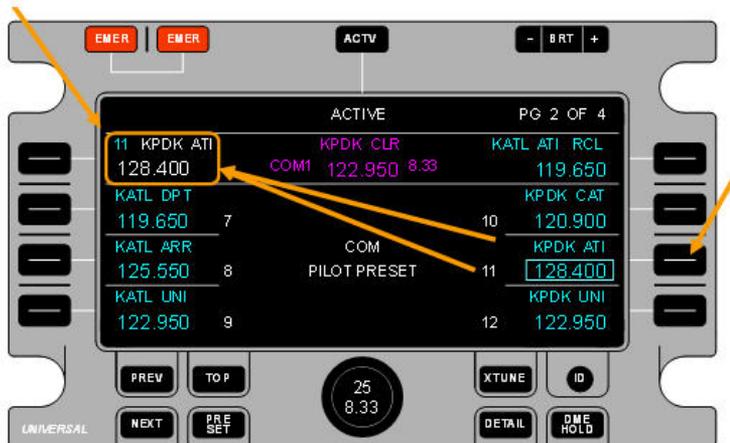
When PREV Key Is Pressed



## Tuning a Preset from Preset Pages

To tune a Preset frequency from a Preset Page, press the LSK next to the Preset. The Preset is then loaded into the radio window Preset field. Tuning is accomplished in the same manner as tuning a Preset frequency from the Top Page. See the Preset Frequency Tuning section of this manual.

Preset Field



Once tuned, press the LSK next to the Preset field. The first key press will move the select box to surround the Preset number. The second key press will tune the Preset to active (center column).

**NOTE:** The RCU will load the Suggested Presets on the Suggested Preset Pages. The Suggested Presets cannot be edited. Once a Suggested Preset is in the radio window Preset field press the LSK [1L] key once to tune the Preset to Active.

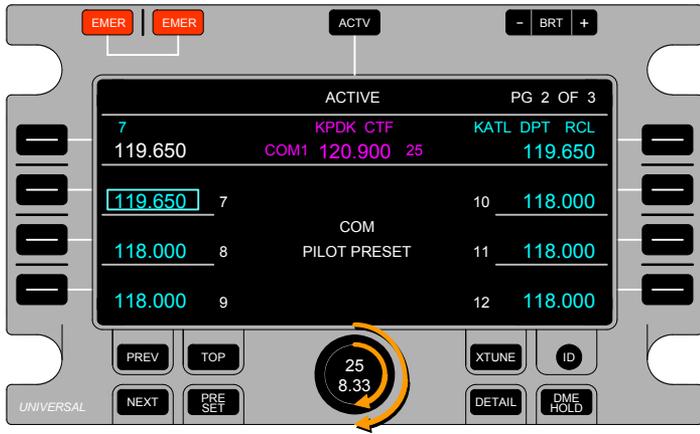
## Entering and Editing Pilot-Defined Presets

Pilot Defined Preset frequencies and identifiers are programmed and stored within the RCU, and are not lost after cycling power. Until a preset frequency is entered, the frequency is set to the lowest possible frequency tunable by the radio: 118.000 for COM, 108.000 for NAV, and 190.0 for ADF. The ATC Preset Codes are set to 1200. All Preset Frequency Identifiers remain empty until entered.

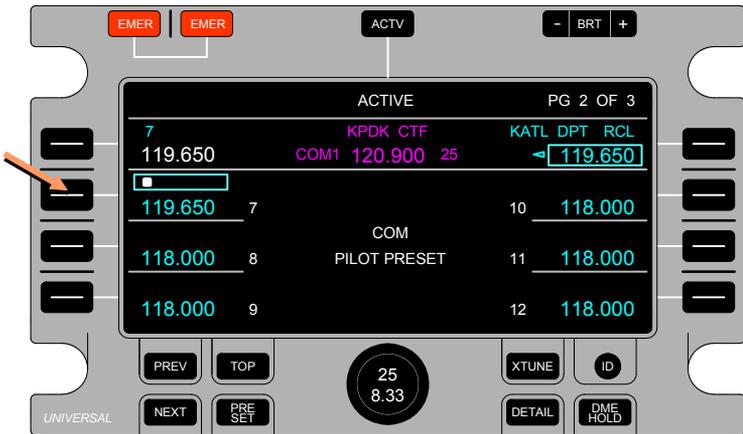
For Preset Pages 2 and 3, when an LSK associated with a particular Pilot Defined Preset is pressed, the Select Box displays around the frequency adjacent to the LSK, indicating that a Pilot-Defined Preset Frequency is now selected.



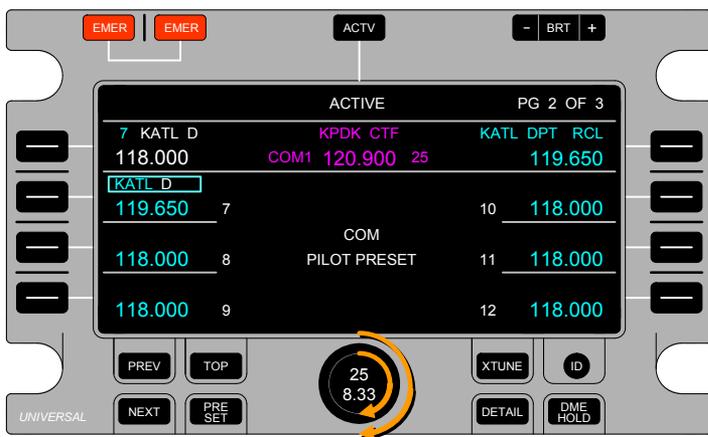
With the desired Pilot-Defined Preset Frequency selected, the frequency can be edited by rotating the Select Knob. The Outer Ring changes the left-hand digits (before the decimal point) and the Inner Knob changes the right-hand digits (after the decimal point). If the field is empty, the lowest possible radio frequency displays after the first rotation detent of the Select Knob. Continuous or subsequent rotations increment the desired Pilot-Defined Preset Frequency.



Once the Preset Frequency is set, pressing the same LSK moves the Select Box to the associated Pilot-Defined Preset Identifier. This indicates that the Identifier is selected.



The character that can be changed is highlighted with white; other characters are cyan. The Inner Knob changes the selected alphanumeric character. The alphanumeric list does feature a wrap through option. The Outer Ring selects the next or previous character position, one detent knob rotation moves one character left or right in the identifier field. The Preset Frequency Identifier Field does not wrap through. The maximum length of the identifier field is eight characters; this includes alphanumeric characters and spaces.



To save the Preset Frequency and Identifier, press the associated LSK. This saves the preset data. Pressing any other LSK or function key ends the edit session and removes the Select Box from the preset field.

NAV, ADF, and ATC presets can be entered and edited in the same manner as described for COM frequency.

## Cross-Tuned Radio Preset Pages

When the RCU is set to cross-tune mode, by pressing the XTUNE key, the RCU will allow access to the RCU Preset Pages in the same manner as previously described.

**NOTE:** For dual RCU installations the RCUs do not share the Pilot Defined Presets or FMS Suggested Presets. For example, if Side 1 RCU is set to cross-tune it will still have Sides 1 presets. Side 2 presets can only be accessed and tuned from the Side 2 RCU.

## RCU Details Pages

Details Pages are available for all radios. A radio's Details Page is accessed by placing the Select Box within the associated Radio Window on the Top Page and then pressing the DETAIL Key.

Details Pages allow the flight crew to set specific radio options. The common methods of selection are the same for all Details Pages for all radios. These Details Pages can be tailored (through configuration options) to each individual radio manufacturer and type of radio, since the radio controls can vary.

**NOTE:** Radio self-test control and status is provided for all radios, and is not configurable. For instance, one COM radio may implement a squelch function differently than another COM radio from another manufacturer.

When the RCU is displaying a radio's Details Page, pressing the PRESET key will drive the RCU to display that same radio's Preset Page and vice-versa. For the COM, NAV, and ADF radios, the Select Box will remain around the same field in the Radio Window when moving between the Details and Preset Pages. When the Select Box is located outside the Radio Window, it is dropped when moving between the Details and Preset Pages.

Pressing either the TOP Key or the PREV Key when on any Details Page drives the RCU to display the Top Page. Upon exiting a Details Page to the Top Page, the Select Box will locate to the homing position. Select Box homing does not occur on any Details Pages.

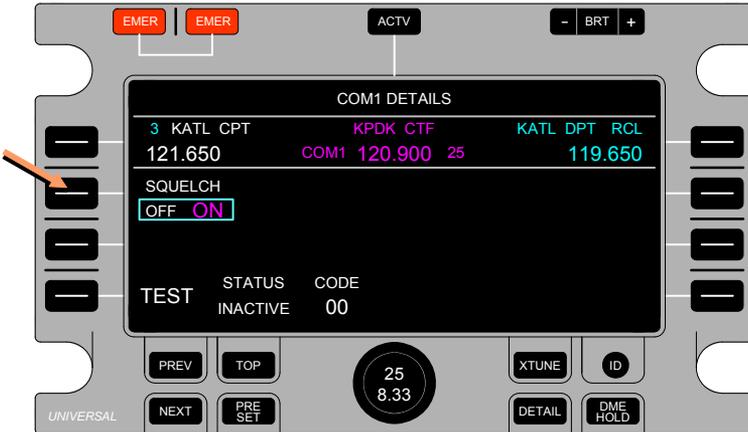
The Top Page Radio Window is retained on the associated radio Details Page below the header. When the radio Details Page is selected, the Select Box is kept in the Radio Window in the same field as is done for Preset Page selection.

## COM Details Page

The COM Radio Details Page can be accessed by placing the Select Box in the COM Field and pressing the DETAIL key, The COM Radio Details Page provides for Squelch setting and COM Radio self-test.



When LSK [2L] is pressed, a cyan Select Box appears around the Squelch ON OFF states. Squelch is ON, as indicated by the large magenta text. OFF is available as indicated by the small white text.



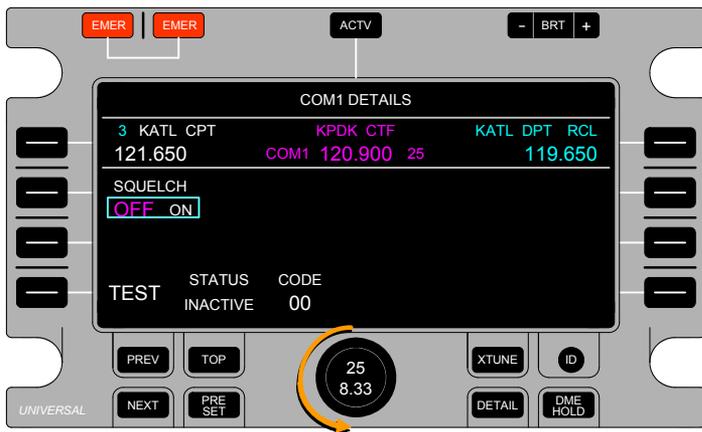
The Squelch State can be changed in one of two ways. The First method is by successive presses of LSKs (LSK [2L] in this case) associated with the State. When LSK [2L] is pressed, the State changes to the other allowable state (OFF). If LSK [2L] is pressed again, the state will change to the next available state (ON).



The other method of changing States is by turning either the Inner Knob or the Outer Ring one detent CW will select the next available State.



There is no wrapping to the leftmost State when the most rightward State is selected. Likewise, turning either the Inner Knob or the Outer Ring one detent CCW will select the next-leftward available State, with no wrapping.



RCUs can be configured to provide tune control to a third COM radio. To bring up the Details Page for a COM3 radio:

1. Move the Select Box to the COM3 radio window.
2. Press the DETAIL key. The COM3 radio Details Page will display.

**NOTE:** COM3 radio Details Page operations work the same as COM1 operations.

## Self-Test

When the LSK next to TEST is pressed, the RCU will command the radio to initiate a self-test. Self-tests initiated by the TEST LSK for NAV, ADF, and ATC/TCAS work the same.

1. Press and release TEST, LSK [4L]. ACTIVE in yellow will show under STATUS. If configured for AC25.1322-1, ACTIVE will show in white.



**NOTE:** When the radio has completed the self-test, the RCU will change the Test Status indication from ACTIVE to INACTIVE (even if LSK [4L] is still being pressed). This allows the person initiating the test to see that it is complete.

The RCU continuously indicates the received radio Diagnostic Code, regardless of Test Status. When the RCU receives the radio Diagnostic Code 00 (no fault), the RCU will display that code in white. When the RCU receives any other code, it will display that code in yellow when configured for the basic color set or in white when configured for AC25.1322-1 color set.

## NAV Radio Details Page

The NAV Details Page provides radio control options and test selections for both NAV and DME radios.



NAV Radio options can be switched in the same manner discussed for the COM Radio.

**NOTE:** The DME radio diagnostic code is derived from the RCU-tuned DME channel. When NAV and DME self-testing is inhibited, the RCU displays the INHIBIT Test Status.



### Marker Sensitivity

Marker sensitivity (MRKER SENSITIVITY) can be toggled between LO and HI settings via the adjacent LSK (LSK [2L]).

## ADF Radio Details Page

The ADF Details Page provides radio control options for the ADF radio.



ADF Radio options can be switched in the same manner discussed for the COM Radio.

**NOTE:** For Single RCU Installation when the ADF blind-tune function is configured, the RCU does not receive diagnostic feedback indicators. Therefore the RCU does not display ADF self-test information.



## Transponder/ATC, TCAS, Flight ID, and ADS-B Details Page

The ATC & TCAS Details Page provides control options for the Transponder, TCAS and Flight ID.

The ATC & TCAS Radio Details Page can be accessed from the Top Page by placing the Select Box in the Transponder/TCAS Field and pressing the DETAIL key.



The Transponder/TCAS Details Page setup has some differences from the COM, NAV, and ADF radio Details Pages.

The ATC Mode is positioned adjacent to LSK [1L]. It can be selected for edit by pressing LSK [1L], and adjusted by subsequent pressing of the LSK [1L] key or using the Select Knob as on the Top Page.

**NOTE:** When the ATC mode is set to ALT the RCU displays transponder reported Altitude. If the transponder feedback is invalid, the altitude readout and ALT indicator will display in yellow.

**NOTE:** When the ATC mode is set to STBY or ON TCAS, mode indications are not displayed. The TCAS modes can be preset, but will be inactive until the transponder is switched to ALT mode.

The following is an example of the Transponder / TCAS Details Page without TCAS configured.



For dual RCU installations, both RCUs provide control of the active transponder and implement the last set code, regardless of installation side.

TA/RA & NORM indicators shown as removed from the ATC Radio Window when ATC mode is set to STBY or ON.

When ATC mode is set to STBY or ON, ATC Reported Altitude is not displayed.

Inactive TCAS mode settings shown in cyan.



The Select Box will appear around the Active Transponder Side Select field whenever the ATC Details Page is selected. The active transponder side selection is available only on the ATC Details Page.

For the line of text with transponder control options next to LSK [2L], the first key press of LSK [2L] will activate the cyan select box around the transponder modes. A subsequent key press of LSK [2L] will activate the control option left of the active control option. When using these LSKs, the RCU wraps the state changes.

The Flight ID Details page can be accessed either by pressing LSK [3L] next to FLIGHT ID; or by pressing NEXT, PREV, or DETAIL to reach Page 2.

On the Flight ID Details page Characters can be edited using the rotary knob. Blank Space character positions are indicated with an underscore ( \_ ).

Turning the Inner Knob selects which character position will be edited.

Turning the Outer Ring CW edits the characters in this order: Blank Space, A-Z, 0-9. Turning the Outer Ring CCW has the reverse effect.



While the select box is located on the Standby Flight ID, pressing the associated LSK will activate the Standby Flight ID. The last Flight ID is now stored as the RCL Flight ID in the Recall/Select column.



The RCU will display the new active ID for two seconds after it is first commanded, and after that it shows the ID as fed back from the transponder. Failure to receive the same ID as commanded will result in the RCU displaying the fed-back ID in red and dashed out. ATC RTI and the ACTIVE ID status indicators are also shown in red.

**NOTE:** Refer to the Color Set Table in this manual for color references applicable to AC25.1322-1 configured installations.



The active Flight ID can be directly edited by using the ACTV Key to move the Select Box around the active Flight ID.



Use the Select Knob to set the Flight ID. The last commanded Flight ID is retained in the Recall column and will not change until the Select Box has been moved away from the active Flight ID position.



### To Clear the Standby or Active Flight ID:

1. Move the Select Box over the Standby or Active Flight ID.
2. Press the LSK by CLEAR ID (LSK [5L]).
3. The Flight ID in the Select Box will highlight in white. The CONFIRM CLEAR indication will also highlight in white inside a Select Box. CLEAR ID changes to CANCEL to allow cancelling of the Clear ID operation.
4. Press the LSK next to CONFIRM CLEAR (LSK [5R]) to complete the Flight ID Clear operation.

**NOTE:** Pressing any other key cancels the Flight ID Clear operation.



The RCU also has a Flight ID clearing function that can be enabled during configuration. This feature will clear the Active Flight ID when the RCU is powered up and W.O.W. is enabled, during configuration, and set.

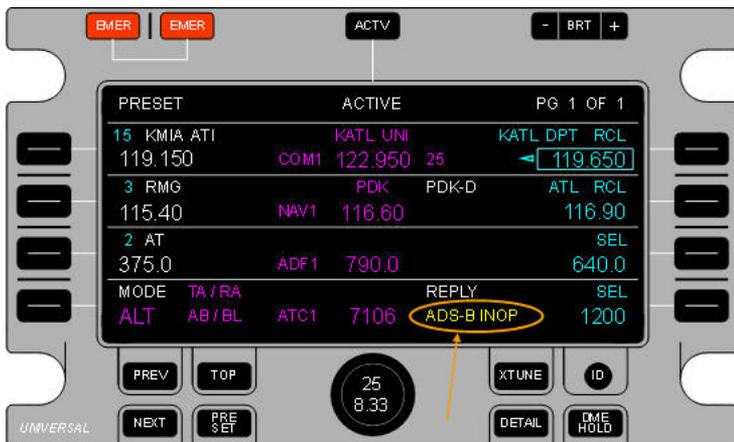
Flight ID can be turned on and off by pressing the LSK next to FLIGHT ID/OFF ON (LSK [2R]). The first press of the LSK moves the Select Box to the Flight ID OFF/ON function. Subsequent pressing of the LSK switches the Flight ID off and on. The display will indicate that Flight ID is off and the RCL field will be blank.



## ADS-B Status Indication

The RCU has additional display features for ADS-B Out capable transponders. The RCU supports reporting to the flight crew a loss of ADS-B data transmission in the event one of the systems provided data to the ADS-B transponder is off, fails, or if the transponder itself has a failure that affects aircraft flight data transmission.

In the following example, the selected & active transponder is reporting a loss of ADS-B data to the RCU. The RCU displays ADS-B INOP as a yellow caution/advisory alert annunciator to the flight crew in the transponder radio window on top of the area where a Flight-ID is normally displayed.



When this occurs, the flight crew can select the other transponder to resume normal ADS-B flight operations.

In the event the unselected/inactive transponder loses ADS-B data, the RCU provides an ATCx ADS-B as a white advisory alert annunciator over where the Flight ID is normally displayed in the transponder window after the aircraft has landed.

**NOTE:** The x following ATC in the annunciation is blank for a single transponder installation, 1 or 2 for the dual transponder installation.



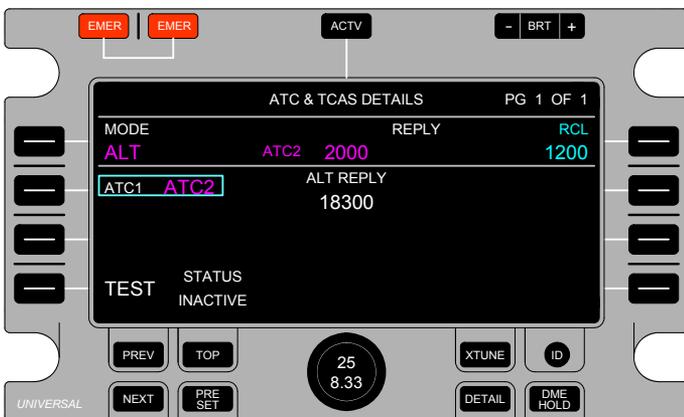
## Cross-Tuned Radio Details Page

The RCU allows access to the offside radio Details Pages when in the cross-tune mode. All radio controls are the same for the cross-tuned radio. The active offside radio will be indicated in Yellow for basic color set, or in Magenta when configured for AC25.1322-1 color set.

**NOTE:** For dual RCU installations, the RCUs do not provide offside radio Diagnostic Code reporting; the RCUs do not share that information.



When the offside transponder is set as the active transponder the RCU will not display diagnostic codes on the ATC & TCAS Details page.

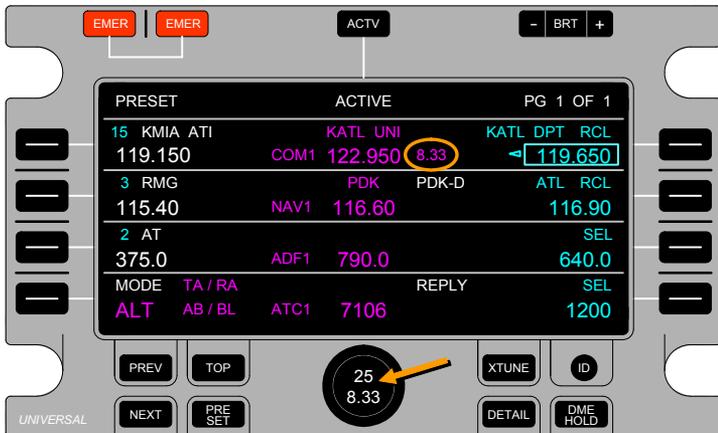


**NOTE:** For a single radio installation with a dual RCU installation, the offside RCU provides all the same radio controls. However, the offside RCU does not provide radio Diagnostic Code reporting. The RCUs do not share that information.

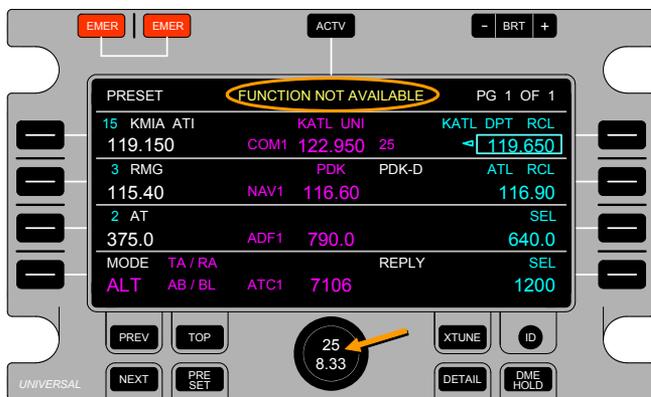


## COM Frequency Tuning Mode

The RCU supports tuning 25 kHz frequency spacing and 8.33 kHz frequency spacing. To change the COM Frequency Tuning Mode, press the COM Frequency Mode pushbutton at the center of the Select Knob for at least a half second. The COM Frequency Mode Tuning Identifier will change to either 8.33 or 25. The COM Frequency Tuning Mode indication does not provide an indication of the type of active COM frequency. It is only used to inform the flight crew of how frequencies will increment when tuning a COM frequency with the Select Knob. If an 8.33 frequency is tuned as the active COM frequency while in 25 mode, the RCU will not change to 8.33 mode. Also, changing the COM Frequency Tuning Mode will not cause changes in any COM frequencies.



When the RCU is installed in an aircraft with COM radios that do not support or are not configured for 8.33 Frequency Selection Mode, pressing the pushbutton at the center of the Select Knob (with the Select Box in the COM Radio Window) will cause the RCU to display a FUNCTION NOT AVAILABLE annunciation over the COM Radio Type Identifier and the COM Frequency Selection Mode Identifier for 4 seconds.

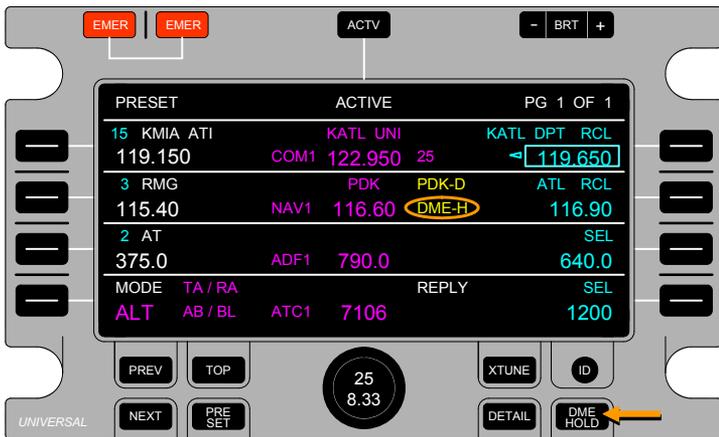


The RCU will prevent attempts to tune an 8.33 kHz COM Preset Frequency to a COM radio that does not support 8.33 kHz tuning. If an 8.33 kHz COM Preset Frequency is set in the Preset column and the adjacent LSK pressed such that the frequency would otherwise be tuned to the COM radio not capable of 8.33 kHz tuning, the RCU will reject the selection and display FUNCTION NOT AVAILABLE in the header for 4 seconds.

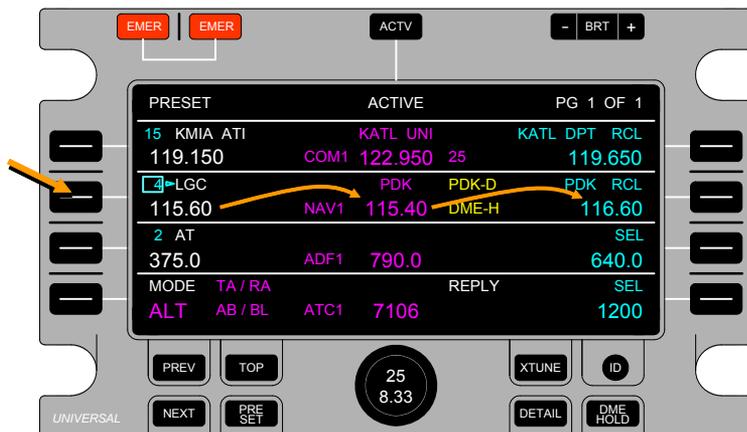
## DME Hold Function

The DME Hold feature freezes the NAV-DME paired frequencies that are active at the time the DME HOLD key is pressed. This condition is maintained until the DME Hold is released.

When the RCU is in a DME Hold condition, a yellow DME-H annunciator will display to the right of the active NAV frequency. If configured for AC25.1322-1 color set, the DME-H annunciator will be displayed in white. In this state, the NAV frequency can be tuned away from the original DME-paired frequency while the DME signal is held.



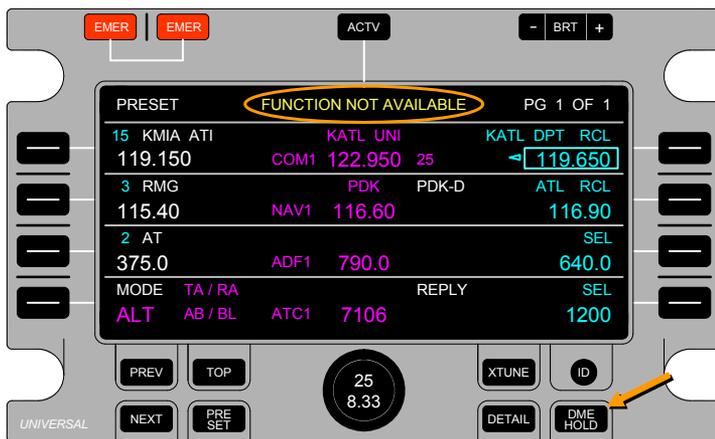
In this example, the NAV Preset radio frequency (115.40) is selected, but the old NAV-DME paired frequency is held, and the old DME Station Identifier is still displayed below the DME-H indicator.



The old NAV frequency is now listed as RCL in the RCL/SEL column. When the DME HOLD Key is pressed again, the RCU drops the held DME frequency (and associated identifier), the RCU tunes the DME to the current NAV Radio frequency and the DME Hold indicator is removed.

When a DME Hold condition is initiated, only the onside radio group is affected. If the offside RCU is operating in a cross-tune mode, that RCU will indicate DME Hold (DME-H) as well.

If an RCU is installed in an aircraft that does not support DME tuning, pressing the DME HOLD key will cause the RCU to display FUNCTION NOT AVAILABLE



**NOTE:** For a Single RCU installation only the DME displayed is held when DME HOLD is pressed.

## RCU Display Information

The following is a list of RCU attributes and their descriptions.



**NOTE:** Refer to the above figure for the following items descriptions in this section.

**NOTE:** Refer to the Color Set Table in this manual for color references applicable to AC25.1322-1 configured installations.

### Radio Type Identifier

The Radio Type Identifier shows the radio type of the controlled radio (COM in this example). The Radio Type Identifier is displayed in magenta unless the radio has failed or the RCU is in cross-tune. In that case, the RCU will display the Radio Type Identifier in red for a detected failure, or yellow when set to cross-tune. This is true for all radios. The following is a list of radio type identifiers; these identifiers will be followed by a side number indicating radio group:

- COM (VHF Communication Radio)
- NAV (VHF Navigation Radio or DME radio)
- ADF (Automatic Direction Finding Radio)
- ATC (Transponder and TCAS)

## Radio Side

The Radio Side shows the radio position of the controlled COM, NAV, and/or ADF radios (side 1 in this example), unless there is only one of a particular type of radio installed. For single radio installations, there will not be a number beside the Radio Type Identifier (ADF in this example). Each RCU shares control of the radio and enacts the last pilot or co-pilot set control option or frequency, regardless of installation side (RCU synchronization is accomplished through the RCUs' cross-talk bus). The Radio Side is displayed in the same color as the Radio Type Identifier. This is true for COM, NAV, and ADF radios.

## Active Frequency

The Active Frequency is displayed in magenta when tuned. If the RCU is no longer receiving feedback from the radio, the RCU will display the commanded frequency and Radio Type Identifier in red. As long as the RCU is receiving radio feedback, the Active Frequency is indicated in magenta for up to 2.0 seconds after tuning and remains magenta if tuned successfully. Afterwards, if the radio feedback frequency disagrees with RCU commanded frequency, the RCU will display the radio feedback frequency and Radio Type Identifier in red. If the radio feedback indicates the frequency is invalid, the RCU will display the feedback frequency in yellow. This is true for all radios.

## COM Frequency Tuning Mode Identifier

The COM Frequency Tuning Mode Identifier indicates COM tuning is set to 8.33 kHz increment spacing or 25 kHz increment spacing.

## Page Indication

Page Indication is shown in the header of all RCU pages (except Details Pages) with PG X OF Y, X being the active page number and Y being the total number of pages available for that function.

## Select Box

The cyan Select Box is moved to a radio field by pressing the adjacent Line Select Key (LSK) or the ACTV Key. However, when the RCU is configured to not provide any control for a radio type the cyan select box cannot be placed in that Radio Window. Select Boxes also have arrows pointing to the field to which the value (in this case, a frequency) will be loaded when the adjacent LSK is again pressed.

The automatic movement of the cyan Select Box to a configured field is called *Select Box Homing*. The cyan Select Box homes after the configured period of time of inactivity has elapsed. The homing positions available for configuration on the RCU includes the COM Preset field, NAV Preset field, COM RCL/SEL field, NAV RCL/SEL field, Off Screen, or No Homing.

## RCL/SEL Indicator

The COM, NAV and ADF radios and Transponder have a RCL/SEL Designator. The RCL/SEL Designator will change based on whether the frequency is actually the last tuned frequency to be recalled or whether it is merely a selected frequency. The two possible states are:

- **SEL-** if a frequency is programmed (set) by the flight crew (through the use of the Select Knob) and is ready to be activated when pushed to the ACTV window. Setting a SEL frequency causes the RCU to dispose of the last RCL/SEL frequency.
- **RCL-** if the displayed frequency was the last active frequency before tuning another frequency from the PRESET or RCL/SEL fields. The RCU will not save the last active frequency when the new active frequency is directly tuned in the active field or remotely tuned via the FMS.

## RCL/SEL Frequency

Each of the COM, NAV, ADF, and Transponder radios has a RCL/SEL frequency/code.

## RCL/SEL Frequency Identifier

Each of the COM, NAV, and ADF radios can have a Recall Frequency Preset Identifier if the last tuned frequency was selected from the radios list of Presets and had a Preset Identifier.

## Transmit Keyed Annunciation

The Transmit Keyed Indicator TX is displayed next to the associated COM Radio Type Identifier whenever transmitting on that radio. After the configured TX WARNING duration has expired, the TX indication will flash yellow and will continue flashing until the microphone is no longer keyed.

## Preset Number

Each of the COM, NAV, and ADF radios has a Preset Number for each Preset.

## Preset Identifier

Each of the COM, NAV, and ADF radios has a Preset Identifier of up to 8 characters (if generated by the FMS or entered by the flight crew).

## Preset Frequency

Each of the COM, NAV, and ADF radios has a Preset Frequency (if generated by the FMS or entered by the flight crew).

## Transponder (XPDR) Mode

Both RCUs indicate the active transponder's mode setting. If the RCUs no longer receive feedback from the selected transponder, the RCUs will display the commanded mode and Radio Type Identifier in red. As long as the RCU is receiving feedback from the selected transponder, the transponder mode is indicated in magenta for up to two seconds after setting and remain magenta if set successfully. However, when the transponder mode is set to STBY and the aircraft is airborne, the RCU will display STBY in yellow and flash. If the transponder mode feedback disagrees with RCU commanded mode, the RCU will display the feedback mode and Radio Type Identifier in red.

The transponder mode is set in the active transponder by the inside RCU. For dual-transponder systems, the inactive transponder is always commanded to standby by the other RCU.

**NOTE:** Both RCUs provide control of the active transponder and implement the last set mode, regardless of installation side. Control synchronization is accomplished through the RCUs' cross-talk bus.

## TCAS Modes

If the TCAS display controls are configured, the RCU will show the TCAS Vertical Coverage Mode and the Traffic/Resolution Advisory in magenta. TCAS display controls are accessible on the TCAS Details Page. Traffic/Resolution Advisory control options are:

- STBY
- TA (Traffic Advisory only)
- TA/RA (Traffic Advisory and Resolution Advisory)

TCAS Vertical Coverage control options are

- NORM (Normal)
- BL (Below)
- AB (Above)
- AB/BL (Above and Below)

## ATC Code

The ATC Code is displayed in magenta when the RCU commanded code has been accepted by the transponder. If the RCUs no longer receive feedback from the selected transponder, the RCUs will display the ATC Code and Radio Type Identifier in red. As long as the RCU is receiving feedback from the transponder, the ATC Code is indicated in magenta for up to two seconds after setting and remains magenta if set successfully. If the transponder feedback code disagrees with RCU commanded code, the RCU will display the feedback code and Radio Type Identifier in red. If the RCU is no longer receiving feedback from the selected transponder, the RCU will display the commanded code and ATC label in red. If the active transponder feedback indicates the code is invalid, the RCU will display the commanded transponder code in yellow.

**NOTE:** Both RCUs provide control of the active transponder and implement the last set code, regardless of installation side. Control synchronization is accomplished through the RCUs' cross-talk bus.

## Active Transponder Side

For dual-transponder aircraft, the Active Transponder Side number indicates which transponder has been selected to be the active transponder (side 2 in the example). Because only one transponder can be active, both RCUs provide shared control of the active transponder (RCU synchronization is accomplished through the RCUs' cross-talk bus). Selecting the active transponder is provided for on the ATC Details Page, and is not affected by XTUNE mode selection.

## IDENT/REPLY Annunciator

The IDENT/REPLY Annunciator is displayed next to the ATC Code to show the reply status of the transponder.

- REPLY in white is displayed whenever the transponder indicates it is replying to an interrogation. When the transponder indicates it is replying, the RCU will display the REPLY indication for at least 0.3 seconds. In this way, the flight crew can be assured of the proper operation of the transponder. After 0.3 seconds elapse, the RCU will immediately remove the REPLY indication when the transponder indicates it is no longer replying.
- IDENT in white is displayed for 15 seconds after a special position identifier (SPI) event is commanded and received by the transponder (initiated by the pilot pressing the IDENT key on the RCU). The IDENT indication supersedes the REPLY indicator.

**NOTE:** The transponder indicates back to the RCU only when IDENT is being commanded by the RCU and does not indicate the IDENT status for the duration of that function. The 15-second display period is solely a function of the RCU and was selected to match the length of time the transponder should IDENT. Consequently, the flight crew is not guaranteed that the display of IDENT on the RCU is indicative of the actual transponder status.

## DME Identifier

The DME Identifier is shown adjacent to the active NAV frequency when provided by the DME and data status is valid. The identifier is displayed in white and is followed by a "-D" to indicate the identifier is from a DME station.

## Separator Line

Separator Lines are grey dividers that provide visual separation of Radio Windows on the Top Page, control fields on Details Pages, and preset fields on Preset Pages.

## Communication/Frequency Identifier Acronyms

<b>Acronym</b>	<b>Communication Type</b>
ACC	Area Control Center
APP	Approach Control
ARR	Arrival Control
ASO	Automated Surface Observation System
ATI	Automatic Terminal Information System (ATIS)
AWO	Automatic Weather Observing System
CLD	Clearance Delivery
CPT	Clearance Pre-Taxi
CTL	Control
DEP	Departure Control
DIR	Director (Approach Control Radar)
EFS	Enroute Flight Advisory Service
FSS	Flight Service Station
GND	Ground Control
INF	Information
MUL	Multicom
RDO	Radio
RDR	Radar
RMP	Ramp/Taxi Control
RSA	Airport Radar Service Area (US Class C Airspace)
TCA	Terminal Control Area (US Class B Airspace)
TWR	Tower
UNI	Unicom

## RCU Warning Annunciations

The symbols and annunciations provided by the RCU display are designed to provide effortless identification and to enhance situational awareness. Annunciations are color coded to coincide with the applicable condition. Because no TCAS feedback is received, TCAS controls are excluded from the following section.

**NOTE:** Refer to the Color Set Table in this manual for color references applicable to AC25.1322-1 configured installations.

### Loss of Radio Feedback

During normal operational circumstances (and two seconds after last pilot interaction), the RCU displays active radio data as fed back from the radio. Whenever there is a loss of radio feedback, the RCU displays the Radio Type Identifier and active commanded radio settings in red on any page where the those settings are displayed. Additionally, the frequency is dashed-out. The RCU provides the red indications until feedback is received. However, such failures do not inhibit attempts to retune a radio.

Some possible causes for loss of radio feedback are radio shutdown, complete radio failure, radio output port failure, and RCU input port failure.

In the following example, the RCU indicates it is not receiving COM radio feedback.

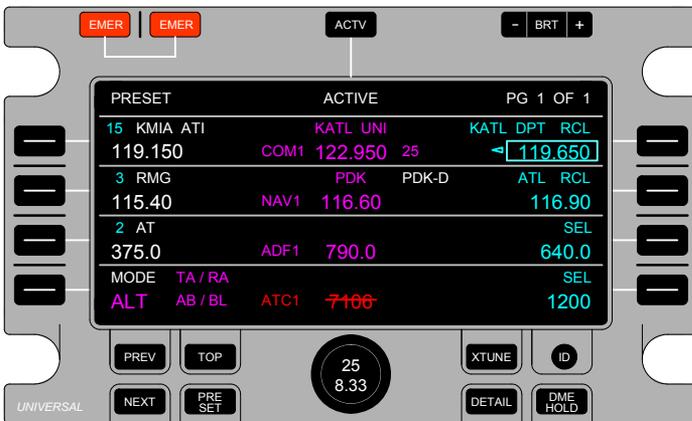


On the radio Details Page, the RCU indicates NO FDBK under STATUS and displays radio control option active setting(s) that are normally fed-back to the RCU from the radio all in red. In the following example, the COM Details Page is selected and the RCU is indicating it is not receiving COM radio feedback.

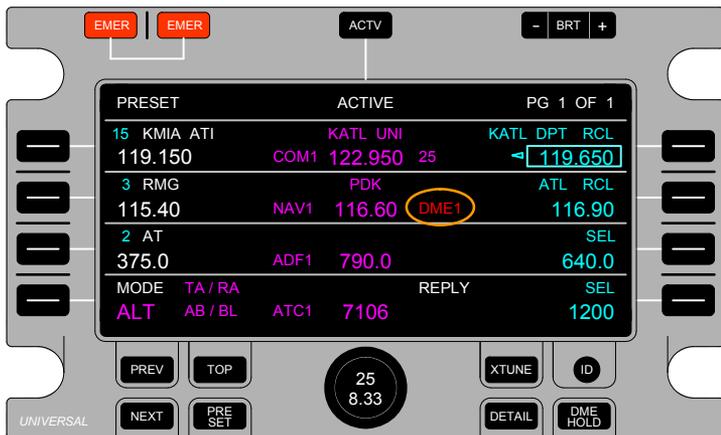
**NOTE:** The COM radio does not provide Squelch status feedback, so the control option selection remains in the normal color.



Active ATC feedback failure results in similar indications as the COM feedback failure. Whenever the RCU does not receive feedback from the active transponder, the RCU displays a Transponder Type Indicator (the active commanded Code dashed-out and the set Mode in red).



A loss of DME radio feedback will drive the RCU to display a failure annunciator next to the NAV Radio Type Identifier in red (see the following example).



When the RCU is set to cross-tune, loss of radio feedback to the cross-side RCU is indicated by displaying the cross-side radio active commanded settings in red on any page. In the following example, the cross-tuned RCU indicates a loss of NAV radio feedback.



## Loss of Unused Transponder Bus Communications

If the RCU does not receive any communication from the unused transponder (the transponder opposite the ATC selected side) for more than two seconds, the RCU will indicate an ATC bus failure.

**NOTE:** The ATC bus failure is a lower priority than the RCU XBUS and XTUNE failures. The ATC bus failure annunciator will not appear if either the RCU XBUS or XTUNE annunciator has been activated first.



## Radio Command Failures

During normal operational circumstances, the RCU displays active radio data as fed back from the radio. As long as radio feedback is received, the RCU displays selected active radio data in the normal color while changes are being made, and does so for two more seconds after the last flight crew adjustment. After two seconds has elapsed, the RCU resumes display of the radio data feedback, which should match what is commanded by the RCU. If after two seconds the radio does not enact what is commanded by the RCU, the RCU will display the associated Radio Type Identifier and the failed setting as fed-back from the radio in red on any page where those fields are available for display. However, such failures do not inhibit attempts to retune a radio. This applies to all radios for which RCU command can be compared to radio feedback (N/A to TCAS controls, COM Squelch, etc.).

Possible causes for a radio failing to tune per RCU command include:

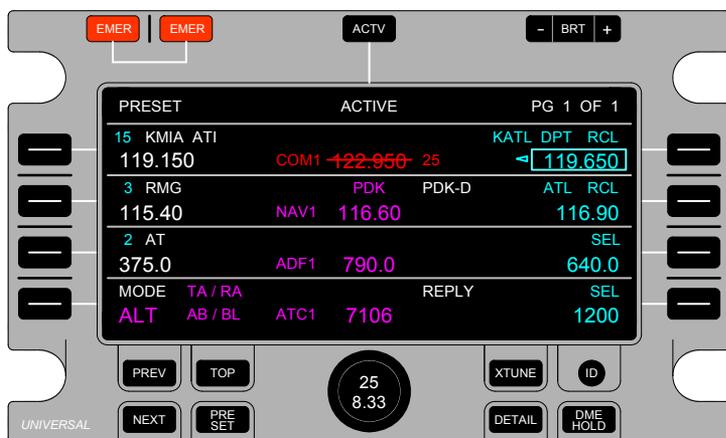
- Radio input port failure
- RCU output port failure.

In the following example, the RCU is being used to tune the ACTIVE COM frequency, and the COM radio is failing to tune the RCU commanded COM frequency.



Two seconds after the COM radio fails to tune the new frequency, the RCU will then display the COM Radio Type Identifier and COM frequency as fed-back to the RCU in red and dashed-out.

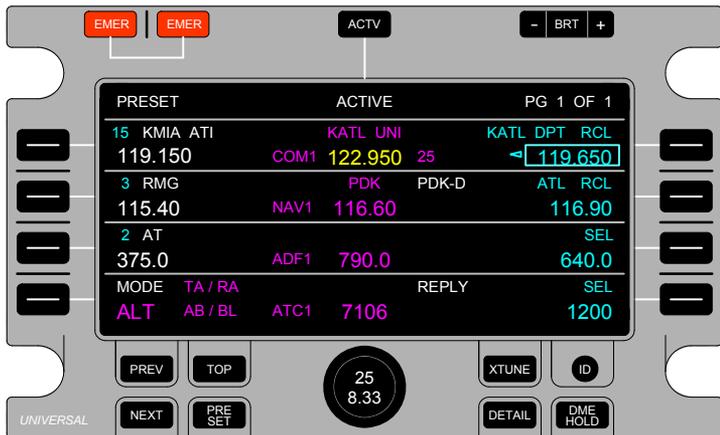
**NOTE:** Refer to the Color Set Table in this manual for color references applicable to AC25.1322-1 configured installations.



Similarly when the NAV, ADF, or ATC radio fail to tune a new frequency, the RCU will then display the Radio Type Identifier and frequency as fed-back to the RCU in red and dashed-out.

## Radio Feedback Frequency Set as Invalid

When the radio feedback frequency is set as invalid, the RCU will display the frequency in yellow (see the following example).

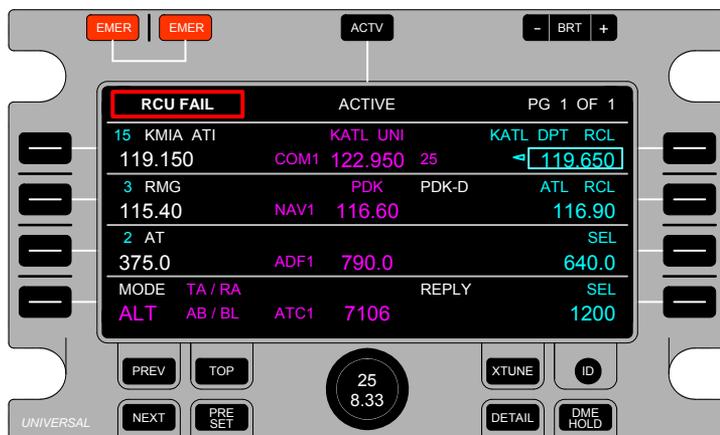


**NOTE:** Refer to the Color Set Table in this manual for color references applicable to AC25.1322-1 configured installations.

## Built In Test Features

The RCU provides Built In Test (BIT) as part of its resident software. In the event a potentially unsafe failure condition is detected by the RCU (such that valid tune command, concentrated data feedback, or tune data display for all radios could not be completely certain), the RCU will halt cross-talk communications, stop commanding the radios, and display RCU FAIL in white text with a red border in the header. For some failure conditions, the Display Backlighting will be shut off and the display will be blank.

**NOTE:** Refer to the Color Set Table in this manual for color references applicable to AC25.1322-1 configured installations.



There are three types of BIT available in the RCU: Power Up BIT (PBIT), Continuous BIT (CBIT), and Initiated (or commanded) BIT (IBIT).

**PBIT** - Engages the self-test upon power-up when the unit is not airborne to test RCU health. Upon completion, the RCU provides a FAIL status on the display if any PBIT test fails.

**CBIT** - Monitors the general health and operability of the RCU critical functions that can be continuously checked in a background mode to normal operation. CBIT tests are performed either continuously (such as the voltage monitoring), or periodically during each pass through the software's executive cycle. CBIT test may also incorporate flight crew observation of the display for detection of any display anomalies. Detected safety critical failures are annunciated on the display and non-critical failures are logged and reported at the next scheduled maintenance check.

**IBIT** - Activated in the RCU configuration pages or via the maintenance serial port for on-demand testing of the RCU. Because IBIT interrupts normal operation, it is disabled when the aircraft is airborne (this is available when the aircraft is on the ground, since access to configuration pages is limited similarly). Like CBIT, detected safety critical failures are annunciated on the display and non-critical failures are logged and reported at the next scheduled maintenance check.

The RCU also provides unit maintenance and status pages for trouble-shooting and maintenance of the unit. These pages are accessible by front panel key presses while the unit is not airborne. They contain general hardware and I/O status for debug and evaluation.

## Initiated Radio Tests and Diagnostic Codes

Radio Self-Test command, Status Indication, and Diagnostic Code display is provided only by the RCU on the same side as the radio. When the LSK next to the RCU TEST indicator is pressed the RCU will command the radio to initiate self-testing.



For radio self-testing where feedback from the onside radio is connected to the RCU (onside tuning), the RCU indicates INACTIVE Test Status in white whenever the radio indicates it is not performing self-test, and indicates ACTIVE Test Status in yellow whenever the radio indicates it is performing self-test. Under normal circumstances, pressing LSK [4L] to activate self-testing will result in an RCU ACTIVE Test Status indication. However, when the radio has completed self-testing and indicates to the RCU that it is no longer performing a self-test, the RCU will change the Test Status indication from ACTIVE to INACTIVE, even if the LSK [4L] is still being pressed. This way, the pilot initiating the radio self-test will know testing is complete.

For radio self-testing where feedback from the cross-side radio is connected to the RCU (cross-side tuning), the RCU only indicates the self-test command status (offside tuning, XTUNE, and ADF Blind tuning).

The RCU continuously indicates the received radio Diagnostic Code, regardless of Test Status. When the RCU receives the radio Diagnostic Code '00' (no fault), the RCU will display that code in

white. When the RCU receives any other code, it will display that code in yellow.

**NOTE:** Refer to the Color Set Table in this manual for color references applicable to AC25.1322-1 configured installations.

**NOTE:** Refer to the applicable radio manufacturer's operator's manual or maintenance manual for definitions of diagnostic codes.

## Tuning with Failed RCU

During normal operational circumstances, the RCU provides tune command to the onside radios. Tune command selection methods are driven by a discrete output from an RCU DISABLE switch.

### Dual RCU Installation – Tuning With Single Failed RCU

**NOTE:** To simplify failure descriptions, the following scenarios center on RCU2 failures. These descriptions are similarly applicable to RCU1 failures, except the associated side assignments are switched vice-versa for the RCU1 failed conditions.

**NOTE:** Setting the RCU DISABLE switch, if installed, to DISABLE for the failed RCU enables cross talk communications and tuning of the offside radios.

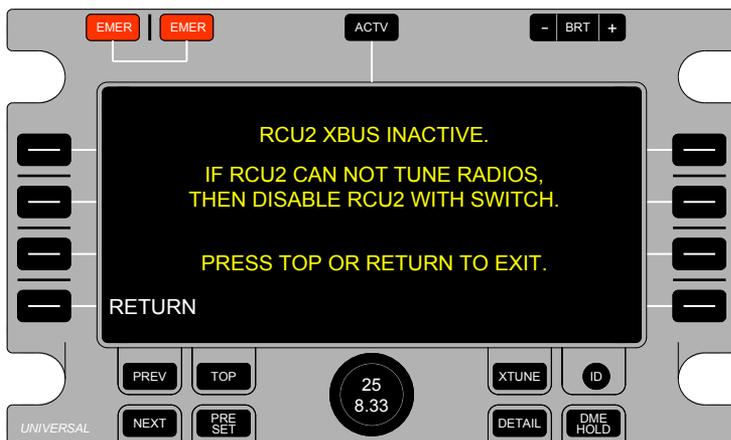
When communication is lost with a failed RCU, the remaining RCU will annunciate RCU2 XBUS and XTUNE MSG, as in the following figure.



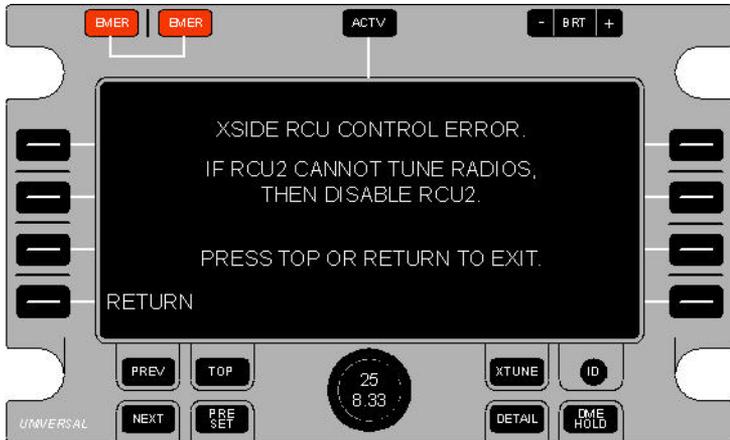
**NOTE:** The XTUNE MSG annunciator is displayed in-lieu of transponder FLIGHT-ID and ADS-B annunciators and annunciators in that field are not displayed until the XTUNE MSG annunciator is acknowledged / removed.

Press XTUNE button to see the cross tune message as in the following figure.

For SCN 1016.0.6 and earlier, the following message appears:



For SCN 1016.0.7, the following message appears:



In the following example, RCU2 is the failed RCU.

**NOTE:** RCU1 displays the RCU2 XBUS annunciation until RCU1 communications with RCU2 are reestablished or RCU2 is disabled.

**NOTE:** The RCU1 XTUNE MSG indication is presented until either RCU1 communications with RCU2 are reestablished, RCU2 is disabled, or the XTUNE INACTIVE message is selected and displayed at least once. The pilot selects the message for display by pressing the XTUNE Key.

1. Press TOP or RETURN to exit the cross tune message screen.
2. For the failed RCU, set the RCU DISABLE switch, if installed, to DISABLE.
3. Press the XTUNE button on the remaining RCU to tune cross side radios.

RCU1 removes the RCU2 XBUS annunciator, removes the XTUNE MSG annunciator, disables the XTUNE INACTIVE message, and allows use of XTUNE. However, because RCU1 will not receive feedback from the side 2 radios, the RCU displays active radio settings in yellow, and a NO FDBK annunciator to the flight crew, as illustrated in the following figure.



**NOTE:** Refer to the Color Set Table in this manual for color references applicable to AC25.1322-1 configured installations.

## Dual RCU Installation – Tuning With Both RCUs Failed

For both RCUs, set the RCU DISABLE switches, if installed, to DISABLE.

Perform radio tuning from an alternate controller.

For SCN 1016.0.3 and later, a yellow AUX TUNE message may be displayed when radio tuning is performed by an alternate controller (a CTL-23 for example). Refer to the AFM for applicability.

**NOTE:** Refer to the Color Set Table in this manual for color references applicable to AC25.1322-1 configured installations.

## Single RCU Installation – Tuning With RCU Failed

Set the RCU DISABLE switch, if installed, to DISABLE.

Perform radio tuning from an alternate controller.

For SCN 1016.0.3 and later, a yellow AUX TUNE message may be displayed when radio tuning is performed by an alternate controller (a CTL-23 for example). Refer to the AFM for applicability.

**NOTE:** Refer to the Color Set Table in this manual for color references applicable to AC25.1322-1 configured installations.



## CLEANING

The RCU does not require any routinely scheduled cleaning. However, because the display surface can be easily damaged, cleaning procedures have been included in this manual.

**CAUTION: DO NOT USE COMPRESSED AIR TO CLEAN THE RCU. DO NOT ALLOW FLUID TO MIGRATE TO THE INTERIOR OF THE UNIT.**

Clean the display surface using a Lint-Free Cloth moistened sparingly with a 50/50 mixture of Isopropyl Alcohol and water.

Dry with a Lint-Free Cloth.

## ACRONYMS

Acronym	Definition
ACC	Area Control Center
ADF	Automatic Direction Finder
ADS-B	Automatic Dependent Surveillance Broadcast
AFM	Aircraft Flight Manual
ALT	Altitude
APP	Approach Control
ARINC	Aeronautical Radio, Incorporated
ARR	Arrival Control
ASO	Automated Surface Observation System
ATC	Air Traffic Control
ATI	Automatic Terminal Information System (ATIS)
AUX	Auxiliary
AWO	Automatic Weather Observing System
BIT	Built-In-Test
CBIT	Continuous Built-In-Test
CLD	Clearance Delivery
COM	Communication Radio
CPT	Clearance Pre-Taxi
CSDB	Commercial Standard Data Bus
CTL	Control
DEP	Departure Control
DIR	Director (Approach Control Radar)
DME	Distance Measuring Equipment
DME-H	DME Hold
EFS	Enroute Flight Advisory Service
FMS	Flight Management System
FSS	Flight Service Station
GND	Ground Control
HF	High frequency
IBIT	Initiated Built-In-Test
ID	IDENT Key Label
IDENT	ATC Identification Event
ILS	Instrument Landing System

<b>Acronym</b>	<b>Definition</b>
INF	Information
kHz	Kilohertz
LRU	Line Replaceable Unit
LSK	Line Select Key
MSG	Message
MUL	Multicom
NAV	Navigation Radio or Navigation Source
NVIS	Night Vision Imaging System
NO FDBK	No Feedback
PBIT	Power-Up Built-In-test
PREV	Label for Previous (page) Key
RCL	Recall
RCL/SEL	Recall/Select
RCU	Radio Control Unit
RDO	Radio
RDR	Radar
RMP	Ramp/Taxi Control
RSA	Airport Radar Service Area (US Class C Airspace)
RTI	Radio Type Identifier
SCN	Software Control Number
SEL	Select
STBY	Standby
TACAN	Tactical Air Navigation
TCA	Terminal Control Area (US Class B Airspace)
TCAS	Traffic Display and Collision Avoidance System
TWR	Tower
TX	Transmit
UNI	Unicom
VHF	Very High Frequency
VHF COM	VHF Communication Radio
VHF NAV	VHF Navigation Radio or Source
VOR	VHF Omni-directional Radio
XMIT	Transmit
XPDR	Transponder
XTUNE	Cross-tune Key Label

## INDEX

### A

AB .....	64
AB/BL .....	25, 64
ABV .....	25
AC25.1322-1 Color Set .....	12
AC25.1322-1 Compliant Alerting .....	15
Accessing Preset Pages .....	29
ACTIVE .....	21, 41, 76
Active ATC .....	68
ACTIVE COM .....	17, 18, 71
Active Flight ID .....	49
Active Frequencies .....	5
ACTIVE ID .....	47
ACTIVE indicator .....	3
Active Transponder Side .....	65
ACTV Key .....	9, 11, 17, 18, 48, 62
ADF .... 1, 2, 4, 8, 21, 22, 23, 24, 28, 30, 34, 36, 37, 41, 43, 44, 60, 61, 62, 63, 72	
ADF Blind tuning .....	76
ADF Field .....	6
ADF Radio Details Page .....	43
ADF Receiver .....	1
ADF Self-Test .....	4, 43
ADF/ANTENNA Mode .....	4
ADS-B .....	4, 78
advisory alert indications .....	15
Air Traffic Control Transponders .....	4
alert messages .....	16
ALT .....	25, 26, 27, 44
ATC .....	2, 4, 23, 24, 36, 44, 60, 70, 72
ATC 1 .....	4
ATC 2 .....	4
ATC Code .....	4, 64, 65
ATC Mode .....	4, 25, 44
ATC Preset Codes .....	30, 34
ATC Preset Page .....	31
ATC RTI .....	47
ATC Special Position Identifier (SPI) .....	9
23-80-01.01 .....	85
15 November 2013 .....	

ATC transponder .....	1
ATC Transponder side number and Code.....	25
ATC/TCAS .....	41
Automatic Direction Finder Radios .....	4

## B

AUX TUNE.....	80
Basic Color Set .....	12
Beat Frequency Oscillation.....	4
BFO.....	4
BIT .....	74
BL64	
blind-tune .....	3, 43
BLW .....	25
Brightness Control Rocker Key.....	9
Built In Test Features.....	74

## C

CBIT.....	See Continuous BIT
CLEANING.....	82
CLEAR ID .....	49
COM.....	22, 28, 30, 34, 37, 38, 40, 44, 56, 60, 61, 62, 63, 68, 71, 72
COM Details Page .....	38
COM Field.....	6, 38
COM Frequency Tuning Mode .....	55
COM Frequency Tuning Mode Identifier .....	61
COM Frequency Tuning Mode Increment Pushbutton.....	8
COM RCL/SEL.....	62
COM Squelch.....	71
COM1.....	40
COM1-TX.....	3
COM2-TX.....	3
COM3.....	40
Communication/Frequency Identifier Acronyms.....	66
Continuous BIT .....	74
Control and Display .....	7
Cross-Side (XTUNE) Frequency Tuning .....	24
cross-tune .....	69
Cross-Tuned Radio Details Page .....	53
Cross-Tuned Radio Preset Pages.....	36

Cyan ..... 12

**D**

DETAIL Key ..... 8, 37, 38  
Detail Pages ..... 37, 53  
Direct Active Tuning ..... 17  
Distance Measuring Equipment Receivers ..... 4  
DME ..... 2, 4, 42, 65, 69  
DME HOLD ..... 4, 9, 57, 58, 59  
DME Hold Function ..... 57  
DME Hold Key ..... 9  
DME Identifier ..... 65  
DME Receivers ..... 1  
DME-H ..... 57, 58  
Dual RCU Installation – Tuning With Both RCUs Failed ..... 80  
Dual RCU Installation – Tuning With Single Failed RCU ..... 77  
Dual RCU installations ..... 45, 53, 54  
dual-transponder systems ..... 63, 65

**E**

EMER (Emergency) Key ..... 9  
Entering and Editing Pilot-Defined Presets ..... 34

**F**

Flight ID ..... 4, 8, 44, 46, 48, 50, 78  
FLIGHT ID/OFF ON ..... 50  
FMS Suggested Presets ..... 21, 36  
FUNCTION NOT AVAILABLE ..... 8, 9, 56, 59

**H**

HF ..... 1, 28, 31  
HF Preset Page ..... 31

**I**

IBIT ..... 74, 75  
ID (IDENT) Key ..... 9  
IDENT ..... 65

IDENT/REPLY Annunciator .....	65
ILS Receivers.....	1
INACTIVE .....	41, 76
INHIBIT Test Status .....	42
Initiated (or commanded) BIT .....	74
Initiated Radio Tests and Diagnostic Codes.....	76
Inner Knob .....	8, 39, 40
Intruder Altitude Display Mode.....	4

## L

Line Select Keys (LSKs).....	9
Loss of Radio Feedback.....	67
Loss of Unused Transponder Bus Communications .....	70
LSK .....	62

## M

Magenta .....	12
Marker Sensitivity .....	42
Menu Mode Page .....	11
MMR .....	1
MRKER SENSITIVITY .....	42
Multi-Mode Receivers .....	1

## N

NAV.... 1, 21, 22, 23, 28, 30, 34, 36, 37, 41, 42, 44, 58, 60, 61, 62, 63, 65, 69, 72	
NAV Field.....	6
NAV Radio Details Page.....	42
NAV RCL/SEL field .....	62
NAV-DME .....	57, 58
NEXT .....	31
NO FDBK.....	3, 68, 80
No Homing .....	62
NORM.....	25, 64

## O

Off Screen.....	62
ON.....	25, 27

ON TCAS.....	44
Outer Ring.....	7, 17, 34, 39, 40

**P**

Page Indication.....	61
PBIT.....	See Power Up BIT
Pilot Defined Presets.....	21, 34, 36
Pilot Preset Identifier.....	8, 35
Power Up BIT.....	74
PRESET.....	21, 31
Preset Frequency.....	5, 35, 63
Preset Frequency Tuning.....	21
Preset Identifier.....	63
PRESET Key.....	10, 29
Preset Number.....	63
Preset Pages.....	28, 33
PREV Key.....	10, 29, 31, 37

**R**

Radio Command Failures.....	71
Radio Feedback Frequency Set as Invalid.....	73
Radio Side.....	61
Radio Type Identifier.....	6, 60, 64, 71
RCL.....	62
RCL Flight ID.....	47
RCL/SEL.....	21, 23, 29, 62
RCL/SEL column.....	19, 20
RCL/SEL Frequency.....	62
RCL/SEL Frequency Identifier.....	62
RCL/SEL Indicator.....	62
RCU ACTIVE.....	76
RCU Bezel Controls.....	7
RCU Color Set.....	12
RCU Details Pages.....	37
RCU DISABLE.....	77, 80
RCU Display Information.....	60
RCU FAIL.....	74
RCU FUNCTIONS AND DISPLAYS.....	28
RCU Operation.....	5
RCU Preset Pages.....	28

RCU TEST .....	76
RCU Warning Annunciations .....	67
RCU XBUS .....	70
RCU1 .....	77, 79
RCU1 XTUNE MSG.....	79
RCU2 .....	77, 79
RCU2 XBUS .....	77, 79, 80
Recall/Select Frequencies .....	5
Recall/Selected Frequency Tuning.....	19
Red .....	12, 15
REPLY .....	65

## S

SEL .....	62
Select Box.....	62
Select Knob.....	7, 17, 34
Self-Test.....	4, 41
Separator Line .....	66
single radio installation .....	54, 61
Single RCU Installation .....	43, 59, 81
Single RCU Installation – Tuning With RCU Failed.....	81
Software Control Number (SCN).....	11
Software CRCS .....	11
Squelch .....	38, 68
Squelch State.....	39
Standby Flight ID .....	47
STBY.....	25, 26, 27, 44, 64

## T

TA .....	64
TA/RA .....	64
TACAN.....	28, 31
Tactical Air Navigation (TACAN) radios .....	1
TCAS .....	2, 4, 27, 44, 67, 71
TCAS Advisory Mode .....	25
TCAS Advisory Status .....	4
TCAS computer .....	1
TCAS Coverage Mode.....	4
TCAS Modes.....	64
TCAS Self-Test.....	4

TCAS Vertical Coverage Mode .....	25, 64
TCAS/ATC Modes and Settings .....	25
TCAS/ATC Transponder .....	28
TCAS-ATC Field .....	6
TEST .....	41
TEST LSK .....	41
To Clear the Standby or Active Flight ID .....	49
TOP Key .....	10, 37
Traffic Alerting and Collision Avoidance System Computers .....	4
Transmit Keyed Annunciation .....	63
Transponder Field .....	25
Transponder Mode .....	25, 26, 27, 63
Transponder Mode Selection .....	25
Transponder/ATC, TCAS, Flight ID, and ADS-B Details Page .....	44
Tuning a Preset Frequency .....	22, 33
Tuning with Failed RCU .....	77
TX WARNING .....	63

## V

VHF COM .....	1, 2, 3, 8, 21, 24
VHF Communication Radios .....	3
VHF NAV .....	1, 2, 4, 8, 24
VOR Receivers .....	1

## W

White .....	12
-------------	----

## X

XTUNE .....	24, 28, 36, 70, 76, 78
XTUNE INACTIVE .....	79
XTUNE Key .....	8, 24
XTUNE MSG .....	77

## Y

Yellow .....	12, 15
--------------	--------