



## RTS01 Remote Transmit Selector



### INSTALLATION AND OPERATION MANUAL

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### Part of AEM Service Manual ASM-RTS

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## RTS01 Remote Transmit Selector Installation and Operation Manual

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# RTS01 Remote Transmit Selector Installation and Operation Manual

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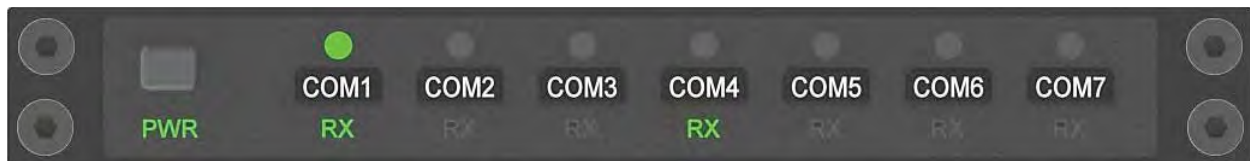
### Section 1.0 Description

#### 1.1 Introduction

Information in this section consists of product description, design features and specifications for the RTS01 Remote Transmit Selector. All derivative product information will be contained in the applicable manual supplement, which may be obtained from AEM as required.

Review all notes, warnings and cautions.

#### 1.2 Product Description



**RTS01 Faceplate with reference legends**

The RTS01 is a powerful communications tool that can be used to add new capability and function to any existing analog audio system. It offers three distinct operator benefits; Remote Transmit Select (RTS), RX Activity Indication, and Audio System Expansion. Installation is designed to be simple, so there is little to no impact on the existing audio system wiring.

The aircraft cockpit can be a very busy place, especially when your mission demands your full attention and having both hands busy with the flight controls. Having to release one of those controls to reach over and change the Transmit Select position on your audio panel can be more than an 'inconvenience'. The Remote Transmit Select capability of the RTS01 can be used to help address this situation. Use of an existing or added 'toggle switch' on one of the flight controls is all that is needed to utilize the RTS functions, once the pilot/operator has set the audio panel for RTS operations. Selection of the transceiver is indicated by the annunciator above the respective transceiver legend. If you need to change radios, you simply toggle the control-mounted RTS selector switch up or down until the desired annunciator is illuminated.

Another issue many pilot/operators are faced with is the number of communication radios they have on board to meet the mission requirements, and trying to determine which radio they are actually listening to at any one time. The RX ACTIVE feature of the RTS01 can be used to solve this problem. This is a simple 'RX' annunciator that illuminates to show which radio(s) are actively receiving communications, and functions regardless of whether or not the operator has that particular radio audio input selected 'on' at the audio panel.

The trend towards a higher number of communication radios in aircraft is rapidly exceeding the capacity of the audio systems that were fit as standard equipment in many different aircraft. The RTS01's 'expansion' capability allows additional transceivers to be added to the communication system without having to remove and replace the entire audio system.

Snap-in legends on the RTS01 provide the ability to custom label the transceiver channels.



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### 1.3 Features

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Use of an existing or added 'toggle switch' to the flight controls provides hands free transceiver selection. See section 2.3.5 or the interconnect document in section 2.7 for more information.

The RX ACTIVE detection feature illuminates a RX annunciator under the transceivers legend indicating if a transceiver is currently receiving an audio signal. See section 2.4.1.2 for installation and section 3.6.3 for operation.

The RTS01 may be incorporated as an expansion panel with support for up to 7 transceivers. See section 2.4.2.1 for Maximum transceiver selection information.

An incorporated Wrap-around feature can be enabled for incrementing and decrementing the transceiver selection. See section 2.4.1.1 for more information.

The RX ONLY feature allows received audio for com 5, 6, and 7 to be monitored individually, regardless of which transceiver is selected by the operator. See section 2.4.1.3 for installation and section 3.6.2 for operation.

The RTS01 front panel uses snap-in legends allowing the radio positions to be custom labeled. 7 snap-in legends are required to operate the RTS01 and are not included. See section 2.3.4 for installation information.

Some RTS01 models support night vision goggle (NVG) mode and as such are available with NVIS Green A backlighting and NVIS Green B annunciators. Contact AEM for more information.

### 1.4 Specifications

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#### 1.4.1 Electrical Specifications

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##### 1.4.1.1 Input Operating Voltage

Normal Operating Conditions	
Nominal	+28 Vdc
Maximum	+30.3 Vdc
Minimum	+22.0 Vdc
Emergency	+18.0 Vdc
Abnormal Operating Conditions	
Nominal	+28 Vdc
Maximum	+32.2 Vdc
Minimum	+20.5 Vdc

##### 1.4.1.2 Input Power Requirements

Nominal	400 mA max @ +28 Vdc
Lighting	1.0 mA max @ +28 Vdc
	1.0 mA max @ +5 Vdc



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### 1.4.1.3 Input Signals

Microphone Audio	(MIC Outputs from Audio Controller)
Quantity	7
Circuit Type	Feedthrough/Passive
Rated Level	250 mVrms
RMT Microphone Audio	(RMT MIC Outputs from Audio Controller)
Quantity	1
Circuit Type	Single ended
Rated Level	250 Vrms
Impedance	150 $\Omega$ $\pm$ 10% (fixed, AC impedance) 480 $\Omega$ $\pm$ 10% (fixed, DC impedance)
MIC Bias	12V dc (unloaded)
Transceiver Receive Audio	(COM RX from Transceivers)
Quantity	7
Circuit Type	Single ended
Rated Level	7.00 Vrms max
Impedance	9.4 k $\Omega$ $\pm$ 10%
Transmit Keylines	(from Audio Controller)
Quantity	7
RMT Transmit Keylines	(RMT TX Keyline from Audio Controller)
Quantity	7
Rated Level	Active Lo( $\leq$ 11.5 Vdc)
Remote Transmit Select	
Quantity	2 (RMT UP, RMT DN)
Rated Level	Active Lo( $\leq$ 11.5 Vdc)
NVG Mode	
Quantity	1
Rated Level	Active Lo( $\leq$ 11.5 Vdc)





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### 1.4.1.4 Output Signals

Microphone Audio	(MIC Outputs to Transceivers)
Quantity	7
Circuit Type	Single ended
Rated Level	250 Vrms nominal into 150 $\Omega$
Freq Response	<3 dB from 300 Hz to 6 kHz
Distortion	< 10% @ Rated output < 3% @ 10% of Rated Power output
Audio Noise Level	Without Signal >60 dB below rated output
Transceiver Receive Audio	(COM RX to Audio Controller)
Quantity	7
Circuit Type	Feedthrough/Passive
Rated Level	7.00 Vrms into 1 k $\Omega$
RMT Transceiver Receive Audio	(RMT COM RX to Audio Controller)
Quantity	1
Circuit Type	Single ended
Rated Level	7.00 Vrms into 1 k $\Omega$
Freq Response	<3 dB from 300 Hz to 6 kHz
Distortion	< 10% @ Rated output < 3% @ 10% of Rated Power output
Audio Noise Level	Without Signal >60 dB below rated output
Transmit Keylines	(to Transceivers)
Quantity	7
Circuit type	Open drain
Rated Level	Active <100 $\Omega$ to power ground Inactive > 1 M $\Omega$ to power ground



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### 1.4.2 Physical Specifications

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Height	0.75" (19.05 mm) max
Depth	4.56" (115.8 mm) max behind panel, including connectors 5.00" (127.0 mm) max overall
Width	5.00" (127.0 mm) max behind panel 5.75" (146.1 mm) max in front of panel
Weight	0.8 lbs. (0.36 kg) max
Mounting	Standard Dzus Mounting (four fasteners)
Faceplate	Lexan polycarbonate
Connectors	1 x 44 pin D-sub Plug (male) 1 x 44 pin Dsub socket (female) V5 locking hardware
Material/finish	Chassis & cover are brushed aluminum with chromate conversion

### 1.4.3 Environmental Specifications

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Temperature	-40 to +70°C (operating) -55 to +85°C (survival)
Altitude	35,000 feet max.
Humidity	95% @ 50°C for 48 Hrs.
Shock	6g for 11ms

End of Section 1.0

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## RTS01 Remote Transmit Selector Installation and Operation Manual

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### Section 2.0 Installation

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#### 2.1 Introduction

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Information in this section consists of: unpacking and inspection procedures, installation procedures, post-installation checks, and installation drawings.

#### 2.2 Unpacking and Inspection

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Unpack the equipment carefully. Inspect the unit visually for damage due to shipping and report all such claims immediately to the carrier involved. Note that each unit should have the following:

- RTS01-001
- Product Information Card
- Certificate of Conformity or Release Certificate

Verify that all items are present before proceeding and report any shortage immediately to your supplier.

##### 2.2.1 Warranty

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All Anodyne Electronics Manufacturing Corp. (AEM) products are warranted for 2 years. See the website [www.aem-corp.com/warranty](http://www.aem-corp.com/warranty) for complete details.

#### 2.3 Installation Procedures

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##### 2.3.1 Warnings

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**WARNING:**  
**High volume settings can cause hearing damage.  
Set the headset volume control to the minimum volume setting prior to  
conducting tests, and slowly increase the headset volume to a  
comfortable listening level.**

##### 2.3.2 Cautions

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**CAUTION:**  
In all installations, use shielded cable exactly as shown and grounded as  
indicated. Significant problems may result.



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### 2.3.3 Cabling and Wiring

The RTS01 must be wired to an available transceiver position of the existing host audio controller. If there are no available transceiver positions, the host audio controller must give up one of its existing transceiver positions to accommodate the electrical installation of the RTS01. If this is the case, the transceiver position that was given up can be added to the RTS01. Other than information described in this paragraph, the RTS01 does not affect the functionality of the existing host audio controller in any way.

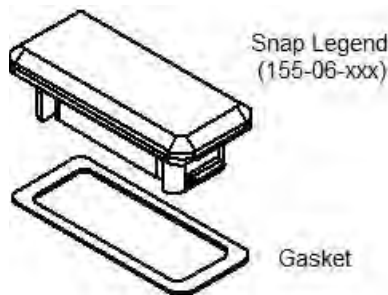
All wire shall be selected in accordance with the original aircraft manufacturer's Maintenance Instructions or AC43.13-1B Change 1, Paragraphs 11-76 through 11-78. Unshielded wire types shall qualify to MIL-W-22759 as specified in AC43.13-1B Change 1, Paragraphs 11-85, 11-86, and listed in Table 11-11. For shielded wire applications, use Tefzel MIL-C-27500 shielded wire with solder sleeves (for shield terminations) to make the most compact and easily terminated interconnect. Follow the interconnect drawing in section 2.7 as required.

Maintain wire segregation and route wiring in accordance with the original aircraft manufacturers Maintenance Instructions. Unless otherwise noted, all wiring shall be a minimum of 24 AWG, except power and ground lines, which shall be a minimum of 22 AWG. Reference the Interconnect drawing for additional specifications. Check that the ground connection is clean and well secured, and that it shares no path with any electrically noisy aircraft accessories such as blowers, turn and bank instruments or similar loads. Microphone and keylines use twisted shielded pair. Do not ground LO connections to airframe. The maximum cable length between RTS01 and the associated audio controller is 15ft (5m).

### 2.3.4 Legend Installation

**Note:** The legends for the transceiver channel labeling must be consistent on each RTS01 within a communications management system (i.e. on each aircraft). Blank legend plates (Part no.155-06-000) are to be installed in any unused transceiver location. Unused transceiver positions are limited to transceivers 5, 6, and 7 with the first disabled transceiver being transceiver 7 followed subsequently by transceiver 6 and 5. It is recommended to disable unused transceivers using the switch located on the right side of the RTS01. See section 2.4.2.1 for more details.

Each RTS01 requires a **minimum of 7** individually purchased snap-in legends (Part no.155-06-xxx). Each legend comes complete with a black gasket, either attached or loose in the bag.



When installing the legends for the first time, each legend must be fitted with a black gasket to eliminate light leakage around the legend. The gasket fits into place on the back of the legend, but is easily dislodged or damaged. Take particular care to ensure that it is properly positioned before snapping the legend fully into place. If a replacement gasket is required, the whole legend must be ordered.

If it is necessary to remove or replace a legend, carefully pry either end of the legend up and out of the faceplate, and insert the new or replacement legend as described above. Avoid using metal or sharp objects when removing legends.

#### **CAUTION:**

If the faceplate is damaged in any way during this process, light leakage may occur, which will necessitate returning the unit to the manufacturer for repair or replacement.



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### 2.3.5 External Toggle

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An external momentary contact toggle switch is required to increment and decrement the available transceivers. The use of an existing flight controls MOM-OFF-MOM toggle switch or installation of an additional flight controls MOM-OFF-MOM toggle switch is required to operate the RTS01.

Please refer to the interconnect document (section 2.7) for installation.

### 2.3.6 Post-Installation Checks

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#### 2.3.6.1 Voltage/Resistance Checks

**Do not attach the RTS01 until the following conditions are met.**

Check the following:

- a) Check P102, pin <5> for +28 Vdc OR pin <6> for +5 Vdc relative to ground (selected lights voltage).
  - b) Check P102 pin <2>, <3>, and <4> for continuity to ground (less than 0.5Ω).
  - c) Check P102 (aircraft power connector) pin <1> for +28 Vdc relative to ground.
  - d) Check P102 pin <9>, and <10> for ground (less than 0.5Ω) when appropriate switches are closed.
- \*\*For RTS01 units which support night vision goggle (NVG) mode only.
- e) Check P102 pin <8> for ground (less than 0.5Ω) when appropriate switch is closed.

#### 2.3.6.2 Power on Checks

Ensure all connectors are securely fastened and the mechanical installation is sound.

Check the following:

- a) Power up the audio systems with the RTS01 installed. Momentarily press the RTS01 PWR button. Ensure the green 'PWR' and a green transceiver annunciator are both on. During initial power up the RTS01 will choose the first transceiver by default. The RTS01 will remember the last selected transceiver for the next startup.
- b) Check that the toggle switch increments and decrements the correct number of transceivers (4 to 7) and ensure that all annunciators illuminate with the selected transceiver. If wrap-around mode is enabled (section 2.4.1.1), ensure that incrementing the last transceiver sets the RTS01's transceiver selection to the first transceiver and decrementing the first transceiver sets the RTS01 transceiver selection to the last transceiver. The number of maximum transceivers is selectable on the right side of the RTS01 (section 2.4.2.1).
- c) Verify that audio is being received and sent to the transceivers correctly through each of the channels.
- d) Verify that a single audible tone is heard while switching transceivers and a dual audible tone is heard on the first and last transceiver. If Wrap-around mode is enabled, only a single audible tone is heard.
- e) Check that turning on the panels lights will backlight the RTS01 snap-in legends and dim the faceplate annunciators.



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- f) If applicable, verify that NVG mode dims the annunciators.
- g) Check that all adjustments have been correctly set before aircraft departure.

Upon satisfactory completion of all performance checks, make all required log book entries, electrical load, weight and balance amendments and other documentation as required by your local regulatory agency before releasing the aircraft for service.

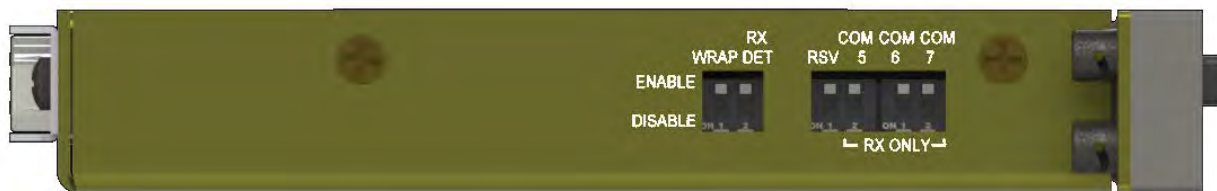
### 2.4 Adjustments and Connections

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The RTS01 is shipped from the factory with all internal adjustments set to the normal test levels. Once installed in the aircraft, it may be desirable to change some of these settings to best suit the local operating environment and specific aircraft installation requirements.

#### 2.4.1 Left Side Panel Adjustments

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Left Side of the RTS01

Two sets of dip switches are provided on the left side of the RTS01 for adjustment of settings. Up on the dipswitch enables the setting while down on the dipswitch disables the setting as indicated.

##### 2.4.1.1 Wrap-around Feature

The first dip switch (labeled "WRAP") located towards the back of the RTS01 allows for the enabling and disabling of the Wrap-around feature. See section 3.6.

Default positioning for the Wrap-around feature is disabled.

##### 2.4.1.2 RX ACTIVE Detection Feature

The second dip switch (labeled "RX DET") located towards the back of the RTS01 allows the enabling and disabling of the RX ACTIVE Detection feature. See section 3.9 for the operation of the RX ACTIVE detection feature.

The detection threshold for the RX ACTIVE feature is further detailed in section 2.4.2.2.

Default positioning for the RX detection feature is enabled.



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### 2.4.1.3 RX ONLY Feature

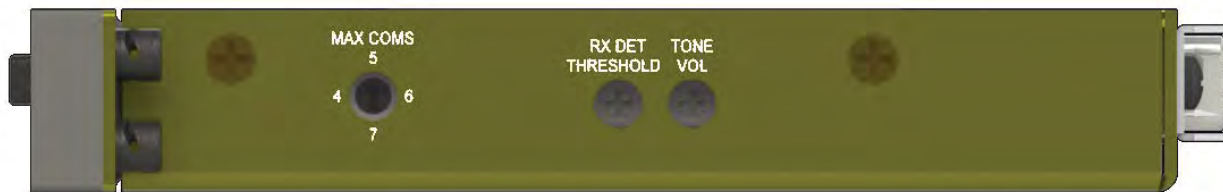
The second set of dip switches allows for the individual transceiver selection for the RX Only feature. The individual transceivers are labeled above the dip switch with COM 5 being transceiver 5 respectively. See section 3.8 for the operation of the RX only feature.

Default positioning for all 3 RX ONLY dip switches is disabled.

\*The dip switch labeled RSV is a reserved switch and provides no functional changes to the device.

### 2.4.2 Right Side Panel Adjustments

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**Right side of the RTS01**

One rotary switch and two potentiometers are provided on the right side of the RTS01 for the adjustment of settings.

#### 2.4.2.1 Maximum Transceiver Selection

The rotary switch labeled “MAX COMS” is for selecting the maximum number of transceivers. The maximum number of transceivers may be adjusted from 4 to 7. Unused transceivers on the RTS01 are restricted to COM 5, 6, and 7 positions.

Example: If only 5 transceivers are used, transceivers 1 through 5 from left to right will be enabled.

Default positioning for MAX COMS is 7.

#### 2.4.2.2 RX ACTIVE Detection Threshold Adjustment

The potentiometer closest to the front of the RTS01 and labeled “RX DET THRESHOLD” adjusts the RX Activity Detection sensitivity for all 7 transceivers. Turning the potentiometer clockwise reduces sensitivity while counterclockwise increases sensitivity.

Default positioning for the potentiometer is the mid position.

#### 2.4.2.3 Tone Volume Adjustment

The potentiometer closest to the back of the RTS01 and labeled “TONE VOL” adjusts the transceiver increment or decrement tone volume. This setting adjusts the tone of both the single and dual audio tones. Turning the potentiometer clockwise increases volume while counterclockwise decreases volume.

Default positioning for the potentiometer is in the mid position.



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### 2.5 Accessories Required But Not Supplied

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#### 2.5.1 Installation Kits

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Installation kit D44S44PV-IKC (crimp) is required to complete the installation. The kit consists of the following:

Quantity	Description	AEM Part No.
1	44 Pin D-min Female Crimp Kit	D44SV-IKC
1	44 Pin D-min Male Crimp Kit	D44PV-IKC
<b>D44SV-IKC</b> consists of		
Quantity	Description	AEM Part No.
1	*D-sub socket, Crimp, Locking	20-21-044
44	Contacts, Crimp, female	20-26-014
<b>D44PV-IKC</b> consists of		
Quantity	Description	AEM Part No.
1	*D-sub plug, Crimp, Locking	20-11-044
44	Contacts, Crimp, Male	20-26-704

\*D-sub socket and plug include the required connector hood.

#### 2.5.2 Snap-in Legends

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The RTS01 requires **7** snap-in Legends to complete the installation. **The 7 snap-in legends must be purchased as separate items and are not included with the RTS01.**

Quantity	Description	AEM Part No.
-	Blank Snap-in Legend	155-06-000
-	*Snap-in Legend	155-06-xxx

\*Snap-in legend text is user specified. Please contact AEM for more information.

### 2.6 Continued Airworthiness

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Maintenance of the RTS01 Remote Transmit Selector is 'on condition' only. Periodic maintenance of this product is not required.





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### 2.7 Installation Drawings

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Use of the "#" symbol in the REV. column indicates that the document is listed elsewhere in the manual. Refer to the applicable AEM Part No. to locate the referenced document.

DOCUMENT	REV	DESCRIPTION	TYPE	SERIAL NO.
RTS01-001-403-0	1.00	Remote Transmit Selector	Interconnect	
RTS01-001-405-0	1.00	Remote Transmit Selector	Connector Map	
RTS01-001-922-0	1.00	Remote Transmit Selector	Mechanical Installation	

Section 2.0 ends following above documents

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RTS01-001 INSTALLATION NOTES

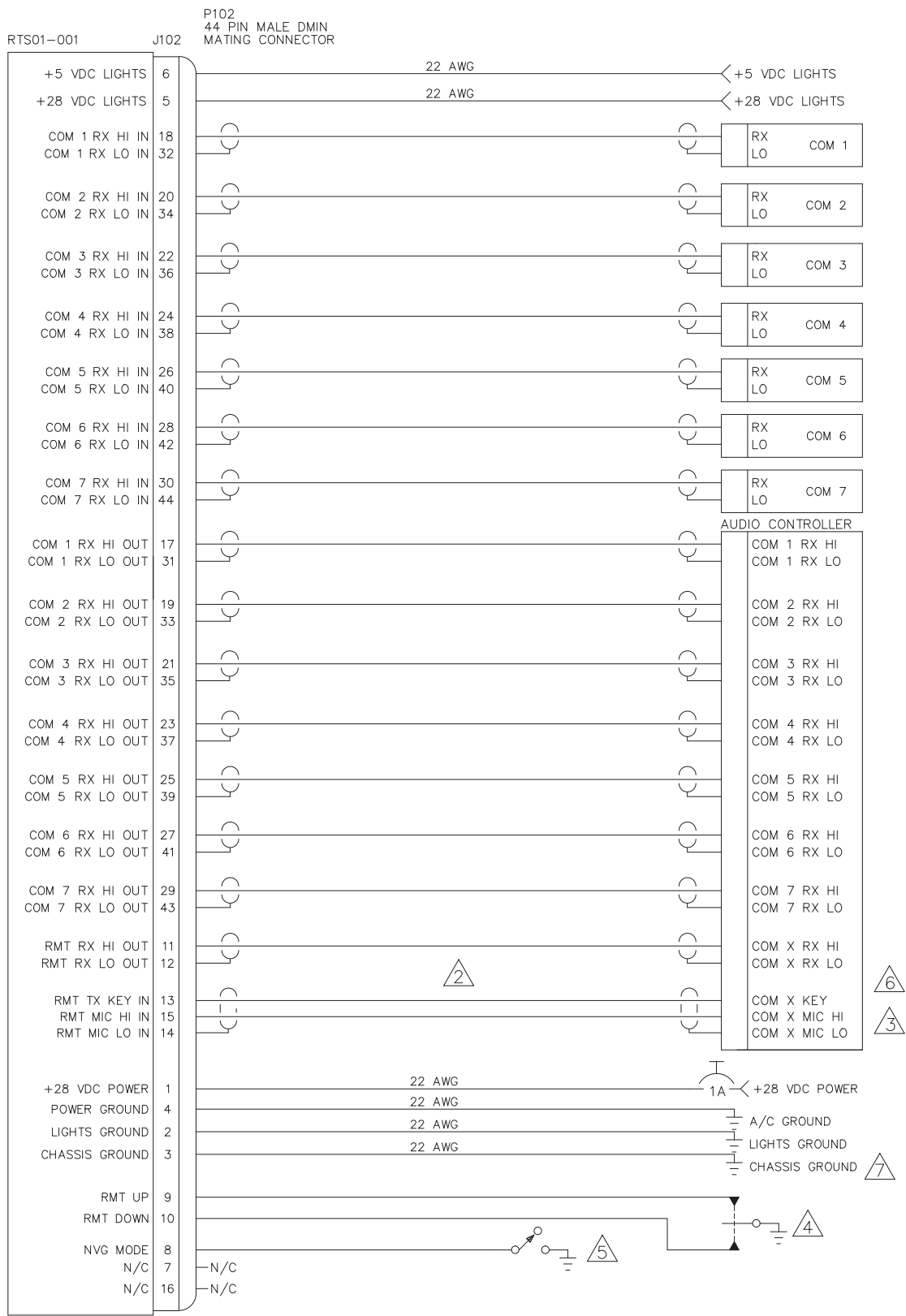
NOTES:

1. ALL WIRES SHOULD BE 24 AWG MINIMUM UNLESS OTHERWISE SPECIFIED. ALL UNSHIELDED WIRE SHALL BE SELECTED IN ACCORDANCE WITH AC43.13-1B CHANGE 1, PARAGRAPHS 11-76 THROUGH 11-78. WIRE TYPES SHOULD BE TO MIL-W-22759 AS SPECIFIED IN AC43.13-1B CHANGE 1, PARAGRAPHS 11-85, 11-86 AND LISTED IN TABLE 11-11. ALL SHIELDED WIRE/CABLE SHOULD BE IN ACCORDANCE WITH MIL-C-27500.
- △2 MICROPHONE AND KEY LINES USE TWISTED SHIELDED PAIR.
- △3 DO NOT GROUND MICROPHONE LO CONNECTIONS TO AIRFRAME.
- △4 MUST BE A MOM-OFF-MOM SWITCH.
- △5 MUST BE A SPST SWITCH. NVG MODE ACTIVE WHEN SWITCH IS CLOSED.
- △6 THE RTS01 MUST INTERFACE WITH THE HOST AUDIO SYSTEM BY CONNECTING TO AN UNUSED TRANSCEIVER POSITION (MIC, KEY AND RX AUDIO).
- △7 CABLE LENGTH NOT TO EXCEED 1 METER.

DEFINITIONS:

- N/C: NO CONNECTION. THE PIN IS NOT CONNECTED TO ANYTHING INTERNALLY, AND THEREFORE SHALL HAVE NO CONNECTION EXTERNALLY.
- N/C SPARE: NO CONNECTION INTERNALLY, BUT A SPARE WIRE SHALL BE INSTALLED IN THE WIRE HARNESS.
- RESERVED: MAY BE CONNECTED AND USED IN THE FUTURE. THE CIRCUITRY MAY BE PRESENT OR ADDED TO ACTIVATE THE FUNCTION. THE PIN MAY BE USED FOR TEST PURPOSES. THERE IS NO EXTERNAL CONNECTION.
- RESERVED SPARE: (RSV SP) RESERVED, BUT INSTRUCTIONS SHALL BE FOLLOWED TO ACTIVATE THE CIRCUITRY. A SPARE WIRE SHALL BE INSTALLED IN THE WIRE HARNESS.

DRAWN		NAME	DATE	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 0.5 Deg ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ± 0.01 THREE PLACE DECIMAL ± 0.005	 <b>ANODYNE ELECTRONICS MANUFACTURING CORP.</b>		KELOWNA BC CANADA (250)-763-1088 WWW.AEM-CORP.COM		
CHECKED			Nov 6/13				TITLE: <b>REMOTE TRANSMIT SELECTOR INTERCONNECT</b>		
APPROVED			Nov 14/13		SIZE	CAGE CODE			
PROPRIETARY AND CONFIDENTIAL  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF ANODYNE ELECTRONICS MANUFACTURING. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF ANODYNE ELECTRONICS MANUFACTURING IS PROHIBITED.				INTERPRET GEOMETRIC TOLERANCING PER:	<b>A</b>	L9015	RTS01-001	1.00	
				MATERIAL					
				FINISH					
				DO NOT SCALE DRAWING	SCALE: 1:1		DRAWING No.: 403-0		
								SHEET 1 of 3	



NAME	DATE	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES:
DRAWN MWS	Nov 05/13	FRACTIONAL ± 0.5 Deg ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ± 0.01 THREE PLACE DECIMAL ± 0.005
CHECKED	Nov 6/13	
APPROVED	Nov 14/13	
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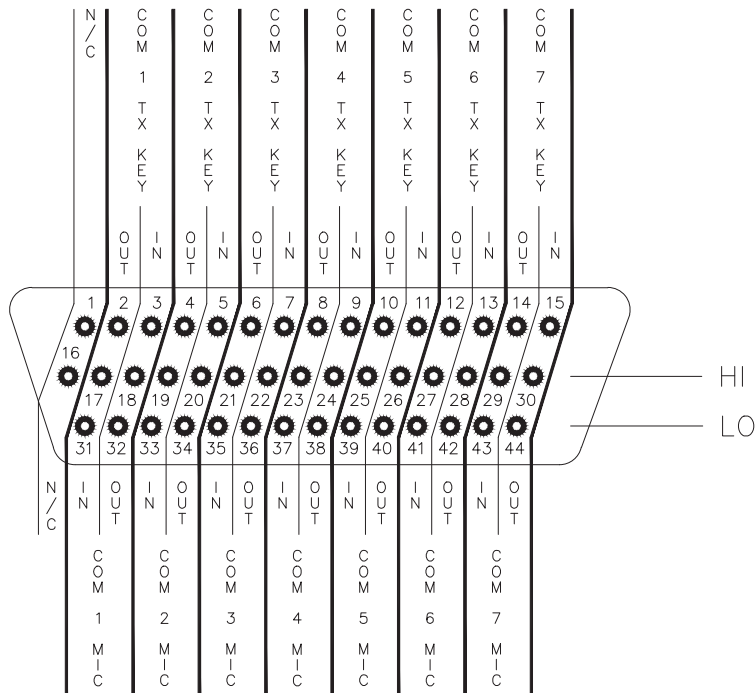
**TITLE: REMOTE TRANSMIT SELECTOR INTERCONNECT**

SIZE	CAGE CODE	PART No.	REV
A	L9015	RTS01-001	1.00

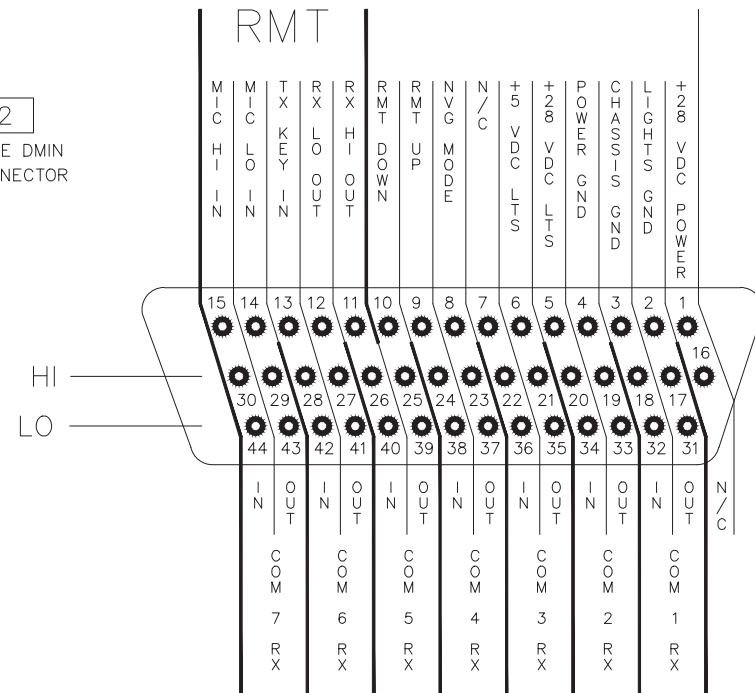
SCALE: 1:1	DRAWING No.: 403-0	SHEET 2 of 3
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**P101**  
44 PIN FEMALE DMIN  
MATING CONNECTOR



**P102**  
44 PIN MALE DMIN  
MATING CONNECTOR



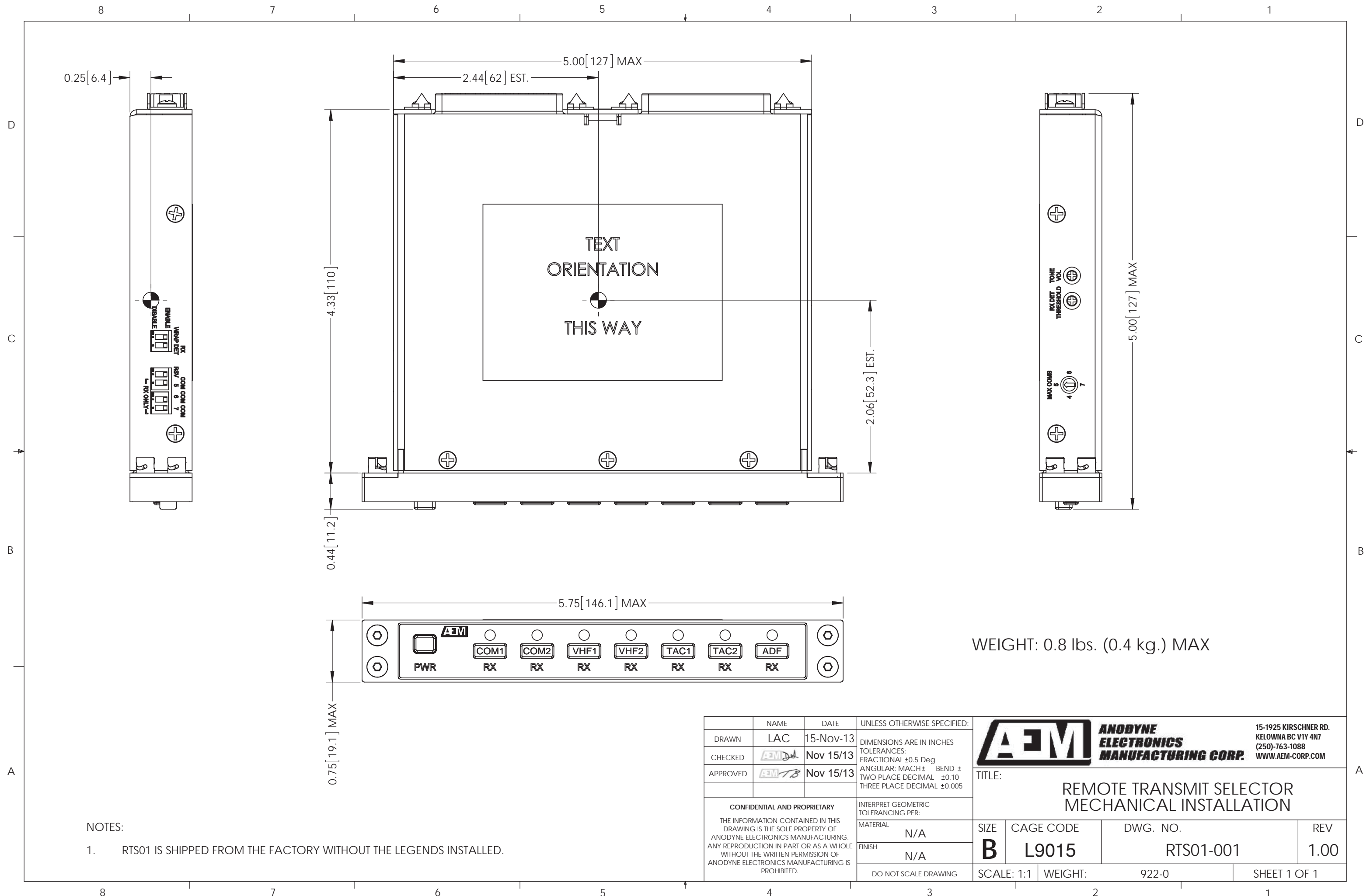
	NAME	DATE	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 0.5 Deg ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ± 0.01 THREE PLACE DECIMAL ± 0.005
DRAWN	MWS	Nov 05/13	
CHECKED		Nov 6/13	
APPROVED		Nov 14/13	
PROPRIETARY AND CONFIDENTIAL			INTERPRET GEOMETRIC TOLERANCING PER:
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TITLE: <b>REMOTE TRANSMIT SELECTOR CONNECTOR MAP</b>			
SIZE	CAGE CODE	PART No.	REV
<b>A</b>	<b>L9015</b>	<b>RTS01-001</b>	<b>1.00</b>
SCALE: 1:1	DRAWING No.: 405-0		SHEET 1 of 1



NOTES:

- RTS01 IS SHIPPED FROM THE FACTORY WITHOUT THE LEGENDS INSTALLED.

NAME	LAC	DATE	15-Nov-13	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±0.5 Deg ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ±0.10 THREE PLACE DECIMAL ±0.005	 <b>ANODYNE ELECTRONICS MANUFACTURING CORP.</b> 15-1925 KIRSCHNER RD. KELOWNA BC V1Y 4N7 (250)-763-1088 WWW.AEM-CORP.COM
DRAWN					
CHECKED					
APPROVED					
<b>CONFIDENTIAL AND PROPRIETARY</b> THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF ANODYNE ELECTRONICS MANUFACTURING. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF ANODYNE ELECTRONICS MANUFACTURING IS PROHIBITED.				INTERPRET GEOMETRIC TOLERANCING PER: MATERIAL N/A FINISH N/A	TITLE: <b>REMOTE TRANSMIT SELECTOR MECHANICAL INSTALLATION</b>
SIZE		CAGE CODE	DWG. NO.	REV	
<b>B</b>		<b>L9015</b>	<b>RTS01-001</b>	<b>1.00</b>	
SCALE: 1:1		WEIGHT:	922-0	SHEET 1 OF 1	



## RTS01 Remote Transmit Selector Installation and Operation Manual

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### Section 3.0 Operation

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#### 3.1 Introduction

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Information in this section consists of functional and operational procedures for the RTS01 Remote Transmit Selector.

#### 3.2 General

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The RTS01 is a powerful communications tool that can be used to add new capability and function to any existing analog audio system. It offers three distinct operator benefits; Remote Transmit Select (RTS), RX Activity Indication, and Audio System Expansion. Installation is designed to be simple, so there is little to no impact on the existing audio system wiring.

The aircraft cockpit can be a very busy place, especially when your mission demands your full attention and having both hands busy with the flight controls. Having to release one of those controls to reach over and change the Transmit Select position on your audio panel can be more than an 'inconvenience'. The Remote Transmit Select capability of the RTS01 can be used to help address this situation. Use of an existing or added 'toggle switch' on one of the flight controls is all that is needed to utilize the RTS functions, once the pilot/operator has set the audio panel for RTS operations. Selection of the transceiver is indicated by the annunciator above the respective transceiver legend. If you need to change radios, you simply toggle the control-mounted RTS selector switch up or down until the desired annunciator is illuminated.

Another issue many pilot/operators are faced with is the number of communication radios they have on board to meet the mission requirements, and trying to determine which radio they are actually listening to at any one time. The RX ACTIVE feature of the RTS01 can be used to solve this problem. This is a simple 'RX' annunciator that illuminates to show which radio(s) are actively receiving communications, and functions regardless of whether or not the operator has that particular radio audio input selected 'on' at the audio panel.

The trend towards a higher number of communication radios in aircraft is rapidly exceeding the capacity of the audio systems that were fit as standard equipment in many different aircraft. The RTS01's 'expansion' capability allows additional transceivers to be added to the communication system without having to remove and replace the entire audio system.

Snap-in legends on the RTS01 provide the ability to custom label the transceiver channels.

#### 3.3 Controls & Indicators

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##### 3.3.1 Power

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A momentary push button power switch is provided on the RTS01 to power on and off the unit. While powered on, the "PWR" annunciator will illuminate green below the power switch. The annunciator above the currently selected transceiver will also illuminate.



## RTS01 Remote Transmit Selector Installation and Operational Manual

### 3.3.2 Faceplate Backlighting



RTS01 Faceplate with reference legends.

The illumination of the RTS01 snap-in legends is linked to the aircraft faceplate dimming buss. When backlighting is on, all snap-in legends will illuminate standard white to a level proportional to the aircraft dimming buss voltage. See section 3.3.3 for information on the RTS01 annunciators. When backlighting is off, all snap-in legends are not illuminated.

### 3.3.3 Faceplate Annunciators

Annunciators are LED indicators that illuminate to indicate currently selected states or provide operator feedback. Two types of annunciators are incorporated into the faceplate of the RTS01. The first being the selected transceiver annunciator and the second being the receive indication annunciator.



- ← Transceiver Annunciator
- ← Snap-in Legend
- ← RX Annunciator

The transceiver annunciator illuminates green above the snap-in legend to indicate the currently selected transceiver.

The 'RX' annunciators illuminate green below the snap-in legends to show which channels are currently receiving an audio signal.

There are 2 brightness levels for the annunciators that are defined as day mode and night mode. These modes are automatically selected within the RTS01 by sensing the voltage on the aircraft dimming buss, as described in the table below:

	Day Mode	Night Mode
5V Dimming Buss	< 1.4 Vdc	> 1.4 Vdc
28V Dimming Buss	< 5.3 Vdc	> 5.3 Vdc

For NVIS models, there is a third brightness level defined as NVG mode, which is dimmer than night mode. NVG mode is activated by grounding pin 8 of J102 on the RTS01 through an external switch. When NVG mode is activated, the annunciator brightness level is fixed regardless of the voltage present on the aircraft dimming buss.

A version of the RTS01 that supports night vision goggle (NVG) mode is available. Contact AEM for more information.

## 3.4 Snap-in Legends

Snap-in legends for each of the 7 possible transceivers provide the ability to customize the individual transceiver labels to match the radios on the aircraft.

Blank snap-in legends should be inserted in any unused transceiver positions.





## RTS01 Remote Transmit Selector Installation and Operation Manual

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### 3.5 External Toggle & Transceiver Selection

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The RTS01 remotely controls up to 7 transceivers by utilizing an external MOM-OFF-MOM toggle switch to remotely scroll through the available transceivers.

The RTS01 provides an audible tone to indicate a transceiver change has been made. The external toggle switch is ideally mounted on or currently installed in the flight controls of the aircraft.

### 3.6 Wrap-around

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The RTS01 includes a Wrap-around feature. When enabled, this feature allows the operator to cycle back to the first transceiver by simply incrementing past the last selectable transceiver, and vice versa.

While Wrap-around mode is disabled, the RTS01 will only increment to the last transceiver and decrement to the first transceiver.

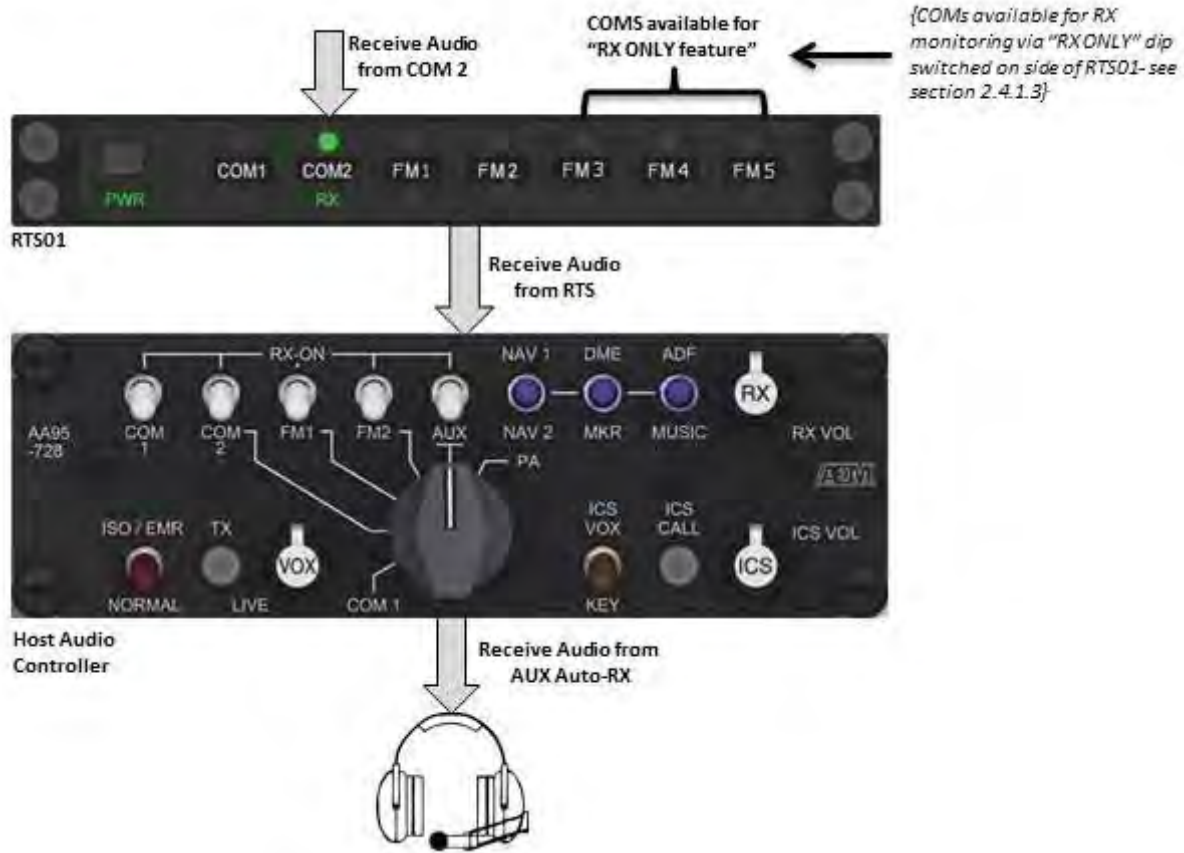
If Wrap-around mode is enabled, a single tone audio signal will be heard with each transceiver selection. When Wrap-around mode is disabled, a two tone audio signal will be heard with the selection of the first and last transceivers.



## RTS01 Remote Transmit Selector Installation and Operational Manual

### 3.7 Received Audio Operation

The RTS01 transmit functionality is only available when the host audio controller's transmit selector is set to the transceiver position assigned to the RTS01. Receive audio from the transceiver selected on the RTS01 (Auto-RX) is summed with receive audio from any RX ONLY enabled channels and routed to the host audio controller for monitoring. See diagram below for a detailed representation of how receive audio is routed to the headset. In this example, the RTS01 is connected to the AUX position of the host audio controller.



Host Audio Controller		Headset Audio will be comprised of
TX Selector	AUX RX Monitor Switch	
AUX	Don't care	RTS01 COM2 + RTS01 RX ONLY enabled channels



## RTS01 Remote Transmit Selector Installation and Operation Manual

If the host audio controller's transmit selection is **not** set to the transceiver position of the connected RTS01, the receive audio from the RTS01 can be monitored by enabling the host audio controller's receive audio monitor switch assigned to the connected RTS01.

See diagram below for a detailed representation of how receive audio is routed to the headset. In this example, the RTS01 is connected to the AUX position of the host audio controller.



Host Audio Controller		Headset Audio will be comprised of
TX Selector	AUX RX Monitor Switch	
COM2	DOWN	COM2 from host audio controller only (No audio from RTS01 regardless of RX annunciation)
COM2	UP	COM2 from host audio controller + RTS01 selected transceiver (eg: COM1) + RTS01 RX ONLY enabled channels

**CAUTION:**

The RTS01 transceiver annunciator will **not** correctly represent the selected transceiver if the host audio controller's transmit selector is **not** set to the transceiver position assigned to the RTS01. Communication selection will be from the host audio controller only. If desired the RTS01 can be powered off to avoid confusion.



## RTS01 Remote Transmit Selector Installation and Operational Manual

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### 3.8 RX ONLY

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The RX ONLY feature allows received audio to be monitored for up to 3 transceivers (COMs 5, 6 and 7) by the operator regardless of which transceiver is selected on the RTS01. This feature can be enabled or disabled individually for COMs 5, 6, and 7.

### 3.9 RX ACTIVE Detection

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When enabled, the RX ACTIVE Detection allows for the viewing of all actively receiving channels.

When a channel is receiving an audio signal the corresponding green RX annunciator will illuminate regardless of which transceiver is selected on the RTS01.

**Note:** When enabled, the RX annunciators will illuminate regardless of the transceiver selector switch position or receive audio monitor switch position of the host audio controller.

End of Section 3.0

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