

MX11 COMM

OWNER'S MANUAL

TKM, INC
14811 NORTH 73rd STREET
SCOTTSDALE, AZ 85260

SPECIFICATIONS

MX11 TRANSCEIVER

Mounting:	Panel mounted, no shock mounting required.
Size:	6.32 x 1.60 x 11.1 inches with connectors but excluding knobs.
Weight:	3.0 lbs excluding external connector and harness.
Power Requirements: Max COMM Total w/ Transmit (Tone)	13.75 Vdc @ 0.9 A/27.5 Vdc @ 0.4 Amp. 5.3 Amp / 2.6 Amp.

RECEIVER

Crystal Controlled:	760 Channel
Frequency Range:	118.00 to 136.975 MHz
Frequency Stability:	+/- .003%. -20 to 50C

TRANSMITTER

VHF Power Output:	8 watts minimum, 50 ohm
Modulation:	85% capability with 90% limiting provided.
Microphone:	Dynamic mike containing transistorized pre-amp or carbon (must provide at least 120 m V)
Sidetone:	Adjustable up to 40 mw into 500 ohm headphones.
Duty Cycle:	1 minute on, 4 minutes off (20%)

RECEIVER

Sensitivity:	1.5 μ V (soft) will provide a 6 db minimum signal plus noise ratio (KHz, 30% mod).
Selectivity:	Typical 6 db at \pm 7.5 KHz, 65 db at \pm 17.5 KHz, 90 db at \pm 25 KHz.
Spurious Responses:	Down at least 70 db.
Squelch:	Noise adaptive squelch with manual override.
AGC Characteristics:	From 2 to 100,000 μ V audio output will not vary more than 1 db.
Headphone Output:	40 mw into 500 ohm.
Speaker Output:	4.5 Vrms into auxiliary input produces 5 watts audio output.

OPERATORS GUIDE FOR MX11 COMM TRANSCEIVER

EQUIPMENT DESCRIPTION

The unit features digital (LED) displays for active (yellow) and frequency channels and standby (red) frequency channels.

For channel selection a MHz knob and a KHz knob are provided. For 25 KHz increments, a 25 KHz button is provided.

Channel selection operates on the standby channel only. When the desired channel is indicated in the standby display it may be placed in the active position by depressing the "flip-flop" button located to the left of the displays; the active channel is then placed into the standby position.

The COMM transceiver features a test button which overrides the squelch to verify proper receiver operation and to allow reception of weak signals. Also provided on the active COMM display, is a tic to indicate transmitter power output.

The master power switch is included with the COMM volume control.

Front panel adjustments include "S" for squelch level, "B" for display brightness in bright light and "D" for display brightness in dim light.

The MX11 is comprised of five replaceable subassemblies; three of the subassemblies are contained in shielded modules to reduce radio frequency interference. The three modules are the COMM receiver, the COMM synthesizer, and the Transmitter.

The remaining subassemblies are the Front Panel Assembly and the Computer Board. The front panel assembly contains the digital displays, the functional select switches and the volume control. The computer board contains the microprocessor, the memory, the program storage, the audio circuits and the power supply circuits.

The subassemblies are interconnected with plugs so that any module may be replaced. For equipment repair it is recommended that complete subassemblies be replaced.

INSTALLATION

The MX11 is designed to be an exact replacement for the NARCO COM11 and similar units. As a replacement unit, the Mx11 is inserted directly into the mounting tray for the COM 11 and tightened down with a 7/64 Allen wrench.

For new installations the Installation instructions for the COM 11 should be used.

To remove the MX11 from the mounting tray it is important to note that the channel selector knobs should not be used. The first step in removal is to insert a 7/64" Allen wrench into the clamp screw hole and rotate the clamp screw counterclockwise. The unit will be slowly pulled out of its case for a distance of about ¼ inch. The unit should then easily slide forward by grasping the sides of the front panel.

For new installations the instructions in the Appendix should be followed.

The conditions and test required for TSO approval of this article are minimum performance standards. It is the responsibility of those desiring to install this article on or within a specific type or class of aircraft to determine that the aircraft operating conditions are within the TSO standards/ The article may be installed only if further evaluation by the user/installer documents an acceptable installation and is approved by the Administrator.

OPERATION

Operating controls for the MX11 are located on the unit front panel or are remote inputs thru the rear panel.

The unit front panel is shown in figure 1. The left hand readout indicates the active frequency and the right hand readout indicates the standby frequency.

A "tic" in the upper left hand corner of the active display will indicate the presence of transmitter power.

Power Application. The COMM volume control contains the master power switch.

Frequency Selection. The MHz and KHz controls are used to select a desired standby channel. The "25A" button is used to advance the frequency by 25 KHz.

After the desired standby frequency is selected it may be transferred to the active position by pressing the Flip-flop button (double arrow). The active and standby channels will be interchanged each time the button is pressed.

TEST. The TEST button is a dual function switch. In normal operation, it is used to override the squelch to verify receiver operation and to receive weak signals. The switch is also used for frequency storage as described below.

Frequency Storage. The MX11 allows up to 0 10 COMM preset frequencies to be stored in the memory for recall. To store channels in memory it is first necessary to enter the "STORAGE" mode.

1. STORAGE mode is entered by turning off the power switch on the unit; hold the flip-flop button in and turn on the power. Channel 122.500 will always appear in position "1" is set to another channel.
2. Channel position is indicated in the "active" display and selected channel is shown in the "standby" display. Channel position number is advanced by one each time the flip-flop button is pressed and will return to "1" after "10".
3. Channel selection is made by setting the desired channel position in the "active" display and then, using the channel selector knobs, setting the "standby" display to the desired channel.
4. The programmed channels may be reviewed by sequencing thru the channels with the flip-flop button.
5. Memory reset allows the memory to be cleared and all channel positions set to 120.000 (except position "1"). Memory reset is accomplished by turning off power, holding the "TEST" button in, and turning on power.

6. When the unit is turned on without any buttons pressed it will be in the normal operating mode. To recall channels from memory, pressing and holding the "TEST" button and then pressing the flip-flop button will cause the first stored channel to appear in the "standby" display and its channel position to appear in the "active" display. In about one second the displays will return to normal. This procedure may be repeated until the desired channel appears in the "standby" display. Pressing the flip-flop button will put the recalled channel into the "active" display.

Transmit. The transmit mode on the transceiver is selected by grounding the MIC Key line on the unit's rear panel.

Display Dimmer Adjustment. The dark end of the automatic display dimmer range is adjustable through the front panel hole marked "D" using a small diameter (1/8") standard screwdriver. Similarly, the bright end of the range is adjustable through the hole marked "B".

Squelch Adjustment. The squelch threshold can be adjusted through the front panel hole marked "S" turning the screw for less sensitivity.

EQUIPMENT LIMITATIONS

The following limitations indicate where the MX11 may be installed and meet the applicable TSO requirements.

1. Equipment is intended for installation within a non-pressurized but controlled temperature in a metallic aircraft that is operated at altitude up to 35,000 ft.
2. Equipment is intended for use in a Standard Humidity Environment..
3. Equipment is intended to be panel mounted in Single and Multi Engine Fixed Wing Aircraft with Reciprocating and Turbo-propeller Engines and in helicopters with reciprocating or turbojet engines.
4. Equipment shall not be mounted less the 0.3m from a magnetic compass.

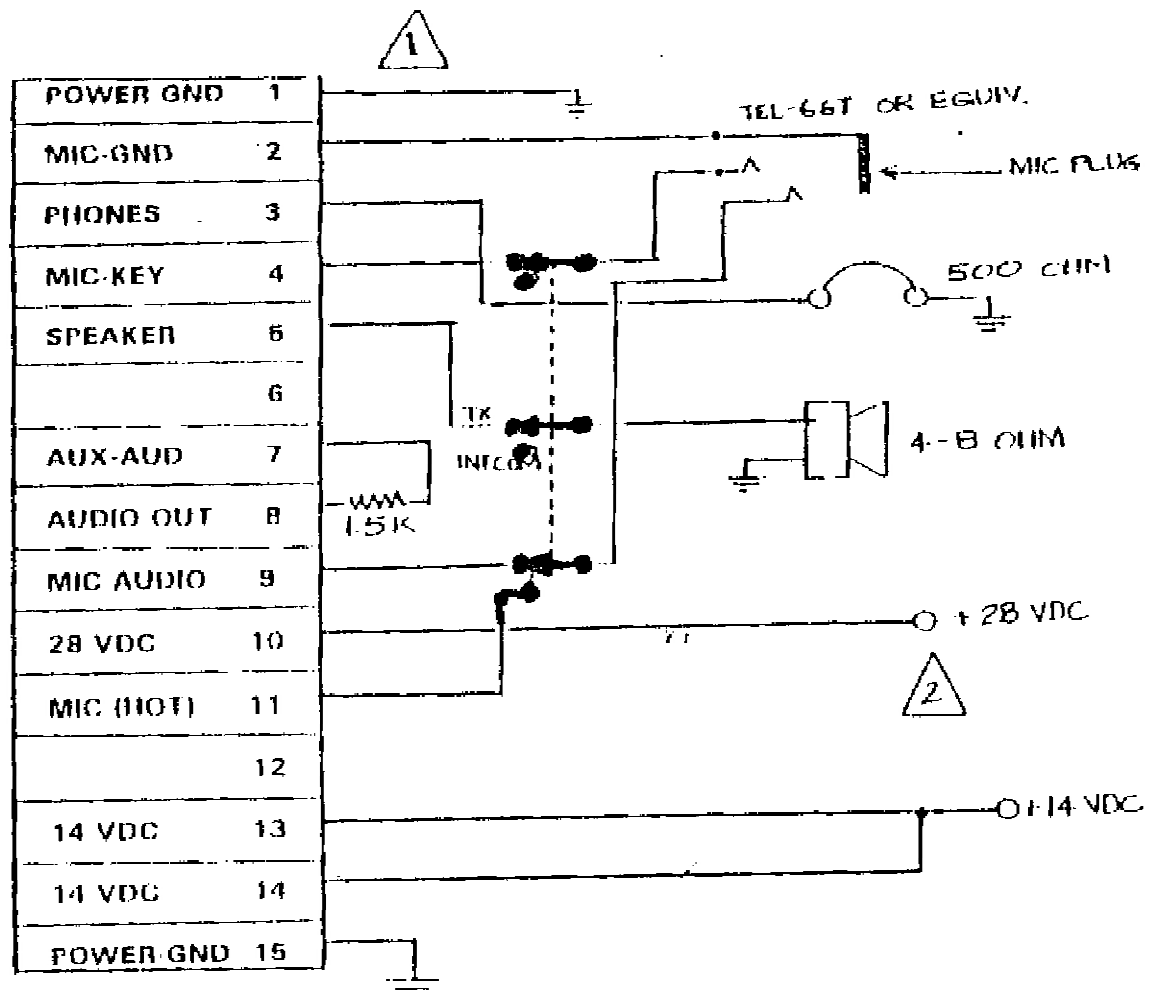
ENVIRONMENTAL QUALIFICATION FORM

MODEL Mx11 COMM as specified in MX11 Specifications is manufactured by TKM, INC., 14811 NORTH 73rd STREET, SCOTTSDALE, AZ 85260, USA

CONDITIONS	C0160 PAR.	DESCRIPTION OF TEST
Temperature and Alt.	4.0	Category C1
Low Temperature	4.51	Category C1
High Temperature	4.52	Category C1
Altitude	4.61	Category C1
Decompression	4.62	Not Tested
Overpressure	4.63	Not Tested
Temperature Variation	5.0	Category C
Humidity	6.0	Category A
Shock	7.0	Tested for all conditions
Vibration	8.0	Cat. M and N (no shock mts.)
Explosion	9.0	X: not tested
Water Resistance	10.0	X: not tested
Fluid Susceptibility	11.0	X: not tested
Sand and Dust	12.0	X: not tested
Fungus	13.0	X: not tested
Salt Spray	14.0	X: not tested
Magnetic Effect	15.0	Category A
Power Input	16.0	Category B
Voltage Spike Cond.	17.0	Category B
Audio Cond. Suscept.	18.0	Category B
Induced Sig. Suscept.	19.0	Category B
RF Susceptibility	20.0	Category T

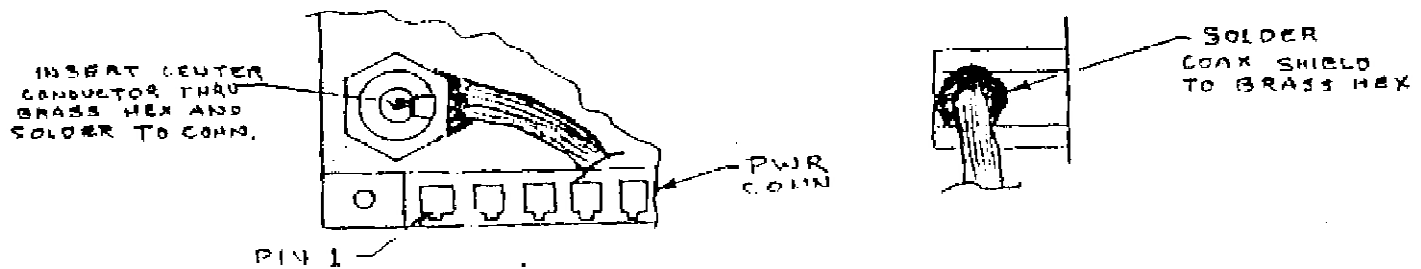
RF Emission	21.0	Category B
Lightning Suscept.	22.0	X: not tested

Installation instructions: The MX11 is designed to be a slide in replacement for the NARCO COMM 11 and, as such, shall be installed with all of the original equipment precautions.

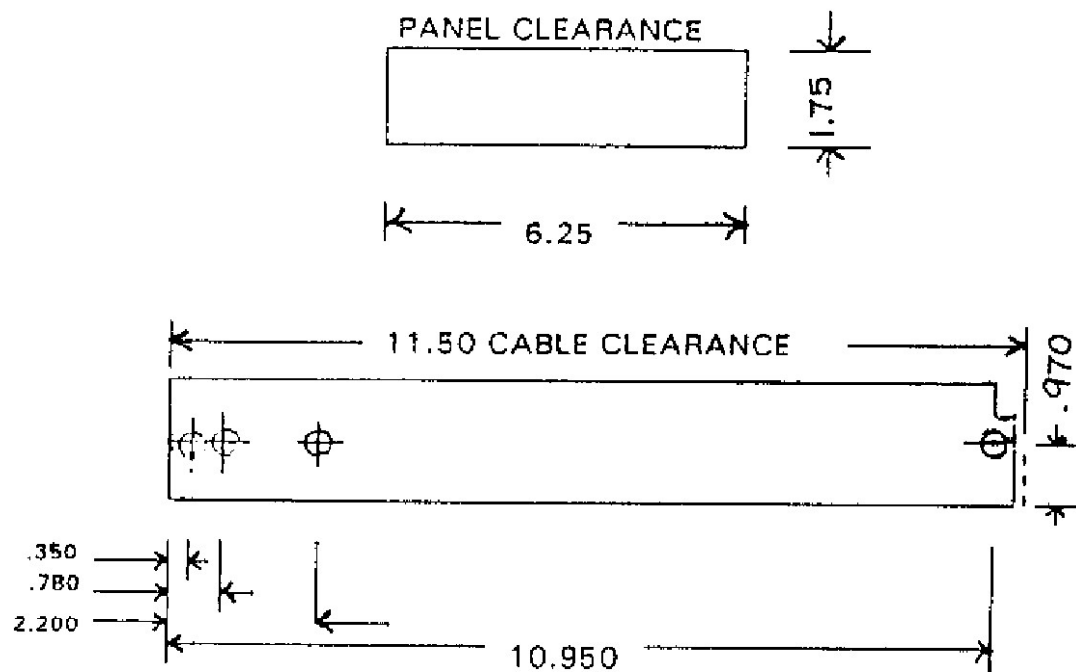


NOTES:

1. Use #22 AWG or larger wire except as noted. Crimp terminals with AMP #90277-1 or equivalent.
2. Apply power to appropriate pins for available voltage using #18 AWG wire and set rear panel switch to match voltage. For 28 vdc operation, use a 3 Amp thermal breaker or 14 amp standard fuse. For 14 vdc operation use a 6 Amp thermal breaker or a 7 1/2 Amp standard fuse.
3. Connect antenna using RG58 A/U coaxial cable. Antenna should be Comant type CI 121 or equivalent.
4. IF INTERCOM IS USED, C15 + R13 MUST BE ADDED TO COMPUTER BOARD.



MX 11 INTERCONNECT DIAGRAM



MOUNTING TRAY DIMENSIONS AND REQUIRED CLEARANCE

Determine that sufficient panel space is available and that there is sufficient depth behind the panel as shown above.

Connect wiring as indicated in the MX11 Interconnect diagram.

Mount tray using 6-32 binder head screws and elastic stop nuts. Verify that the screw heads will not interfere with the smooth insertion of the radio. For crash safety each corner of the mounting tray should be capable of supporting a static load of 14 lbs.

Rotate the clamp screw on the MX11, using 7.64" Allen wrench CCW until the clamp is against the back stop of the housing. Slide the MX11 into the tray until the clamp hits the tray. Rotate the clamp screw CW until the MX11 is fully seated and locked in place. **EXCESSIVE FORCE IS NOT REQUIRED.**