

Design Note

From: DEMI R & D Dept.

DN#: 025

Date: AUG, 19, 2011

Re: Install A-32 in 900 and 1200 MHz Clamshell Transverters

PREFACE: This document will demonstrate and instruct how to install the A-32 Synthesizer in the 900 and 1296 MHz transverters with the clamshell type enclosures. The component designators and placements mentioned or described are the same for both frequency and IF versions of the transverters.

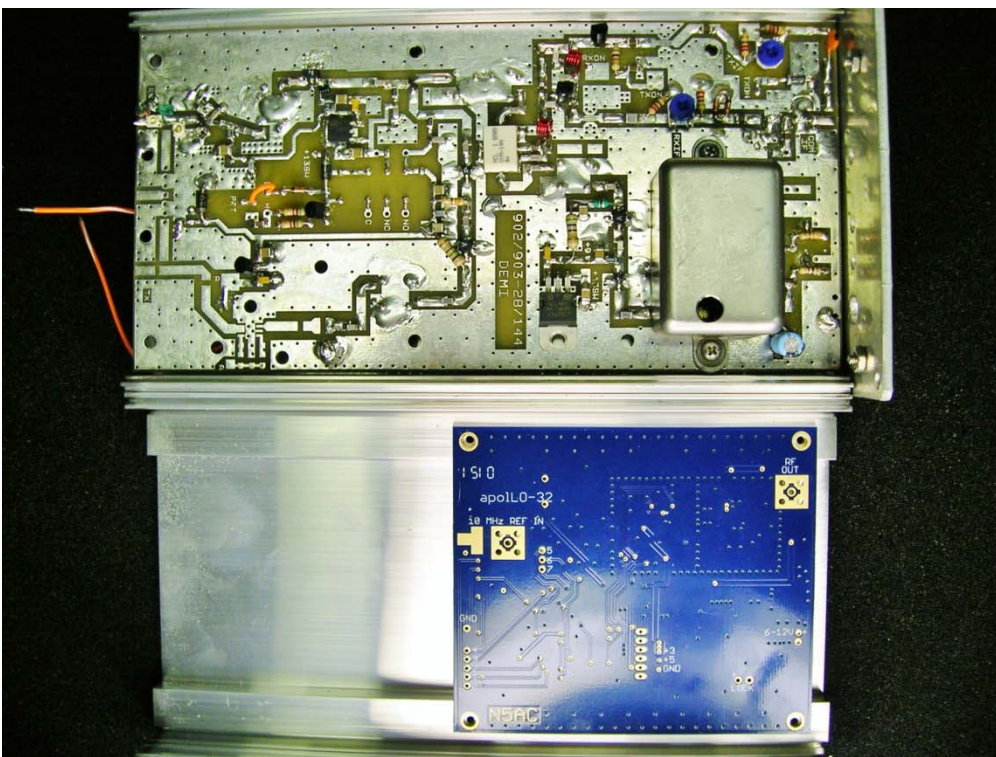
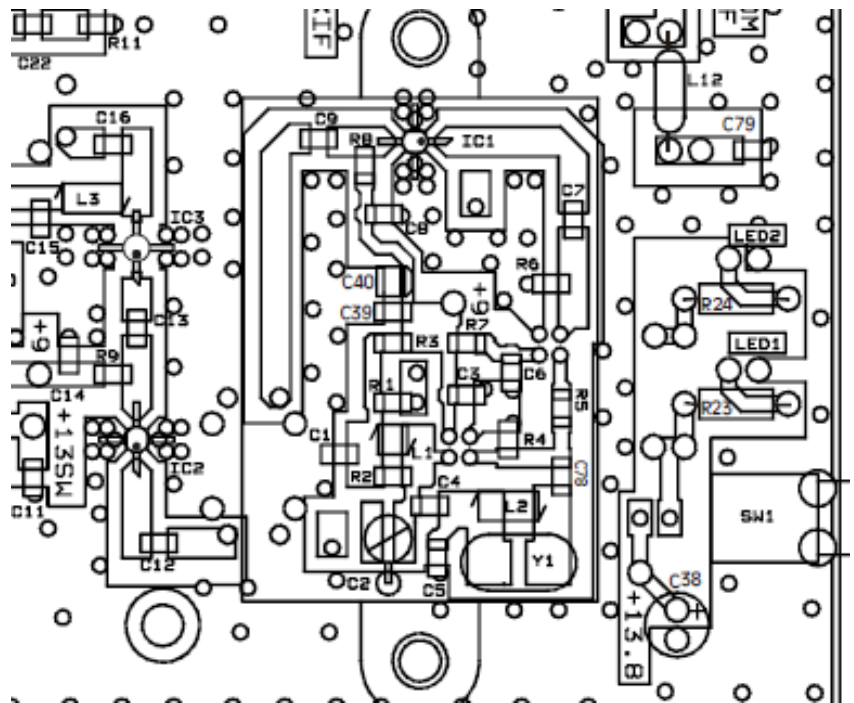
A-32 PROGRAMMING: First, select the desired LO frequency by choosing the band and IF frequency. Program the A-32 as shown on the chart by shorting the indicated pads to ground. Review the A-32 operating document if necessary.

Band	IF	Frequency	REV	7	6	5	4	3	2	1	0	Predicted PN, dBc/Hz @ 1 kHz
1296	144	1152	C2			X					X	-81
1296	28	1268	C2			X		X				-81
1296	145	1151	C3			X				X	X	-81
1296	147	1149	C3			X		X		X	X	-81
1296	29	1267	C3			X		X	X			-81
1296	50	1246	D7			X	X	X		X	X	-81
*902	144	758	C3	X							X	-81
*902	146	756	C3	X						X		-81
*902	145	757	C3	X						X	X	-81
*903	144	759	C3	X					X			-81
*902	29	873	C3	X					X	X	X	-81
*902	28	874	C3	X				X				-81
*903	28	875	C3	X				X			X	-81
*902	50	852	D7	X				X		X	X	-81
*902	52	850	C3	X					X	X		-81
*903	50	853	D7	X				X	X			-81

To utilize the A-32 on 900 MHz, the A-32 will require a modification. If you have purchased the A-32 for and specified 900 MHz operation, it has been modified in advance. If you desire to use an A-32 that requires the 900 MHz modification, cut the end of the L2 inductor (found on the Schematic in the A-32 document) and place a 3.9nH 0402 chip inductor across the cut.

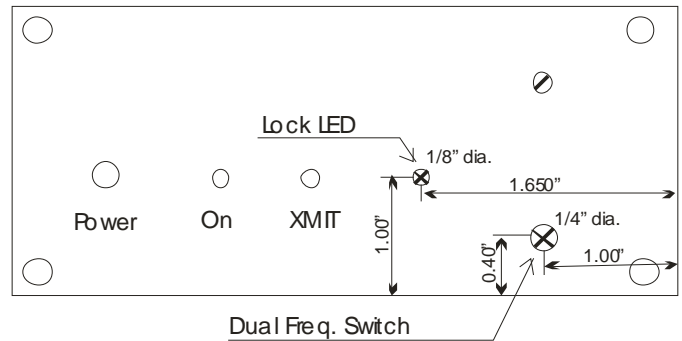
TRANSVERTER CIRCUIT MODIFICATION: The circuit modifications are simple. Do the following steps utilizing the partial component placement shown.

1. Open the transverter and remove the LO shield. It will no longer be required.
2. Remove IC1, R8, R7 and R3 from the LO section that was under the shield.
3. Attach the center conductor of a 4-1/2" length of small coax (RG188) to the pad that was shared by IC1 and R8. Attach the shield of the coax to the ground pad shared with C8.
4. Verify that L12 is not installed in your transverter. If not, connect a 6" #24 wire to the pad with C79. If C79 is not installed, place a 100 pF or larger chip cap in its position. If L12 is installed, the transverter is set up for PTT keying through the IF coax. If this keying is still desired, omit the 6" wire for now.
5. Connect a 5" #24 wire to the pad labeled +9. It is where R7 and R3 were removed.



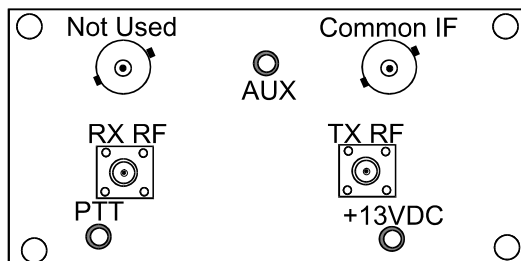
6. The alignment of the enclosure is critical in this step. See the picture. The A-32 is mounted in the top half of the enclosure with the board closest to the front panel side. Be sure that the top half of the enclosure is correctly aligned with the bottom half. Then insert the A-32 in the top half about 1/4" from the edge of the enclosure on the front panel side. Transfer the holes using a marking pen. Your choice or either drill and tap or bolt through for # 4 screws. When finished, debur the holes and attach the board to the enclosure.

7. Remove the front panel and modify as shown for the LOC LED. It will require a 1/8" hole where specified. This is for the LOC LED. Only drill the 1/4" hole if you desire a dual LO frequency switch installed. The dual frequency option can only be utilized with the same IF frequency range. I.E., the transverter may be set up to operate at 1296 with a 144 MHz IF or a 147 MHz IF if desired. Not with a 144 and 28 MHz IF. If a SPDT switch is installed, (sideways to correctly fit) attach at least 6" of wire to each terminal. The center pole is to ground, the others to the frequency selection pads. THEN, reinstall the panel and bring the wires to the top side of the PC board. Insert a 1/8" LED in the new LOC hole and solder the short lead to ground and the longer lead to the wire and C79 junction. If L12 is installed, see the **ISSUES** section at the end of the document.

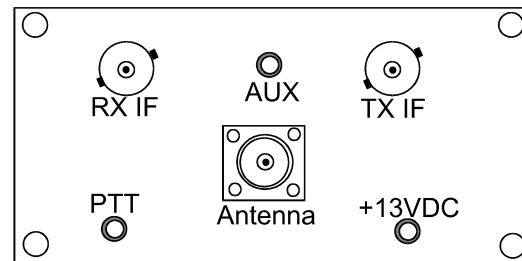


8. If you desire to use an external 10 MHz. source, (recommended for best frequency stability) over an on board 10 MHz clock oscillator, you will require a BNC connector in the rear panel. (See picture below) If there is an extra BNC connector in the rear panel, good. If not, drill the AUX connector hole to 3/8" and install a BNC. If the AUX is in use, pick a spot and drill a hole! Solder 8" of mini coax to the connector.

COMMON IF



SPLIT IF



SPLIT RF

COMMON RF

FINAL WIRING: Line up the both halves of the enclosure as shown in the previous picture and start by connecting the coax. The one from the BNC connector (if required) connects to the 10MHz REF IN on the A-32. Cut and trim the coax to fit. Then connect the other coax to the RF OUT of the A-32. Connect the +9 wire to the 6-12V+ on the A-32. Then connect the last wire to the +LOCK.

TESTING: Testing is simple. Cable up the transverter as you have used it before. Connect the external 10 MHz. source if required. Power up the transverter and the POWER LED and LOC light should light. Remove the 10 MHz. source cable, and the LOC light should go out. Test your transverter as you have before either on the air or with equipment.

ISSUES: If you have set up your transverter with the PTT through the IF coax, then L12 is installed. You will need to somehow relieve the stress of the wire pulling on the LED. You can attach the ground lead to the board and hot glue the body in the panel. A thinner gauge wire with a loop or two in it will prevent it from pulling out of the panel and breaking the lead.