



FT900 Transceiver
Low Power ADSP² Installation
Catalog Number 70-11

This document describes procedures that could result in voiding of the warranty of your radio.

If these procedures are not precisely and properly carried out, it could result in a radio that does not work or is damaged.

Furthermore, while reasonable efforts have been made to assure the accuracy of this information, it is possible that there are some errors, or that your radio is of a slightly different version than the one used for testing and thus, differences may exist. You are expected to take total responsibility for your own actions.

It is assumed that anyone following suggestions made in this document is already thoroughly familiar with the technologies and techniques involved and possesses the necessary skill and knowledge to make their own judgment as to the appropriateness and validity of the information.

If you choose to do the installation outlined, you do so at your own risk. You are solely responsible for any damage, voiding of warranty, or other harm that may come about by following these procedures. It is very strongly recommended that, if you maintain your own radio, you thoroughly familiarize yourself with the transceiver service manual. If you don't have one, get one!

CAUTION: Soldering and desoldering of very small Surface Mount Components may be required to perform this installation

IMPORTANT NOTE: Support for the ADSP² board will be provided by SGC exclusively by email. Please write to sgc@sgcworld.com for assistance if needed.

1. Technical Specifications


Specification	Low Audio	High Audio
Size	1.7 X 1.475"	2.645 X 1.475"
Weight	0.6 oz	1.1 oz
Audio Limits		
Min Input	10 mv RMS	100 mv RMS
Max Input	150 mv RMS	5 volt RMS
Max Output	.5 v RMS	9 v RMS
Power Output		5 Watts RMS
Current Consumption		
idle	80 mA	110 mA
full out	80 mA	500 mA
	X1	X2
Noise Reduction	13 dB	26 dB
Time Delay	6.5 ms	13 ms
Tone Rejection	-50 dB	-65 dB
Filters (3dB Bandwidth)		
Voice	300-2100 Hz	
CW Wide	400-900 Hz	
CW Narrow	600-700 Hz	
Out of Band Rejection	-45 dB	

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2. Preparation

The ADSP² installation provides you with an unprecedented ADSP capability, far beyond what you can find on most amateur radio transceivers.

Every possible effort has been made to provide you with a simple, easy to use product. One where you can concentrate on your communication and not on fiddling with knobs. SGC's ADSP² will give you years of service improving your ability to communicate.

- ***Prepare your work area***

- ***Assemble your tools and parts***

- ADSP² board
- ADSP² switch assembly
- Double-stick tape for mounting the board
- Tools for disassembling your transceiver
- soldering iron suitable for working with Surface Mount Devices

3. Install the ADSP² Board

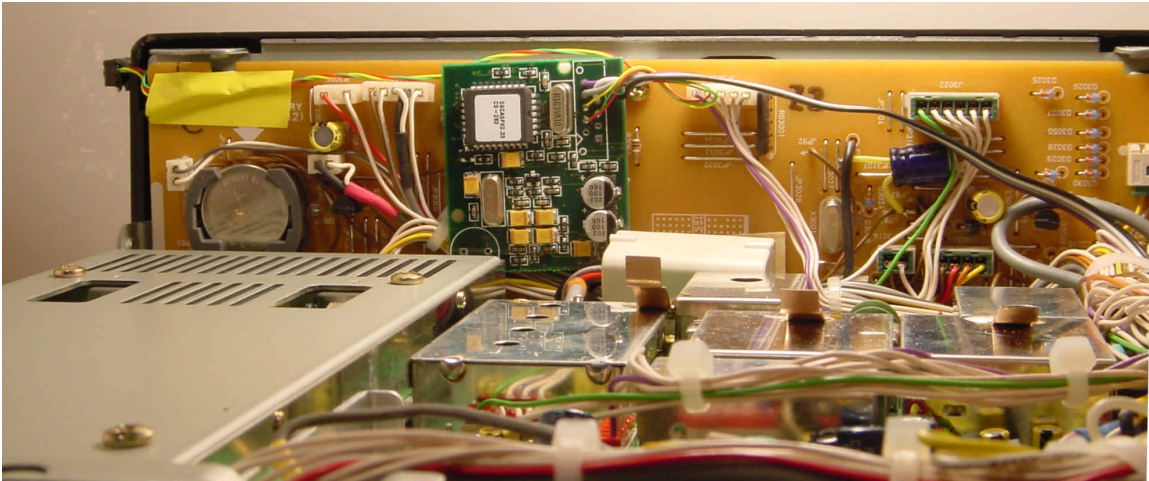
- ***Open your transceiver***

- ***Remove the backing from the double-stick foam tape and attach the ADSP² assembly into a convenient location***

We shoes to mount the board on the vertical board behind the front panel. This location was convenient and allowed us to run the switch wires out to the left side in the picture below. There was no convenient hole through the transceiver's case, so we filed a small gap between the front panel and the front panel just to the left of the yellow tape in the picture to allow us to run the switch wires outside of the box.



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□ **Connect the ADSP² into the signal path**

The following connections will be made between the ADSP² board and the transceiver:

- Pin 7 to 12V DC, White wire
- Pin 9 to DC ground, Black wire
- Pin 8 to audio in to the ADSP², Gray wire
- Pin 10 to the audio out from the ADSP², Brown wire

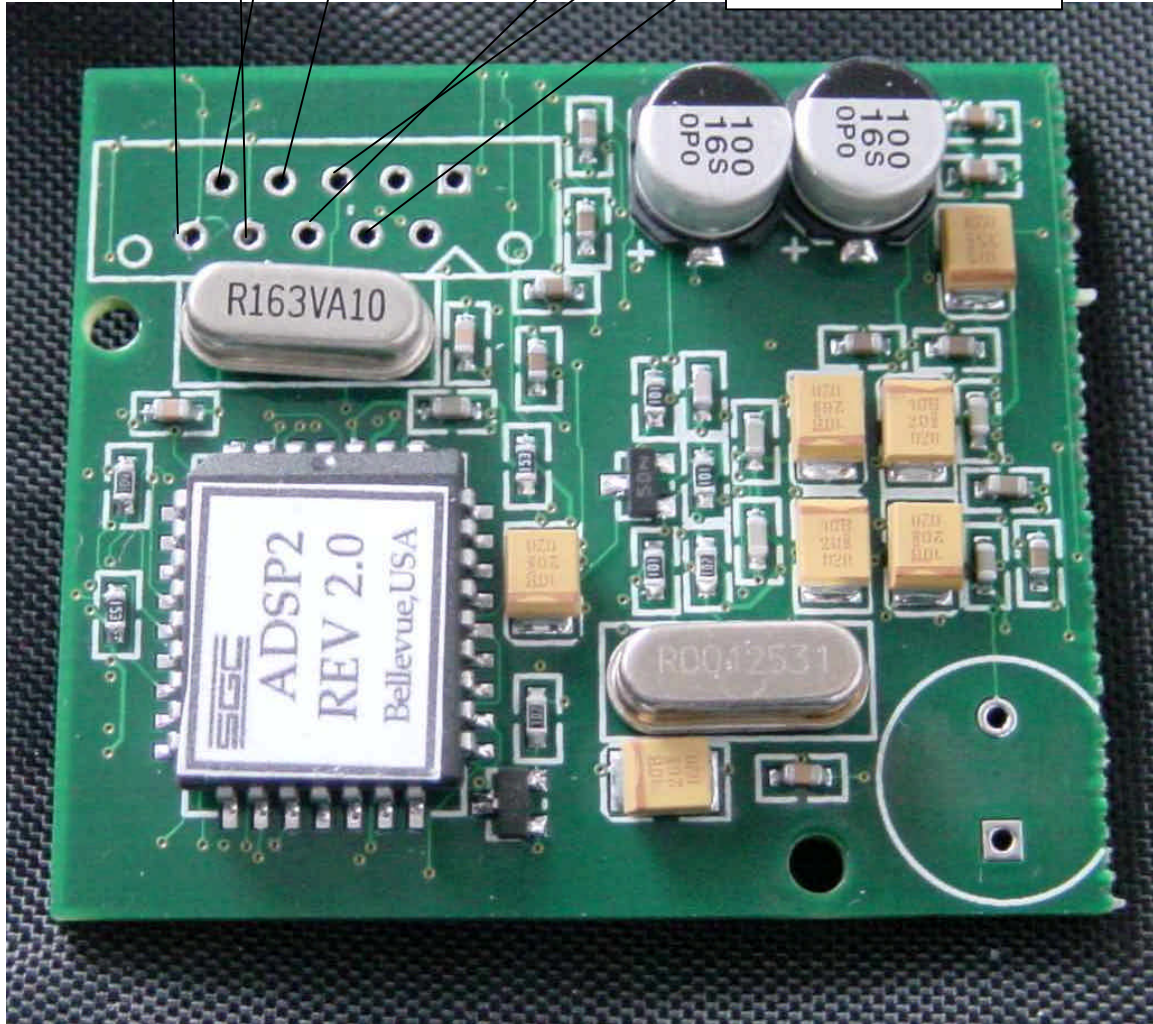
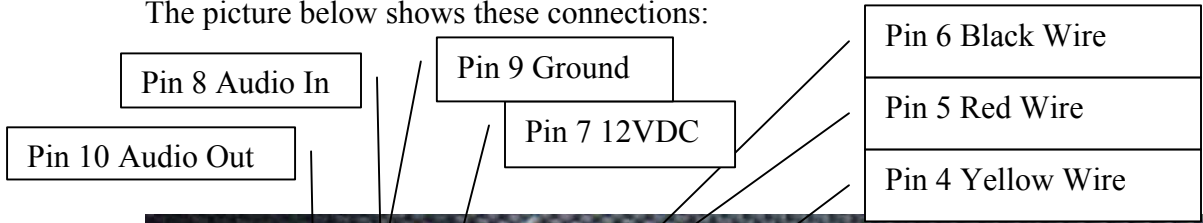
You will also need to make the following connections to the board from the momentary switches provided for switching ADSP modes and Filters:

- Pin 4 to the Yellow Wire
- Pin 5 to the Red Wire
- Pin 6 to the Black Wire



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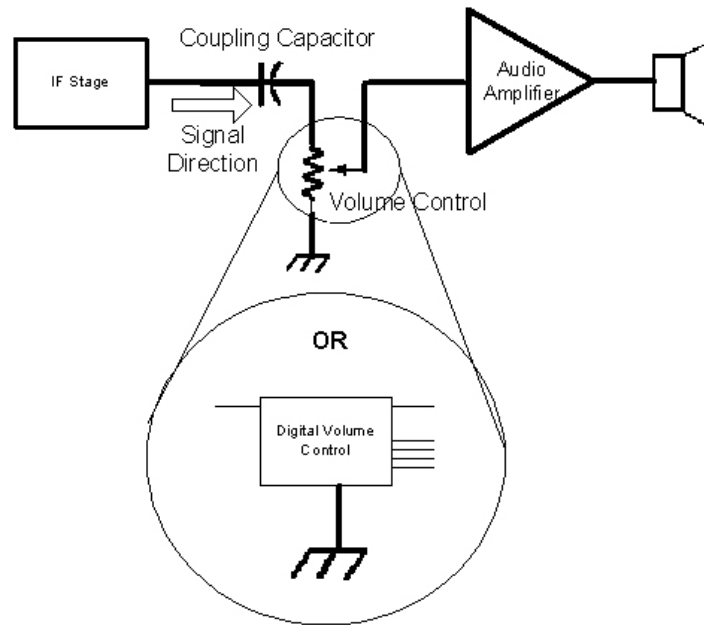
The picture below shows these connections:



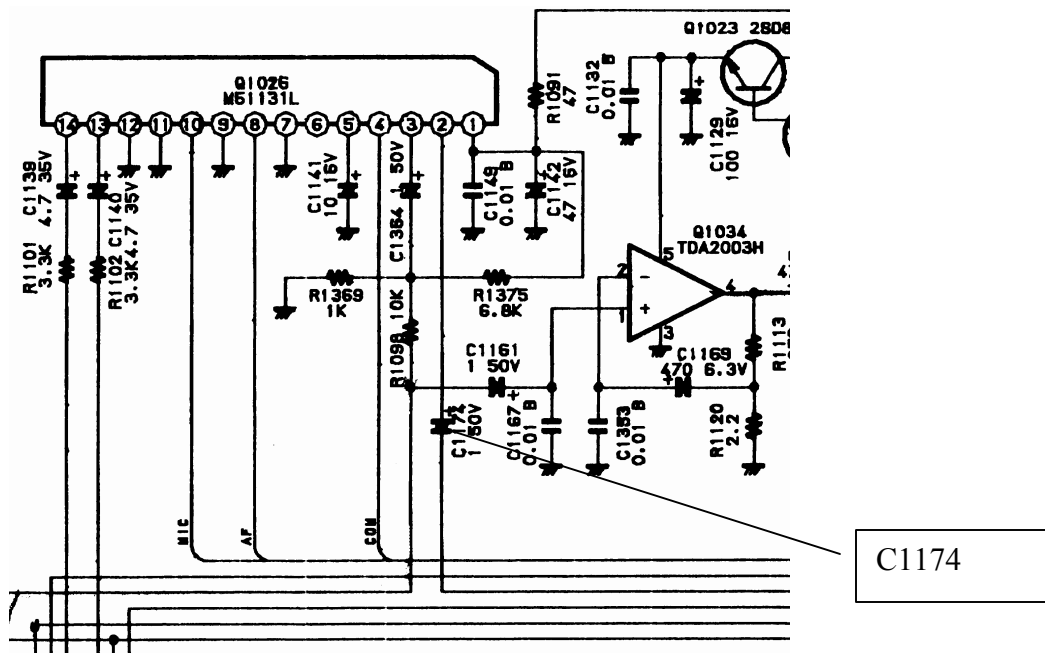
The audio path should be broken at the input to the audio amplifier just before the volume control. The only requirement at this point is that a minimum of 10 millivolts RMS and a maximum of 150 millivolts RMS will appear at this point when using the Low Power version of the ADSP². Normally, there is a capacitor at this point (0.1 uf is a typical value) to couple the stages together. Remove this capacitor and connect the ADSP² board in its place. The board has coupling capacitors on its input and output.



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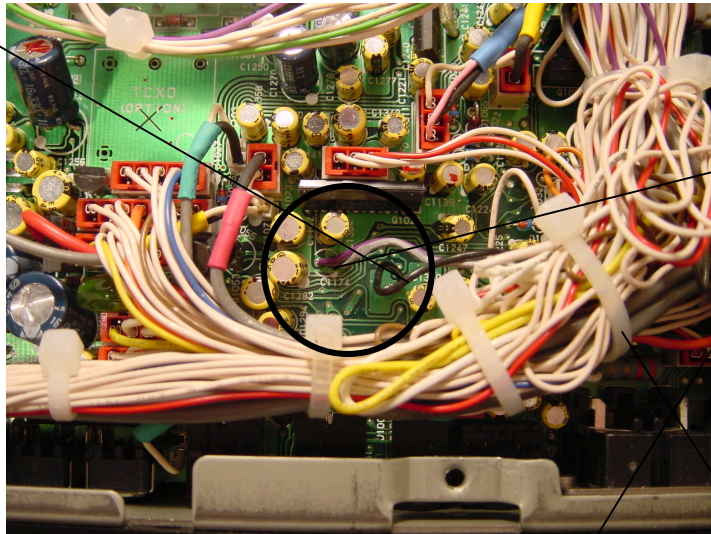
SGC recommends removing the C1174 coupling capacitor and connecting the audio in/audio out connections across where the capacitor was.



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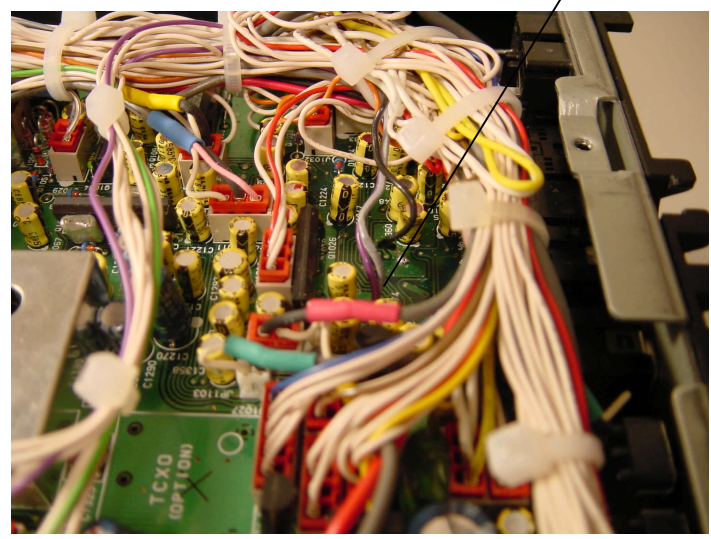
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GND wire tacked directly to ground plane



Location of C1174

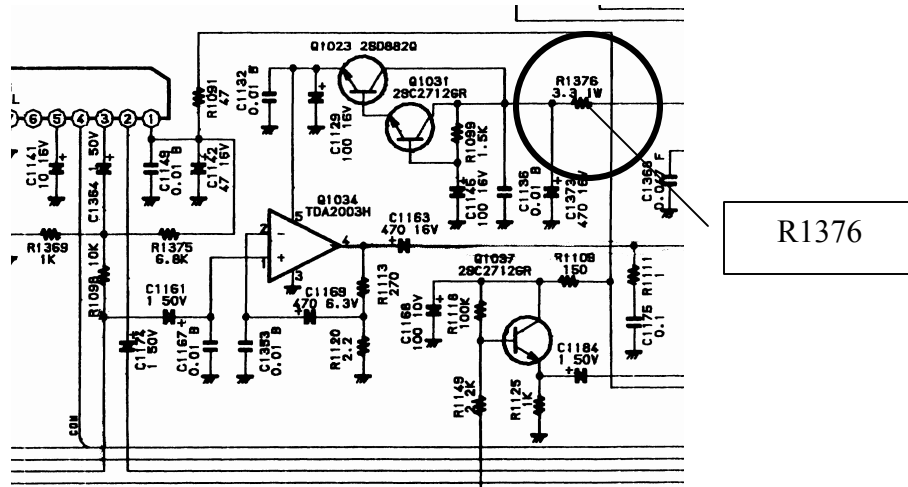
R1376 – 12 VDC (under the wire bundle)



12 VDC can be taken from any point where it is convenient and the ground can be connected to any convenient point which is connected to the chassis ground. There are a number of suitable locations to connect 12 VDC and GND. We chose to connect to R1376 to get 12 VDC and to scrape clean a point near C1360 to tack to the board ground plane.



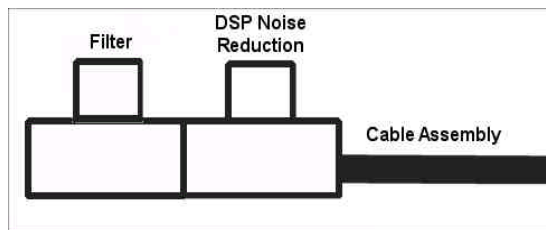
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- Route the ADSP² switch assembly out of the transceiver body**
- Connect the switch assembly to the switch wire connector**
- Reassemble the transceiver**

4. Test your transceiver

The switch buttons are assigned to their functions according to the diagram below:



Each switch steps through its functions in order as shown below under testing.

- Testing the ADSP Functions**

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- Press & Release the ADSP² Pushbutton for Noise Reduction X1
- Press & Release the ADSP² Pushbutton for Noise Reduction X2
- Press & Release the ADSP² Pushbutton for No Reduction
- Repeat several times to verify operation

□ **Testing the Filter Functions**

- Press & Release the Filter Pushbutton for the Voice Filter
- Press & Release the Filter Pushbutton for the Wide CW Filter
- Press & Release the Filter Pushbutton for the Narrow CW Filter
- Press & Release the Filter Pushbutton for No Filter
- Repeat several times to verify operation

5. Installing the Switches

The switches may be installed in any convenient location. The specific choice of switches was made to make it easy to mount on nearly any transceiver. Some people have chosen to install their switches on the side of the unit, others have preferred the top, and some on the front. Your specific installation will determine what the best location is.



SGC mounted the switches on the FT900 on the right side when looking at the front panel.

SGC welcomes any suggestions regarding these switches to improve installation and operation.

CAUTION: Overdriving the ADSP2 module may cause distortion. Backing off the level of the input signal will avoid it.

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