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# *RTC Real Time Clock Module Manual*

*Hardware Revision 2.0*

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# Introduction

Congratulations on your purchase of the RTC Real Time Clock Module! The RTC is designed for use with our RC210 Deluxe Repeater Controller and provides a high accuracy Real Time Clock and Calendar, as well as additional memory space for the RC210.

The RTC measures only 1.5" x 1.3" and mounts directly to the RC210's pc board in seconds.

## Features

- ❑ High accuracy Real Time Clock.
- ❑ Accuracy +/- 2 ppm 0c to +40c, +/- 3.5 ppm -40c to +85c
- ❑ Calendar automatically corrects for Leap Years
- ❑ Provides an additional 30 Remote Base Memories (Memories 11 – 40)
- ❑ Provides an additional 30 Message Macros (Memories 41 – 70)
- ❑ Provides an additional 30 DTMF Memories (Memories 21 – 50)
- ❑ Plugs into RC210 board without using a Radio Port
- ❑ Provides feedthrough signaling for AP1 Intelligent Autopatch
- ❑ Provides an additional 256K of memory for future expansion

## Description Of Features

### Clock And Calendar

The RTC provides extremely accurate realtime clock (RTC) with an integrated temperature compensated crystal oscillator (TCXO) and crystal. The RTC also incorporates its own on-board lithium backup battery and maintains accurate timekeeping when main power is removed from the RC210. The lithium battery life is approximately 10 years.

### Additional Memories

The RTC also provides additional non-volatile storage space that enhances the RC210 operations. 30 additional memories are provided for Remote Base Memories as well as 30 more memories for Memory Macro and DTMF Memories.

### Future Expansion

There is an additional 256K of non-volatile memory onboard as well, to be used for future expansion of features of the RC210.

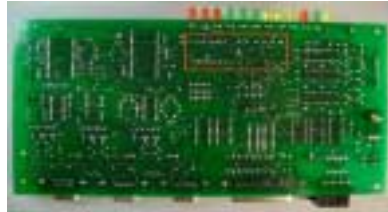
**Please note that you must have firmware version 5.281 or later installed in the RC210 in order to use the RTC. If necessary, refer to the RC210 Operations and Programming Manual for directions on how to upgrade the firmware.**

# RC210 Modification

If you have a version 3.0a pc board or earlier, you will need to perform a simple modification to your controller in order to be able to use the RTC. **If your pc board is a later version, you may disregard this section.**

In order to use your existing RC210 pc board with our Real Time Clock (RTC) daughterboard, it is necessary to “tap” the 16 mHz clock signal from the RC210’s CPU and route it to the I/O Expand Header. Fortunately this is simple to do and requires only one wire.

Remove the RC210 pc board from the Rack Mount Enclosure (if applicable) and turn it so it is oriented as shown below. You will be working in the area shown by the red square.



Install a wire from pin 6 of the I/O Expand connector as shown to the solder pad as shown (this pad is one leg of C21, a 22pf capacitor) . While the added wired does not have to be as taught as a guitar string, keep it as short and direct as possible.

That's it! Reinstall the rc board in the Rack Mount Enclosure (if applicable) and your RC210 is ready to place back in service



## Connecting The RTC To The RC210

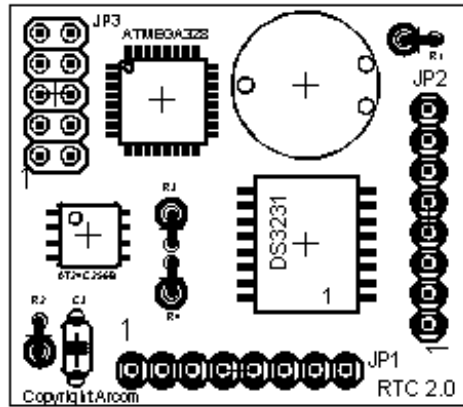
Installation couldn't be simpler. Simply plug the RTC Board Connector (JP1) onto the RC210's I/O Expand 8 pin header. If you have the optional AP1 Intelligent Autopatch, first remove its 8 pin connector from the RC210's I.O Expand Connector.

Take care to insure you have it oriented correctly (pin 1 to pin1). When done, it should look like this:



If you have the optional AP1 Intelligent Autopatch, plug its 8 pin connector into the RTC's JP2 connector, taking care to line up pin 1. That's it! Now power up your RC210 and set the clock and calendar (which should be the last time you ever have to do that!)

# PC Board Layout



# Schematic

