

# RAC (Radio Alarm Clock)

coreWeaver / ioConnected

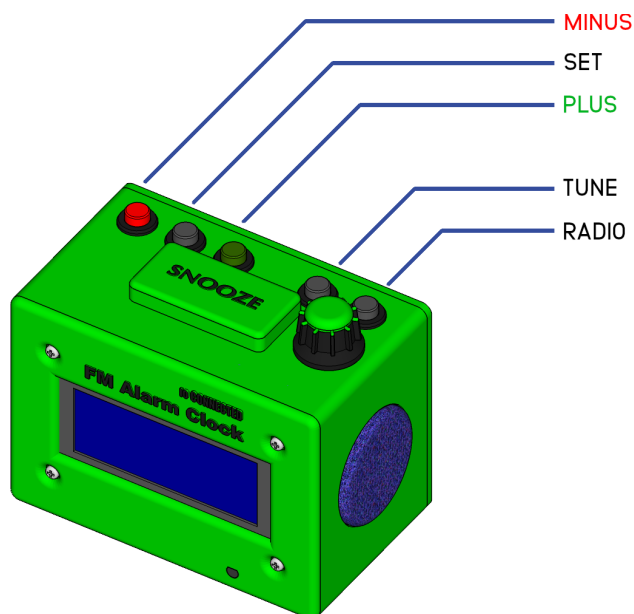


## FM RADIO ALARM CLOCK

- **CLOCK / CALENDAR / ALARM**
- **DEDICATED RTC CHIP**
- **BACKUP BATTERY**
- **20X4 LCD**
- **FIVE CONFIG. KEYS**
- **SNOOZE BUTTON**
- **PIEZO BUZZER**
- **76-108 MHZ FM RADIO**
- **AUDIO AMPLIFIER**
- **2 SPEAKERS**
- **FREQUENCY FINE TUNING**
- **VOLUME CONTROL**
- **SILENT ALARM**
- **LOW POWER**
- **PC APPLICATION**
- **3D PRINTED CASE**
- **OPEN SOURCE**

## Controls Overview

ISO view of the RAC showing the control buttons:



Each button performs specific actions when pressed in different situations. For instance if an alarm event is currently ongoing, or depending on the FM Radio Module current state (ON/OFF), a button may have different controls assigned to it.

Same goes for the duration of the button press (short/long).

Each of these situations and commands are described in the section below.

- Pressing the "**RADIO**" button will toggle the FM Radio ON/OFF
- Pressing both the "**RADIO**" and the "**SET**" buttons at the same time will change the LCD's Backlight Mode. There are two illuminations mode available:
  1. Backlight Always ON
  2. Auto Dimming 2 seconds after the last button press
- Pressing the "**PLUS**" button while the Radion is ON will switch to the next available Radio station
- Pressing the "**MINUS**" button while the Radion is ON will switch to the previous Radio station
- Pressing the "**PLUS**" button while the Radio is OFF will show the current Date and the measured Temperature, if one or more temp. Sensors are detected
- Pressing the "**MINUS**" button while the Radio is OFF will show the current Alarm configuration (Set, Time, Type of Alarm)
- Pressing the "**TUNE**" key while the Radio is ON will open the "Fine Tuning" submenu
- To slowly increase the current radio station's frequency press "**PLUS**" while in the "Fine Tuning" submenu
- To slowly decrease the current radio station's frequency press "**MINUS**" while in the "Fine Tuning" submenu
- Pressing the "**SET**" button in the "Fine Tuning" menu will accept the new frequency value for the selected radio station. This new value will also remain saved in the microcontroller's EEPROM
- Pressing the "**TUNE**" key when the radio is OFF will enter the UART Utility Mode. In this mode the Radio Alarm Clock will accept READ, WRITE and ERASE commands coming from a computer running the special RAC application. You'll need to use an USB – UART converter to establish the communication with the computer.

Pressing the **"SET"** key (long press) will enter the configuration main menu. You can use the **"PLUS"**, **"MINUS"** and **"SET"** keys to navigate and change the values. The available options are:

- Set new Time
- Set new Date
- Set new Alarm
- Alarm Options

### ***Setting new Time***

for each "Hour", "Minute", "Second" use the **"PLUS"** / **"MINUS"** keys to increase or decrease the value. When you're done press the **"SET"** key. The new Time value will be also written in the RTC's EEPROM. Since the RTC is battery backed up the Time and Date values will not be affected incase of power failure.

### ***Setting new Date***

same as above.

### ***Setting new Alarm***

same as above. The new Alarm will overwrite any pre-existent Alarms. The Time and Type of the Alarm will be written in the microcontroller's EEPROM and they will be preserved incase of a power failure.

### ***Alarm Options***

you can change the way the Radio Clock will behave when an Alarm has been detected. You can deactivate it or choose one of the three types of alarms:

- Wake up with Radio
- Buzzer Alarm
- Light Only

When an Alarm event begins the RAC will react according the the Alarm type which has been set. It will either turn ON the radio, or use it's internal piezo buzzer to acustically signal the alarm or it will remain silent indicating the alarm by flashing the LCD's backlight and the internal LED.

The "**SNOOZE**" button:

- if there's currently no alarm, a short press will shortly illuminate the display
- a long press will illuminate the display and will completely disable any alarm

While an Alarm is being signaled, pressing the "**SNOOZE**" button will pause the alarm for 5 minutes. This can happen 3 consecutive times. After that any "**SNOOZE**" short press will stop and postpone the Alarm for the exact time of the next day.

A long "**SNOOZE**" press will disable the alarm.

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