

# The S02R Mini

S02R In Your Palm!

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By Marty Sullaway, NN1C

# What This Is...

- S02R Mini Overview
  - How it came to be
  - Design background
  - What it does
  - What it doesn't do
  - How you can get one
- What this isn't...
  - Anything to do with how to do S02R
    - Ask Randy or Doug!



# Why SO2R Mini?

- Late Fall, 2018, W1UE asks NN1C for audio switching box!
- Prototype used at HQ9X for ARRL CW 2019
- “Let’s make it a real SO2R box and sell a few!”
- The journey begins



# Design Principles

- Cheap and easy.
- Arduino-based.
- No custom enclosures.
- Hackable and accessible.
- Does a few things well, not everything to everyone.



# Design Timeline

- March, 2019 - Initial Designs
  - May, 2019 - First PCBs Made.
    - “Does it fit in the case?”
    - “How many traces did Marty screw up?”
  - Summer 2019 - Not much, Marty is busy.
  - September, 2019 - it works!
    - K1XM joins to help with some hardware, writes S02R Mini Connector.
  - October 2019 - Case designs are finalized.
  - November 2019 - Initial Orders.
  - January, 2020 - All orders fulfilled.
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# The Built SO2R Mini

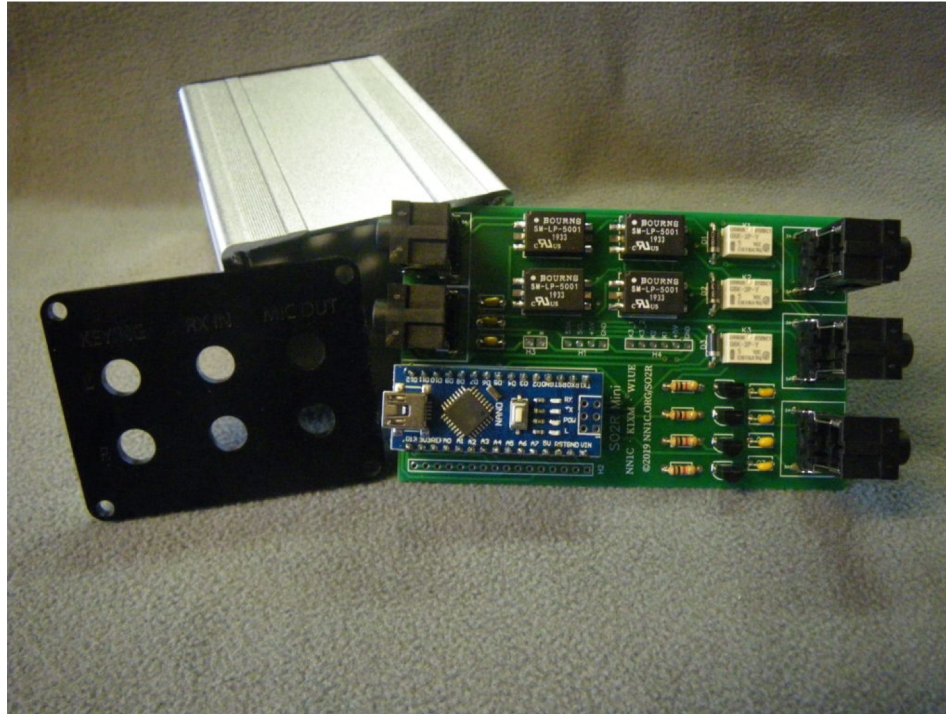
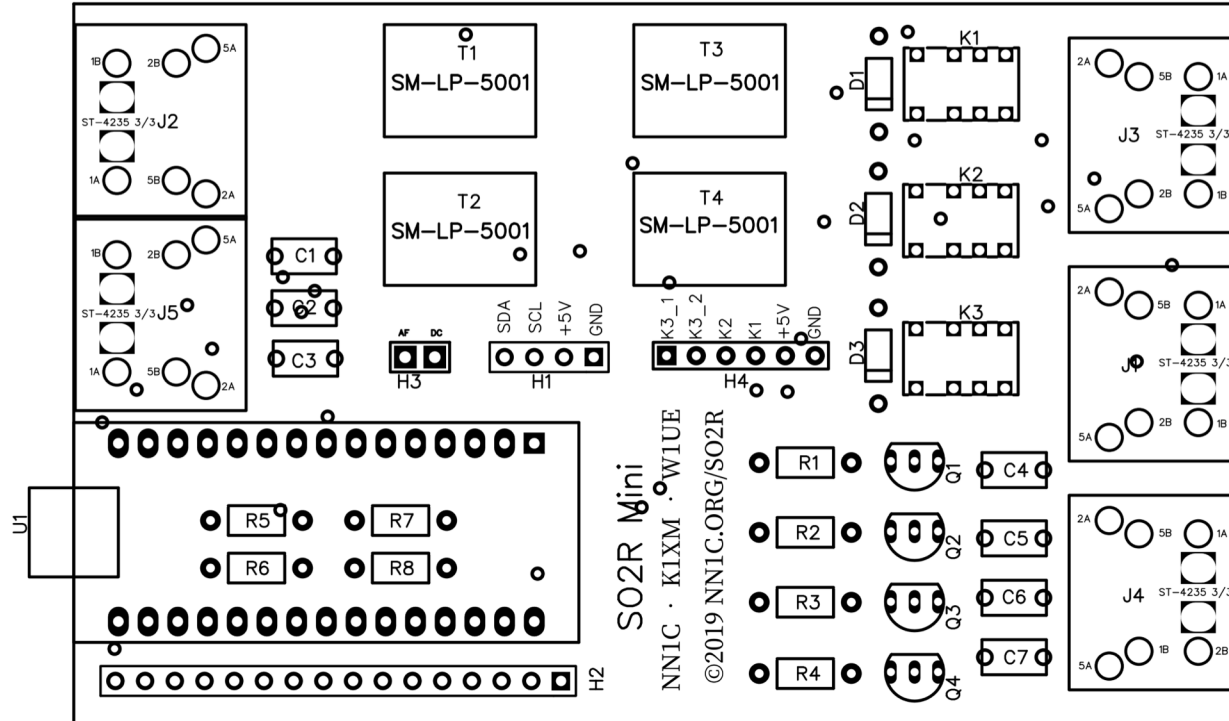


Photo Credit: Rich, N1IXF

# SO2R Mini PCB Silkscreen



# Unit Features

- Laser Cut “end panels” to make for easy production.
- The normal audio stuff
  - Transformer isolated RX audio switching (Relay switching)
  - Mic audio switching
- The normal keying stuff
  - PTT/CW keying - built in WinKey emulation
- Headless - Ships with no switches/knobs
  - All computer control
- Computer control via Arduino Nano
  - “Speaks” K3NG WinKey emulation library with K1XM addition.
  - Hardware supports adding LEDs and switches for TX/RX focus
  - Can add speed pot.





# “Bonus” Features - Hardware Supported

- **“Aux” Header**
  - Dual Paddle Support
  - Dual Footswitch Support
  - Speed Pot
  - PTT interlock (Handy for S03R, M/xx)
- **I2C Interface**
  - Remote control head in the works
- **LED Interface**
  - Resistor and LED wire pads on board for indicators
- **Antenna Switching**
  - Not fully developed, nag K1XM if wanted.



# What We Lack (YCCC S02R Comparison)

- Serial Device, not HID (It has a COM port)
- No front panel interfaces
- Only 2 radio supported
- Relay RX audio switching



# Software Notes...

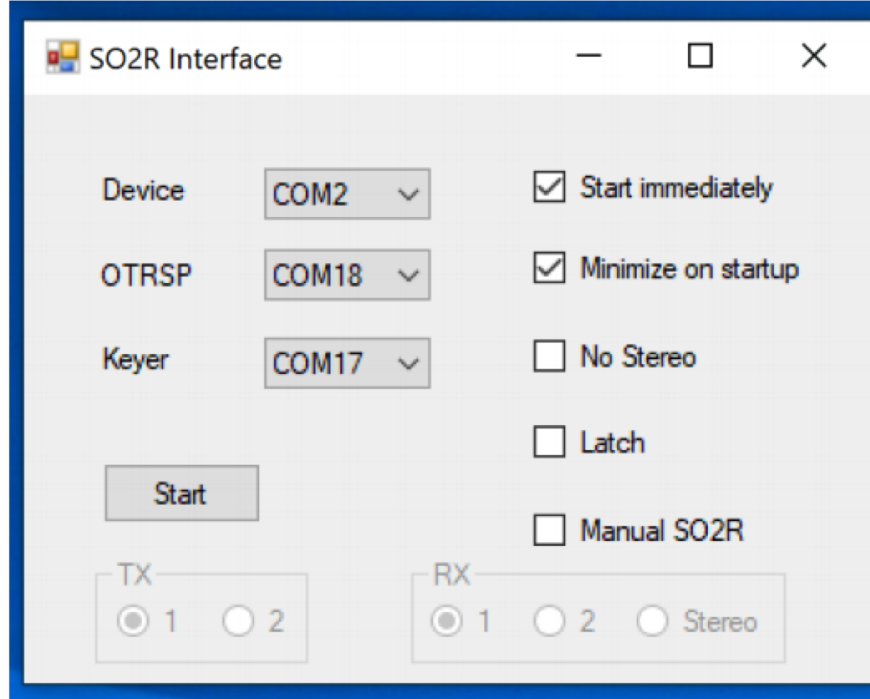
- **S02R Mini Connector Program**
  - Speaks to S02R Mini
  - Speaks OTRSP and WinKey to your logger
- Any logger that can handle OTRSP and WinKey can handle S02R Mini.
- Rumor has it that SkookumLogger support is coming.



# SO2R Mini Connector

Uses two  
virtual com  
port pairs.

Instructions  
for the popular  
loggers on the  
website.



# Website With More Info...

## NN1C — Blog, Products, and Productions

The home of Marty Sullaway, NN1C

Home	About Marty	Presentations and Media	Contact NN1C!	Icom Radio Transmit Inhibiting: ICM_TXD	SO2R Mini: SO2R Box In Your Palm	
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## Software and Manuals

Complete documentation, including the Schematic, PCB and Arduino sketch, and all software for this project are available. They will be posted on this website as they are either completed or ready for posting.

## Documentation

[SO2R Mini Build Guide](#)

[SO2R Mini Station Cabling and Installation](#)

[Updating SO2R Mini Firmware](#)

[N1MM+ and SO2R Mini Setup Guide](#)

[Win-Test and SO2R Mini Setup Guide](#)

[SO2R Mini PCB Silkscreen](#)

[SO2R Mini Schematic](#)

[VA6AM Filtering Systems For SO2R Mini](#)

## Downloads and Software Links

[SO2R Mini GitHub Repo](#)

[SO2R Mini Connector Software V1.0](#)

[SO2R Mini Arduino Firmware Compiled \(Hex\)](#)

[SO2R Mini Arduino Firmware – Sketch](#)



### Pages

- [Home](#)
- [Icom Radio Transmit Inhibiting: ICM\\_TXD](#)
- [Order SO2R Mini](#)
- [SO2R Mini: SO2R Box In Your Palm](#)
- [Software and Manuals](#)
- [Updating SO2R Mini Firmware](#)

# Buying SO2R Mini

- **Online**
  - \$60 as a kit (1 hour to build)
  - \$110 assembled and tested by W1UE.
- **Today**
  - \$50 cash as a kit (\$53 via PayPal)
  - \$100 cash assembled and tested (\$103 via PayPal)
- **Lots of documentation online.**
  - [SO2R.org](http://SO2R.org)



# Questions?

- I contest, please work me.
  - NN1C@K1VR - ARRL DX CW - If you're somewhere warm, work me.
  - NN1C@ZF1A - ARRL DX SSB - If you're freezing, work me.
- I'm outta here.
- This talk will be on [nn1c.org](http://nn1c.org) by the time you wake up tomorrow.

