

Tode-RC

Development Guide

Using Arduino-Mega Pro and Ebyte E32

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Feel free to use: no strings attached (text content only / images respectfully referenced)

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1. INTRODUCTION

1.1 Project Goals

- ✓ Features
 - Adaptable Hardware Configurations
 - User friendly IO Configurations
 -

1.2 To-Do List

1.3 Feature Requests

1.4 Links

- ✓ The project is Open Source and its main page Resides at: <https://github.com/TGit-Tech/Tode-RC>
 - Releases (All Finalized Plans, Files and Documentation) can be downloaded at: <https://github.com/TGit-Tech/Tode-RC/releases>
 - This document (most recent version) can be seen at: <https://github.com/TGit-Tech/Tode-RC/tree/main/docs>
 - Pre-Built Purchasing options are available – See the projects main page link above

A. Signal Strength (2-Miles)

- ✓ Standard Signal distance is recommended for usage of up to 2-miles
 - Elevated or higher gain antennas can be purchased to extend this range
 - Test Scenario

2. BILL OF MATERIALS - \$

2.1 Tools

2.1.1 Required Tools

- ✓ 3D Printer
- ✓ CNC Mill
- ✓ Soldering Iron & Solder

2.1.2 Recommended Tools

- ✓ Solder Reflow Oven

2.2 Electronic Modules - \$17.40

- ✓ AliExpress order date 20BC
 - Ebyte E32-433T30D LoRa [\$81.60/10] Savings [\$159.00/20] = \$7.95/ea
 - Mega 2560 PRO Boards [\$60.07/10] Savings [\$127.35/20] = \$6.37/ea
 - WeAct 1.8-in TFT [\$2.52/1] Savings [\$61.51/20] = \$3.08/ea
 - TOTAL = \$17.40

2.2.1 Mega Pro 2560

- Mega 2560 – Incoming Voltage 6V to 9V (peek 18Vdc)
 - Output: 5Vdc @ 800mA
 - Output 3Vdc @ 800mA

2.2.2 Ebyte E32

- Ebyte E32
 - Input: 3.3V – 5.2Vdc (Over 5.0Vdc for best preformance; over 5.2V will damage)
 - Data Rate: 0.3Kps to 19.2Kps
 - Transmit Current: 106mA, Receiving Current: 15mA

2.2.3 TFT Screen

2.3 Electronic Parts

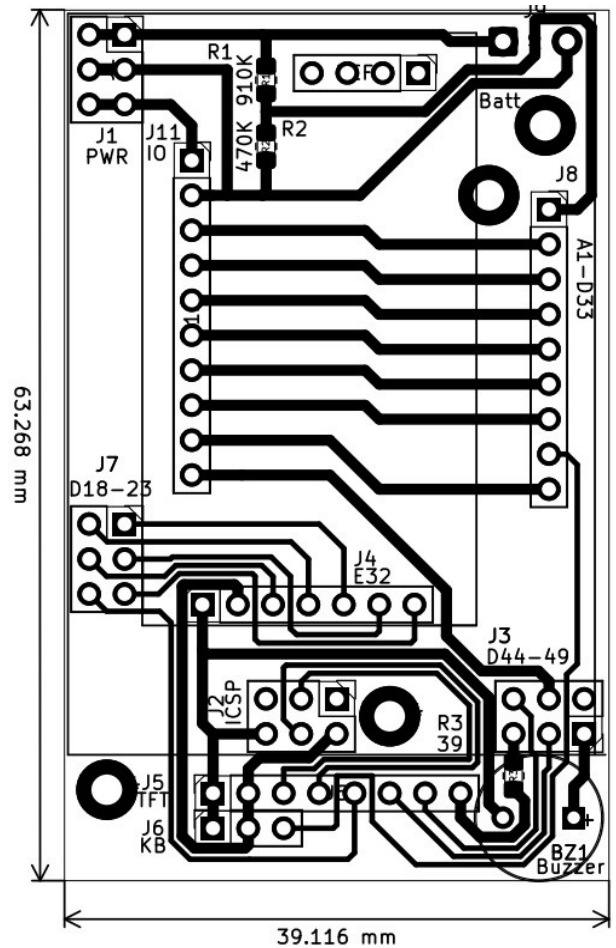
2.4 Raw Materials

- ✓ 3D Prints
 - 3D Solutech White PLA (\$15.99/ea + tax is \$84.75 for (5) 1Kg Rolls = \$0.01695/gram)
 - Tode-Handheld-BackCover-E32-433T30D.STL 24g / 2hr 23m [\$0.10/g] = \$0.41
 - Tode-CenterCover-Mega2560 18g / 1hr 44m = \$0.31
 - Tode-ScreenKeybCover-TFT1.77.STL 13g / 1hr 17m = \$0.22
 - Tode-WingIO-PS+20ST+2RY 33g / 3hr 6m = \$0.56
- ✓ PCB
 - (2) 4" x 3" Cu-Clad Single-Sided
 -

3. PCB DEVELOPMENT

3.1 BackPlane

- ✓ NOTICE
 - BEFORE soldering power wires to DC barrel jack; Put wires through jack nut
- ✓ Electronic Components
 - Female Dupont 2.54mm pitch connectors
 - J1-3, J7 6-Pin (2x3)
 - J5 (TFT) 8-Pin Long Lead
 - J6 (KB) 3-Pin Long Lead
 - J8 (A1..) 9-Pin
 - J11 (IO) 10-Pin
 - J4 (Ebyte E32 – direct solder)
 - BZ1 Micro Piezo Buzzer
 - R1 910K-ohm 0805 SMD Resistor
 - R2 470K-ohm 0805 SMD Resistor
 - R3 39-ohm 0805 SMD Resistor
- ✓ PCB
 - (1) 4" x 3" Cu-Clad – uses only 1/2
- ✓ Connectors
 - (1) 10-Pin Female 2.54mm Dupont
 - (4) 6-Pin (2x3) 2.54mm Dupont
 - (1) 9-Pin
 - (1) 8-Pin Long Lead 2.54mm Female Dupont
 - (1) 3-Pin Long Lead 2.54mm Female Dupont
- ✓ Other
 - 22AWG Red and Black Wire
 - (2) M2.5x0.400 – 6mm long Machine Screws and Nuts



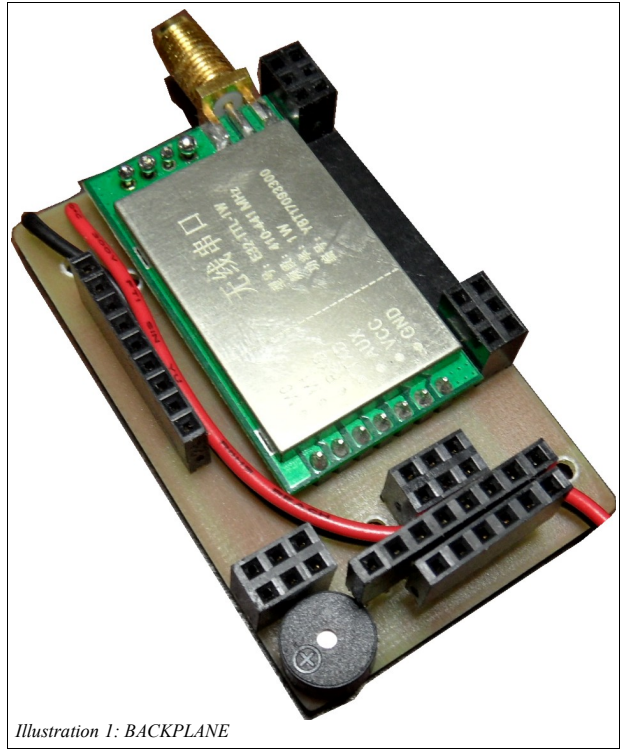


Illustration 1: BACKPLANE

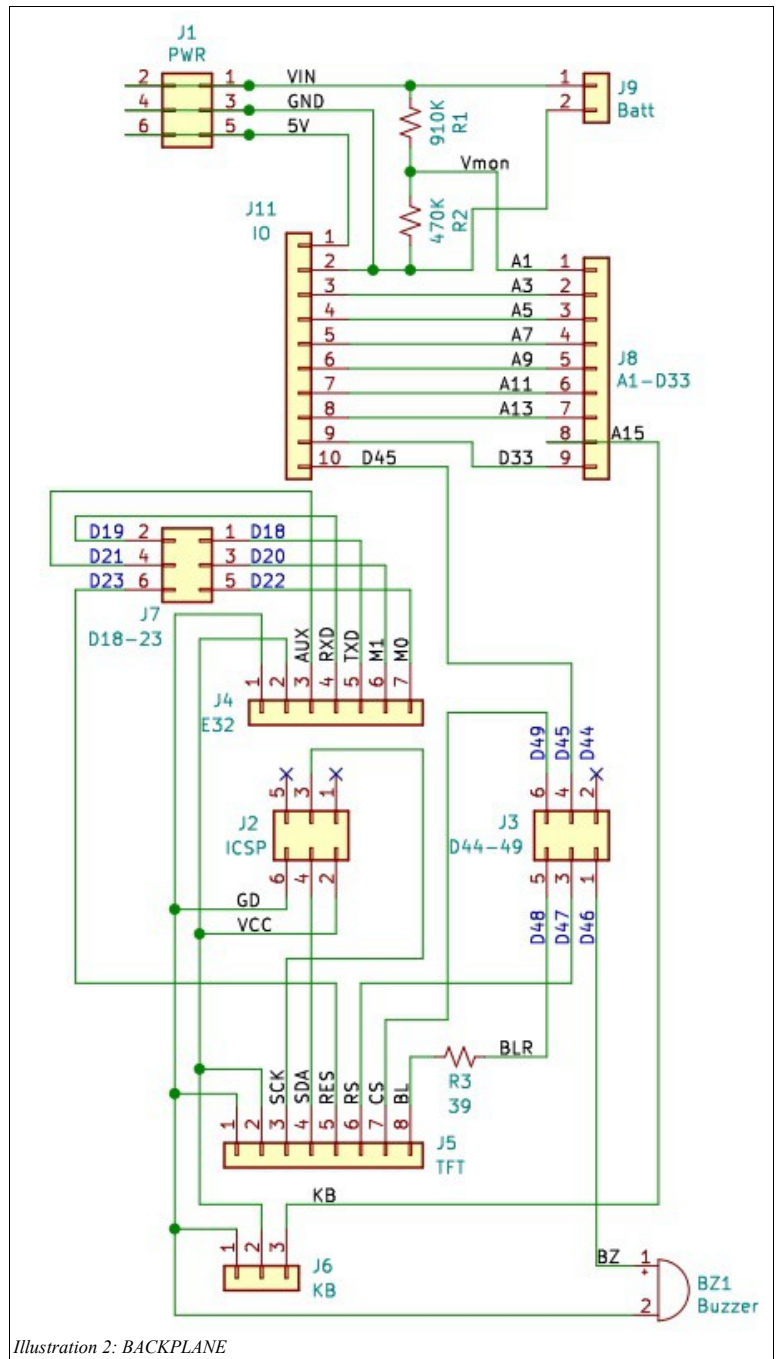


Illustration 2: BACKPLANE

✓

3.1.1 Costs

✓

4. SOFTWARE