

# Tode-SIOST-CB

## *Hardware Development* Side-IO Screw Terminals - Commercial Box

by TGit-Tech [ <http://www.TGit-Tech.com> ] Last Updated: 2024-01-25

Compatible with [S]ide-IO Tode-RCs - Models: SA212K & SD23CF

Fitted for Joinfworld 6x6x4 Outdoor Box Enclosure with Clear Lid.

**This guide covers everything needed to build the Screw Terminals (Right of Tode).  
Screw Terminals can be used inside or outside an enclosure.**



# 1. Table of Contents

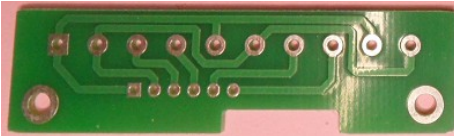
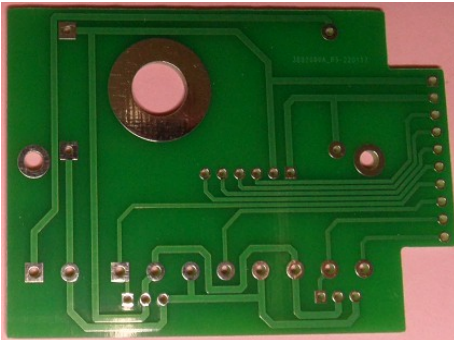
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TOTAL Screw-Terminals with Outdoor Enclosure:		\$32.04	

## 2. Screw Terminal Block





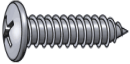
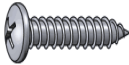

### 2.1 Bill of Materials (BOM) \$5.84

#### 2.1.1 Parts \$1.66

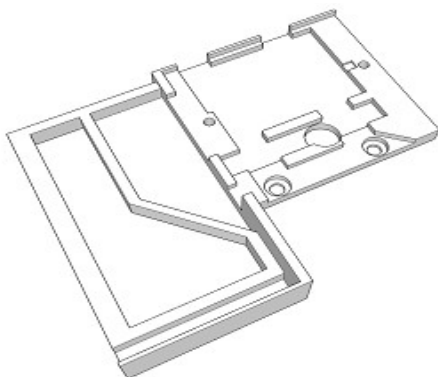


- Bottom PCB
  - Design Software: Kicad
  - Folder: \Tode-IO-Options\Side-IO 3D-Printed Box\kicad\SIOST-BOTTOM\SIOST
  - Manufacturer: jlcpcb.com
  - Batch Price: \$33.96 per 100
  - Pricing: \$0.34/ea
- Top PCB
  - Design Software: Kicad
  - Folder: \Tode-IO-Options\Side-IO 3D-Printed Box\kicad\SIOST-TOP\SIOST
  - Manufacturer: jlcpcb.com
  - Batch Price: \$10.11 per 50
  - Pricing: \$0.20/ea
- (2) KY-019 5V 1-Channel Relay Module Board
  - \$0.56/ea = \$1.12

2.1.2 Supplies \$3.18

	<p><b>(1) 1x10P 90° Male Pin Header</b> Dupont 2.54mm-Pitch For Side-IO Plug @<b>\$0.10/ea = \$0.10</b></p>		<p><b>(1/2-Sheet) Adhesive Shipping Label</b> @<b>0.04/sheet = \$0.02</b></p>
	<p><b>(9) CUI 1x2P Screw Terminals</b> 5.08mm Pitch @<b>\$0.30/ea = \$2.70</b></p>		<p><b>2-Inch Clear Packing Tape</b> Weatherproof Label</p>
	<p><b>(2) #4 x 3/4" Phillips-Pan Screws</b> Standoff-HighRelay \$0.08/ea = <b>\$0.16</b></p>		<p><b>(1) #2 x 1/4" Phillips-Pan Screw</b> Standoff-Label \$0.04/ea = <b>\$0.04</b></p>
			<p><b>(4) #2 x 1/4" Phillips-Flat Screw</b> Relays \$0.04/ea = <b>\$0.16</b></p>

2.1.3 3D-Prints \$1.00



#### **SIOST-1W.stl**

Folder: ./Tode-IO-Options/Side-IO Commercial Box/3DPrints/stl

Layer Height: 0.2mm

Infill Density: 100%

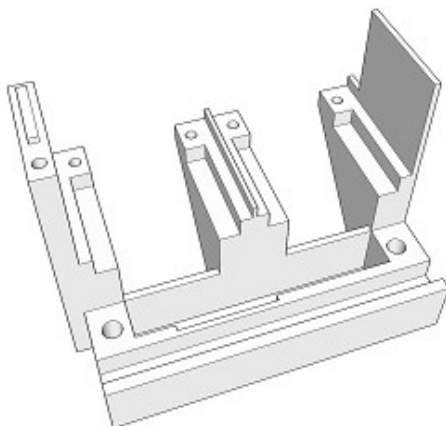
Supports: OFF

Plastic: 24-grams @ \$0.02/g = \$0.48

Printer-use: @ \$0.0015/g = \$0.036

Power: 3h 02m @ \$0.01/hr = \$0.03

**TOTAL COST: \$0.546**



#### **SIOST-Standoff-HighRelay.stl**

Folder: ./Tode-IO-Options/Side-IO Commercial Box/3DPrints/stl

Layer Height: 0.2mm

Infill Density: 100%

Supports: OFF

Plastic: 19-grams @ \$0.02/g = \$0.38

Printer-use: @ \$0.0015/g = \$0.0285

Power: 2h 52m @ \$0.01/hr = \$0.03

**TOTAL COST: \$0.4385**



#### **SIOST-Standoff-Label.stl**

Folder: ./Tode-IO-Options/Side-IO Commercial Box/3DPrints/stl

Layer Height: 0.2mm

Infill Density: 100%

Supports: OFF

Plastic: 1-grams @ \$0.02/g = \$0.02

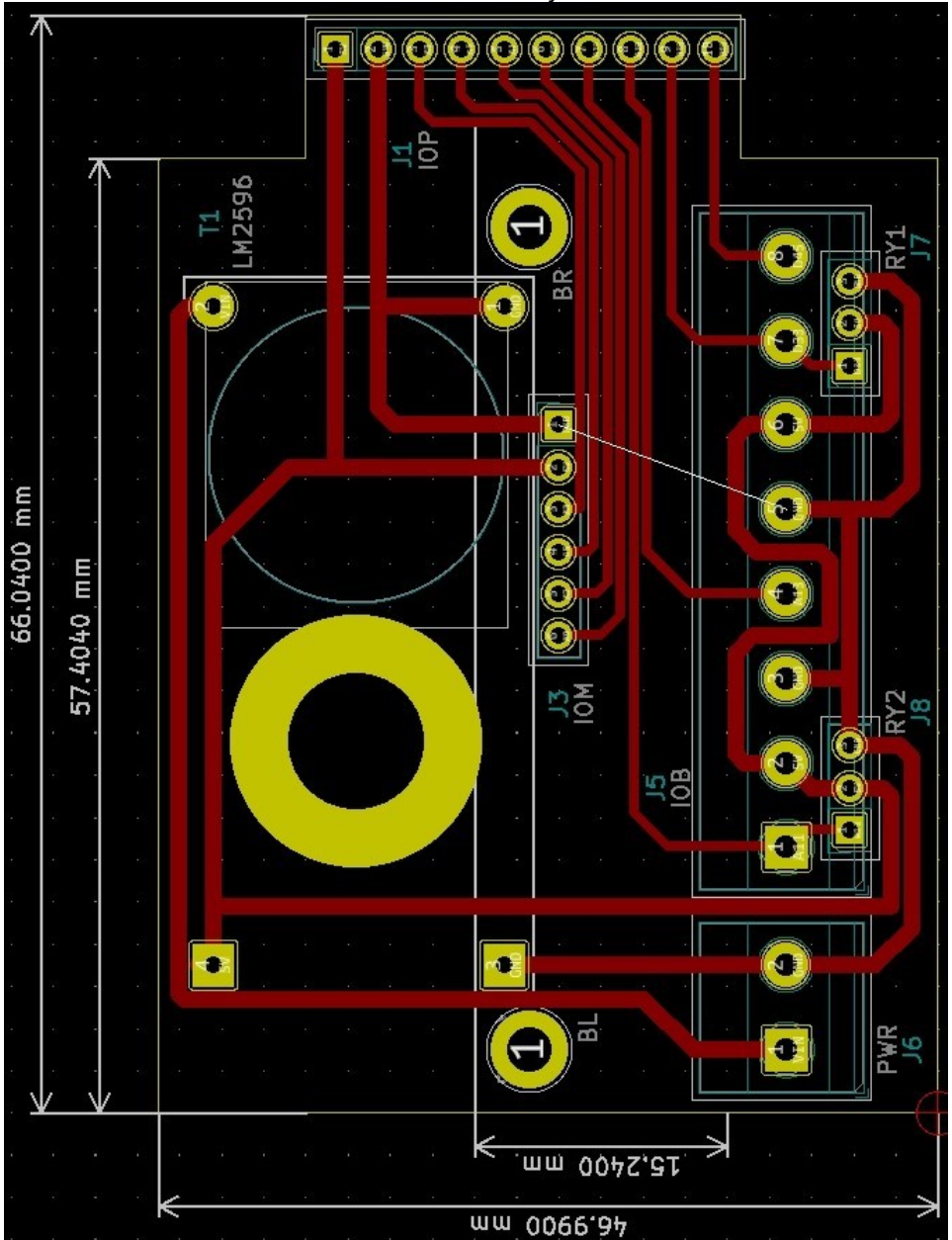
Printer-use: @ \$0.0015/g = \$0.0015

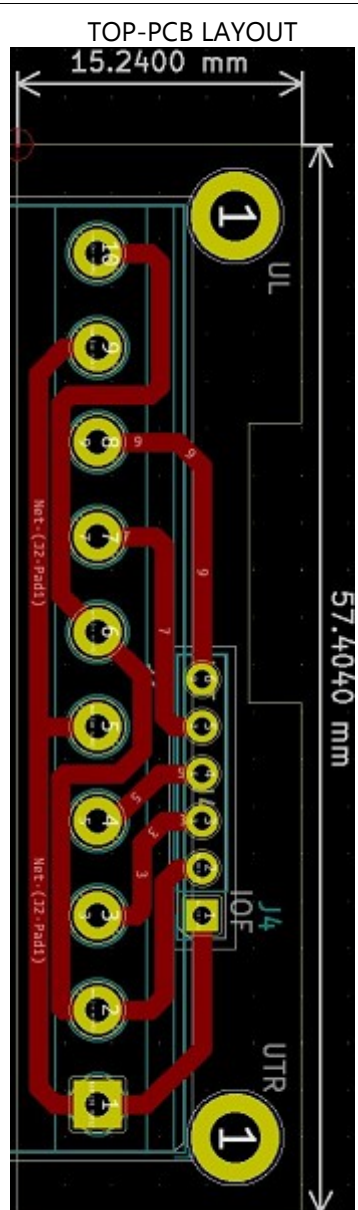
Power: 0h 09m @ \$0.01/hr = \$0.00

**TOTAL COST: \$0.0215**

## 2.2 Diagram

BOTTOM-PCB Layout

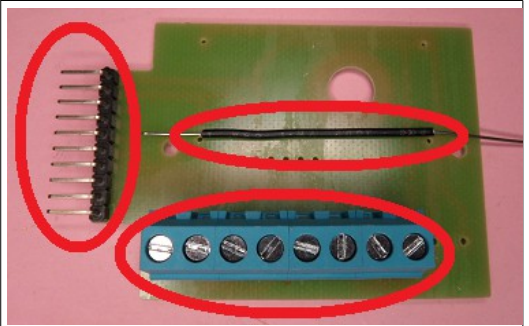






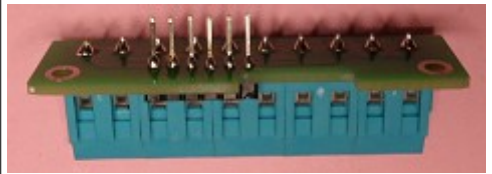
### 2.3.1 Bottom PCB

1. Solder on (4) CUI screw terminals
2. Solder on (10) Right Angle Pin Header
3. Solder on Black Jump wire



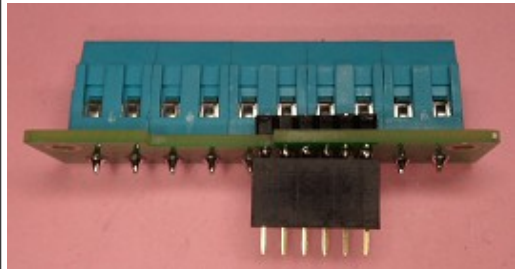
### 2.3.2 Top PCB

4. Install 1x6P Header; push pins down flat with top-side and solder from back-side.
5. Solder on (5) CUI Screw Terminals.



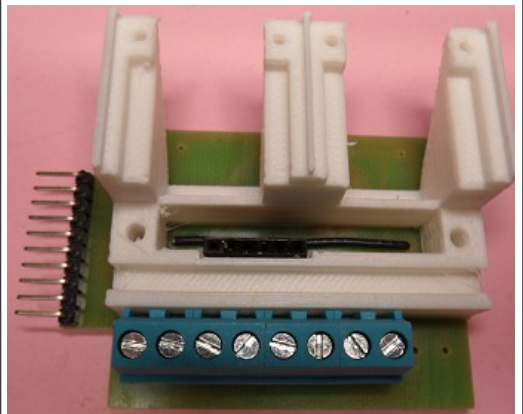
### 2.3.3 LED

6. Attach 1x6P Socket to Pins



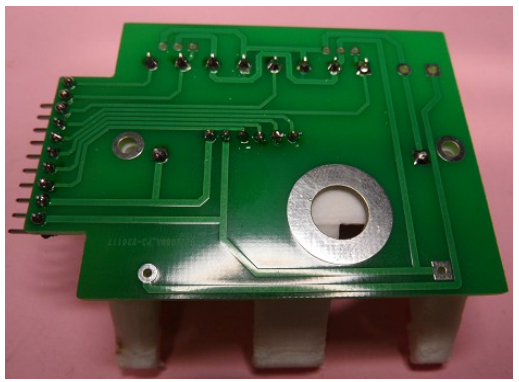
### 2.3.4

7. Put Standoff in place
8. Put Top PCB on Standoff with 1x6P Socket aligned with Bottom-PCB holes.



### 2.3.5

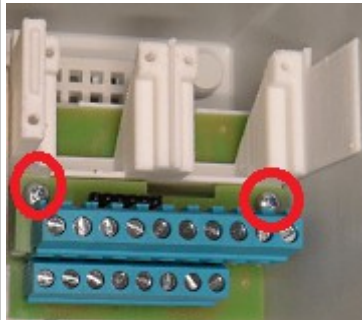
9. Solder the 1x6P Socket to Bottom-PCB.



## 2.4 Casing Assembly

### 2.4.1 Terminal Block

10. Plug the Top PCB over the Standoff.
11. Using **(2) #4 x 3/4" Phillips-pan** screw fasten Top PCB to SIOST-1W 3DPrint.



### 2.4.2 Relays

12. Place (2) Relay Modules onto Standoff and fasten them using **(4) #2 x 1/4" Phillips-Flat** Screws.

### 2.4.3 Labels

13. Print Label
14. Stick Label to Label 3DPrint with 2-Inch Packing Tape.
15. Screw Label above the Relays

## 3. Outdoor Enclosure

### 3.1 Bill of Materials (BOM) \$26.20

#### 3.1.1 Parts \$26.20



- Commercial Box
  - Manufacturer: Joinworld
  - Retail Dimensions: 6x6x4
  - Cover: Clear
  - Outside Dimensions: 5.9 x 5.9 x 3.9
  - Inside Dimensions:
  - Link <https://www.amazon.com/joinworld-Outdoor-Electrical-Box/dp/B0CHHJ49QN?th=1>
  - \$19.99/ea = \$19.99



- SMA Extension Cable
  - Female SMA Right Angle
  - Male SMA Straight
  - 5-Meters Long
  - \$6.21/ea = \$6.21