

Serval Mesh Extender case MR3020 documentation

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I. INTRODUCTION

An enclosure for Serval Mesh Extender has been developed to be constructed using 3D printing technique. The case is designed to encapsulate the router MR3020 and RFD900 radio as documented on the Serval developer portal. An improvement on the design is made by introducing a solder-less assembly technique using spring-loaded test pins and a custom connecting PCB, discussed in the later section.



FIG. 1: Serval Mesh Extender with MR3020 encased

II. FEATURES

The developed case is designed to be water-resistant and in the correct vertical orientation rain-resistant if a sealant is applied around the antenna connectors. While this is not the optimal design for weather-resistance, it is the minimal volume assembly.

List of features:

1. rail mounting for MR3020
2. rail mounting for RFD900
3. rail mounting for solder-less assembly PCB insert
4. space for ScanDisc cruiser Tiny Fit USB memory drive.
5. zip-tie attachment channel
6. mounting section for attaching to vertical poles
7. thin transparent wall for through-case LED indication
8. 3-screw simple assembly

III. SOLDER-LESS ASSEMBLY PCB INSERT

The solder-less assembly PCB allows for the router and the radio to be connected without soldering wires in a stable manner. The circuit board implements optional features, such as adding soft power on/off control to the radio, interfacing analog voltage measurements to determine battery states or so and allows the expansion with i2c sensors, such as environment of power monitoring systems.

Bare minimal assembly requires the test-ping to be soldered to the PCB as well as to 0 Ohm resistor bricks, bypassing the additional components that can be added to the PCB for extending the functionality.

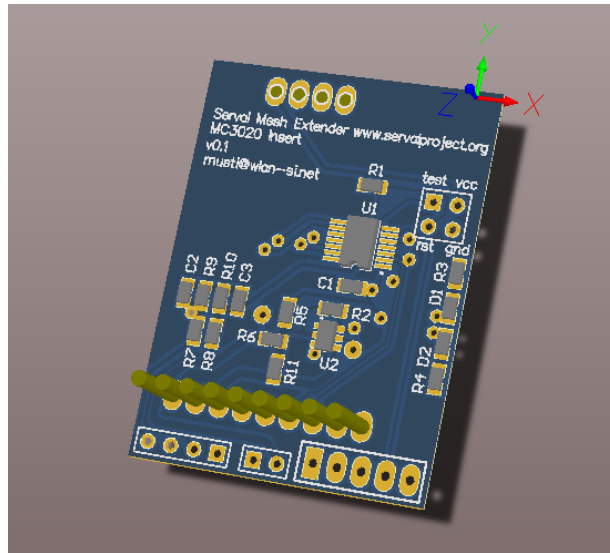


FIG. 2: Serval Mesh Extender Insert PCB for solder-less connection