

# 3D Printing and Ham Radio

By Eric Stoddart K8ERS



# What is 3D printing

- ▶ 3D Printing or additive manufacturing is the action or process of making a physical object from a three-dimensional digital model, typically by laying down many thin layers of a material in succession.
- ▶ This can be accomplished in a few different ways
  - ▶ Material Extrusion FDM Most common in the home printing market
    - ▶ Plastics, metals, foods, concrete
  - ▶ Vat Polymerization SLA Somewhat common
    - ▶ Photopolymer resins
  - ▶ Binder Jetting Not as common anymore
    - ▶ Sand, polymers, metals, ceramics

# How is this useful for ham radio

- ▶ Making stuff
  - ▶ End Caps for projects boxes. Example Mortty
    - ▶ Instead of drilling or machine the end caps you can print them out
  - ▶ Display cases for TFT touch screens
    - ▶ Can make custom cases for screens, PI's and other projects
- ▶ Antenna Projects
  - ▶ Coils
  - ▶ Antenna supports
- ▶ CW Keys
- ▶ Knobs
  - ▶ Both for new projects and old radios
- ▶ Radio Mounts



# How to select a 3d printer

- ▶ Find what materials you want to print. Depends on the end use of the item. For the easiest use, a FDM printer is the best.
- ▶ Find a printer that has the bed size that you want needs to fit the max size of the items you will print. What you pick will never be big enough you will find something that is bigger than your bed.
- ▶ Prusa & Ender 3 are the most common printers
  - ▶ Prusa is a Czech company that was created in 2012. This was cloned and many printers have been forked from the original design while taking their own path.
  - ▶ Ender 3 and clones can be found at micro center and other places



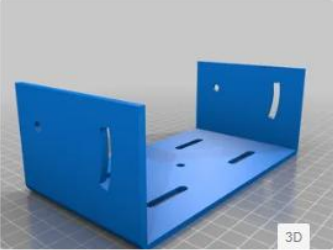




## How to design modules to print or where to find models to print


- ▶ Designing a model
  - ▶ Open-source Cad programs do exist
    - ▶ FreeCad and LibreCAD and the top two
  - ▶ Free commercial Cad programs
    - ▶ Fusion 360
    - ▶ Onshape
- ▶ Find models online
  - ▶ Free with the Creative commons license
    - ▶ Thingiverse.com
    - ▶ Printables.com

# What can be found online



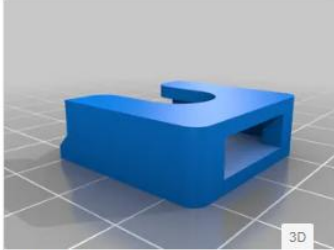
**taxilian**  
@taxilian\_195597

3D




**Filip Cichowski**  
@FilipCichowski\_655034

3D FFF




**calisomething**  
@calisomething\_226083

3D



**GX1400**  
@GX1400

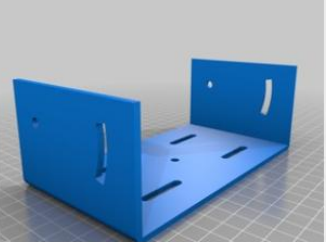
3D



Ham Radio Dipole Antenna Support

+ Collect Thing


144  
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Ham Radio customizable mounting bracket

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131  
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Ham radio speaker reflector

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Antenna Double Bazooka for Ham Radio

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176  
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CB/Ham Radio Mic Holder Remix II

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107  
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Knobs for (tr)usdx / trusdx ham radio

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Ham Radio Call sign

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71  
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HAM Radio Portable DP Antenna

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Adjustable Mount for Yaesu FTM-400 or F...

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Arrow II Ham Radio Satellite Antenna Mou...

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Ham radio microphone holder

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# What can be found online

Relevant

All Things

Filter By

Ham Radio Coat Hanger Antenna

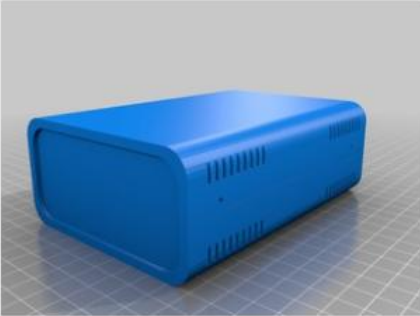


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VK3BEZ Ham radio audio interface




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Protector for MTR3B Mountain Topper Ha...




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Antenna Coupler HAM Radio

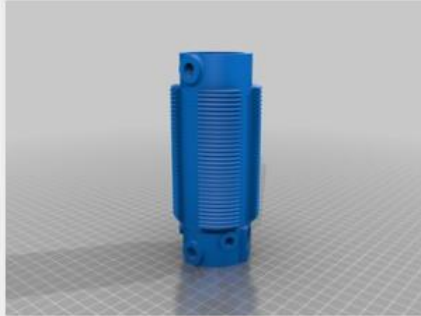


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Ham Radio Ground Plane 20/30/40m

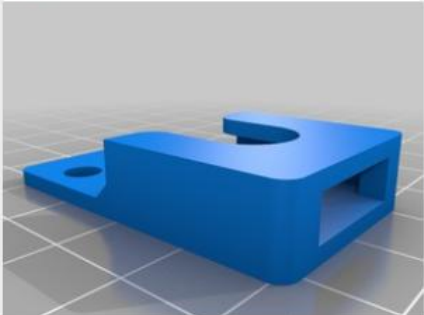


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CB/Ham Radio Mic Holder Remix




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Ham Radio Ground plane antenna

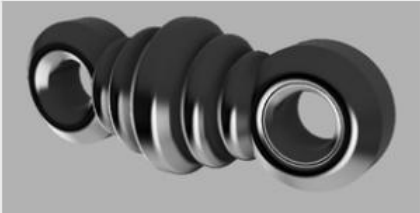


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antenna insulator for ham radio




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Ham Radio Radial Gound Spike




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Mobile Mount for QYT KT-8900D Dual Ban...



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# How to get model to printer

- ▶ Not as easy as just clicking print
- ▶ All printers use G-Code to control the printer
- ▶ To create the G-Code there are slicer programs that take the 3D model and cut it into layers. Then create a tool path for the printer.
- ▶ The slicer sends the G-Code to the printer.



The background features a dark blue-grey field on the left, transitioning into a series of overlapping, semi-transparent green and yellow-green geometric shapes on the right. These shapes are primarily triangles and polygons, creating a layered, abstract effect. The word "Questions?" is centered in the blue area.

Questions?

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Thanks