

FreeGrid 1.0 Design Specification

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Document History

2025-11-09 Document created. FreeGrid version 1.0.

General

FreeGrid is a design system for modular, grid based storage.

All dimensions in this document are in millimetres, unless otherwise noted.

The nominal size of a FreeGrid grid is 50mm, which is just under two inches. To avoid confusion, components that use a different grid size must note the difference in a way that is prominent. For example, a component using a 42mm grid could be referenced as FreeGrid-42.

Background

This document describes the main design elements of the FreeGrid storage system. The intent is to make it easier to implement FreeGrid components with any design platform.

Isn't this just an Infinigrid Clone?

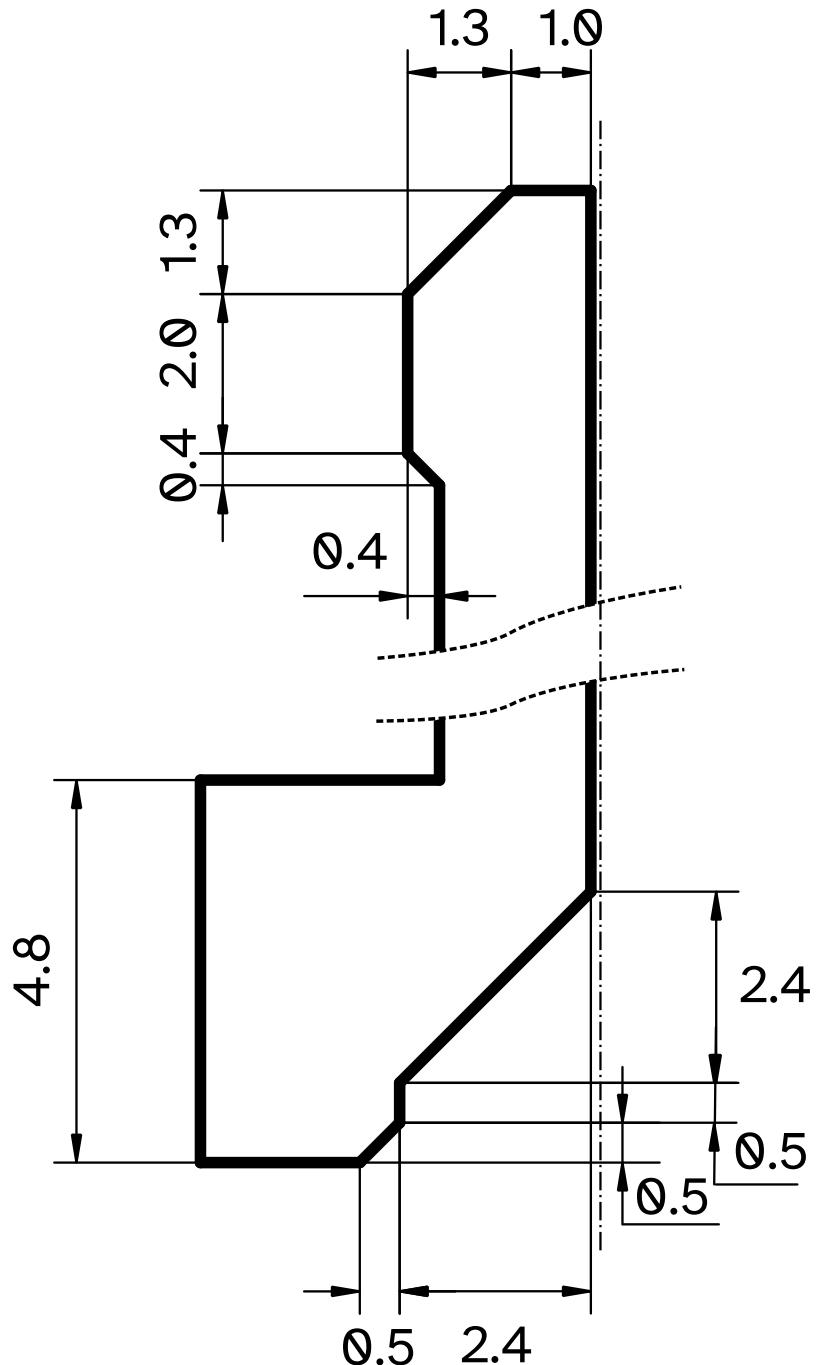
No. The inspiration comes from a workshop organization system designed by Alexandre Chappel, but I wanted to have the ability to design my own components, and Chappel's system is a commercial product and not open. I started work on FreeGrid in late 2019 but then other projects took priority. In April 2020, Zach Freedman released his open GridFinity system and I figured adopting that was great, just use his system.

But Zach made some design choices I wasn't 100% happy with and his design files were released in Fusion 360, while FreeGrid was designed with macros written for the open source CAD tool FreeCAD (UPDATE: FreeGrid is now a FreeCAD Workbench). Importing GridFinity system into FreeCAD would lose all the parametric aspects of Zach's design, rendering them almost useless. Even if the parametric aspect was imported successfully, the workbench based approach makes it much easier to make system-wide design tweaks.

So I just carried on with FreeGrid, and since the intent was always to make it open,

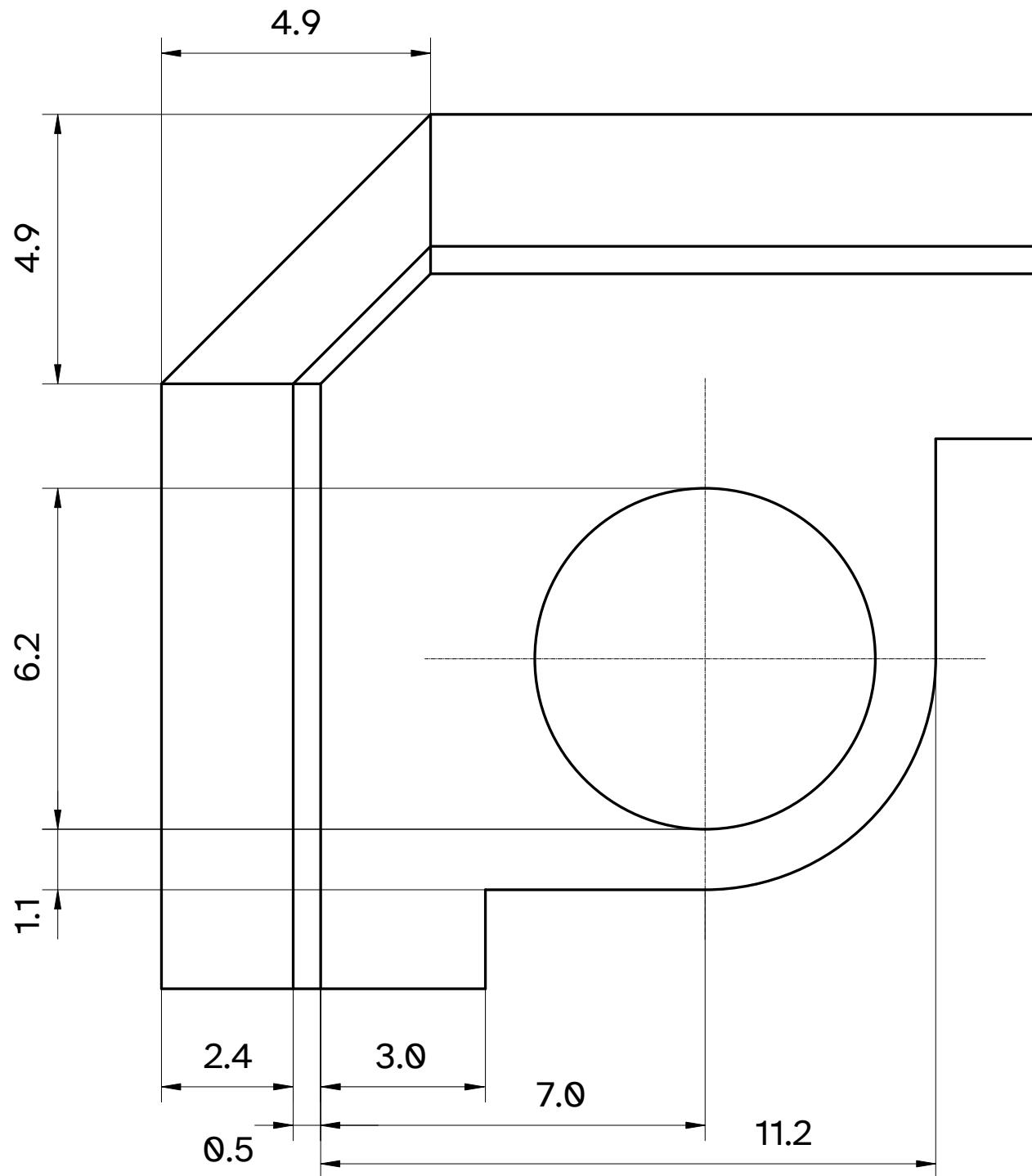
Boxes

Side Profile



The box side profile ensures that boxes fit into grids, and that boxes can be stacked securely. There is a clearance of 0.1mm from the grid centre line on the outside wall. Thus, with a standard 50mm grid, the width of a unit box would be 49.8mm. the 0.5mm cut at the bottom corrects for the “elephant foot” issue on some printers.

Bottom Profile

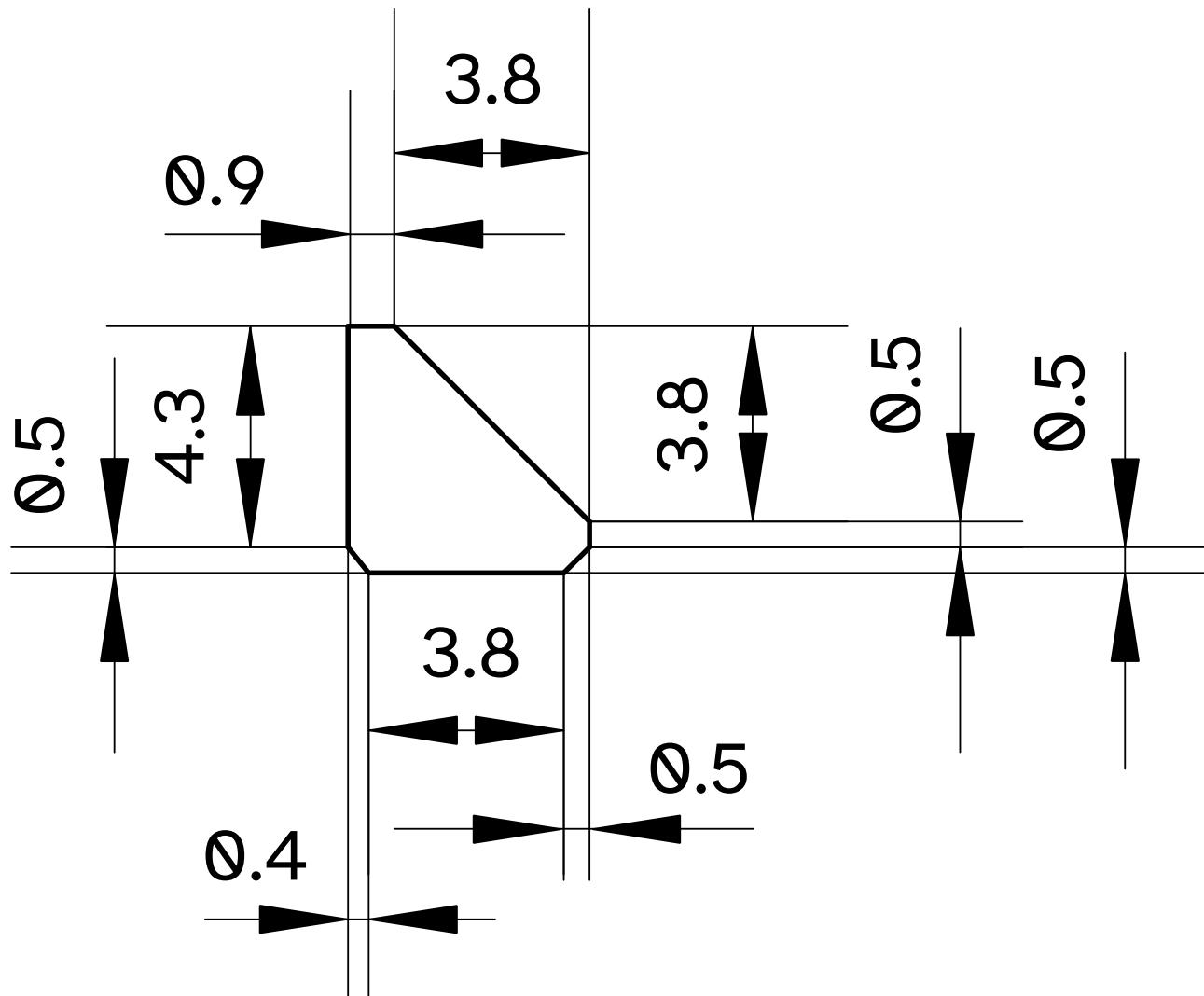


Box corners are 4.9mm in (making them 5mm from the grid centre due to the 0.1mm allowance). the bottom surface starts 2.9mm in after the 2.4mm bevel and 0.5mm elephant foot provision. The base is 3mm across.

The centre line of the magnet is 7mm in from the start of the base. With a nominal 6x2 mm magnet, the hole is 6.2mm across, the wall enclosing the magnet is 1.1mm thick.

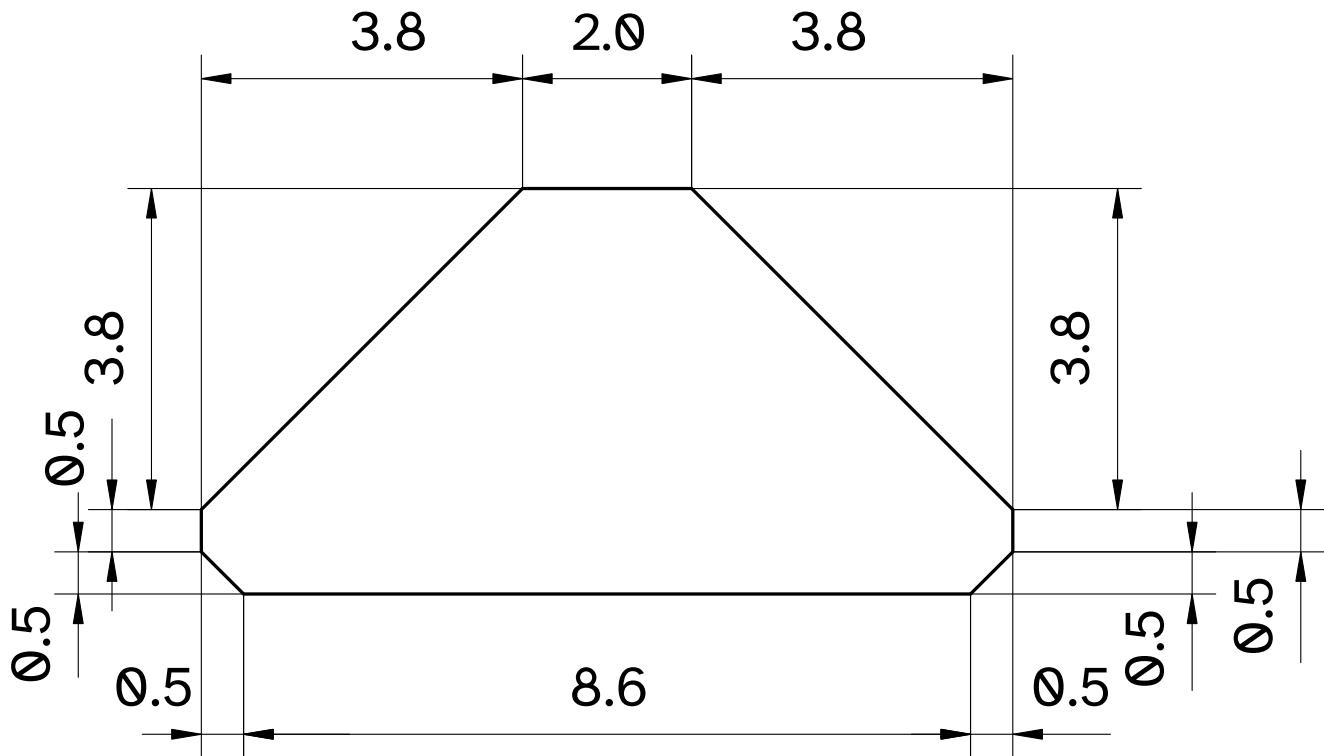
Grids

Outer Profile



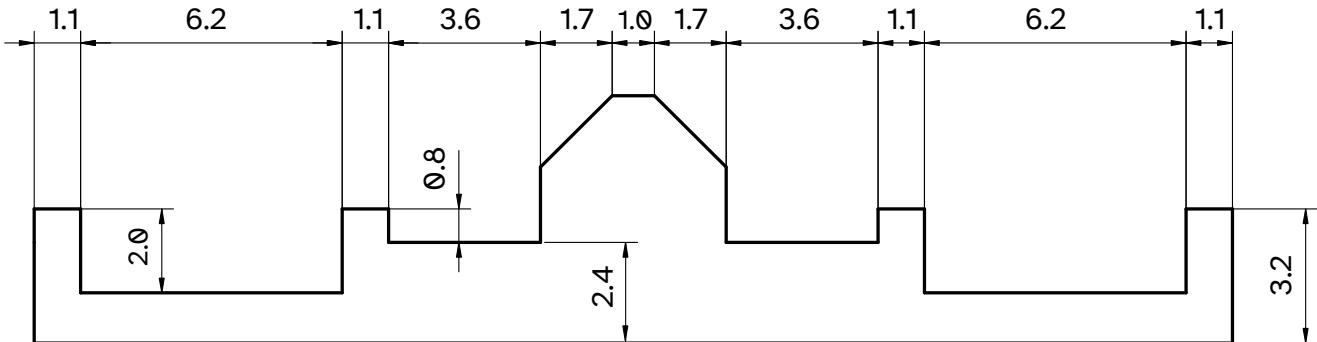
The outer profile incorporates a 0.1mm clearance on the outer edge and bevels on the bottom face to account for elephant foot.

Inner Profile



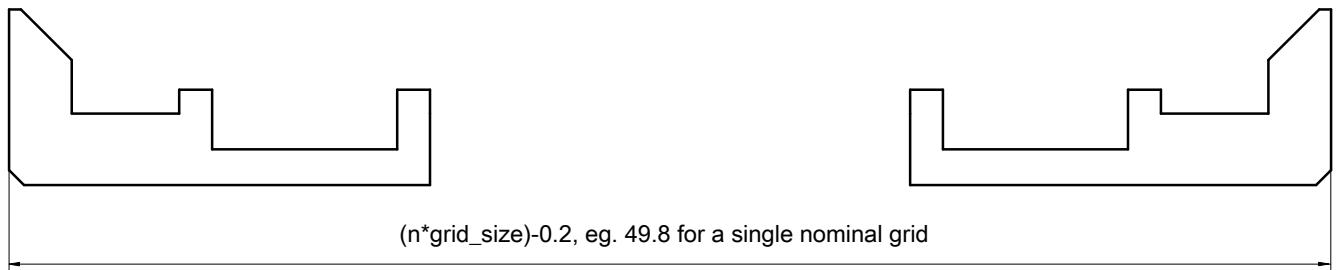
The inner profile is a reflection of the inner profile, filling in the 0.2mm gap in the centre.

Inner Profile with Magnet Holder



This is a cross-section of an inner grid at the centre-line of the magnet holder, using a nominal 6x2 mm magnet.

Grid Spacing



This illustrates the spacing of grid elements.