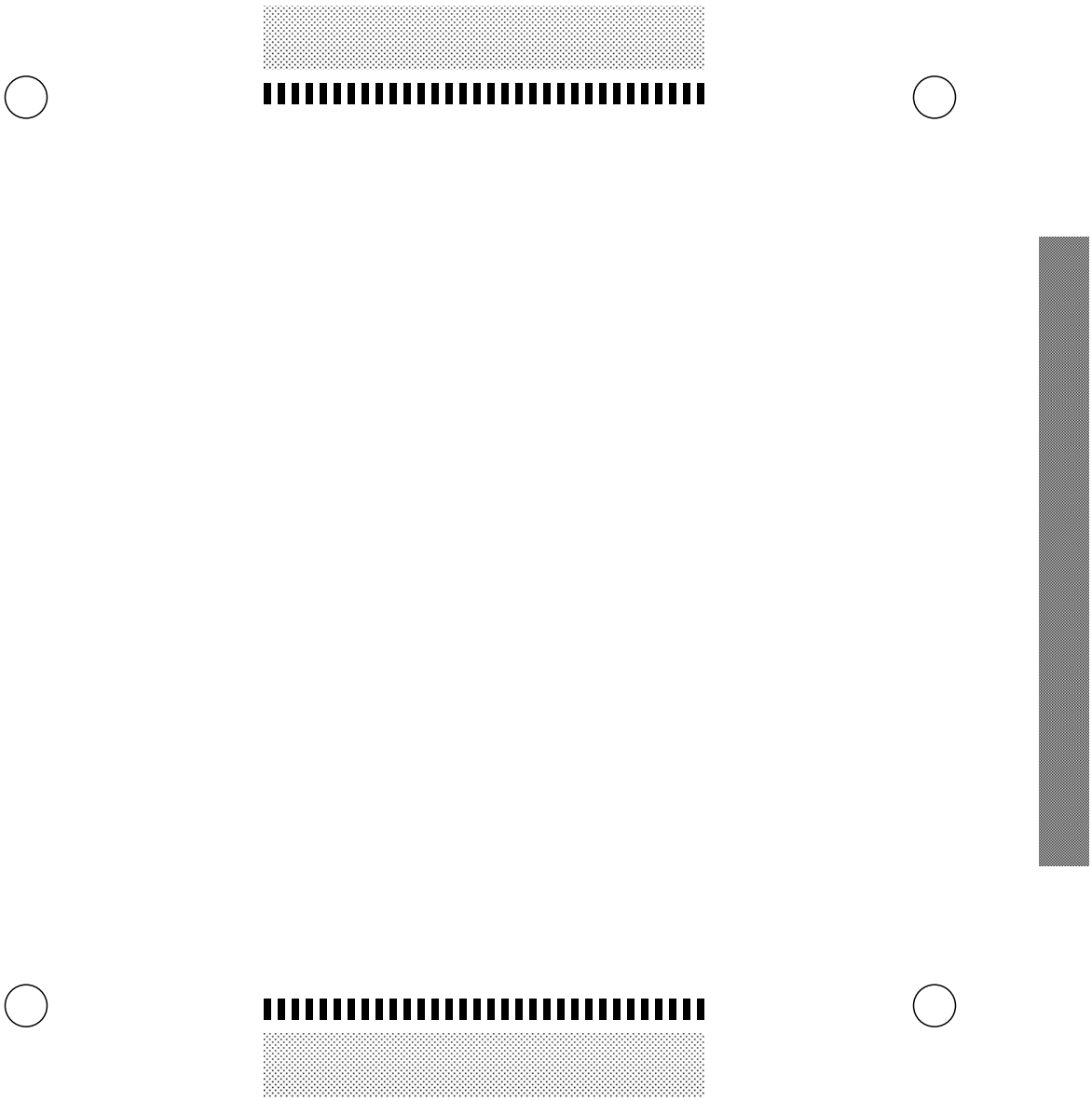


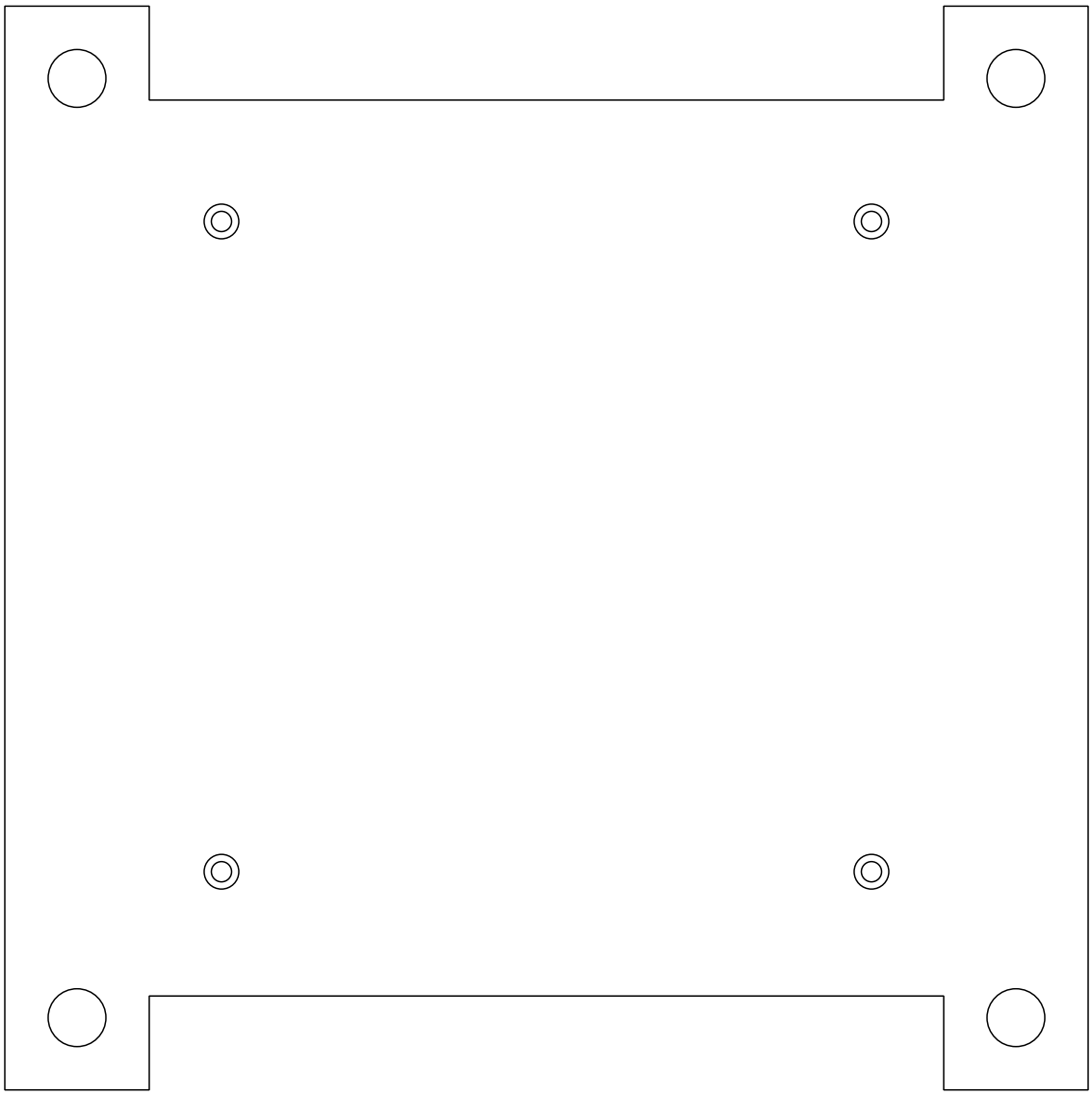
Motherboard

4 holes for 6mm screws spaced at 13 cm

2 x 32 contacts, each 1 mm wide, 1 mm spacing
not symmetric, shifted by 0.5 mm wrt middle of board

behind the contacts a region of resistors (can be removed)
needs a vertical clearence of ~2 mm

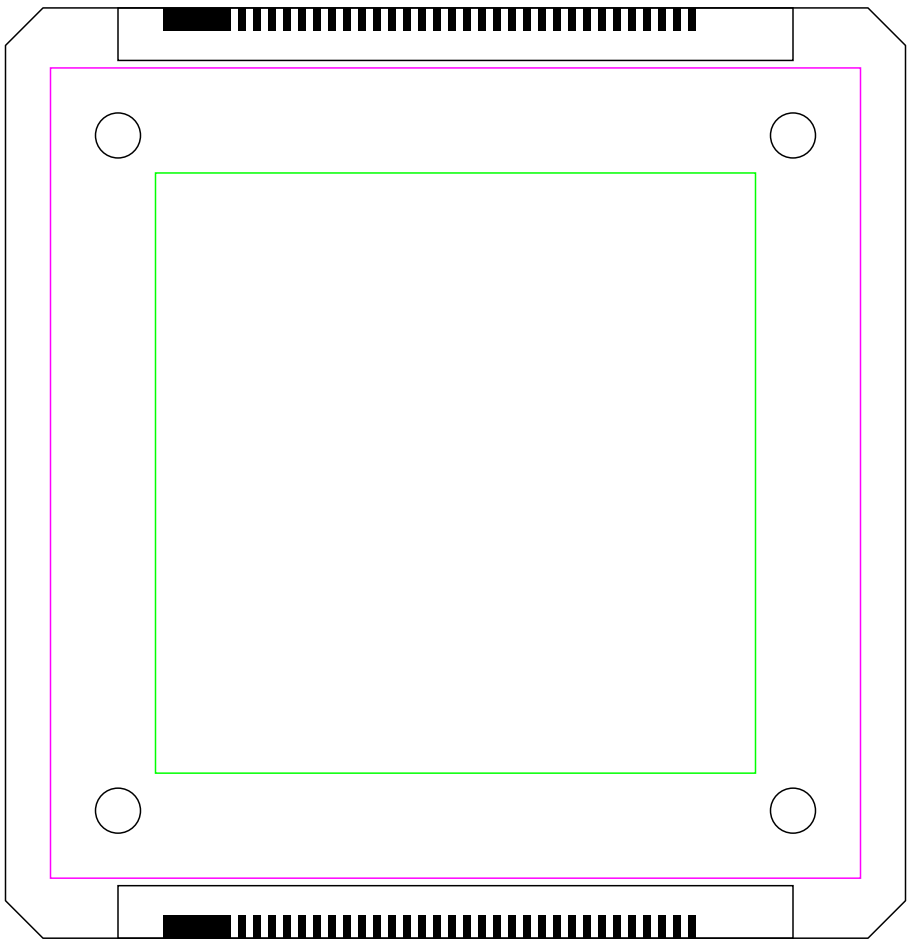
on one side contacts for GEM voltages (only partly used with microMegas)
on other side contact for drift voltage (not drawn, far enough away)



plastic frame to hold the PCB and microMegas frame (optional)
1.5 mm thick

4 large screw holes, spacing 13 cm, 7 mm diameter

4 small screw holes that can hold conical 2mm flat head screws
spacing 9 cm



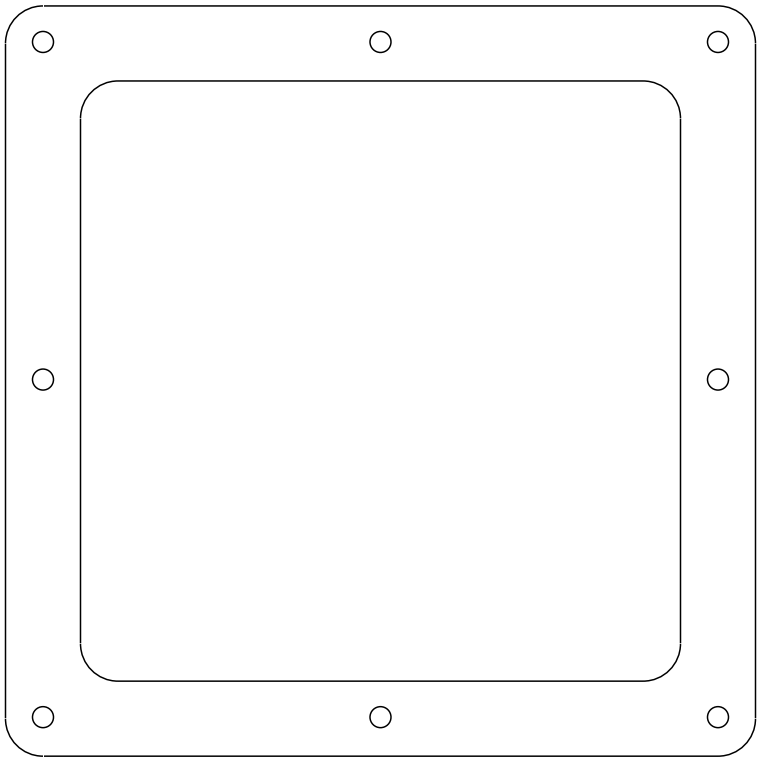
PCB

4 screw holes 6mm diameter, spacing 9 cm.

12.4 x 12.0 cm with cut corners
we need that space at the corners for the spacers that will hold the frame of the field cage windows.
On the other hand we want a large PCB to make contact with the resistive foil.

Ground plane 11 x 12 cm + corners

Indicated is
green: area of insulating glue  (8 x 8 cm) covering the open area of the microMegas frame.
magenta: area of resistive foil (10.8 x 10.8 cm) leaving 4 mm on each side outside the microMegas frame for taping.

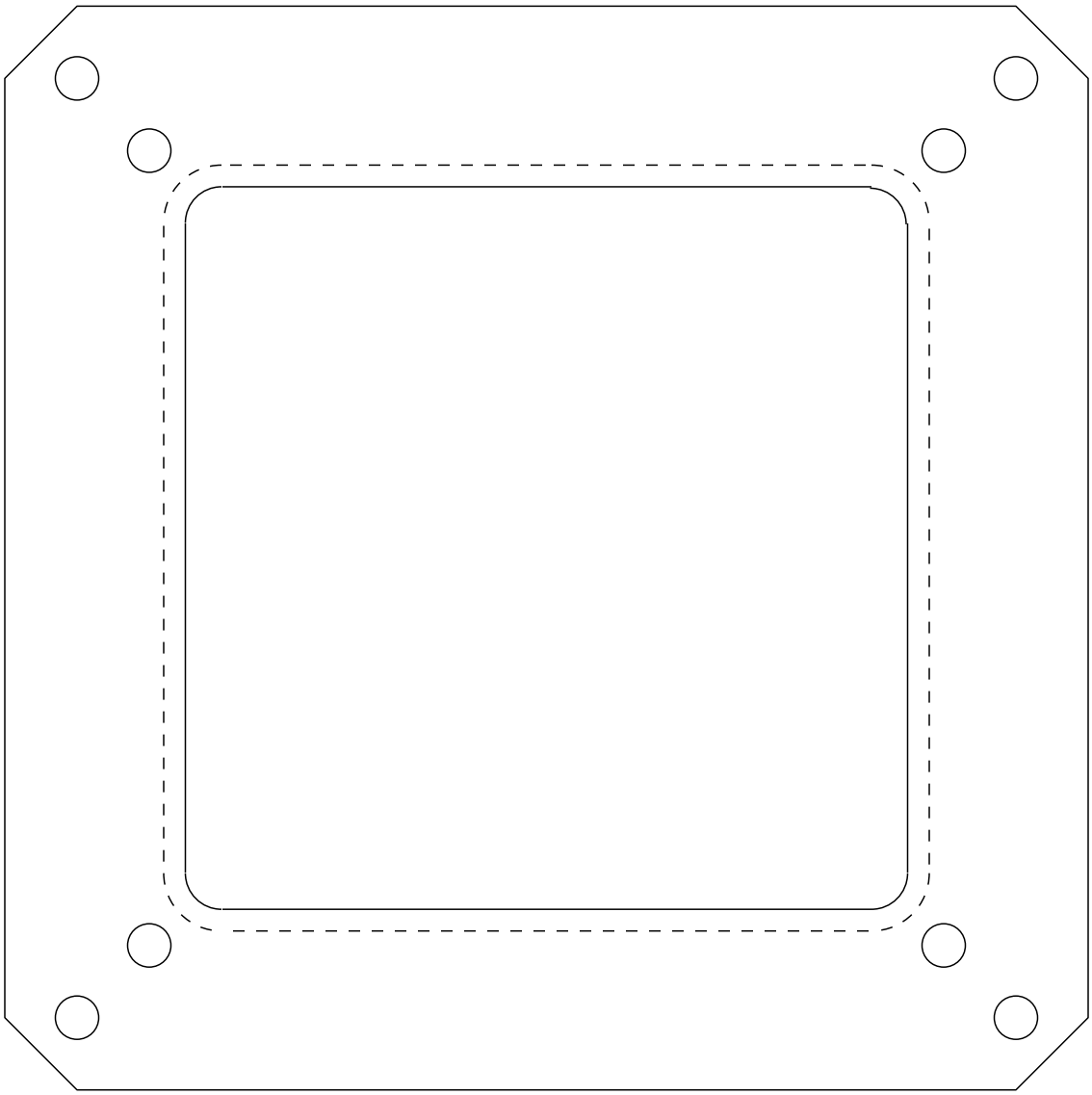


microMegas frame

open area 8 x 8 cm, round corners
outer frame 10 x 10 cm, round (or cut) corners

8 holes (we will use only 4) 3.2 mm diameter.

thickness 3.2 mm
a larger thickness will increase the gap between MM mesh and fieldcage window.



Support frame for field cage windows

4 outer screws to attatch to motherboard,
4 inner screws with 11 mm spacing to hold the field cage windows,
all screws 6 mm diameter.

In the GEM setup this 5 mm thick frame sits directly on the first GEM
which has the foil on the upper side. It serves as spacer between the
GEM foil and the first field cage frame, maintaining the same distance
as between the field cage windows.

We might have to change this for the microMegas setup:
with screws: increase the open area, keep thickness
with clamps: decrease the thickness, keep open area (not absolutely necessary)

New thickness is ~3 mm, additional spacing is provided via spacers at
the outer screws (between frame and motherboard).

Increase the open area from 10 x 10 cm to 10.6 x 10.6 cm to get space for
the microMegas frame. CAUTION the corners are round otherwise the
inner screws don't hold. Dashed line in figure.
->
Can the microMegas frame have round outer corners?

If we run out of space we can increase the gap between the microMegas
foil and the first field cage window to more than 5 mm, changing the resistor chain.

| | |
|---|---|
| red: | motherboard |
| cyan: | 1.5 mm thick frame |
| magenta: | PCB |
| green: | microMegas frame 3.2 mm thick |
| yellow: | spacer |
| blue: | frame (5 mm thick) and windows for field cage |
| pink: | small screws or clamps |

Mounting procedure:

- glue resistive foil on PCB
- put PCB on frame with small screws
- position frame on motherboard such that contacts of PCB fit - tape in place
- make heatseal connections
- mount microMegas frame with clamps or small screws, put on screw nuts
- tape resistive foil to PCB ground plane
- make connection with microMegas mesh
- put spacers over outer screws
- mount fieldcage frame (with windows), put on screw nuts
- make connection of fieldcage
- close pressure vessel
- cross fingers and test