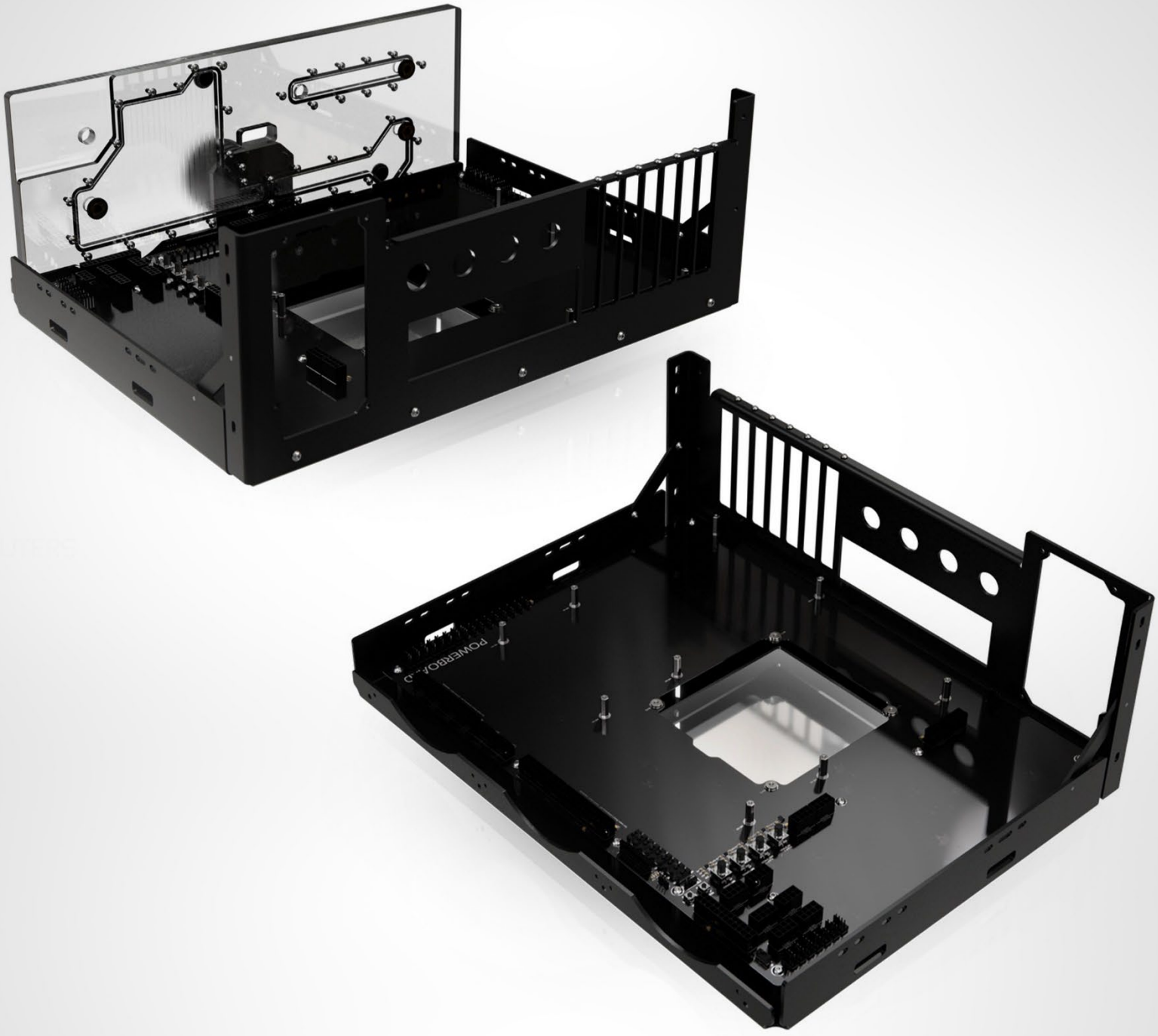
SINGULARITYCOMPUTERS

SC TEST BENCH



Manual

Revision 1.1

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Introduction

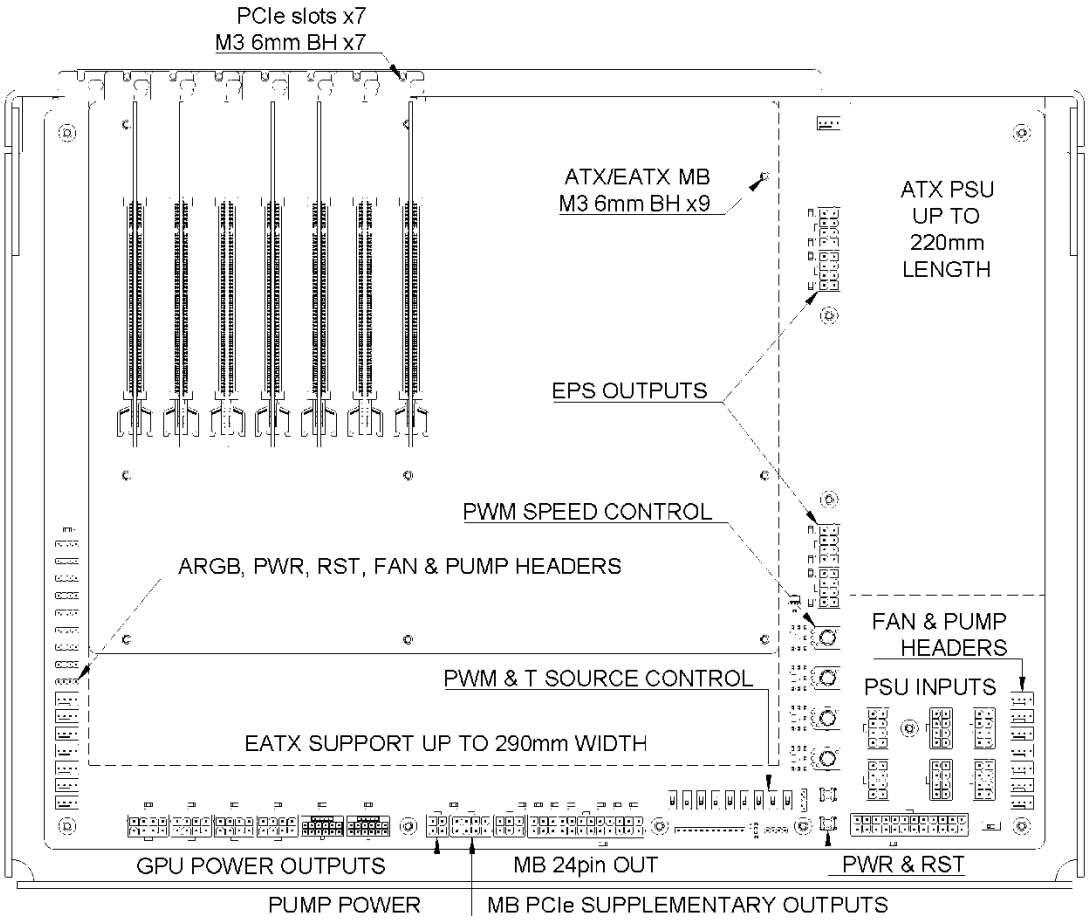
SC Test Bench

When we first came up with our patented idea of the PowerBoard we realized the potential of using it for a test bench. We have built and used many test benches and the common issue is cable management, usually on a test bench there is none. The SC Test Bench eliminates the need for cable management thanks to the PowerBoard. Built into the PowerBoard are many features which are useful to have on a test bench and in any system particularly if it is water-cooled. The SC Test Bench fits radiators on both sides up to 480mm or 560mm and x3 more 140mm fans on the front. There will also be a pump/reservoir distribution plate add-on which will mount onto the front.

SC Test Bench D5 Reservoir Distribution Plate

The SC Test Bench D5 Reservoir Distribution Plate adds a D5 and Reservoir Combination to the SC Test Bench. A Distribution Plate is the most compact way to add a pump and reservoir which is important for a test bench to keep things out of the way for easy access to the other components. It also improves the loop routes and is a major visual feature. This distribution plate installs on one side and has a loop route for easy connections to and from the side mounted radiators. It has an integrated reservoir, D5 pump top, D5 cover and a LED strip built in so that the distribution plate glows. The distribution plate is built from CNC machined clear cast acrylic and uses gaskets instead of O-Rings for increased durability. It is hand assembled with stainless steel fasteners.

Features Overview



Specifications

SC Test Bench

Enclosure	5052 Aluminum. Folded. Anodized.
PowerBoard	PCB.
Fasteners	Stainless Steel.
Motherboard	ATX, EATX (up to 290mm wide).
PSU	ATX (up to 220mm long).
Expansion Slots	x7.
Radiators	Up to 480mm or 560mm.
Fans	140mm x3 (front) and 140mm x1 (bottom). 120mm/140mm x2 per side.
Drive Mounts	Total 3x 2.5" drive mounts, 1x back panel + 2x bottom panel.
External Water-cooling Pass-Through	x4 to connect external radiators with up to 2 separate loops.
Dimensions WxHxD(mm)	476.5 x 190 x 361.5 | 500 x 200 x 400 (Packaged)
Weight	8.5kg | 9.5kg (Packaged)
Electronics Integration	Connectors: 24pin x1. PCIE 8pin x4. 12V2X6 x2. 8pin EPS x4. PCIE 6pin Supplementary x1. PCIE 8pin Supplementary x1. (Equal inputs and outputs must be used). Hubs: PWM Fan Hubs x2 each with x1 input and x4 outputs. Pump inputs and outputs x2. Each fan hub and pump output have coolant temperature-based RPM control or can be switched to motherboard RPM control. The built-in RPM control on the PowerBoard is independent of the motherboard and no software is needed. Dedicated PWM header for 140mm fan which can be mounted behind the motherboard. Controlled by PWM fan hub 1. PWM Control: 4x potentiometers to set the minimum PWM speed. ARGB: x8 outputs with one input. Temperature sensor inputs: x2 for up to two loops. Compatible with any water-cooling brand plug temperature sensor or inline sensor if it is a 10K NTC thermistor. Power and Reset Buttons. 4pin ATX header to power up to two pumps with custom cables from the PowerBoard. 12pin header for future controller addon. PSU jump-start switch to run the pump/s without booting so that you can run only the pump for filling the loop. Cables: 24pin x1. 8pin EPS x2. 8pin PCIE x3 or 12V2X6 (select above). 18AWG Black Headshrinkless Sleeve. PWM Female to Female 50cm Black Sleeved x2. ARGB Female to Female 50cm Black x1. Power, Reset, Black 20cm. Pump Power Cable 4pin ATX to SATA & Molex x2.

SC Test Bench D5 Reservoir Distribution Plate

Distribution Plate	Cast Acrylic, Clear, CNC Machined.
Reservoir & D5 Pump Top	Integrated.
Pump Cover	D5 CNC Machined Anodised Black.
Ports	x9. Fill Port. Drain Port.
Fasteners	Stainless Steel.
Gaskets	Sillicone.
O-Rings	D5, Sillicone.
Dimensions WxHxD(mm)	476.5 x 190 x 90 | 500 x 200 x 120 (Packaged)
Weight	2.5kg | 3kg (Packaged)

Parts List

SC Test Bench

Cables

- 8pin PCIe 30cm Linking cable x3 / 12V2X6 30cm x1
- PWM Linking Cable 50cm x2
- ARGB Linking Cable 50cm x1
- PowerBoard Switch Power Cable x1
- PowerBoard Switch Reset Cable x1

Pre-installed Hardware

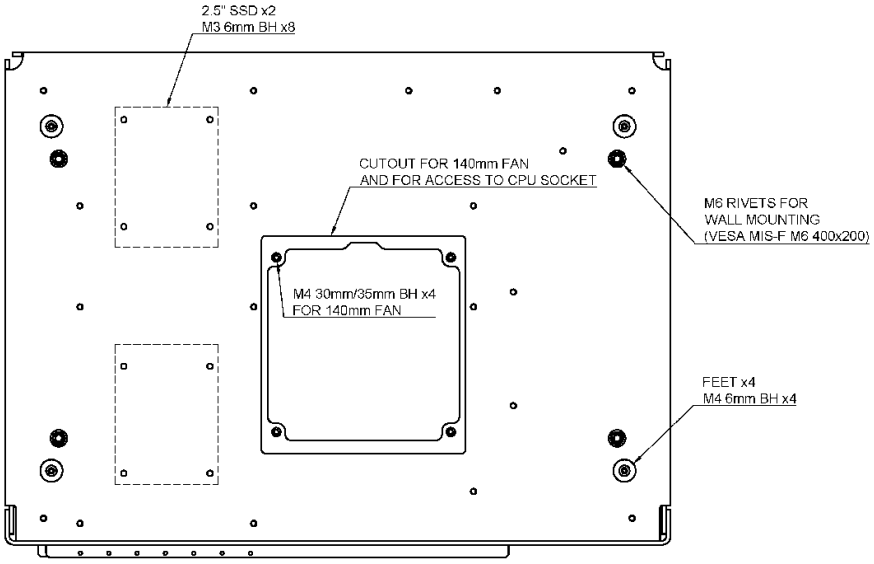
- M3-to-M4 18mm (Motherboard PCB Standoffs) x9
- M4 6mm Button Head (PowerBoard PCB) x10
- M4 21.5mm (PowerBoard PCB Standoffs) x19

Hardware

- M3 6mm Button Head x26
- M4 6mm Button Head x13
- M4 14mm Button Head x6
- M4 30mm Button Head x10
- M4 35mm Button Head x10
- #6-32 ¼" BH x4
- Feet x4

Installation

The PowerBoard comes preinstalled to the bottom panel. The bottom panel has mounting holes for 2x 2.5" drives, but the PowerBoard needs to be removed to access them. If used, install the 2.5" drives using 4x M3 6mm BH per drive to secure them to the bottom panel and connect the SATA power and data cables, then reinstall the PowerBoard.

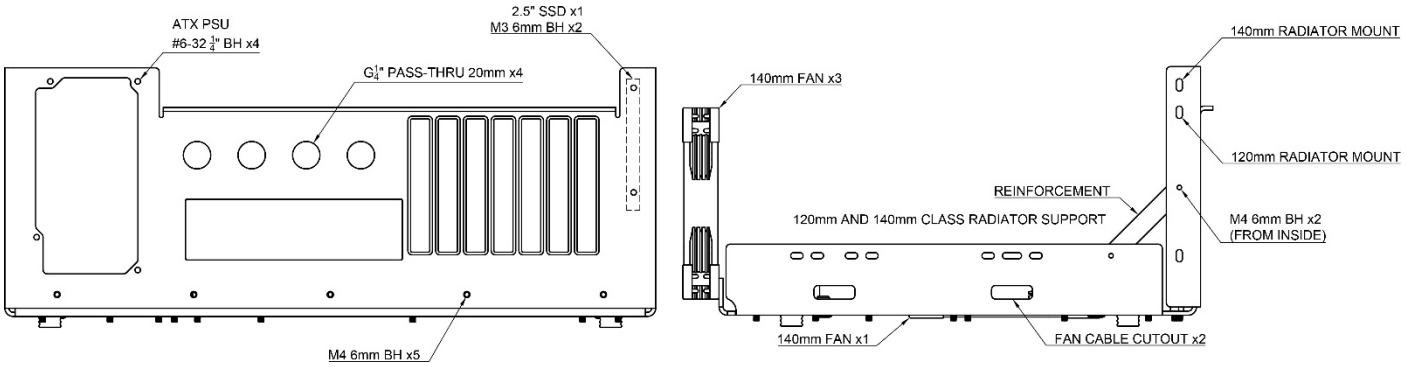


Install the back panel to the bottom panel using 5x M4 6mm BH fasteners, but do not tighten these fasteners for now. Install the reinforcement bars using 2x M4 6mm BH fasteners per bar driving the fasteners in from the inside, but do not tighten these fasteners either for now.

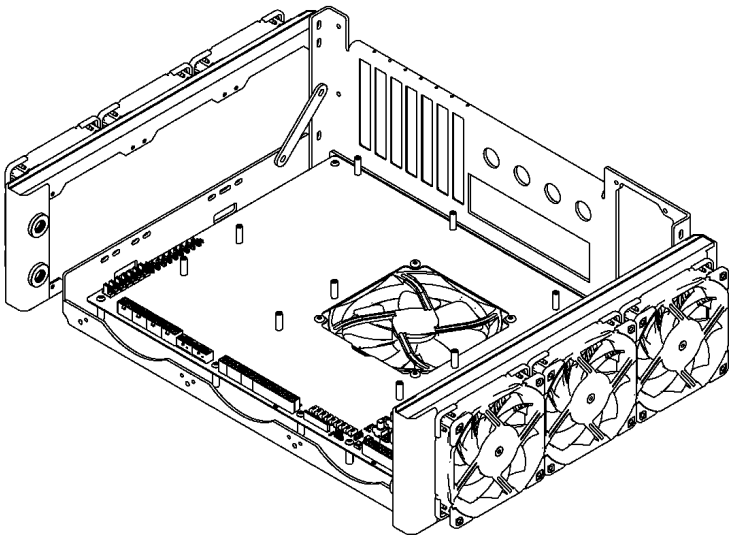
Temporarily install a 120mm or a 140mm fan or radiator to the sides to align the back panel to the bottom panel. The fan or radiator installed will hold the back and bottom panels in ideal positions to each other, so tighten the M4 6mm BH fasteners on the reinforcement bars and on the back panel to secure them in place, then remove the fan or radiator if they won't be used in the build.

Optional: Install a 140mm fan to the bottom of the PowerBoard through the bottom panel using M4 30mm BH for 25mm thick fans or M4 35mm BH fasteners for 30mm thick fans. Pull the fan cable through the cutout first before mounting the fan. After installing the fan, plug in the fan cable to the "FAN-1-OUT-BACK" header.

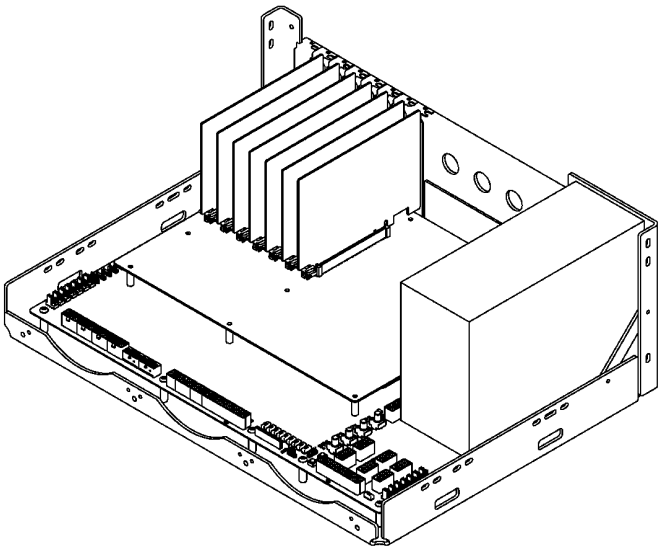
A 2.5" drive can be installed to the back panel using 2x M3 6mm BH fasteners and the SATA data and power cables can be routed under the PowerBoard or the motherboard.



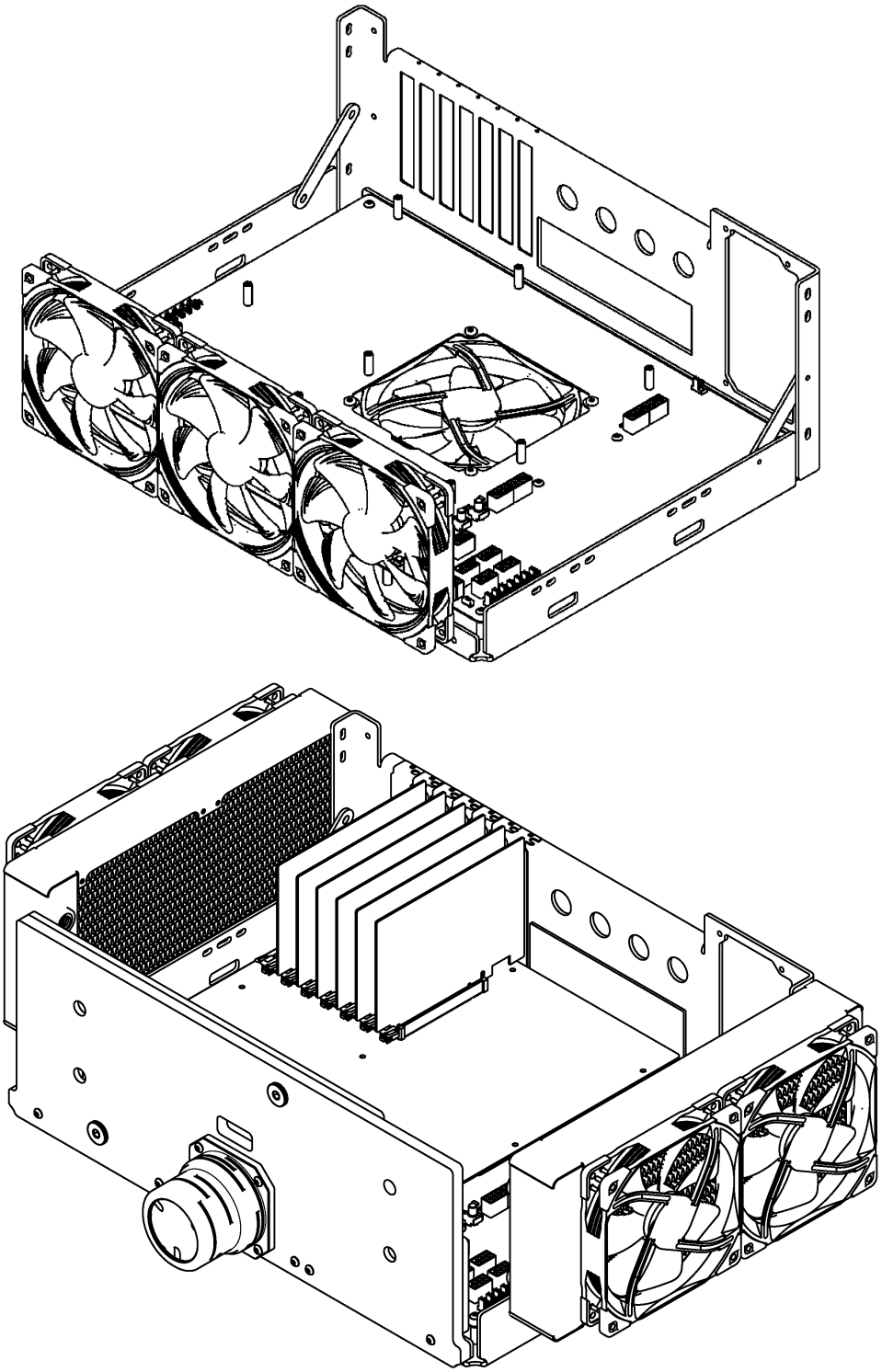
If radiators are going to be used in the system, install them now to the sides using the radiators' included mounting hardware. An offset fitting might need to be used with 280mm radiators to clear the power supply input cables and with 360mm radiators to make a connection to the D5 distribution plate (sold separately). There are cable routing holes on each side for the fans.



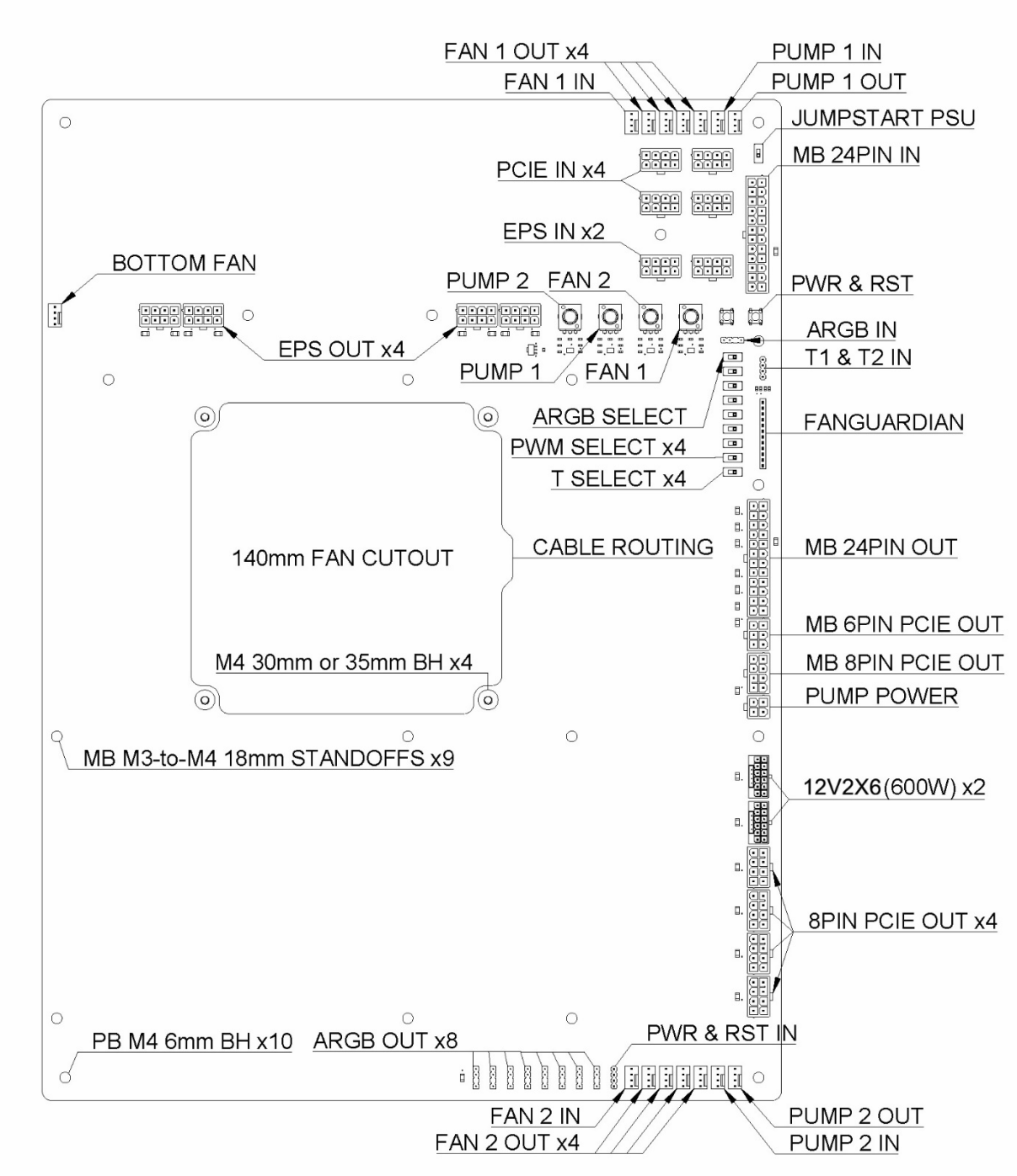
Install the motherboard using 9x M3 6mm BH fasteners. Install an ATX power supply using 4x #6-32 ¼" BH fasteners. Install PCIe cards and secure them using M3 6mm BH fasteners.



To the front of the case, we can attach up to 3x 140mm fans using M4 30mm BH for 25mm thick fans or M4 35mm BH fasteners for 30mm thick fans, or a D5 distribution plate using 6x M4 14mm BH fasteners. Graphics cards longer than 350mm interfere with the front fans and distribution plate.



PowerBoard



⚠ All PowerBoards need PowerBoard Linking Cables.

Test Bench D5 Reservoir Distribution Plate Port Layout