Cooling Guide for Xilinx Varium C1100 Blockchain Accelerator Card



As seen in the picture above, stock cooling on the C1100 is passive (no fans come with the card). Without manual intervention, C1100's running the TRM bitstream will quickly throttle (<3min) down to at least half of target hashrate due to exceeding the default temperature thresholds in the miner of 70C for core temp and/or 85C HBM temp.

As shown in Xilinx's provided data sheet on the C1100, ideally airflow is forced through the narrow front grill of the card:



Figure 5: Recommended Airflow Direction for C1100 Card



Without a customized solution to force airflow though this narrow grill, airflow will tend to follow the path of least resistance around the card, even in server case setups with forced/tunneled airflow.

A custom model, which attaches via the 3 available screw holes on the front of the C1100, has been developed to achieve the necessary airflow for sufficient cooling on TRM's ETH bitstream.

Disclaimer: This model is the product of FPGA /TRM discord member N2DCRYPT#2778 and is unaffiliated with TeamRedMiner software or Xilinx, Inc. Any complaints or questions should be directed towards N2DCRYPT#2778 and not the TRM Devs or Xilinx, Inc.



Installation Instructions for C1100 Custom Cooling Kit

Shroud Kit:



Parts included:

1x Shroud

3x Shroud Screws

2x Fan Screws w/ Nuts

1x 180° 8-pin PCIE Power Adapter (Type A or Type B)

1x 1.85A San Ace B97 97x33 Blower Fan

Tools/Parts required and not included:

1x Phillips screwdriver

1x Xilinx C1100 FPGA

Directions:

- 1. Attach shroud to front face-plate of Xilinx C1100 FPGA, aligning power slot and screw openings.
- 2. Using the 3 shroud screws, secure shroud to FPGA.

Figure 1: Steps 1 & 2



3. Connect 180° 8-pin PCIE power adapter to the power connector of the FPGA.



Figure 2: Step 3

4. Insert San Ace blower fan into shroud funnel. Fit should be snug and fan screw openings should align with openings on shroud's fan connectors.

5. Insert fan screws to connect shroud fan connectors and blower fan. A screwdriver may be required. Secure with nuts on opposite side of fan connectors.



Figure 3: Steps 4 & 5

Additional comments:

The fan that will be shipping with the kits (while supplies last) is 1.85a and pulls 22w at full speed; this fan should not be run from motherboard headers, which are typically rated for 1a, unless speed is held to 50% or below (fan is 4-pin and has PWM control). Externally powered fan hubs/splitters should work, if they provide the required 20w of power per channel. I've been running 4-pin molex powered fan splitters without issue. Splitters/hubs with speed control will allow greater efficiency with reduction of fan speed/power draw.

Fan needs and setups will vary widely by level of user and number of cards; I've decided not to include a splitter/hub in the base kit. If demand is there, I will consider adding a simple 4-pin molex powered hub for users (will not have fan speed control). Molex max power rating is theoretically 132w (12v x 11a rating) but given the variability of gauge on PSU peripheral wiring, I wouldn't recommend running more than 3-4 of these fans per hub.

Xilinx C1100 Cooler Pricing					
quantity	shroud only	+ adapter	+ fan	base	total
1	\$25	\$5	\$20	\$50	\$50
2	\$23	\$5	\$20	\$48	\$96
3	\$21	\$5	\$20	\$46	\$138
4	\$19	\$5	\$20	\$44	\$176
5	\$17	\$5	\$20	\$42	\$210
6 or more	\$15	\$5	\$20	\$40	

Pricing for C1100 Custom Cooling Kit

As shown, some discount will be provided for purchasers of multiple kits. Shipping and any payment method fees are additional to the above numbers as they vary by purchaser. PayPal or common cryptocurrencies (ETH, BTC, LTC, USDT, etc.) will be accepted. Currently these will be available in US only (possibly Canada); if enough demand, a solution for shipping elsewhere can potentially be worked out.

Priority will be given to those purchasing kits, though shrouds will be available for purchase separately. Supplies are limited, particularly of San Ace fans. If/when those run out, I may have to source additional fans at higher cost and will update the pricing chart accordingly. Depending on availability, I am also open to modifying/verifying the shroud funnel to be compatible with other brands of 97x33 blower fans, such as Delta. For now, only San Ace B97 fans are verified to fit the shroud funnel.

Given that many of you have not received your C1100s, part of the intent of making a kit available in advance is to minimize downtime solving cooling issues when they arrive, which offsets the cost of the kit and saves you time. It is highly recommended to have a cooling solution ready in advance of receipt of your FPGAs given the long time already wasted on the 5-6 weeks lead time for shipment. For further questions or concerns, please reach out to support member N2DCRYPT#2778 on the FPGA or TRM Discords.