



Before making any changes to the IA-440i, read the [warranty information](#) at the end of this document. Unauthorized modifications to the card **can void the warranty**.

## IA-440i Top Level Assembly

### Tools Required

You will need the following tools for this procedure:

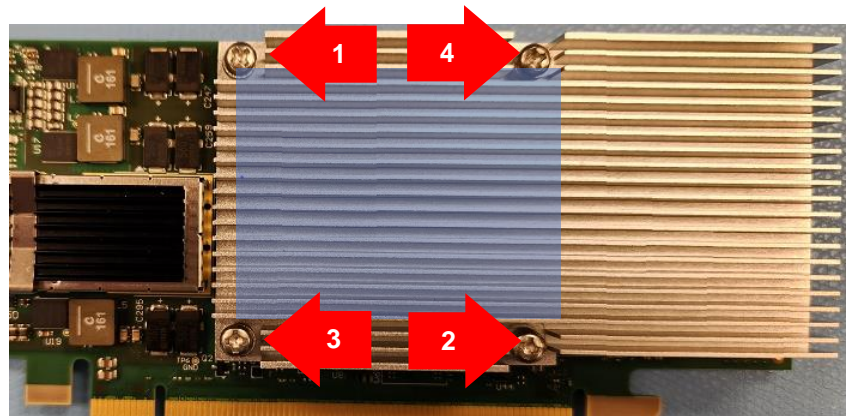
- Size no. 1 Posi-headed screwdriver
- 50ml two-part dispensing gun (for thermal gap filler)
- Mixing dispensing nozzles for dispensing gun
- Bergquist GF3500S35-50CC Thermal Interface Gap Filler

### Removing the Heatsink

To remove the heatsink from the IA-440i,

1. Place the card on a flat surface.

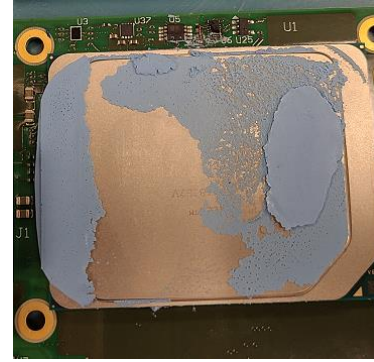
2. Following the sequence shown, turn the screws up to two full turns until they are loosened from the backplate PEM nuts.



3. Remove the backplate.



4. Bake the card in an oven for 30 minutes at 160°F (70°C) to activate the thermal material.
5. Remove the card from the oven.
6. Apply light pressure to remove the heatsink from the FPGA.
7. Use a new lint free cloth and isopropyl alcohol to remove any excess thermal material from the FPGA package lid.



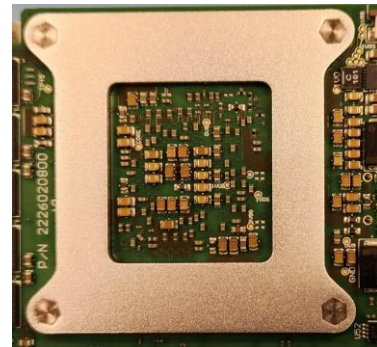
## Assembling the Heatsink



The two-part gap filler has a working time of **60 minutes**, so be sure to **complete the procedure within 40 to 45 minutes**.

To assemble the heatsink for the IA-440i,

1. Insert the backplate on the back of the card.
2. Since other components are taller than the backplate, use an ESD-safe method (such as ESD-safe Kapton tape) to hold it in place while attaching the heatsink to the FPGA.
3. Use a new lint free cloth and isopropyl alcohol to clean the package lid of the FPGA (indicated with a red dot).
4. Set the assembly aside to dry.



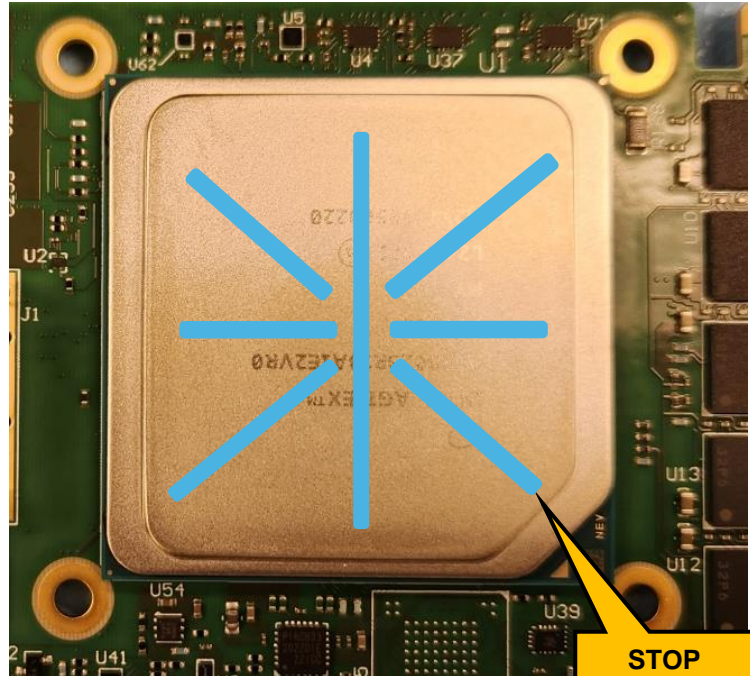
- To dispense the correct amount of gap filler, cut a new mixing nozzle at the first 'step', as shown here by the red line.

The nozzle to use is from Loctite (PN 833982).

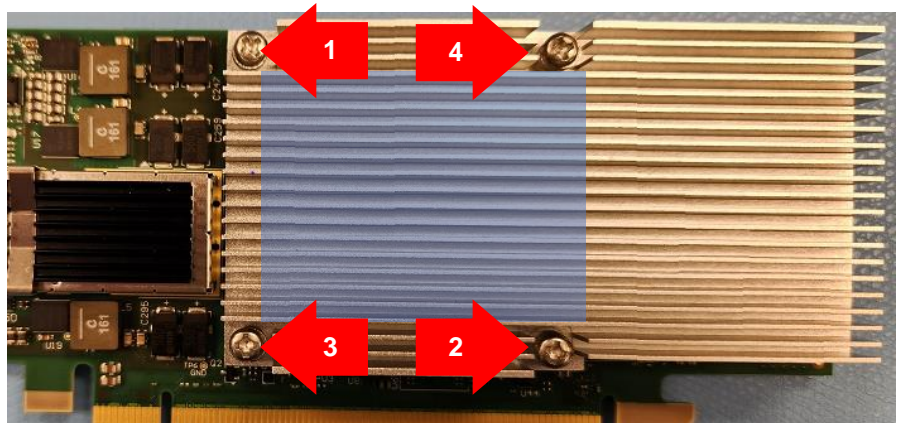


- Apply the two-part gap filler as an eight-pointed 'star' in the center of the FPGA lid, keeping each point within 3mm of the edge of the raised section of the lid.
  - Apply the first gap filler segment as a line from top to bottom as shown.
  - Begin the remaining start points from the center to the edge. Do not overlap the center line.

**Do not spread the gap filler over the component lid.** Leave it as shown (in an eight-point star) before applying the metalwork.



- Place the card on a flat surface.
- Mount the heatsink onto the gap-filler-loaded FPGA in the orientation shown so that the heatsink screws align with their associated backplate PEM nuts.
- The gap filler should start to appear around the FPGA.
- Line up the screws with the backplate PEM nuts. Tighten each screw using the numbered sequence shown, up to two full turns, until all four screw shoulders are mated to the backplate PEM nuts.
- Tighten each screw to a torque value of 2 in-lb (22 N-cm).



## Warranty

This section outlines the handling guidelines that are allowed within the warranty. Always follow proper ESD handling precautions. Do not move or replace any component that was installed by BittWare (DIMMs, cables, heatsink, etc.) without reaching out to BittWare support. The support team will ensure these parts are replaced safely to avoid any possible damage to the card; in many cases an RMA will be required. Moving these components without recommendation from the support team will void the warranty of the card.

Other components that were not pre-installed (QSFPs, MCIO cables, etc.) can be moved or replaced. Installing DIMMs at the customer location will void the BittWare hardware warranty. If you suspect an issue with your DIMM, please contact BittWare for support.

**For any clarification on operations allowed under the warranty, please reach out to BittWare.**