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104 ENCLOSURE

MODEL 104E-BOX

USER MANUAL

Patent Pending

General Description

This document details how to integrate a PC/104 system using the 104E-BOX. The design of the box allows for conduction cooling of the CPU and power supply to the top and bottom end plates, respectively.

System Integration

When ordering the 104E-BOX it is important to know what CPU and I/O boards you are planning to use in your stack. Depending on what type of CPU is used, a custom heatsink block may be needed to properly heatsink the CPU to the Top End Plate of the 104E-BOX. ACCES can provide this heatsink block if you let us know the height of the CPU microprocessor on the board. We will also need to know the location of the CPU microprocessor so that we can mount the heatsink block above the CPU microprocessor. Since each CPU has different features, let us know what cable connections come with your CPU so that we can custom punch the endplates, leaving you with a clean design.

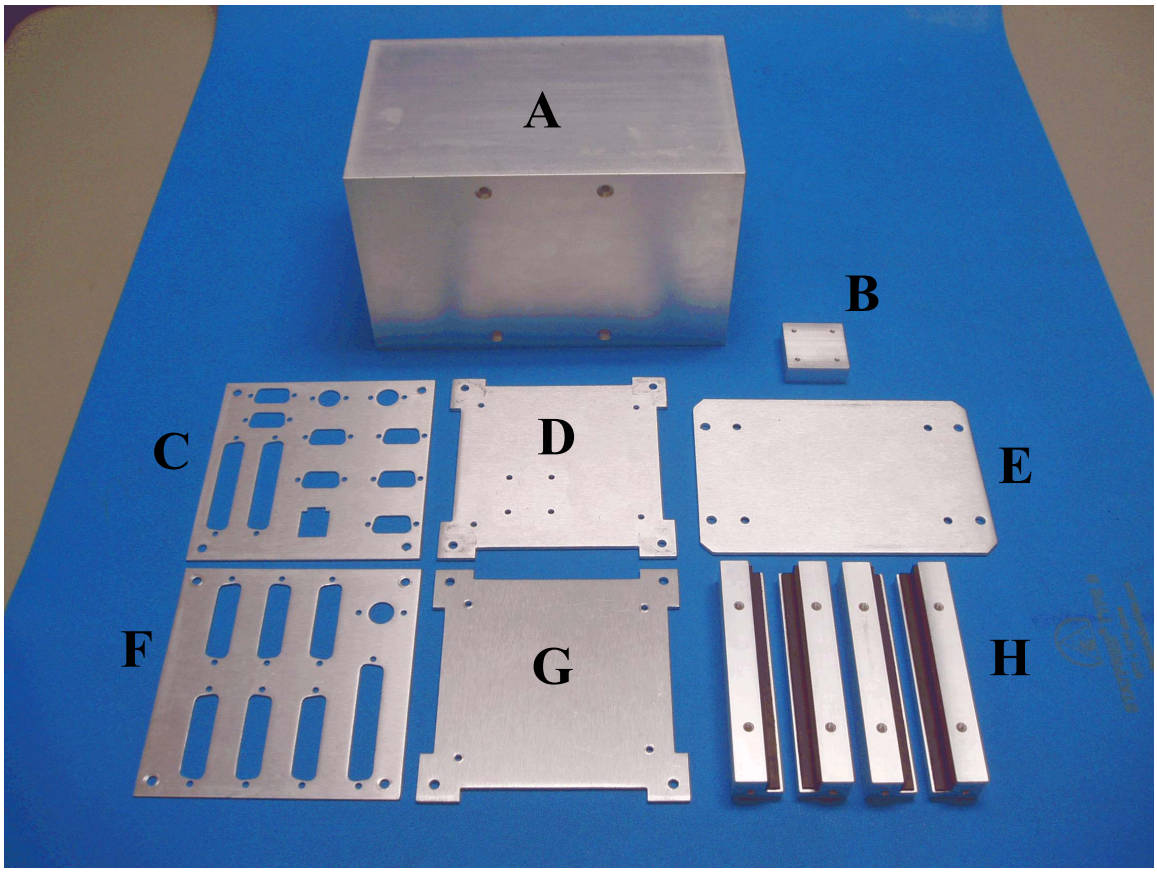
There are many possible I/O combinations available for your stack. Due to the various combinations the I/O Plate of the 104E-BOX is custom punched for each application. Let us know how you would like to connect to your I/O so that we can ensure a clean design with no extra cutouts.

When working with PC/104 Enclosures, custom cabling is a must due to space requirements and various cable lengths. ACCES can provide all your cabling needs for your custom 104E-BOX along with complete, documented system integration. We suggest allowing us to integrate the prototype system for you, that way we can provide you with all the necessary steps and documentation to perform the system integration yourselves.

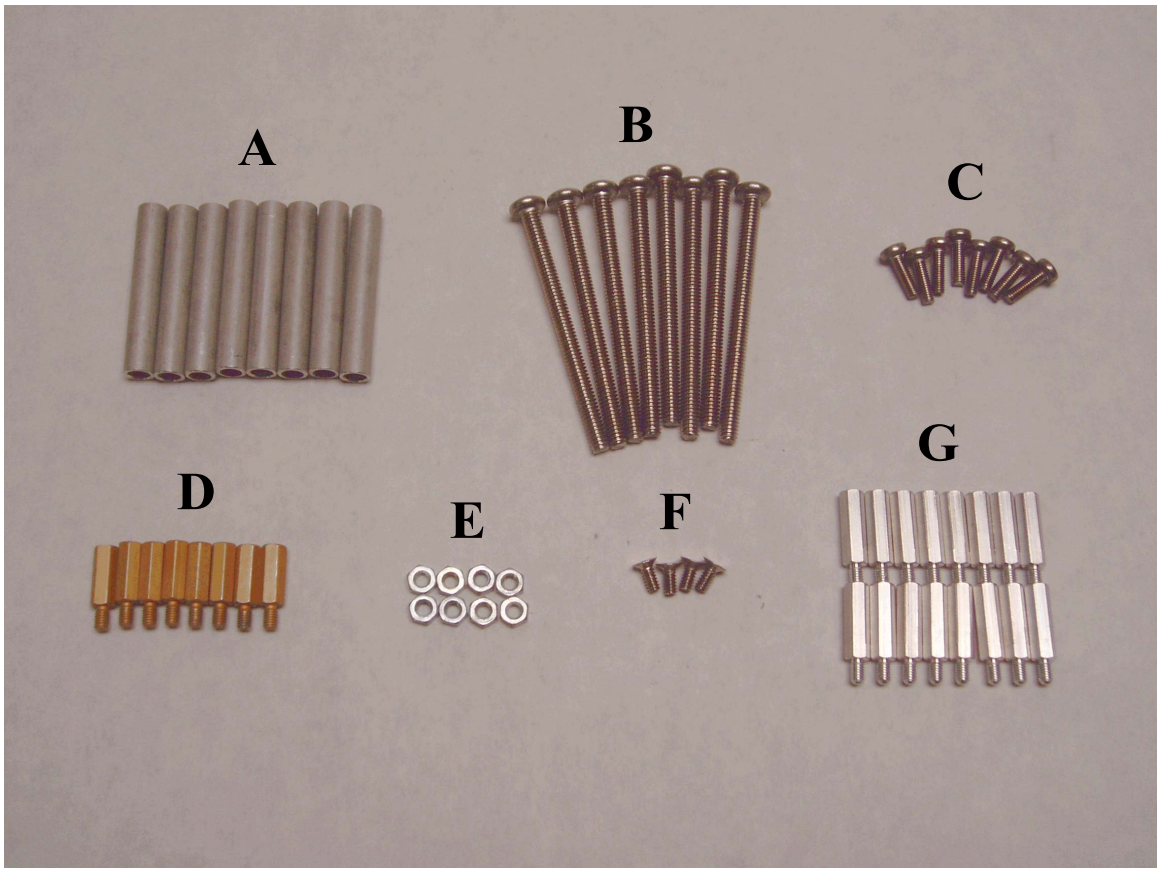
Note: Not all PC/104 CPU's follow the PC/104 specification. There may be some customization needed in the type of hardware used which may not be found in the hardware kit.

Included with the 104-E-BOX:

A) Extrusion
B) Heat-sink (optional depending on the CPU)
C) Top CPU plate
D) Top end plate
E) Mounting Plate
F) Bottom I/O plate
G) Bottom end plate
H) 4 x Rails
- Hardware Assembly Kit (pictured separately)



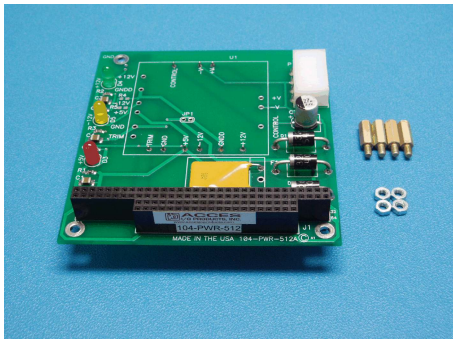
Hardware Assembly Kit:
A) 8 x 1.5" Standoffs
B) 8 x 2.25" 6-32 Screws
C) 8 x 0.5" M3 Screws
D) 8 x 0.475" M3 m/f Standoffs
E) 8 x M3 Nuts
F) 4 x 0.25" 4-40 Flathead Screws
G) 16 x 0.6" M3 m/f Standoffs

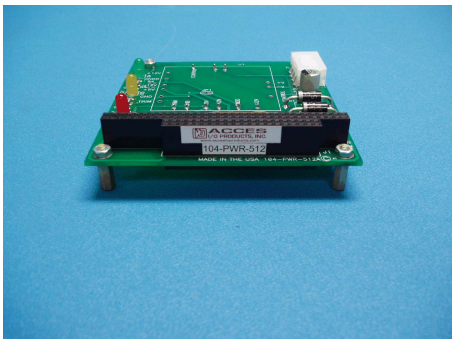


-Tools Required:
- 3/16 Nut Driver
- 7/32 Wrench
- Philips Screwdriver
- Heatsink Compound
- Loctite

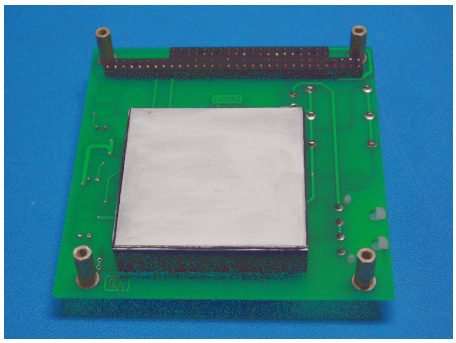
Assembly Instructions for 104E-BOX:

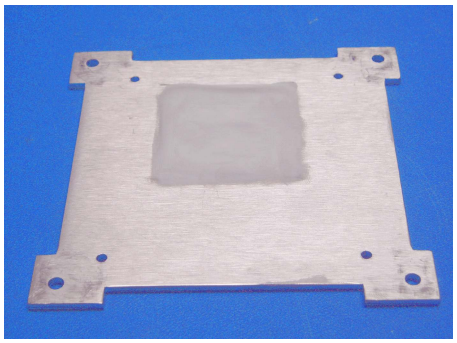
1. Using one of ACCES I/O Products PC/104 Power Supplies, 104-PWR-500A-R or 104-PWR-512A-R, install 4 x 0.475" M3 m/f standoffs to the underside of the board with 4 x M3 nuts using a small application of loctite to the threads. These power supplies were designed to be used with the 104E-BOX by mounting the power supply on the bottom of the board so that it acts as a heatsink.



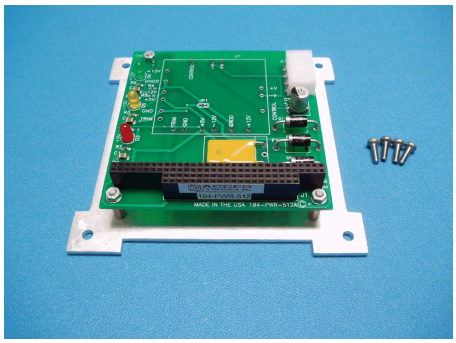


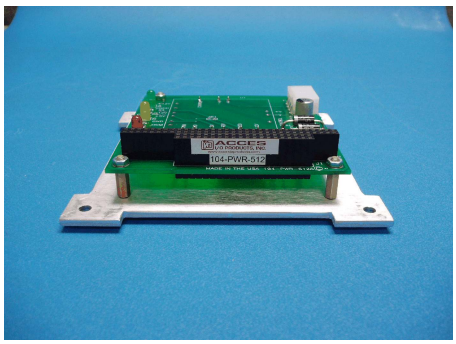
2. Apply heatsink compound to power supply and to Bottom End Plate where the power supply touches the plate.



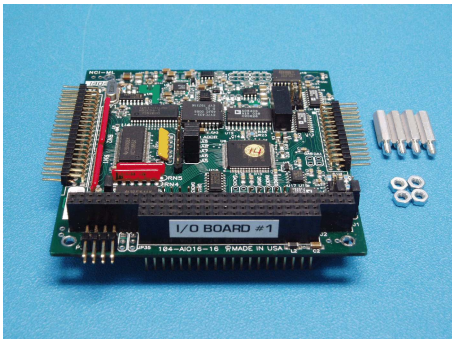


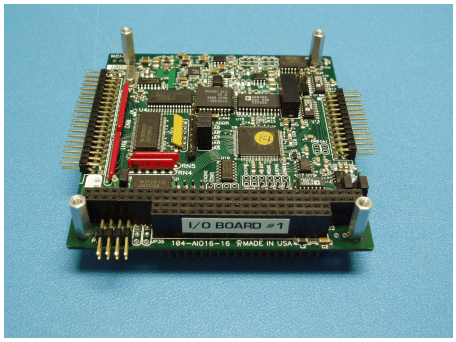
3. The power supply is ready to be installed to the Bottom End Plate. Align the holes of the power supply with the Bottom End Plate. Using 0.5" M3 screws, secure the power supply to the Bottom End Plate using a small application of loctite to the threads. Once completed this assembly can be put aside until further instructions.





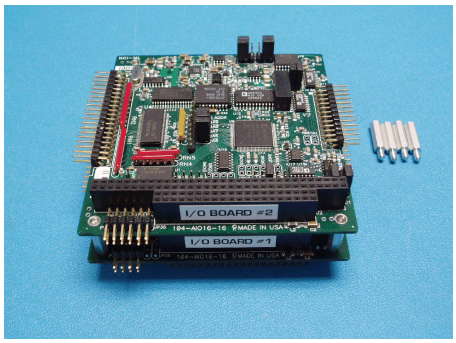
4. Begin assembly of the I/O stack starting with the bottom I/O board which will be closest to the power supply, for these instructions this board will be referred to as I/O BOARD #1. Install 4 x 0.6" M3 m/f standoffs to topside of I/O BOARD #1 and secure with 4 x M3 nuts to underside of I/O BOARD #1 using a small application of loctite to the threads.

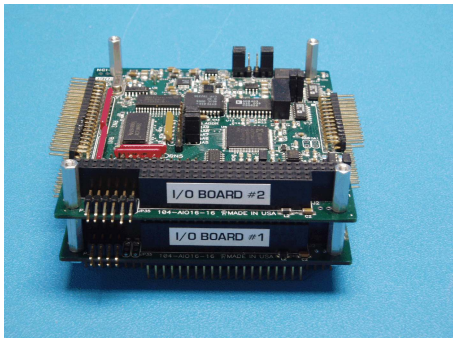




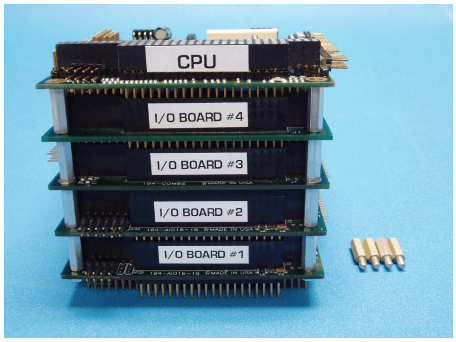
Note: Plan your I/O stack so that cable lengths and cable locations on the I/O plate and board itself are taken into consideration for painless assembly.

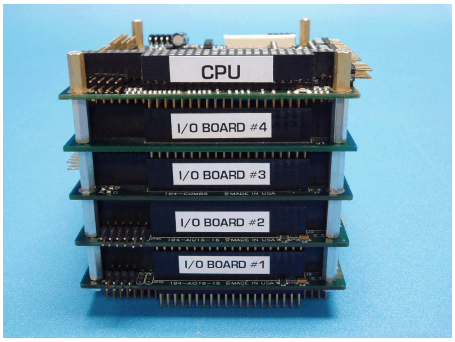
5. Next, plug in I/O BOARD #2 into I/O BOARD #1 and install 4 x 0.6" M3 m/f standoffs to secure the boards together along with a small application of loctite to the threads.



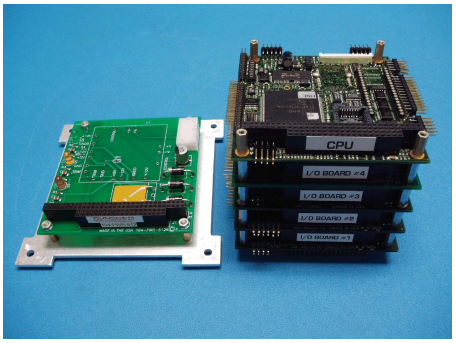


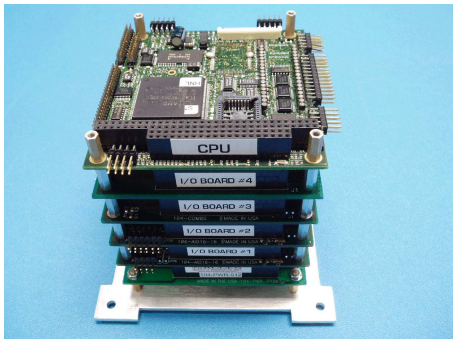
6. Repeat step 4 for each additional I/O BOARD then plug in the CPU on top of the stack. Install 4 x 0.475" M3 m/f standoffs to secure the CPU to the top I/O BOARD along with a small application of loctite to the threads.





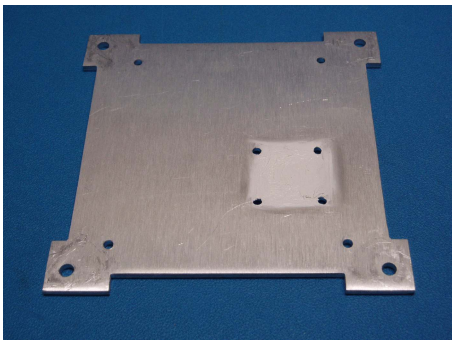
7. Referring back to the power supply and bottom end plate assembly in step 2, plug the entire stack together. The example shown in the photos is for a 6 board stack (1 PS, 4 I/O, and CPU).



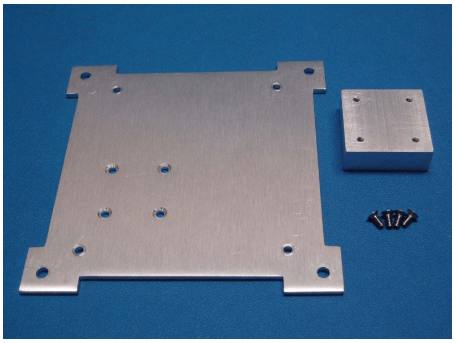


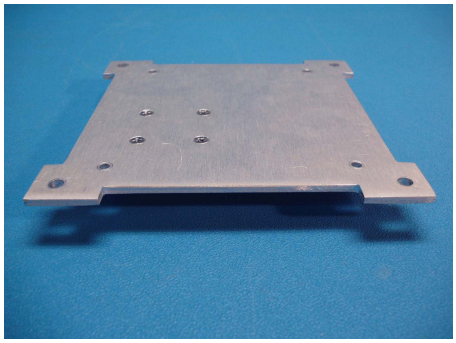
Note: If the CPU you are using has any cable locations which are not available at the boards edge, now would be the time to install these cables.

8. Apply heatsink compound to bottom of Top End Plate were the heatsink block is located.

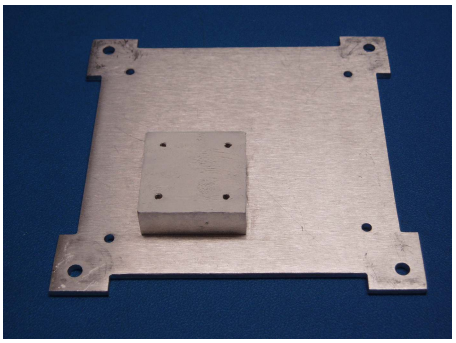


9. Install heatsink block to bottom of Top End Plate using 4 x 0.25" 4/40 flathead screws and a small application of loctite to the threads.

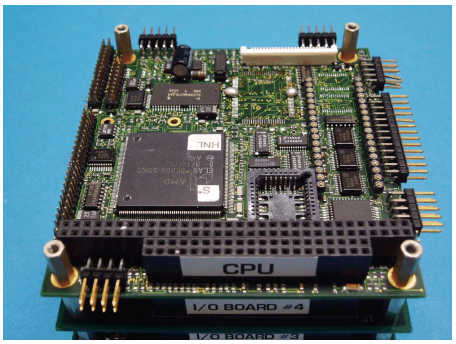


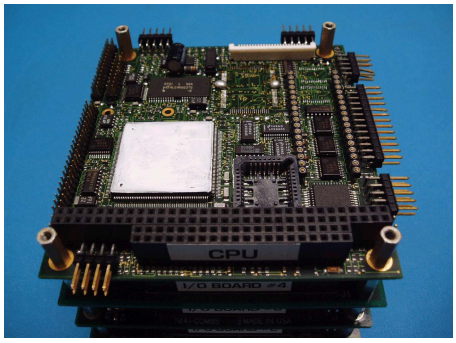


10. Apply heatsink compound to heatsink block.

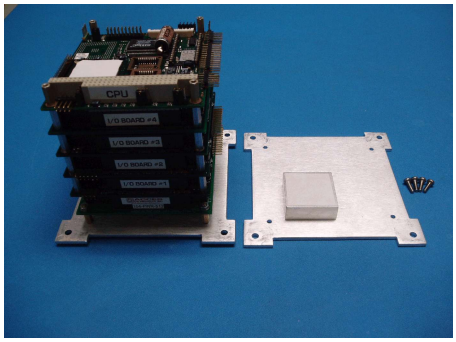


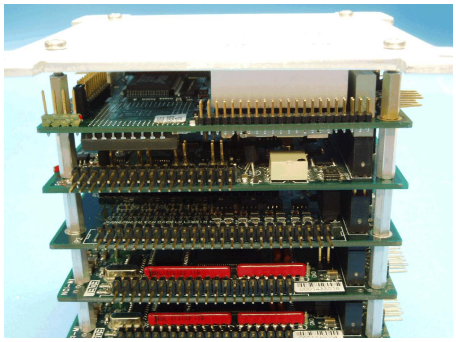
11. Apply heatsink compound to CPU.



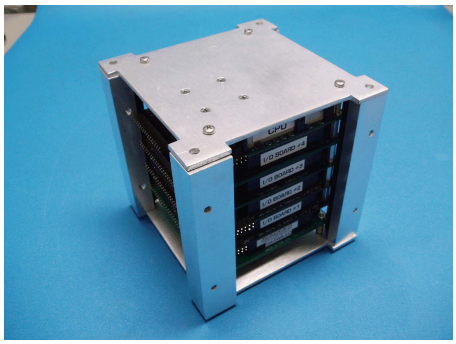


12. Install Top End Plate, with heat sink attached, to the CPU board and secure with 4 x 0.5" M3 screws and a small application of loctite to the threads. Tighten until heatsink makes solid contact with the CPU microprocessor without bending the CPU board.





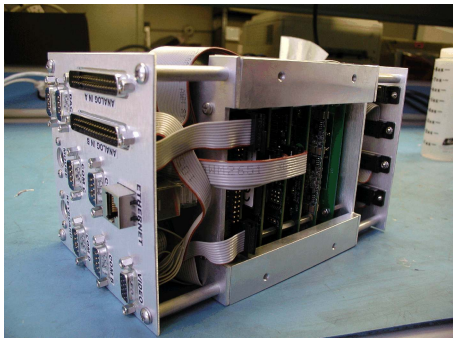
13. Install rails on corners of the stack.



Note: Some separation may be necessary between power supply and I/O BOARD #1. This tolerance is built into the design and allows for fine tune adjustment to ensure proper heatsinking of CPU and power supply.

14. Install all CPU connectors to CPU Plate.

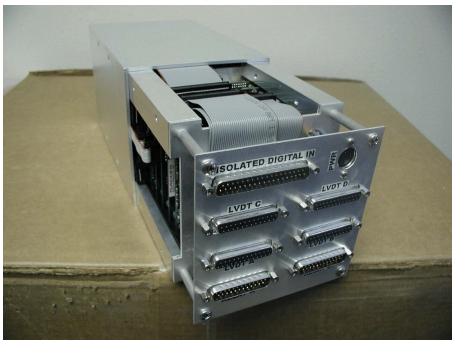
15. Plug all CPU cables into the CPU board. Then install CPU Plate to Top End Plate using 1.5" standoffs and 2.25" 6-32 screws and a small application of loctite to the threads. Loosely tighten the screws, allowing for some play in the rails.



Note: When installing CPU Plate to Top End Plate keep in mind to install in such a way which eases the routing of the various CPU cables.

16. Install all I/O connectors to I/O Plate.

17. Plug all I/O cables into I/O boards. Then install I/O Plate to Bottom End Plate using 1.5" standoffs and 2.25" 6-32 screws and apply a small application of loctite to the threads. Loosely tighten the screws, allowing for some play in the rails.



Note: When installing I/O Plate to Bottom End Plate keep in mind to install in such a way which eases the routing of the various I/O cables.

18. Slide completed assembly into extrusion. Make sure to align the holes of the extrusion with the holes found on the rails. The screws should be loose, a 1/4 turn, when sliding into extrusion.

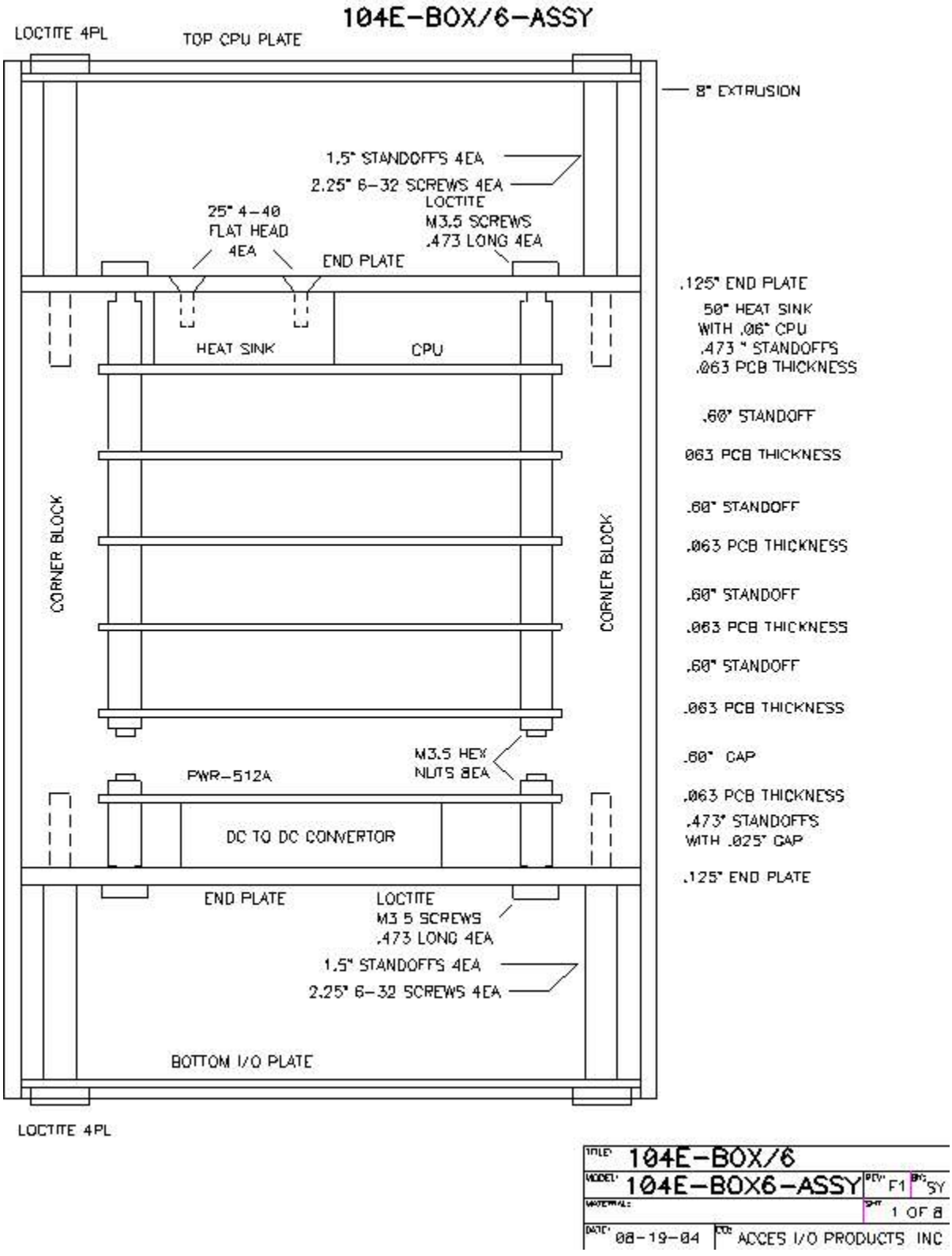
19. Tighten down both the I/O Plate and the CPU Plate.

20. Align Mounting Bracket holes with those found on the extrusion. The Mounting Bracket installs in the holes which are **not** countersunk on the extrusion with 4 x 0.75" 6-32 Flathead screws and a small application of loctite to the threads. Apply a thin coat of heatsink compound between the mounting plate and the extrusion.

21. Secure opposite side of extrusion with 4 x 0.5" 6-32 Flathead screws and a small application of loctite to the threads. These holes are countersunk.

Removing the 104 stack from the Extrusion:

To remove the 104 stack from the extrusion unscrew the side retaining screws and loosen both the I/O Plate and CPU Plate a 1/4 turn. Now, you should be able to push on either end and the stack will slide out of the extrusion.



TITLE:	104E-BOX/6
MODEL:	104E-BOX6-ASSY REV: F1 SIZE: SY
MATERIAL:	SHT 1 OF 8
DATE: 08-19-04	CO: ACCES I/O PRODUCTS INC