BLIP BOARD MODIFICATIONS AND UPGRADES
CDMS 5 November 1998

Board layout correction modifications: Version 3

Modifications 1 through 8 correct board layout problems and maintain version 3 schematic match. Modifications 8-13 upgrade the board to Version 4.

1. **Write PS1 and PS2 DAC control lines shorted:**
- Cut trace by pin 9 of U2 (component side)
- Cut trace from pin 16 of U92 below U72
- Run jumper from pin 9 of U2 to pin 16 of U92 side of cut trace.

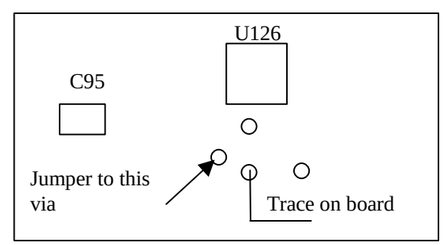
2. **Trace from pin 28 of U72 to pin 4 of U129 is connected to –15FE supply.**
- Drill out pin 28 of U72 and at via connected to pin 4 of U129
- Run jumper from pin 28 of U72 to pin 4 of U129 (component side)
- Run jumper from pin 28 of U72 to trace going to R194 (solder side)

3. **QO drain connected to +15 FE:**
- Drill out upper 2 holes of buss area between F5 and C5 (component side)

4. **QO, QI, Lockin 1, Lockin 2 auto zero upgrade:**
- Install OP627 for U9, U45, U55, U68 instead of OP27 as indicated in silk screen

5. **2 DIV SEL control line shorted to Digital ground:**
- Drill out via located above bypass capacitor mounted above U50 and RES PACK #2 (solder side)
- Run jumper from pin 15 of U50 to pin 16 of U121 (connection can be made at via located near U126, see drawing)

Solder side of board



6. **DAC power supply coupling capacitors improperly grounded:**
- Locate coupling capacitors on solder side of board, connected to pins 19 and 20 of DAC
- Cut traces between capacitor and ground vias
- Run jumper from side of caps where via traces were cut to pin 18 of DAC
- Do for all four DACs, U31, U51, U72 and U92

7. **R369 connected to R424 bypassing Cinner trigger control:**
- Cut trace leading from R369 to junction of R424, C226 and pin 7 of U132
- Run jumper from R369 to junction of C226 and pin 6 of U132

8. **Bypass capacitor for U104 not connected to FE ground:**
- Bypass capacitor located above U103 (solder side)
- Run jumper to top edge of adjacent capacitor

Version 4 upgrades:

9. **FET heater current control selector switch:**
- Install SPST selector switch in front panel
- Install 10k ohm potentiometer in front panel
- Cut trace between R527 and pin 32 of P1 near location of SPST switch
- Cut trace between R360 and via (other end of R360 connected to U128)
- Connect wiper of potentiometer to one end and run jumper to the side of R527 that is connected to pin 6 of U134 (side of resistor away from cut trace)
- Run jumper from remaining potentiometer lead to top pin of SPST switch
- Run jumper from lower pin of SPST switch to R527 side of cut trace
- Run jumper from center pin of SPST switch to pin 32 of P1 side of cut trace
- Run jumper from center pin of SPST switch to side of R360 where trace was cut

10. **Trigger +/- line resistor removal:**
- Remove R40 (component side)

11. **Implant pulse capacitor removal:**
- Remove C58 (solder side)

12. **IBAPACAP pulse width upgrade:**
- Replace R100 and R101 with 301k Ω resistors (were 110k Ω)
- Replace C41 and C42 with .1µF capacitors (were .01µF)

13. **FET T sense polarity upgrade:**
- Cut pin 35 of P1 so it is not connected to board
- Cut trace going to pin 2 of P1, close to connector
- Run jumper from cut trace to connector side of pin 35 of P1
- Run jumper from pin 2 of P1 to FEGND side of bypass capacitor (side towards via) in the vicinity of U12

14. **14 Volt power supply resistor change:**
- Replace R117, R183(were 715 Ω)and R71 & R180(were 200 Ω)with 84.5 Ω resistor

15. **BLIP board version change to Version 4:**
- This involves the reconfiguration of the jumpers installed in locations 9, 10 and 11 of board address configuration
- Connect pins 9 and 10 (center column of holes) to ground side of configuration
- Connect pin 11 to +5V side of configuration
- Ensure pin 11 is disconnected from pin 12