

SET-II Evaluation Test Board (SET-II)

v3.00, 2010-11-24

Main Features of the SET-II Board (refer to diagram on back)

- ◆ Socket for standard 14-pin butterfly or 7-pin package Aeon SOA
- ◆ Connector for external +9V power supply (included)
- ◆ LCD display
- ◆ Four push-buttons B1-B4. B2 is a rotary knob
- ◆ Three indicator LEDs

Mounting the SOA on the board

Make sure the power is disconnected before mounting or removing a SOA from the board. Place the SOA device in the socket, making sure all the pins are in their slots. Verify that the SOA device is properly oriented, i.e. the SOA device pin1, identified by the bevel at the corner of the SOA device, is at top-right as shown in the drawing. Screw the SOA to the heat sink at the four corners of the device, but be sure not to over-tighten them.

Board operation

- 1 Plug in the +9V DC power, using the 120V AC to +9V DC Power Adapter (supplied), into the +9V power connector on the SET-II Board. The Power LED should turn green.
 - 2 Use B1 to cycle through display readouts for set temperature, actual temperature, thermistor resistance, TEC current, TEC voltage, chip set current, chip actual current, and chip voltage.
 - 3 In the first five (TEC related) readout states, rotating B2 changes the TEC set temperature; pushing it turns the TEC controller circuit on and off. Keeping B4 pressed while rotating B2 changes settings faster.
 - 4 In the last three (chip related) readout states, rotating B2 changes the chip set current; pushing it turns the injection current on and off. Keeping B4 pressed while rotating B2 changes settings faster.
 - 5 In an error state (as indicated by the LEDs, see below), the injection current and TEC controller will automatically be turned off. Press B1 to clear the error condition. If this does not work, press B3 to reset the board.
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LCD Display Readouts

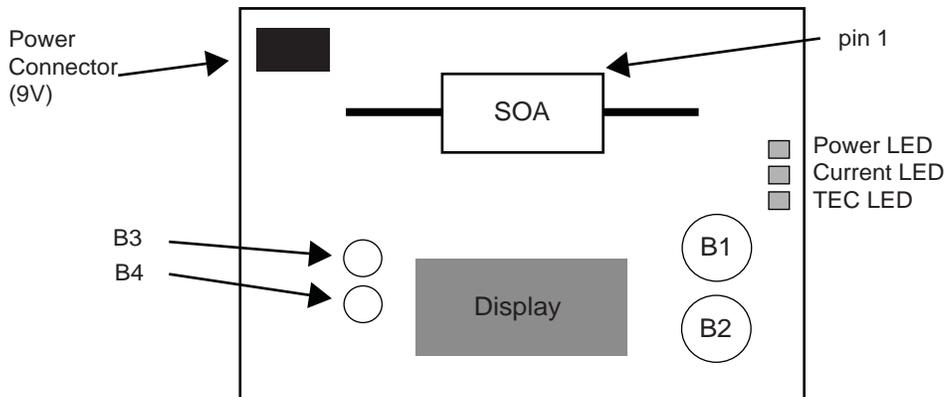
Readout	Shows	Resolution
Set T	TEC circuit set temperature. Range 0-55 °C	0.1°C
Actual T	Actual temperature calculated from thermistor value. Reading only valid when TEC controller is turned on	0.1°C
R therm	Thermistor value. Reading only when TEC controller is turned on	100 Ω
I TEC	TEC current. Positive = cooling; negative = heating	1 mA
V TEC	TEC voltage. Positive = cooling; negative = heating	1 mV
Set I	Set current for chip injection current source. Range 0 to approx. 450 mA	1 mA
I Chip	Measured chip injection current	1 mA
V Chip	Forward voltage across chip	10 mV

LED Indicators

LED	State	Meaning
Power	Green	Board powered up
	Red	Error in power circuit, or insufficient supply power
	Yellow	Microcontroller hang, causing an automatic reset. Please report this condition to Aeon
Current	Off	Chip injection current turned off
	Green	Chip injection current turned on
	Red	Error detected related to chip injection current
TEC	Off	TEC controller turned off
	Green	TEC controller turned on and cooling
	Yellow	TEC controller turned on and heating
	Red	Error detected by TEC controller

If any error is detected, as indicated by the LEDs, TEC and injection current are automatically shut off.

- TEC error can be caused, e.g., by open or short circuit
- Chip current errors can be caused by open circuit, or by trying to operate the chip when TEC controller is off, or when the chip is attempted to be driven with more current than the circuit can supply.



Push Buttons

- B1 Select between eight display readouts
- B2 Rotate to change set temperature or current press to turn on / off
- B3 Board reset
- B4 Keep pressed to change temperature or current faster when rotating B2