10. The thermal block assembly of claim 9, wherein each independent controller comprises a computer processor.

11. The thermal block assembly of claim 10, wherein the computer processor is configured to control one of the two or more thermoelectric devices and to communicate with the thermal sensor associated with the thermoelectric device.

12. The thermal block assembly of claim 1, wherein the controller comprises two or more sub-controller elements.

13. The thermal block assembly of claim 12, wherein each of the two or more sub-controllers are operably connected to one of the thermoelectric devices.

14. The thermal block assembly of claim 1, further comprising a heat sink, wherein the heat sink comprises a baseplate and fins, wherein the baseplate comprises a top surface and an opposing bottom surface, wherein the top surface is in thermal contact with the opposing bottom surface of the thermoelectric devices, and the fins are pendant the opposing second surface.

15. A method for controlling sample block temperature, comprising:

providing a block assembly including,

a sample block;

two or more thermoelectric devices in thermal communication with the sample block,

wherein each of the thermoelectric devices comprises a top surface in thermal contact with the bottom surface of the sample block and an opposing bottom surface facing away from the sample block, and each of the thermoelectric devices houses a unique thermal sensor in a groove carved out of a surface of said thermoelectric device from an edge of said surface;

pairing each of the thermoelectric devices with their respective unique thermal sensors to form a thermal unit; and

independently controlling the temperature of each of the thermal units with a controller to maintain a substantially uniform temperature throughout the sample block.

16. The method of claim 15, wherein the controller is configured to minimize temperature differences measured by the thermal sensor of each thermal unit.

17. The method of claim 16, wherein each thermal sensor is configured to measure temperature of a sample block region that is proximate to each respective thermal sensor.

18. The method of claim 15, wherein the controller is comprised of 2 or more sub-controllers.

19. The method of claim 18, wherein each of the sub-controllers is operably connected to one of the thermal units.

20. A thermocycler system, comprising:

a sample block assembly including,

a sample block configured to receive a plurality of reaction vessels; and

two or more thermoelectric devices in thermal communication with the sample block, wherein each thermoelectric device houses a unique thermal sensor; and

a controller including a computer processing unit with machine executable instructions and two or more communication ports, each port operably connected to one of the two or more thermoelectric devices and their respective thermal

sensor, wherein the machine executable instructions are configured to individually adjust the temperature of each thermoelectric device based on temperature measurements from their respective thermal sensor to provide a substantially uniform temperature profile throughout the sample block,

wherein each of the thermoelectric devices further comprises a top surface in thermal contact with the bottom surface of the sample block and an opposing bottom surface facing away from the sample block; and

wherein the thermal sensor is housed in a groove carved out of a surface of each thermoelectric device from an edge of said surface.

21. The thermocycler system of claim 20, wherein the top surface comprises the groove.

22. The thermocycler system of claim 20, wherein the bottom surface comprises the groove.

23. The thermocycler system of claim 20, further comprising a heat sink, wherein the heat sink comprises a baseplate and fins, wherein the baseplate comprises a top surface and an opposing bottom surface, wherein the top surface is in thermal contact with the opposing bottom surface of the thermoelectric devices, and the fins are pendant the opposing second surface.

24. A thermal block assembly, comprising:

two or more sample blocks, each sample block with a top surface configured to receive a plurality of reaction vessels and an opposing bottom surface; and

two or more sets of thermoelectric devices operably coupled to each sample block and a thermal control interface in communications with a controller,

wherein each of the thermoelectric devices includes a top surface in thermal contact with the bottom surface of the respective sample block and an opposing bottom surface facing away from the respective sample block; and

wherein each of the thermoelectric devices further includes housing for a thermal sensor, the housing comprising a groove carved out of a surface of said thermoelectric device from an edge of said surface.

25. The thermal block assembly of claim 24, further comprising two or more heat sinks, wherein each heat sink comprises a baseplate and fins, wherein the baseplate comprises a top surface and an opposing bottom surface, wherein the top surface is in thermal contact with the opposing bottom surface of the thermoelectric devices, and the fins are pendant the opposing second surface.

26. The thermal block assembly of claim 24, wherein the controller comprises two or more independent controllers, wherein each independent controller comprises a

computer processor and is configured to control one of the two or more sample blocks and sets of thermoelectric devices.

27. The thermal block assembly of claim 24, wherein the controller comprises a computer processor and two or more channels, wherein the processor is configured to control each of the two or more channels.

28. The thermal electric assembly of claim 24, wherein each of the sets of thermoelectric devices comprises at least one thermoelectric device.

29. A thermal block assembly, comprising:

at least one sample block, each sample block with a top surface configured to receive a plurality of reaction vessels and an opposing bottom surface; and

at least one set of thermoelectric devices operably coupled to each sample block and a thermal control interface in communications with a controller,

wherein each of the thermoelectric devices includes a top surface in thermal contact with the bottom surface of the respective sample block and an opposing bottom surface facing away from the respective sample block; and

wherein each of the thermoelectric devices further includes housing for a thermal sensor, the housing comprising a groove carved out of a surface of said thermoelectric device from an edge of said surface.

30. The thermal block assembly of claim 29, further comprising at least one heat sink, wherein each heat sink comprises a baseplate and fins, wherein the baseplate comprises a top surface and an opposing bottom surface, wherein the top surface is in thermal contact with the opposing bottom surface of the thermoelectric devices, and the fins are pendant the opposing second surface.

31. The thermal block assembly of claim 29, wherein the controller comprises at least one independent controller, wherein each independent controller comprises a computer processor and is configured to control one of the at least one sample block and set of thermoelectric devices.

32. The thermal block assembly of claim 29, wherein the controller comprises a computer processor and at least one channel, wherein the processor is configured to control each of the at least one channel.

33. The thermal electric assembly of claim 29, wherein each of the at least one set of thermoelectric devices comprises at least one thermoelectric device.