WHAT IS CLAIMED IS:

1. An apparatus for applying an alternating electric field to a subject's body, the apparatus comprising:

a plurality of electrode elements;

a support configured to hold the electrode elements against the subject's body;

a plurality of thermistors, each of the thermistors having a first terminal and a second terminal, wherein each of the thermistors is positioned to sense a temperature at a corresponding respective one of the electrode elements;

a connector having a plurality of first pins and a second pin;

a plurality of first conductors, each of which provides an electrically conductive path between (a) a respective one of the first pins, (b) a respective one of the electrode elements, and (c) the first terminal of the corresponding thermistor; and

a second conductor that provides an electrically conductive path between the second pin and the second terminal of at least one of the thermistors.

2. The apparatus of claim 1, wherein the second terminals of all the thermistors are wired together.

3. The apparatus of claim 2, wherein the second terminals of all the thermistors are wired together using at least one of (a) at least one trace on a flex circuit and (b) at least one wire.

4. The apparatus of claim 1, wherein the plurality of thermistors are arranged in series, beginning with a first one of the thermistors and ending with a last one of the thermistors, and wherein the second terminal of each of the thermistors except for the last thermistor is wired to the first terminal of a respective subsequent thermistor, and wherein the second conductor provides an electrically conductive path between the second pin of the connector and the second terminal of the last thermistor.

5. The apparatus of claim 1, wherein the second conductor provides an electrically conductive path between the second pin and the second terminal of only a single one of the thermistors.

6. The apparatus of claim 1, wherein the plurality of electrode elements comprises at least four electrode elements, and wherein the plurality of thermistors comprises at least four thermistors.

7. The apparatus of claim 1, wherein the plurality of electrode elements comprises at least nine electrode elements, and wherein the plurality of thermistors comprises at least nine thermistors.

8. The apparatus of claim 1, wherein each of the electrode elements comprises a conductive plate and a dielectric layer disposed on the conductive plate, and wherein the support is configured to hold the electrode elements against the subject's body so that the dielectric layer of each of the electrode elements faces the subject's body.

9. The apparatus of claim 1, wherein the second terminals of all the thermistors are wired together, and wherein the second conductor provides an electrically conductive path between the second pin and the second terminal of all the thermistors.

10. An apparatus for applying an alternating electric field to a subject's body using a plurality of electrode elements, wherein each of the plurality of electrode elements is disposed in thermal contact with a respective thermistor, the apparatus comprising:

an AC signal generator that generates an AC output signal;

a connector that includes a plurality of pins, wherein each of the pins corresponds to a respective one of the plurality of electrode elements;

a first plurality of switches, wherein each of the first plurality of switches is configured to selectively either apply or not apply the AC output signal to a respective one of the pins;

an amplifier configured to accept an electrical signal from each of the thermistors and generate a corresponding output, wherein the electrical signals from the thermistors arrive via the same pins that correspond to the plurality of electrode elements; and

a controller configured to, based on the output of the amplifier, control the first plurality of switches so as to individually adjust the duty cycle of the AC signal that is applied to each of the plurality of pins.

11. The apparatus of claim 10, wherein the controller is configured to (a) determine, based on the output of the amplifier, when at least one of the electrode elements is hotter than other electrode elements and (b) control the first plurality of switches so as to reduce the duty cycle of the AC signal that is applied to at least one respective pin.

12. The apparatus of claim 10, wherein the controller is configured to (a) determine, based on the output of the amplifier, when at least one of the electrode elements is hotter than a threshold level and (b) control the first plurality of switches so as to reduce the duty cycle of the AC signal that is applied to at least one respective pin.

13. The apparatus of claim 10, wherein the plurality of electrode elements comprises at least four electrode elements, wherein the plurality of pins comprises at least four pins, and wherein the first plurality of switches comprises at least four switches.

14. The apparatus of claim 10, wherein the plurality of electrode elements comprises at least nine electrode elements, wherein the plurality of pins comprises at least nine pins, and wherein the first plurality of switches comprises at least nine switches.

15. The apparatus of claim 10, further comprising a second plurality of switches, each of which is arranged to route a signal from a respective one of the plurality of pins to a first input of the amplifier,

wherein the controller is further configured to control the second plurality of switches so as to sequentially select each of the plurality of pins and to sequentially obtain temperature readings from each of the thermistors.

16. The apparatus of claim 15, wherein the connector includes an additional pin, and wherein the apparatus further comprises an additional switch arranged to route a signal from the additional pin to a second input of the amplifier.

17. The apparatus of claim 16, further comprising a third plurality of switches, each of which is arranged to route a signal from a respective one of the plurality of pins to the additional pin, and

wherein the controller is further configured so that when a given switch from the first plurality of switches is opened, the controller closes a respective corresponding switch from the third plurality of switches.

18. The apparatus of claim 10, further comprising:

a second plurality of switches, each of which is arranged to route a signal from a respective one of the plurality of pins to a first input of the amplifier; and

a third plurality of switches, each of which is arranged to route a signal from a respective one of the plurality of pins to a second input of the amplifier,

wherein the controller is further configured to control the second plurality of switches and the third plurality of switches so as to sequentially route signals to the first and second inputs of the amplifier from pairs of the plurality of pins that correspond to both terminals of each of the thermistors in turn, and to sequentially obtain temperature readings from each of the thermistors.