CLAIMS

1. An electrical safety device comprising:

a socket arranged to receive an electrical plug of an electrical appliance to connect a current supply to the electrical appliance;

a thermal sensor arranged to provide a contactless measurement of a temperature of the electrical plug when received in the socket;

a processor in communication with the thermal sensor, the processor configured to determine when the temperature exceeds a predetermined threshold;

a wireless communications links operably coupled to the processor and configured to connect with one or more remote devices to form a wireless network, the wireless communications link further configured to send a signal, via the wireless network, to a remote device in response to the processor determining that the temperature of the electrical plug has exceeded the predetermined threshold; and one or more of:

a smoke and/or gas sensor;

a carbon monoxide sensor; and

a current sensor;

wherein the processor is configured to compare behavior of a combination of sensed parameters against response data stored in a memory to identify a presence of a hazard.

2. The electrical safety device of claim 1 further comprising a housing wherein the socket is provided in a surface of the housing; wherein

the thermal sensor is arranged to detect the temperature in a region external to the housing corresponding to the position of the socket.

3. The electrical safety device of claim 2 wherein the socket comprises a plurality of recesses and the thermal sensor is arranged within the housing between the plurality of recesses and directed out of the housing so as to detect the temperature of the underside surface of the electrical plug when received in the socket.

4. The electrical safety device of claim 2 wherein the thermal sensor is provided on the surface of the housing adjacent to the socket and the thermal sensor is directed along an outer surface of the housing to detect a temperature of a side surface of the electrical plug when received in the socket.

5. The electrical safety device of claim 1 wherein the electrical safety device is a plug-in adaptor unit further comprising:

a plug part arranged to be received in a mains electrical socket, the plug part positioned relative to the socket such that the electrical plug of the electrical appliance can be received in the socket of the electrical safety device when the plug part is received in a mains socket.

6. The electrical safety device of claim 1 wherein the electrical safety device is a mains socket faceplate, configured to be mounted on a surface.

7. The electrical safety device of claim 1 further comprising

a relay switch configured to disconnect the current supply to the electrical appliance connected to the electrical safety device in response to the processor determining that the temperature of the electrical plug exceeds the predetermined threshold.

8. The electrical safety device of claim 1 further comprising an audible and/or visual alarm.

9. An electrical safety device comprising:

a socket arranged to receive an electrical plug of an electrical appliance to connect a current supply to the electrical appliance;

a thermal sensor arranged to provide a contactless measurement of a temperature of the electrical plug when received in the socket;

a processor in communication with the thermal sensor, the processor configured to determine when the temperature exceeds a predetermined threshold;

a wireless communications link operably coupled to the processor and configured to connect with one or more remote devices to form a wireless network, the wireless communications link further configured to send a signal, via the wireless network, to a remote device in response to the processor determining that the temperature of the electrical plug has exceeded the predetermined threshold; and

a water sensor;

wherein the electrical safety device comprises a main body housing the socket, the thermal sensor, and the processor; and

the water sensor is arranged to be positioned on a surface below the main body of the electrical safety device wherein the water sensor is connectable to the main body by a cabled or wireless connection.

10. An electrical safety system comprising:

an electrical safety device comprising:

a socket arranged to receive an electrical plug of an electrical appliance to connect a current supply to the electrical appliance;

a thermal sensor arranged to provide a contactless measurement of a temperature of the electrical plug when received in the socket; and

a processor in communication with the thermal sensor, the processor configured to determine when the temperature exceeds a predetermined threshold; and

one or more remote devices; wherein the electrical safety device comprises a communications link and the electrical safety device is configured to

send a signal to the remote device using the communications link when the processor determines that the temperature of the electrical plug has exceeded the predetermined threshold,

wherein the electrical safety system comprises one or more electrical safety devices and one or more remote devices,

wherein the electrical safety devices and remote devices form a network in which the electrical safety devices and remote devices can communicate,

wherein at least one remote device comprises an isolation unit comprising a communications link,

wherein the isolation unit is configured to restrict a flow of water or gas through the isolation unit upon receiving a signal from the electrical safety device.

11. The electrical safety system of claim 10 wherein the communications link comprises a wireless communications link.

12. The electrical safety system of claim 10 wherein the electrical safety devices and remote devices are configured to communicate both by a Wi-Fi® wireless communications network and a narrow band radio frequency network.

13. The electrical safety system of claim 10 wherein at least one remote device comprises a smart user device and the smart user device is configured to provide an audio or visual alert after receiving a signal from the electrical safety device.

14. The electrical safety system of claim 10 wherein the isolation unit is further configured to restrict a flow of electricity through the isolation unit upon receiving the signal from the electrical safety device.

15. The electrical safety system of claim 14 wherein at least one isolation unit comprises a local water isolation unit arranged for installation at a local water connection to an electrical appliance; the local water isolation unit comprising:

a cabled or wireless connection for connecting to the electrical safety device; and

a motorised valve; wherein

the local water isolation unit is configured to close the motorised valve to restrict a water supply to the electrical appliance upon receiving a signal from the electrical safety device.

16. The electrical safety system of claim 14 wherein at least one isolation unit comprises a mains supply isolation unit comprising:

at least one motorised valve arranged for installation in a mains water feed, a header water tank or mains gas supply; wherein

the mains supply isolation unit is configured to close the at least one motorised valve to restrict the mains supply upon receiving a signal from the electrical safety device.

17. The electrical safety system of claim 14 wherein at least one isolation unit comprises a mains electrical isolation unit comprising:

a mains electrical shut off switch; wherein

the mains electrical isolation unit is configured to actuate the mains electrical shut off switch to shut off the mains electricity upon receiving a signal from the electrical safety device.

18. The electrical safety system of claim 17 wherein the mains electrical isolation unit is connected to a mains consumer unit and is configured to actuate a main switch on the mains consumer unit to shut off the main electricity supply.

19. The electrical safety device of claim 14 wherein the isolation unit comprises a processor and one or more local sensors, the one or more local sensors comprising one or more of:

a thermal sensor;

a smoke and/or gas sensor;

a carbon monoxide sensor;

a moisture and/or water sensor; or

a current sensor; wherein the isolation unit is configured restrict a flow of water, gas or electricity when the processor determines that a parameter sensed by a local sensor exceeds a predetermined threshold.