

CLAIMS

1. A protection circuit for an electric appliance, comprising:
 - 5 a first comparator module configured to compare an operating parameter input signal to a threshold value and to output a first control signal to a first switching circuit configured to control power flow to an associated electrical component,

wherein the first comparator module is configured to receive an enable/disable signal
10 from a first state-change latching device,

wherein the first state-change latching device is responsive to a state change of the first control signal from the first comparator module, in response to which the state-change latching device changes the enable/disable signal from an enable state to a
15 disable state thereby to set the first control signal into an off state and thereby lock the appliance in a non-working safe state.
2. The protection circuit of Claim 1, wherein a control module monitors the first control signal of the first comparator module and outputs a triggering input to the
20 state-change latching device that is responsive to the state of the first control signal.
3. The protection circuit of Claim 2, wherein the first state-change latching device includes a latching mechanism that is activated by the triggering input.
- 25 4. The protection circuit of Claim 3, wherein the latching mechanism is configured to change state upon detecting the triggering input being in a triggering state for a predetermined time period.
5. The protection circuit of Claim 3 or 4, wherein the first state-change latching
30 device includes a memory module that saves the state of the latching mechanism.
6. The protection circuit of Claim 5, wherein the control module controls the memory module to save the state of the latching mechanism by outputting a save input of a predetermined duration whereby once the state of the latching mechanism is saved

in the memory module, the appliance will remain in a non-working state even after the appliance is power cycled.

7. The protection circuit of any preceding claim, wherein the first state-change
5 latching device is a digital potentiometer.

8. The protection circuit of any preceding claim, wherein the first comparator module
includes a comparator that outputs a logic high signal to a first logic element when
the operating parameter input signal exceeds the threshold value, and wherein the
10 first logic element outputs the first control signal as a logic high state when the first
comparator output signal and the enable/disable signal are the same logic state.

9. The protection circuit of any of Claims 1 to 7, wherein the first comparator module
includes a comparator that outputs the first control signal as a logic high state when
15 the operating parameter input signal exceeds the threshold value.

10. The protection circuit of Claim 9, wherein the threshold value is provided by the
enable/disable signal of the first state-change latching device when that signal is in
an enable state.

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11. The protection circuit of any preceding claim, further comprising:

a second comparator module configured to receive the operating parameter input
signal and to compare operating parameter input signal to a threshold value and, in
25 response, to output a second control signal to a second switching circuit configured
to control power flow to the associated electrical appliance,

wherein the second comparator module is configured to receive an enable/disable
signal from a second state-change latching device,

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wherein the second state-change latching device is responsive to a state change of
the second control signal from the second comparator module, in response to which
the second state-change latching device changes the enable/disable signal from an
enable state to a disable state thereby to lock the second control signal into an off
35 state.

12. The protection circuit of any of Claims 1 to 10, wherein the first switching circuit is connected to a power control relay, and wherein the power control relay is connected to a power supply.
- 5 13. The protection circuit of Claim 12, when dependent on Claim 10, wherein the second switching circuit is connected to the power control relay.
14. The protection circuit of Claim 13, wherein the power control relay is configured to disable the power supply when one or both the first switching circuit and the
- 10 second switching circuit operate to de-energise the relay