What is claimed is:

1. A light emitting diode (LED) luminaire, comprising:

a base;

a heat sink coupled to the base;

a power supply coupled to an interior volume of the heat sink;

one or more LEDs coupled to the power supply, wherein the one or more LEDs are coupled to a circuit configured to provide a constant input impedance; and

a lens coupled to the heat sink and enclosing the one or more LEDs.

2. The LED luminaire of claim 1, wherein the constant input impedance is provided by setting an LED current proportional to a supply voltage.

3. The LED luminaire of claim 2, wherein the supply voltage varies.

4. The LED luminaire of claim 1, wherein the constant input impedance is achieved by the circuit being without a current control loop.

5. The LED luminaire of claim 1, wherein the one or more LEDs are under driven.

6. The LED luminaire of claim 1, wherein the circuit comprises a power factor correction integrated circuit.

7. The LED luminaire of claim 1, wherein the LED luminaire is connected in series with a plurality of other LED luminaires.

8. The LED luminaire of claim 1, wherein the power supply is in direct contact with the heat sink.

9. A lighting system, comprising:

a plurality of light emitting diode (LED) luminaires, wherein the plurality of LED luminaires is electrically connected in series,

wherein each one of the plurality of LED luminaires comprises a circuit configured to provide a constant input impedance.

10. The lighting system of claim 9, wherein the constant input impedance is provided by setting an LED current proportional to a supply voltage.

11. The lighting system of claim 10, wherein the supply voltage varies.

12. The lighting system of claim 9, wherein the constant input impedance is achieved by the circuit being without a current control loop.

13. The lighting system of claim 9, wherein one or more LEDs of each one of the plurality of LED luminaires are under driven.

14. The lighting system of claim 9, wherein the circuit comprises a power factor correction integrated circuit.

15. The lighting system of claim 9, wherein the power supply is in direct contact with a heat sink.

16. The lighting system of claim 9, wherein the lighting system comprises a railway lighting system.

17. A circuit for a light emitting diode (LED) luminaire that achieves a constant input impedance, comprising:

a power factor correction control integrated circuit (IC), wherein the power factor correction control IC has a plurality of pins; and

wherein a first one of the plurality of pins is connected to one or more resistors that set a current based upon a varying supply voltage.

18. The circuit of claim 17, a second one of the plurality of pins is coupled to a current sense resistor to limit a peak current in a switching field effect transistor.

19. The circuit of claim 17, wherein a third one of the plurality of pins is coupled to a return.

20. The circuit of claim 17, wherein the circuit is without a current control loop.

CLAIMS

1. A light emitting diode (LED) luminaire, comprising:

a base;

a heat sink coupled to the base;

an alternating current (AC) power supply coupled to an interior volume of the heat sink;

one or more LEDs coupled to the AC power supply, wherein the one or more LEDs are coupled to a circuit configured to provide a constant input impedance by allowing an LED current to vary in proportion to a supply voltage that varies and the circuit comprises a power factor correction integrated circuit, wherein the one or more LEDs are not coupled to a current regulator; and

a lens coupled to the heat sink and enclosing the one or more LEDs.

2. The LED luminaire of claim 1, wherein the supply voltage varies.

3. The LED luminaire of claim 1, wherein the constant input impedance is achieved by the circuit being without a current control loop.

4. The LED luminaire of claim 1, wherein the one or more LEDs are under driven.

5. The LED luminaire of claim 1, wherein the LED luminaire is connected in series with a plurality of other LED luminaires.

6. The LED luminaire of claim 1, wherein the power supply is in direct contact with the heat sink.

7. A lighting system, comprising:

a plurality of light emitting diode (LED) luminaires, wherein the plurality of LED luminaires is electrically connected in series and powered by an alternating current source wherein an LED current varies in proportion to a supply voltage that varies,

wherein each one of the plurality of LED luminaires comprises a circuit configured to provide a constant input impedance and the circuit comprises a power factor correction integrated circuit, wherein the circuit does not include a current regulator.

8. The lighting system of claim 7, wherein the supply voltage varies.

9. The lighting system of claim 7, wherein the constant input impedance is achieved by the circuit being without a current control loop.

10. The lighting system of claim 7, wherein one or more LEDs of each one of the plurality of LED luminaires are under driven.

11. The lighting system of claim 7, wherein the power supply is in direct contact with a heat sink.

12. The lighting system of claim 7, wherein the lighting system comprises a railway lighting system.

13. A circuit for a light emitting diode (LED) luminaire that achieves a constant input impedance, comprising:

one or more resistors that set a current based upon a varying supply voltage to achieve the constant input impedance; and

a power factor correction control integrated circuit (IC), wherein the power factor correction control IC has a plurality of pins, wherein a first one of the plurality of pins is connected to a return of a second one of the plurality of pins via a second resistor to disable a current control loop.

14. The circuit of claim 13, a third one of the plurality of pins is coupled to a current sense resistor to limit a peak current in a switching field effect transistor.