CLAIMS

What is claimed is:

1. An integrally formed LED light wire, comprising a plurality of LED modules, each LED module comprising:

one or more LEDs;

a microcontroller; and

one or more ports, said microcontroller being configured to:

check a status of at least one of said one or more ports;

if the status of the port corresponds to a predetermined state:

assign the LED module to which said microcontroller belongs to a first display address, and

send signals to said microcontroller of a neighboring LED module, said signals assigning respective further display address to the neighboring LED module.

2. The integrally formed LED light wire of claim 1, further comprising a display memory, electrically coupled to said plurality of LED modules, said display memory storing current display information associated with each of said LED modules in said integrally formed LED light wire, said current display information stored in said display memory being accessible by each of the microcontrollers of the LED modules, such that said microcontrollers can retrieve current display information.

3. The integrally formed LED light wire of claim 2, further comprising:

a display controller, said display controller being configured to update the current display information stored in said display memory.

4. The integrally formed LED light wire of claim 1, wherein said one or more LEDs in each said LED module comprise a red, blue, green or white LED.

5. The integrally formed LED light wire of claim 1, wherein said one or more LEDs in each said LED module is either red, blue and green LEDs, or red, blue, green and white LEDs.

6. An integrally formed LED light wire, comprising:

a first bus element formed from a conductive material adapted to distribute power from a power source;

a second bus element formed from a conductive material adapted to transmit a control signal;

a third bus element formed from a conductive material adapted as a ground;

at least two LED modules, each of said LED modules comprising:

a microcontroller and at least one LED, said LED module being electrically coupled to said first, second and third bus elements;

one or more ports, said microcontroller being configured to check a status of at least one of said one or more ports, and if the status of the port corresponds to a predetermined state:

assign said LED module to which said microcontroller belongs to a first display address, and

send signals to the microcontroller of a neighboring LED module, said signals assigning respective further display address to said neighboring LED module.

7. The integrally formed LED light wire of claim 6, further comprising a display memory, electrically coupled to said at least two LED modules, said display memory storing current display information associated with each of the LED modules, said current display information stored in said display memory being accessible by each of the microcontrollers of the LED modules, such that said microcontrollers can retrieve current display information.

8. The integrally formed LED light wire of claim 7, further comprising:

a display controller, said display controller being configured to update the current display information stored in said display memory.

9. The integrally formed LED light wire of claim 6, wherein said first, second and third bus elements are made of braided wire.

10. The integrally formed LED light wire of claim 6, further comprising an encapsulant completely encapsulating said first, second, and third bus elements, and said at least two LED modules.

11. The integrally formed LED light wire of claim 10, wherein said encapsulant further comprising light scattering particles.

12 The integrally formed LED light wire of claim 6, wherein said at least one LED in each said LED module comprises a red, blue, green or white LED.

13. The integrally formed LED light wire of claim 6, wherein said at least one LED in each said LED module is either red, blue and green LEDs, or red, blue, green and white LEDs.

14. An integrally formed LED light wire, comprising:

a support substrate;

a conductive base mounted on said support substrate, said conductive base comprising a first, second and third conductive bus elements, wherein said first

conductive bus element is adapted to distribute power from a power source, said second conductive bus element is adapted to transmit a control signal, and said third conductive bus element is adapted as a ground;

at least two LED modules, each of said LED modules, comprising:

a microcontroller and at least one LED, said LED modules being electrically coupled to said first, second and third conductive bus elements;

one or more ports, said microcontroller being configured to check a status of at least one of the one or more ports, and if the status of the port corresponds to a predetermined state:

assign the LED module to which said microcontroller belongs to a first display address, and

send signals to the microcontroller of a neighboring LED module, said signals assigning respective further display address to the neighboring LED module; and

a display memory, electrically coupled to said at least two LED modules, said display memory storing a current display information for each of said LED modules, said current display information stored in said display memory being accessible by each LED module, such that said LED modules can request and retrieve current display information.

15. The integrally formed LED light wire of claim 14, further comprising:

a display controller, said display controller being configured to update the current display information stored in said display memory.

16. The integrally formed LED light wire of claim 14, wherein said first, second and third conductive bus elements are made of braided wire.

17. The integrally formed LED light wire of claim 14, further comprising an encapsulant completely encapsulating said support substrate, said conductive base, said at least two LED modules.

18. The integrally formed LED light wire of claim 17, wherein said encapsulant further comprising light scattering particles.

19. The integrally formed LED light wire of any one of claims 1, 6 and 14, wherein the outer profile of the encapsulant comprises an alignment key and an alignment keyhole located at opposite sides of the integrally formed LED light wire.

20. A lighting panel comprising a plurality of the integrally formed LED light wires of claim 19.

CLAIMS

What is claimed is:

1. A freestanding, integrally formed LED light wire, comprising a plurality of LED modules, each LED module comprising:

one or more LEDs;

a microcontroller; and

one or more ports, said microcontroller being configured to:

check a status of at least one of said one or more ports;

if the status of the port corresponds to a predetermined state:

assign the LED module to which said microcontroller belongs to a first display address, and

send signals to said microcontroller of a neighboring LED module, said signals assigning respective further display address to the neighboring LED module;

a printed circuit board, wherein the one of more LEDs and the microcontroller are mounted on the printed circuit board; and

a continuous unitary encapsulant completely and continuously encapsulating said plurality of LED modules, including said respective microcontrollers and said one or more ports.

2. The freestanding, integrally formed LED light wire of claim 1, further comprising a display memory, electrically coupled to said plurality of LED modules, said display memory storing current display information associated with each of said LED modules in said freestanding, integrally formed LED light wire, said current display information stored in said display memory being accessible by each of the microcontrollers of the LED modules, such that said microcontrollers can retrieve current display information.

3. The freestanding, integrally formed LED light wire of claim 2, further comprising: a display controller, said display controller being configured to update the current display information stored in said display memory.

4. The freestanding, integrally formed LED light wire of claim 1, wherein said one or more LEDs in each said LED module comprise a red, blue, green or white LED.

5. The freestanding, integrally formed LED light wire of claim 1, wherein said one or more LEDs in each said LED module is either red, blue and green LEDs, or red, blue, green and white LEDs.

6. The freestanding, integrally formed LED light wire of claim 1, wherein said encapsulant further comprising light scattering particles.

7. The freestanding, integrally formed LED light wire of claim 1, wherein said encapsulant further comprising light scattering particles.

8. A freestanding, integrally formed LED light wire, comprising:

a first bus element formed from a conductive material adapted to distribute power from a power source;

a second bus element formed from a conductive material adapted to transmit a control signal;

a third bus element formed from a conductive material adapted as a ground;

at least two LED modules, each of said LED modules comprising:

a microcontroller and at least one LED, said LED module being electrically coupled to said first, second and third bus elements;

one or more ports, said microcontroller being configured to check a status of at least one of said one or more ports, and if the status of the port corresponds to a predetermined state:

assign said LED module to which said microcontroller belongs to a first display address, and

send signals to the microcontroller of a neighboring LED module, said signals assigning respective further display address to said neighboring LED module;

a printed circuit board, wherein the one of more LEDs and the microcontroller are mounted on the printed circuit board; and

a continuous unitary encapsulant completely and continuously encapsulating said first, second, and third bus elements, and said at least two LED modules, including said respective microcontrollers and said one or more ports.

9. The freestanding, integrally formed LED light wire of claim 8, further comprising a display memory, electrically coupled to said at least two LED modules, said display memory

storing current display information associated with each of the LED modules, said current display information stored in said display memory being accessible by each of the microcontrollers of the LED modules, such that said microcontrollers can retrieve current display information.

10. The freestanding, integrally formed LED light wire of claim 9, further comprising: a display controller, said display controller being configured to update the current display information stored in said display memory.

11. The freestanding, integrally formed LED light wire of claim 8, wherein said first, second and third bus elements are made of braided wire.

12. The freestanding, integrally formed LED light wire of claim 8, wherein said at least one LED in each said LED module comprises a red, blue, green or white LED.

13. The freestanding, integrally formed LED light wire of claim 8, wherein said at least one LED in each said LED module is either red, blue and green LEDs, or red, blue, green and white LEDs.

14. The freestanding, integrally formed LED light wire, comprising:

a support substrate;

a conductive base mounted on said support substrate, said conductive base comprising a first, second and third conductive bus elements, wherein said first conductive bus element is adapted to distribute power from a power source, said second conductive bus element is adapted to transmit a control signal, and said third conductive bus element is adapted as a ground;

at least two LED modules, each of said LED modules, comprising:

a microcontroller and at least one LED, said LED modules being electrically coupled to said first, second and third conductive bus elements;

one or more ports, said microcontroller being configured to check a status of at least one of the one or more ports, and if the status of the port corresponds to a predetermined state:

assign the LED module to which said microcontroller belongs to a first display address, and

send signals to the microcontroller of a neighboring LED module, said signals assigning respective further display address to the neighboring LED module;

a printed circuit board, wherein the one of more LEDs and the microcontroller are mounted on the printed circuit board; and

a display memory, electrically coupled to said at least two LED modules, said display memory storing a current display information for each of said LED modules, said current display information stored in said display memory being accessible by each LED module, such that said LED modules can request and retrieve current display information; and

a continuously unitary encapsulant completely and continuously encapsulating said support substrate, said conductive base, said at least two LED modules, including said respective microcontrollers and said one or more ports, and said display memory.

15. The freestanding, integrally formed LED light wire of claim 14, further comprising: a display controller, said display controller being configured to update the current display information stored in said display memory.

16. The freestanding, integrally formed LED light wire of claim 14, wherein said first, second and third conductive bus elements are made of braided wire.

17. The freestanding, integrally formed LED light wire of any one of claims 1, 8 and 14, wherein the outer profile of the encapsulant comprises an alignment key and an alignment keyhole located at opposite sides of the integrally formed LED light wire.

18. A lighting panel comprising a plurality of the freestanding, integrally formed LED light wires of claim 17.