Claims

1. A power distribution unit, comprising:

   a field replaceable master management module;

   at least one set of socket management modules; at least one of a power input management modules, a power phase management modules; and a power supply management modules;

   wherein the socket management module manages power output and the master management module connects to each of the socket management modules for monitoring the status of a power output of each of the socket management modules and using a control relay to control the switching state of the power output of each of the socket management modules, the switching state of the power output comprises on, off and power cycling of the power output;

   wherein the master management module is connected to the power input management module, the power phase management module and the power supply management module, respectively, for managing the power input through the power input management module, the power phase through the power phase management module and the power supply through the power supply management module;

   the management module comprises an incoming port and an outgoing port for connecting to an external device;

   wherein a plurality of power distribution units cascade by serial or controller area network BUS technology, the number of cascades exceeds 255 through cascading individual master management module in the form of a daisy-chain;

   wherein the master management module comprises at least one environmental sensing connection port that connects to a set of sensors that sense surrounding environmental parameters, or the power distribution unit also comprises a sensor module that connects to the master management module for obtaining the surrounding environmental parameters of the power distribution unit; the sensor module comprises at least one of the temperature sensor, humidity sensor, door open/close status sensor, smoke sensor, vibration sensor, flood sensor and sensor that detects the contact state with other equipment.

2. The power distribution unit according to claim 1, wherein the sensor module comprises an alarm instruction unit, for sending out alarming instruction when the environmental parameters have been detected as having reached a pre-set alarming value.

3. The power distribution unit according to claim 1, further comprising a power adaptor for providing DC power supply to other modules.

4. The power distribution unit according to claim 1, further comprising an LCD monitor for displaying locally.

5. A detachable communication device is used in coupled with the power distribution unit according to claim 1, comprising:
   a connection cable for use with hot-plugging connection with the power distribution unit;
   an encryption dongle for achieving software and/or hardware protection; and
   a wired network port for communicating with a network computer via wire, and/or a wireless network port for communicating wirelessly with the network computer.

6. The detachable communication device according to claim 5, wherein a plurality of said detachable communication devices share one network computer, wherein said network computer is capable of managing more than 65536 said detachable devices.

7. A power distribution system comprising the power distribution unit according to claim 1 and the detachable communication device according to claim 5, wherein a platform with an edge for coupling with the detachable communication device is provided on the power distribution unit, wherein the detachable communication device is placed directly on and interlocked with the power distribution unit by the platform.

8. A power distribution unit comprising:
   a master management module; and
   at least one set of socket management modules which manages a power output,
   wherein the master management module connects to each of the socket management modules for monitoring the power output state of each of the socket management modules, and controlling the switching state of the power output of each of the socket management modules; the master management module further comprises an incoming port and an outgoing port for connecting to an external device.

9. The power distribution unit according to claim 8, wherein the master management module is a field replaceable module.

10. The power distribution unit according to claim 8, further comprising an internal management module that connects to the master management module for managing the power parameter of the power distribution unit, wherein the internal management module is monitored and controlled by the master management module.

11. The power distribution unit according to claim 10, wherein the internal management module comprising at least one of a power input management modules, a power phase management modules and a power supply management modules; wherein the master management module is connected to the power input management module, power phase management module and the power supply management module, respectively, for managing the power input through the power input management module, the power phase through the power phase management module and the power supply through the power supply management module.

12. The power distribution unit according to claim 8, further comprising a sensor module that connects to the master management module for obtaining the surrounding environmental parameters of the power distribution unit.

13. The power distribution unit according to claim 12, wherein the sensor module comprising at least one of temperature sensor, humidity sensor, door open/close state sensor, smoke sensor, vibration sensor, flood sensor, and sensor that detects the contact state with other equipments.

14. The power distribution unit according to claim 12, wherein the sensor module comprising an alarm instruction unit, for sending out alarming instruction when the environmental parameter has been detected as having reached a pre-set alarming value.

15. The power distribution unit according to claim 8, wherein the master management module comprising at least one environmental sensing connection port for sensing the

surrounding environment parameters, wherein the said sensing connection port connects to a set of sensors.

16. The power distribution unit according to claim 8, further comprising a power adaptor for providing DC power supply to other modules.

17. The power distribution unit according to claim 8, wherein a plurality of power distribution units cascade, the cascading of the plurality of power distribution units through individual master management module is in the form of a daisy-chain.

18. The power distribution unit according to claim 17, wherein when the plurality of power distribution units cascade by serial and controller area network BUS (CAN-BUS), the number of cascades exceeds 255.

19. The power distribution unit according to claim 8, further comprising an LCD monitor for displaying locally.

20. A detachable communication device which is used in coupled with the power distribution unit according to claim 8.

21. The detachable communication device according to claim 20, comprising a connection cable for use with hot-plugging connection with the power distribution unit.

22. The detachable communication device according to claim 20, further comprising an encryption dongle for achieving software and/or hardware protection.

23. The detachable communication device according to claim 20, further comprising a wired network port for communicating with a network computer via wire, and/or a wireless network port for communicating wirelessly with the network computer.

24. The detachable communication device according to claim 23, wherein the wired network port is a RJ45 interface.

25. The detachable communication device according to claim 23, wherein a plurality of detachable communication devices share one network computer, wherein said network computer is capable of managing more than 65536 said detachable devices.

26. A power distribution system, comprising a power distribution unit and a detachable communication device detachable from connecting with the power distribution unit; the power distribution unit comprises a master management module and at least one set of the socket management modules which manage power output; the master management module connects to each of the socket management modules for monitoring power output state of each of the socket management modules, and controlling the switching state of the power output of each of the socket management modules; the master management module comprises an incoming port and an outgoing port that are used to connect to an external device, the power distribution unit connects to the detachable communication device through the incoming port of a master management module.

27. The power distribution system according to claim 26, wherein a platform with an edge for coupling with the detachable communication device is provided on the power distribution, and the detachable communication device is placed directly on and interlocked with the power distribution unit by the platform.

What is claimed is:

1. A power distribution unit comprising:
a master management module; and
at least one set of socket management modules which manages a power output,
wherein the master management module connects to each of the socket management modules for monitoring the power output state of each of the socket management modules, and controlling the switching state of the power output of each of the socket management modules; the master management module further comprises an incoming port and an outgoing port for connecting to an external device and cascading the power distribution unit;
a plurality of power distribution units cascade, the cascading of the plurality of power distribution units through individual master management module is in the form of a daisy-chain; only one master management module is directly connected to the external device; and data of other master management modules is transmitted to the master management module that is directly connected to the external device so that the data is sent to the external device.

2. The power distribution unit according to claim 1, wherein the master management module is a field replaceable module.

3. The power distribution unit according to claim 1, further comprising an internal management module that connects to the master management module for managing the power parameter of the power distribution unit, wherein the internal management module is monitored and controlled by the master management module.

4. The power distribution unit according to claim 3, wherein the internal management module comprising at least one of a power input management modules, a power phase management modules and a power supply management modules; wherein the master management module is connected to the power input management module, power phase management module and the power supply management module, respectively, for managing the power input through the power input management module, the power phase through the power phase management module and the power supply through the power supply management module.

5. The power distribution unit according to claim 1, further comprising a sensor module that connects to the master management module for obtaining the surrounding environmental parameters of the power distribution unit.

6. The power distribution unit according to claim 5, wherein the sensor module comprising at least one of temperature sensor, humidity sensor, door open/close state sensor, smoke sensor, vibration sensor, air flow sensor, dew point sensor, flood sensor, and sensor that detects the contact state with other equipments.

7. The power distribution unit according to claim 5, wherein the sensor module comprising an alarm instruction unit, for sending out alarming instruction when the environmental parameter has been detected as having reached a pre-set alarming value.

8. The power distribution unit according to claim 1, wherein the master management module comprising at least one environmental sensing connection port for sensing the surrounding environment parameters, wherein the said sensing connection port connects to a set of sensors.

9. The power distribution unit according to claim 1, further comprising a power adaptor for providing DC power supply to other modules.

10. The power distribution unit according to claim 1, wherein when the plurality of power distribution units cascade by serial and /or controller area network BUS (CAN-BUS), the number of cascades exceeds 255.

11. The power distribution unit according to claim 1, further comprising an LCD monitor for displaying locally.

12. A detachable communication device which is used in coupled with the power distribution unit according to claim 1.

13. The detachable communication device according to claim 12, comprising a connection cable for use with hot-plugging connection with the power distribution unit.

14. The detachable communication device according to claim 12, further comprising an encryption dongle for achieving software and/or hardware protection.

15. The detachable communication device according to claim 12, further comprising a wired network port for communicating with a network computer via wire, and/or a wireless network port for communicating wirelessly with the network computer.

16. The detachable communication device according to claim 15, wherein the wired network port is a RJ45 interface.

17. The detachable communication device according to claim 15, wherein a plurality of detachable communication devices share one network computer, wherein said network computer is capable of managing more than 65536 said detachable devices.

18. A power distribution system, comprising
a plurality of cascaded power distribution units; the cascading of the plurality of power distribution units is in the form of a daisy-chain; and
a detachable communication device detachable from connecting with the cascaded power distribution units; wherein
each of the cascaded power distribution units comprises a master management module and at least one set of the socket management modules which manage power output; the master management module connects to each of the socket management modules for monitoring power output state of each of the socket management modules, and controlling the switching state of the power output of each of the socket management modules; the master management module comprises an incoming port and an outgoing port that are used for connecting to an external device and cascading a power distribution unit; and
only one of the cascaded power distribution units is directly connected to the detachable communication device through the incoming port thereof, and data of other power distribution units is transmitted to the power distribution unit that is directly connected to the detachable communication device so that the data is sent to the detachable communication device.

19. The power distribution system according to claim 18, wherein a platform with an edge for coupling with the detachable communication device is provided on the power distribution

unit that is directly connected to the detachable communication device and the detachable communication device is placed directly on and interlocked with the power distribution unit that is directly connected to the detachable communication device by the platform without additional installation components.