

CLAIMS

1. A wearable electronic device, comprising:
 - first, second, and third connectors;
 - a flexible printed circuit;
 - a first battery pack operatively coupled to the flexible printed circuit with the first connector;
 - a second battery pack operatively coupled to the flexible printed circuit with the second connector;
 - a main logic board operatively coupled to the flexible printed circuit with the third connector;
 - a first protection circuit module disposed in the first battery pack and configured to selectively enable and disable power output from the first battery pack;
 - a second protection circuit module disposed in the second battery pack and configured to selectively enable and disable power output from the second battery pack;
 - and
 - a sensing circuit disposed along the flexible printed circuit and main logic board and including one or more sensing signal paths coupling the first and second protection circuit modules through each of the first, second, and third connectors,
 - wherein the first battery pack provides a first sensing signal over the sensing circuit and the second battery pack is configured to provide a second sensing signal over the sensing circuit, and
 - the first protection circuit module enables power output from the first battery pack when it detects the second sensing signal over the sensing circuit and disables power output from the first battery pack when it fails to detect the second sensing signal over the sensing circuit, and
 - the second protection circuit module enables power output from the second battery pack when it detects the first sensing signal over the sensing circuit and disables power output from the second battery pack when it fails to detect the first sensing signal over the sensing circuit.
2. The wearable electronic device of claim 1 in which the main logic board is disposed in a front section of the wearable electronic device that is configured to be located proximate to a user's face or forehead when the wearable electronic device is worn by the user.

3. The wearable electronic device of claim 2 in which at least a portion of the flexible printed circuit is disposed in the front section of the wearable electronic device.
4. The wearable electronic device of claim 1 in which the first and second battery packs are respectively disposed in left-side and right-side sections of the wearable electronic device, the left-side section being located proximate to a left-side of a user's head when the wearable electronic device is worn by the user, and the right-side section being located proximate to a right-side of the user's head when the wearable electronic device is worn by the user.
5. The wearable electronic device of claim 4 in which the first connector is located proximate to an interface between the front section and the left-side section and the second connector is located proximate to an interface between the front section and the right-side section.
6. The wearable electronic device of claim 1 further including one or more field effect transistors (FETs) in each of the first and second protection circuit modules.
7. The wearable electronic device of claim 1 in which the one or more sensing signal paths are low power paths.
8. The wearable electronic device of claim 1 in which each of the protection circuit modules includes logic configured to implement state awareness of connector integrity.
9. The wearable electronic device of claim 1 further comprising a main power bus distributed over the flexible printed circuit and main logic board in which power from the first and second battery packs is output from respective first and second protection circuit modules to the main power bus.
10. The wearable electronic device of claim 1 as implemented in a head mounted display device.

11. An assembly configured for use in an electronic device, comprising:
- an intermediate circuit sub-assembly comprising a flexible printed circuit or a printed circuit board;
 - a first battery pack comprising a first set of one or more battery cells and a first protection circuit module configured to switch power on and off from the first battery pack;
 - a second battery pack comprising a second set of one or more battery cells and a second protection circuit module configured to switch power on and off from the second battery pack;
 - a power bus disposed in the intermediate circuit sub-assembly;
 - a first connector configured to operatively couple the first battery pack to the intermediate circuit sub-assembly and providing at least one electrical connection from the first battery pack to the power bus;
 - a second connector configured to operatively couple the second battery pack to the intermediate circuit sub-assembly and providing at least one electrical connection from the second battery pack to the power bus; and
- wherein the first and second protection circuit modules are each configured to verify, as conditions to be satisfied prior to switching power output on to the power bus, that
- electrical continuity is established between the first battery pack and the intermediate circuit sub-assembly at the first connector, and,
 - electrical continuity is established between the second battery pack and the intermediate circuit sub-assembly at the second connector.
12. The assembly of claim 11 further comprising:
- a main logic circuit sub-assembly comprising a second flexible printed circuit or a second printed circuit board; and
 - a third connector configured to operatively couple the intermediate circuit sub-assembly to the main logic circuit sub-assembly and providing at least one electrical connection between a portion of the power bus on the intermediate circuit sub-assembly and a portion of the bus disposed on the main logic circuit sub-assembly, and
- wherein electrical continuity is established between the intermediate circuit sub-assembly and the main logic circuit sub-assembly at the third connector as a condition to be satisfied prior to switching power output on to the power bus.

13. The assembly of claim 12 in which verification at each of the first and second protection circuit modules is performed by receiving a sensing signal from the other battery pack over a sensing circuit having a signal path that includes each of the first, second, and third connectors, the sensing signal being received if each of the sub-assemblies is properly assembled at the respective first, second, and third connectors.

14. The assembly of claim 13 further comprising a controller disposed on the main logic circuit sub-assembly, the controller configured to control operation of the sensing circuit.

15. The assembly of claim 14 in which the controller is configured to maintain awareness of connector state for each of the first, second, and third connectors.