WHAT IS CLAIMED IS:

1. An adapter for providing a communication path between a first electronic device and an accessory device, the adapter comprising:

a first connector to mate with a plug connector on an accessory device;

a second connector to mate with a receptacle connector on the first electronic device, wherein the first connector is incompatible with the second connector; and

conversion circuitry adapted to convert signals received from the accessory to a format that can be transmitted to and processed by the first electronic device and to convert signals received from the first electronic device to a format that can be transmitted to and processed by the accessory; and

authentication circuitry adapted to implement a first level of authentication that authenticates the adapter to the first electronic device and, if the first level of authentication is successful, implement a second level of authentication that authenticates the accessory device to the adapter.

2. The adapter of claim 1 further comprising switching circuitry that sets at least some contacts of the first connector to an open state prior to the adapter authenticating itself to the first electronic device.

3. The adapter of claim 2 wherein after the adapter is authenticated to the first electronic device, the switching circuitry connects at least some of the at least some contacts of the first connector to other circuitry within the adapter.

4. The adapter of claim 3 wherein the first connector includes an accessory detect contact that is set to an open state by the switching circuitry prior to the adapter authenticating itself to the first electronic device and is then subsequently connected to other circuitry upon the adapter and first electronic device being operatively coupled to each other.

5. The adapter of claim 1 further comprising identification circuitry configured to indicate a communication protocol used by the adapter over first and second data contacts of the second connector to communicate with the electronic device.

6. The adapter of claim 1 wherein the first connector has 30 contacts including a first contact configured to receive an accessory ID signal, a pair of contacts configured to carry a universal serial bus (USB) signal, a second contact configured to carry power to the accessory from the portable electronic device, a third contact configured to carry an accessory detect signal to determine whether the accessory is coupled to the adapter, and a pair of contacts configured to carry audio signals.

7. The adapter of claim 1 wherein the second connector comprises a first contact configured to carry identification signal to the portable electronic device, a first pair of data contacts configured to carry differential data signals, a second contact configured to carry a host power signal from the accessory to the portable electronic device, a third contact configured to carry accessory power from the portable electronic device to the accessory, a second pair of data contacts, and a fourth contact coupled to a ground path.

8. The adapter of claim 7 wherein, in the second connector, the first pair of data contacts is disposed between the first contact and the second contact, and the second pair of data contacts is disposed between the third contact and the fourth contact.

9. The adapter of claim 8 wherein the transmission rate of data carried by each of the first and second pairs of data contacts is two or more orders to magnitude higher than the transmission rate of information carried by the first contact.

10. The adapter of claim 1 wherein the authentication circuitry comprises:

an identification device configured to provide identification information of the adapter to the portable electronic device; and

a power control device configured to control a power path between the accessory and the portable electronic device.

11. The adapter of claim 10 wherein each of the identification device and the power control device are implement as a single integrated circuit (IC) chip.

12. The adapter of claim 1 wherein the second connector is configured to mate with the receptacle connector on the first electronic device in either of two orientations rotated

180 degrees from each other, wherein the second connector includes a first set of eight external contacts spaced apart along a first row on a first side of the second connector and a second set of eight external contacts spaced apart along a second row on a second side of the second connector opposite the first side, and wherein each contact in the first set of contacts is coupled to a contact in the second set of contacts.

13. A method of using an adapter to enable an accessory electronic device having a first connector to exchange data with a host electronic device having a second connector that is incompatible with the first connector, the method comprising:

sending identification and authentication information from the adapter to the host device to enable the host to perform a first level of authentication that authenticates the adapter to host device upon mating a plug connector on the adapter to the second connector of the host device;

requesting and receiving identification and authentication information from the accessory electronic device connected to the adapter if the adapter is successfully authenticated by the host device, and performing a second level of authentication at the adapter to authenticate the accessory; and

after the first and second levels of authentication are successfully completed, enabling a power path between the accessory device and the host device.

14. The method of claim 12 wherein the adapter comprises a first connector for coupling with the host device and a second connector for coupling with the accessory.

15. The method of claim 14 wherein the second connector includes 30 contacts and the first connector includes a first set of eight external contacts spaced apart along a first row on a first side of the first connector and a second set of eight external contacts spaced apart along a second row on a second side of the first connector opposite the first side.

16. The method of claim 12 wherein enabling the power path further comprises sending a signal to a power control device disposed within the adapter based on receiving the identification information from the accessory device.

17. An adapter comprising:

a first connector to mate with a plug connector on a first accessory device;

a second connector to mate with a receptacle connector on a host electronic device, wherein the plug connector on the accessory device is incompatible with the receptacle connector receptacle on the host electronic device;

an identification device coupled to the second connector;

a power control device coupled to the first and the second connector; and

authentication circuitry coupled to the first connector and the second connector;

wherein the adapter is configured to: (i) detect connection of a host device to the second connector; (ii) send authentication and identification information to the host device to authenticate the adapter to the host device as a first level of authentication; (iii) detect connection of an accessory device to the first connector; (iv) receive authentication information from the accessory device; (v) authenticate the accessory device as a second level of authentication; and (vi) upon completing the first and second levels of authentication, enable communication between the accessory device and the host device and enable a power between the accessory device and the host device.

18. The adapter of claim 17 wherein the identification device and the power control device each are implemented as a single integrated circuit (IC) chip.

19. The adapter of claim 17 wherein the first connector has thirty contacts, and wherein the second connector is configured to mate with a receptacle connector on the first electronic device in either of two orientations rotated 180 degrees from each other, and the second connector includes a first set of eight external contacts spaced apart along a first row on a first side of the second connector and a second set of eight external contacts spaced apart along a second row on a second side of the second connector opposite the first side with each contact in the first set of contacts being coupled to a contact in the second set of contacts.

20. The adapter of claim 17 wherein the adapter further comprises a housing having a first side and a second side, the first connector disposed at the first side and the second connector disposed at the second side, and wherein the identification device, power control device and authentication circuitry are all disposed in the housing.

Claims:

1. An adapter for providing a communication path between a portable electronic device and an accessory, the adapter comprising:

a first connector to mate with a plug connector on an accessory;

a second connector to mate with a receptacle connector on the portable electronic device, wherein the plug connector on the accessory is incompatible with the receptacle connector receptacle on the portable electronic device; and

conversion circuitry adapted to convert signals received from the accessory to a format that can be transmitted to and processed by the portable electronic device and to convert signals received from the portable electronic device to a format that can be transmitted to and processed by the accessory; and

authentication circuitry adapted to implement a first level of authentication that authenticates the adapter to the portable electronic device according to a first authentication protocol and, if the first level of authentication is successful, implement a second level of authentication that authenticates the accessory to the adapter according to a second authentication protocol used by the accessory.

2. The adapter of claim 1 wherein the first connector includes 30 contacts.

3. The adapter of claim 1 wherein the first connector comprises:

a first contact configured to receive an accessory ID signal;

a pair of contacts configured to carry a universal serial bus (USB) signal;

a second contact configured to carry power to the accessory from the portable electronic device;

a third contact configured to carry an accessory detect signal to determine whether the accessory is coupled to the adapter;

a first set of differential data contacts; and

a second set of contacts configured to carry audio signals; and

a third set of contacts configured to carry video signals.

4. The adapter of claim 1 wherein the second connector comprises:

a first contact configured to carry identification signal to the portable electronic device;

a first pair of data contacts configured to carry differential data signals;

a second contact configured to carry a host power signal from the accessory to the portable electronic device;

a third contact configured to carry accessory power from the portable electronic device to the accessory;

a second pair of data contacts configured to carry differential data signals; and

a fourth contact coupled to a ground path.

5. The adapter of claim 4 wherein the first pair of data contacts is disposed between the first contact and the second contact.

6. The adapter of claim 4 wherein the second pair of data contacts is disposed between the third contact and the fourth contact.

7. The adapter of claim 4 wherein a transmission rate of data carried by the first pair of data contacts is two or more orders of magnitude higher than a transmission rate of information carried by the first contact.

8. The adapter of claim 1 wherein the first connector has contacts disposed on an upper surface of a printed circuit board (PCB) and on a lower surface of the PCB.

9. The adapter of claim 8 wherein an equal number of contacts are disposed on the upper surface and the lower surface.

10. The adapter of claim 8 wherein the first pair of data contacts is disposed on the upper surface of the PCB and a third pair of data contacts is disposed on the lower surface of the PCB directly below the first pair of data contacts.

11. The adapter of claim 1 wherein the authentication circuitry comprises:

an identification device configured to provide identification information of the adapter to the portable electronic device; and

a power control device configured to control a power path between the accessory and the portable electronic device.

12. The adapter of claim 11 wherein each of the identification device and the power control device are implement as a single integrated circuit (IC) chip.

13. A method for operating an adapter, the method comprising:

upon connection of a host device to the adapter, sending, by the adapter, identification and authentication information to the host device for authenticating the adapter to the host device to enable the host device to perform a first level of authentication according to a first authentication protocol that authenticates the adapter to the host device;

detecting, by the adapter, connection of an accessory device to the adapter;

receiving, by the adapter, identification and authentication information from the accessory;

authenticating, by the adapter, the accessory device according to a second authentication protocol used by the accessory device; and

enabling, by the adapter a power path between the accessory device and the host device after the second authentication protocol is successfully completed.

14. The method of claim 13 wherein the step of authenticating the accessory is performed only if the adapter is successfully authenticated by the host device.

15. The method of claim 13 wherein the adapter comprises a first connector for coupling with the host device and a second connector for coupling with the accessory.

16. The method of claim 15 wherein the second connector includes 30 contacts and the first connector includes up to 16 contacts.

17. The method of claim 13 wherein enabling the power path further comprises sending a signal to a power control device disposed within the adapter based on receiving the identification information from the accessory device.

18. An adapter comprising:

a housing having a first side and a second side;

a plug connector disposed at the first side;

a receptacle connector disposed at the second side;

an identification device disposed in the housing and coupled to the plug connector;

a power control device disposed in the housing and coupled to the plug and the receptacle connector; and

authentication circuitry coupled to the plug connector and the receptacle connector;

wherein the adapter is configured to:

detect connection of a host device to the plug connector;

send authentication and identification information to the host device to authenticate the adapter to the host device as a first level of authentication using a first communication protocol;

detect connection of an accessory to the receptacle connector;

receive authentication information from the accessory;

authenticate the accessory using a second authentication protocol used by the accessory as a second level of authentication; and

enable communication between the accessory and the host device upon authenticating the accessory.

19. The adapter of claim 18 wherein the identification device and the power control device each are implemented as a single integrated circuit (IC) chip.

20. The adapter of claim 18 wherein the plug connector comprises between 4 and 16 contacts arranged in two rows, wherein a first row of contacts is disposed on a upper surface of a printed circuit board (PCB) and a second row of contacts is disposed on a lower surface of the PCB and wherein the contacts are exposed to the environment.

21. The adapter of claim 18 wherein the receptacle connector includes 30 contacts.

22. The adapter of claim 18 wherein the power control device is configured to enable a power between the accessory and the portable electronic device after the accessory is authenticated.