

VEHICULAR AIR CONDITIONING DEVICE

BACKGROUND OF THE INVENTION

The present invention relates to a vehicular air conditioning device and, more particularly, to a vehicular air conditioning device using an auxiliary starting device to
5 allow use of the air conditioning device while the engine of the vehicle is stopped.

Vehicles are a necessary traffic tool in modern life. No matter an engine-powered vehicle or a hybrid vehicle, an air conditioning device is generally mounted in the vehicle to adjust the temperature in the vehicle for providing users in the vehicle with comfort. In a case that the driver has to pull the vehicle over to a side of a
10 road, the engine of the vehicle must keep running to drive the compressor of the air conditioning device to maintain the temperature in the vehicle. However, the engine keeping running in the idle state causes a waste of fuel, increases air pollution, and causes global warming.

Thus, how to fix the problems and disadvantages of the conventional techniques
15 need is an issue to the persons in the art.

BRIEF SUMMARY OF THE INVENTION

The primary objective of the present invention is to provide a vehicular air conditioning device allowing a user to use an auxiliary starting device to use the air conditioning device when the vehicle is stopped, avoiding excessively high temperature
20 in the vehicle, avoiding emission of waste gas to reduce air pollution, and reducing the global warming effect.

To achieve the above objective, a vehicular air conditioning device according to the present invention includes a coolant piping, a fan unit, and an auxiliary starting device. A first compressor is connected to the coolant piping. The first compressor and
25 the fan unit are connected to a first controller. The first controller is connected to a first

power source. The auxiliary starting device includes a compressor unit having a second compressor. The second compressor is connected to a motor. The compressor unit is connected to a second controller and a second power source. The second compressor is connected to the coolant piping.

5 Preferably, the coolant piping includes a high pressure piping and a low pressure piping, and the second compressor of the auxiliary starting device is connected to the high pressure piping and the low pressure piping.

 Preferably, the fan unit includes a heat dissipating fan and a cooling fan. The second controller includes a second air conditioning controller and a second fan
10 controller. The heat dissipating fan and the compressor unit are connected to the second air conditioning controller of the second controller. The cooling fan is connected to the second fan controller of the second controller.

 Preferably, a temperature sensor is mounted on the coolant piping. The second controller includes a second air conditioning controller and a second fan controller. The
15 second air conditioning controller and the second fan controller are connected to a microprocessor. The temperature sensor is connected to the microprocessor of the second controller.

 Each of the first power source and the second power source can be a cell or battery. Each of the first power source and the second power source can be connected to
20 a charging circuit of a vehicle. The vehicular air conditioning device can include a plurality of second power source.

DESCRIPTION OF THE DRAWINGS

 FIG. 1 is a block diagram of a vehicular air conditioning device of a first example according to the present invention.

25 FIG. 2 is a block diagram of a vehicular air conditioning device of a second example according to the present invention.

DETAILED DESCRIPTION OF THE INVENTION

With reference to FIG. 1, a vehicular air conditioning device according to the present invention includes a coolant piping 10, a first compressor 20, a fan unit 30, and an auxiliary starting device 60.

5 The coolant piping 10 includes a high pressure piping 11, a low pressure piping 12, and a temperature sensor 13.

 The first compressor 20 is connected to the high pressure piping 11 and the low pressure piping 12 of the coolant piping 10. The first compressor 20 is connected to a first controller 40. The first controller 40 is connected to a first power source 50. The
10 first power source 50 can be a cell or battery. The first controller 40 includes a first air conditioning controller 41 and a first fan controller 42. The first controller 40 is connected to a heat dissipating fan 31 and a cooling fan 32. The heat dissipating fan 31 is connected to the first air conditioning controller 41 of the first controller 40. The cooling fan 32 is connected to the first fan controller 42 of the first controller 40.

15 The auxiliary starting device 60 includes a compressor unit 61 and can be mounted in a trunk of a vehicle. The compressor unit 61 includes a second compressor 611 connected to a motor 612. The compressor unit 61 is connected to the coolant piping 10 by a three-way fitting or a communication valve for respective communication with the high pressure piping 11 and the low pressure piping 12. Furthermore, the compressor
20 unit 61 is connected to a second controller 62 and a second power source 63. The second controller 62 includes a second air conditioning controller 621 and a second fan controller 622. The second air conditioning controller 621 and the second fan controller 622 are connected to a microprocessor 623. The second air conditioning controller 621 is connected to the compressor unit 61 and the heat dissipating fan 31 of the fan unit 30.
25 The second air conditioning controller 621 is connected to the cooling fan 32 of the fan

unit 30. The microprocessor 623 is connected to the temperature sensor 13 on the coolant piping 10. The second power source 62 is a cell or battery.

By such an arrangement, when the engine of the vehicle is started, a user uses the first air conditioning controller 41 of the first controller 40 to activate the first compressor 20 and the heat dissipating fan 31 of the fan unit 30, allowing use by the user. In this case, the coolant in the coolant piping 10 will not flow through the compressor unit 61 of the auxiliary starting device 60 in the stopped state. Furthermore, the user can use the first fan controller 42 to solely control the cooling fan 32 to feed air. When the engine of the vehicle is stopped, the user can use the second air conditioning controller 621 of the auxiliary starting device 60 to activate the compressor unit 61. The motor 612 drives the second compressor 611 to make the coolant in the coolant piping 10 flow through the second compressor 611 without passing through the first compressor 20 in the stopped state. Furthermore, the heat dissipating fan 31 is used to dissipate heat, and the microprocessor 623 uses the second fan controller 622 to control the cooling fan 32 to output cool wind. Further, the user can use the second fan controller 622 to adjust the wind output of the cooling fan 32. Alternatively, the cooling fan 32 can be controlled to feed air independently without activating the compressor unit 61. Thus, the user can still use the air conditioning device in the vehicle when the engine of the vehicle is stopped. Furthermore, the temperature sensor 13 can be the starting condition for activation of the first compressor 20 by the first air conditioning controller 41 of the first controller 40 or the starting condition for activation of the second compressor 611 by the second air conditioning controller 621 of the second controller 62.

With reference to FIG. 2, the difference between the second example of the present invention and the above first example is that each of the first power source 50 and the second power source 63 is connected to a charging circuit 70 of the vehicle. The charging circuit 70 is an inherent circuit of the vehicle and can charge the first power

source 50 and the second power source 63. Furthermore, the vehicular air conditioning device includes a plurality of second power source 63.

In view of the foregoing, the present invention can fix the deficiency and disadvantages of the conventional techniques. The key technique is that the present invention can use the auxiliary starting device 60 to activate the coolant piping 10 and the fan unit 30 such that the user can use the vehicular air conditioning device when the engine of the vehicle is in the stopped state, avoiding excessively high temperature in the vehicle and avoiding emission of waste gas to reduce air pollution.

CLAIMS

1. A vehicular air conditioning device comprising a coolant piping (10), a fan unit (30), and an auxiliary starting device (60), with a first compressor (20) connected to the coolant piping (10), with the first compressor (20) and the fan unit (30) connected to a first controller (40), with the first controller (40) connected to a first power source (50), characterized in that:

the auxiliary starting device (60) includes a compressor unit (61) having a second compressor (611), the second compressor (611) is connected to a motor (612), the compressor unit (61) is connected to a second controller (62) and a second power source (63), and the second compressor (611) is connected to the coolant piping (10).

2. The vehicular air conditioning device as claimed in claim 1, wherein the coolant piping (10) includes a high pressure piping (11) and a low pressure piping (12), and the second compressor (611) of the auxiliary starting device (60) is connected to the high pressure piping (11) and the low pressure piping (12).

3. The vehicular air conditioning device as claimed in claim 1, wherein the fan unit (30) includes a heat dissipating fan (31) and a cooling fan (32), the second controller (62) includes a second air conditioning controller (621) and a second fan controller (622), the heat dissipating fan (31) and the compressor unit (61) are connected to the second air conditioning controller (621) of the second controller (62), and the cooling fan (32) is connected to the second fan controller (622) of the second controller (62).

4. The vehicular air conditioning device as claimed in claim 1, wherein a temperature sensor (13) is mounted on the coolant piping (10), the second controller (62) includes a second air conditioning controller (621) and a second fan controller (622), the second air conditioning controller (621) and the second fan controller (622)

are connected to a microprocessor (623), the temperature sensor (13) is connected to the microprocessor (623) of the second controller (62).

5. The vehicular air conditioning device as claimed in claim 1, wherein each of the first power source (50) and the second power source (63) are charging type batteries or lead storage batteries, and the first power source (50) and the second power source (64) are connected to a charging circuit (70) of the vehicle, and the second power source (63) are set for several units.

6. The vehicular air conditioning device as claimed in claim 1, wherein each of the first power source (50) and the second power source (63) is connected to a charging circuit (70) of a vehicle.

7. The vehicular air conditioning device as claimed in claim 1, wherein the vehicular air conditioning device includes a plurality of second power source (63).