**WHAT IS CLAIMED IS:**

1. A valve manifold integration module (100) for a thermal management system (1000), the thermal management system (1000) having a plurality of preset thermal management modes, wherein the valve manifold integration module (100) comprises:

a plurality of flow channels (10), provided inside the valve manifold integration module (100); and

a valve manifold (20), the valve manifold (20) comprising a plurality of valves, the plurality of valves being arranged on the valve manifold integration module (100), and the plurality of valves communicating with the flow channels (10), wherein

by opening or closing the plurality of valves, the plurality of flow channels (10) are allowed to communicate with each other to form different fluid channels, thereby realizing at least one of the plurality of preset thermal management modes.

2. The valve manifold integration module according to claim 1, wherein the flow channels (10) comprise a first flow channel (110) and a second flow channel (120), the first flow channel (110) being distributed in a same plane, the second flow channel (120) being distributed in different planes, and the valve manifold (20) being configured to selectively allow communication between the first flow channel (110) and the second flow channel (120) to form different fluid channels.

~~3. The valve manifold integration module according to claim 2, wherein there are a plurality of first flow channels (110), and there are a plurality of second flow channels (120).~~

~~4~~3. The valve manifold integration module according to any one of claims 1 to ~~3~~2, wherein the valve manifold integration module (100) further comprises an interface, the interface being configured to connect the fluid channel to an external heat exchange component in the thermal management system.~~.~~

~~5. The valve manifold integration module according to claim 4,~~ wherein the interface comprises more than one of a condenser interface, an air-conditioning heat exchanger interface, an evaporator interface, a battery pack heat exchanger interface, a motor heat exchanger interface, an engine heat exchanger interface, a compressor interface, a gas-liquid separator interface, and a PT sensor interface, the condenser interface, the air-conditioning heat exchanger interface, the evaporator interface, the battery pack heat exchanger interface, the motor heat exchanger interface and the compressor interface being configured to be connected to corresponding external thermal management system components.

~~6~~4. The valve manifold integration module according to claim ~~5~~3, wherein the interface comprises the condenser interface, the air-conditioning heat exchanger interface, the evaporator interface, and the compressor interface, the condenser interface being configured to be connected to a condenser (200) in the external thermal management system, the air-conditioning heat exchanger interface being configured to be connected to an air-conditioning heat exchanger (300) in the external thermal management system, the evaporator interface being configured to be connected to an evaporator (400) in the external thermal management system, and the compressor interface being configured to be connected to a compressor (600) in the external thermal management system.

~~7~~5. The valve manifold integration module according to claim ~~6~~4, wherein the condenser interface comprises a condenser outlet interface (202), the air-conditioning heat exchanger interface comprises an air-conditioning heat exchanger inlet interface (203) and an air-conditioning heat exchanger outlet interface (204), and the evaporator interface comprises an evaporator inlet interface (205);

the valve manifold (20) comprises a first switch valve (21) and a second expansion valve (32);

a first port of the first switch valve (21) is connected to the condenser outlet interface (202), and a second port of the first switch valve (21) is connected to the air-conditioning heat exchanger inlet interface (203); and

a first port of the second expansion valve (32) is connected to the air-conditioning heat exchanger outlet interface (204), and a second port of the second expansion valve (32) is connected to the evaporator inlet interface (205), such that the thermal management system realizes an air-conditioning cooling mode in the preset thermal management modes.

~~8~~6. The valve manifold integration module according to claim ~~7~~5, wherein the valve manifold further comprises a first expansion valve (31) and a second switch valve (22);

a first port of the first expansion valve (31) is connected to the condenser outlet interface (202), and a second port of the first expansion valve (31) is connected to the air-conditioning heat exchanger inlet interface (203); and

a first port of the second switch valve (22) is connected to the air-conditioning heat exchanger outlet interface (204), and a second port of the second switch valve (22) is configured

to be connected to an inlet of the compressor (600), such that the thermal management system realizes an air-conditioning heating mode in the preset thermal management modes.

~~97~~. The valve manifold integration module according to claim ~~75~~, wherein the battery pack heat exchanger interface comprises a battery pack heat exchanger first interface (207) and a battery pack heat exchanger second interface (208);

the valve manifold further comprises a third expansion valve (33) and a fourth switch valve (24); a first port of the third expansion valve (33) is connected to the battery pack heat exchanger second interface (208), and a second port of the third expansion valve (33) is connected to the air-conditioning heat exchanger outlet interface (204); and

a first port of the fourth switch valve (24) is connected to the battery pack heat exchanger first interface (207), and a second port of the fourth switch valve (24) is configured to be connected to an inlet of the compressor (600), such that the thermal management system realizes a battery cooling mode, or air-conditioning cooling and battery cooling modes in the preset thermal management modes.

~~108~~. The valve manifold integration module according to claim ~~97~~, wherein the compressor interface comprises a compressor outlet interface (201), and the motor heat exchanger interface comprises a motor heat exchanger first interface (209) and a motor heat exchanger second interface (210);

the valve manifold further comprises a second switch valve (22) and a third switch valve (23); and a first port of the third switch valve (23) is connected to the compressor outlet interface (201), a second port of the third switch valve (23) is connected to the battery pack heat

exchanger first interface (207), a second port of the third expansion valve (33) is connected to the motor heat exchanger first interface (209), a first port of the second switch valve (22) is connected to the motor heat exchanger second interface (210), and a second port of the second switch valve (22) is configured to be connected to the inlet of the compressor (600), such that the thermal management system realizes a battery heating mode, or air-conditioning cooling and battery heating modes in the preset thermal management modes.

~~11~~9.The valve manifold integration module according to claim ~~10~~8, wherein the valve manifold further comprises a first expansion valve (31); and a first port of the first expansion valve (31) is connected to the condenser outlet interface (202), and a second port of the first expansion valve (31) is connected to the motor heat exchanger first interface (209), such that the thermal management system realizes a heat pump heating mode, or heat pump heating and battery cooling modes, or heat pump heating and battery heating modes in the preset thermal management modes.

~~12~~10. The valve manifold integration module according to claim ~~11~~9, wherein the motor heat exchanger second interface (210) is further connected to the first port of the second expansion valve (32), such that the thermal management system realizes air-conditioning cooling, air-conditioning dehumidifying, and battery heating modes, or air-conditioning cooling, air-conditioning dehumidifying, and battery cooling modes in the preset thermal management modes.

~~13~~11. The valve manifold integration module according to claim ~~11~~9, wherein the valve

manifold further comprises a fifth switch valve (25) and a sixth switch valve (26);

a first port of the fifth switch valve (25) is respectively connected to the second port of the first switch valve (21) and the second port of the first expansion valve (31), and a second port of the fifth switch valve (25) is connected to the motor heat exchanger first interface (209); and

a first port of the sixth switch valve (26) is respectively connected to the second port of the first switch valve (21) and the second port of the first expansion valve (31), and a second port of the sixth switch valve (26) is configured to be connected to the air-conditioning heat exchanger inlet interface (203).

~~14~~12. The valve manifold integration module according to claim ~~11~~9, wherein the valve manifold further comprises a first one-way valve (41) and a second one-way valve (42);

a first port of the first one-way valve (41) is connected to the second port of the third expansion valve (33), and a second port of the first one-way valve (41) is configured to be connected to the motor heat exchanger first interface (209), wherein the first one-way valve (41) is configured to allow a fluid to flow only from the first port to the second port of the first one-way valve; and

a first port of the second one-way valve (42) is connected to the air-conditioning heat exchanger outlet interface (204), and a second port of the second one-way valve (42) is connected to the second port of the third expansion valve (33), wherein the second one-way valve (42) is configured to allow the fluid to flow only from the first port to the second port of the second one-way valve.

~~15~~13. The valve manifold integration module according to claim ~~7~~5, wherein the gas-liquid

separator interface comprises a gas-liquid separator inlet interface (211), and the evaporator interface further comprises an evaporator outlet interface (206), the evaporator outlet interface (206) being connected to the gas-liquid separator inlet interface (211).

~~16~~14. The valve manifold integration module according to claim ~~13~~11, wherein the flow channels comprise the first flow channel (110) distributed in the same plane,

wherein the first flow channel (110) comprises a first branch (11), the condenser outlet interface (202) communicating with the first port of the first switch valve (21) and the first port of the first expansion valve (31) through the first branch (11); or

the first flow channel (110) further comprises a second branch (12), the second port of the first switch valve (21) and the second port of the first expansion valve (31) communicating with the first port of the fifth switch valve (25) through the second branch (12), and the second port of the first switch valve (21) and the second port of the first expansion valve (31) further communicating with the first port of the sixth switch valve (26) through the second branch (12); or

the first flow channel (110) further comprises a third branch (13), the second port of the sixth switch valve (26) communicating with the air-conditioning heat exchanger inlet interface (203) through the third branch (13); or

the first flow channel (110) further comprises a fourth branch (14), the air-conditioning heat exchanger outlet interface (204) and the motor heat exchanger second interface (210) communicating with the first port of the second switch valve (22) through the fourth branch (14), and the air-conditioning heat exchanger outlet interface (204) and the motor heat exchanger second interface (210) further communicating with the first port of the second expansion valve

(32) through the fourth branch (14); or

the first flow channel (110) further comprises a fifth branch (15), the second port of the third switch valve (23) and the battery pack heat exchanger first interface (207) communicating with the first port of the fourth switch valve (21) through the fifth branch (15); or

the first flow channel (110) further comprises a sixth branch (16), the second port of the second switch valve (22), the evaporator outlet interface (206), and the second port of the fourth switch valve (24) being communicable with the inlet of the compressor (600) through the sixth branch (16).

~~17. The valve manifold integration module according to any one of claims 2 to 16, wherein the valve manifold integration module (100) comprises a first half body (1) and a second half body (2), the first half body (1) comprising a first connection surface (1001), the second half body (2) comprising a second connection surface (2001), and the first connection surface (1001) being hermetically connected to the second connection surface (2001); and~~

~~the plurality of second flow channels (120) are provided inside the first half body (1), and the second connection surface (2001) of the second half body (2) is provided with at least one groove, such that the groove on the second connection surface (2001) and the first connection surface (1001) jointly define the first flow channel (110).~~

~~18. The valve manifold integration module according to any one of claims 2 to 17, wherein the valve manifold integration module (100) comprises a first half body (1) and a second half body (2), the first half body (1) comprising a first connection surface (1001), the second half body (2) comprising a second connection surface (2001), and the first connection surface (1001) being~~

~~hermetically connected to the second connection surface (2001); and~~

~~the plurality of second flow channels (120) are provided inside the first half body (1), and the first connection surface (1001) of the first half body (1) is provided with at least one groove, such that the second connection surface (2001) and the groove on the first half body (1) jointly define the first flow channel (110).~~

~~19. The valve manifold integration module according to claim 17 or 18, wherein the groove is a curved groove or a straight groove.~~

~~20. The valve manifold integration module according to any one of claims 17 to 19, wherein a plurality of hollow portions (50) are formed in the first half body (1).~~

~~21~~15. The valve manifold integration module according to any one of claims ~~5~~ 3 to ~~20~~14, wherein the interface further comprises a motor heat exchanger third interface (212) and a motor heat exchanger fourth interface (213), and the valve manifold integration module (100) further comprises a pump (60) and an accommodating box (70) for accommodating a coolant; and an outlet of the pump (60) is connected to the motor heat exchanger third interface (212) such that the coolant is pumped to the motor heat exchanger third interface (212), an inlet of the accommodating box (70) is connected to the motor heat exchanger fourth interface (213), and an outlet of the accommodating box (70) is connected to an inlet of the pump (60) such that the coolant is added to the pump (60).

~~22~~16. The valve manifold integration module according to claim ~~21~~15, wherein the valve

manifold integration module (100) further comprises a three-way valve (40), a first port (401) of the three-way valve (40) being connected to the motor heat exchanger fourth interface (213), a second port (402) of the three-way valve (40) being configured to be connected to an inlet of a radiator (910) of a coolant flow path where a motor is located, and a third port (403) of the three-way valve (40) being configured to be connected to an inlet of a high-pressure system (920) of the coolant flow path where the motor is located.

~~23~~17. A vehicle thermal management system, comprising thermal management system components and the valve manifold integration module (100) according to any one of claims 1 to ~~22~~16, the thermal management system components comprising a compressor (600), a condenser (200), an air-conditioning heat exchanger (300), and an evaporator (400), and at least one of a compressor interface, a condenser interface, a heat exchanger interface, and an evaporator interface being arranged on the valve manifold integration module (100) and connected to the corresponding thermal management system component.

~~24~~18. The vehicle thermal management system according to claim ~~23~~17, wherein the vehicle thermal management system further comprises a gas-liquid separator (800), and a gas-liquid separator interface configured to be connected to the gas-liquid separator (800) is further arranged on the valve manifold integration module (100).

~~25~~19. The vehicle thermal management system according to claim ~~23~~ 17 or ~~24~~18, wherein the vehicle thermal management system further comprises a battery pack heat exchanger (500), and a battery pack heat exchanger interface configured to be connected to the battery pack heat

exchanger (500) is further arranged on the valve manifold integration module (100), so as to heat or cool a battery pack by selecting the corresponding fluid channel.

~~26~~20. The vehicle thermal management system according to any one of claims ~~23~~ 17 to ~~25~~19, wherein the vehicle thermal management system further comprises a motor heat exchanger (700), and a motor heat exchanger interface configured to be connected to the motor heat exchanger (700) is further arranged on the valve manifold integration module (100), so as to realize heat exchange with a motor by selecting the corresponding fluid channel.

~~27~~21. A vehicle, comprising the vehicle thermal management system according to any one of claims ~~23~~ 17 to ~~26~~20.