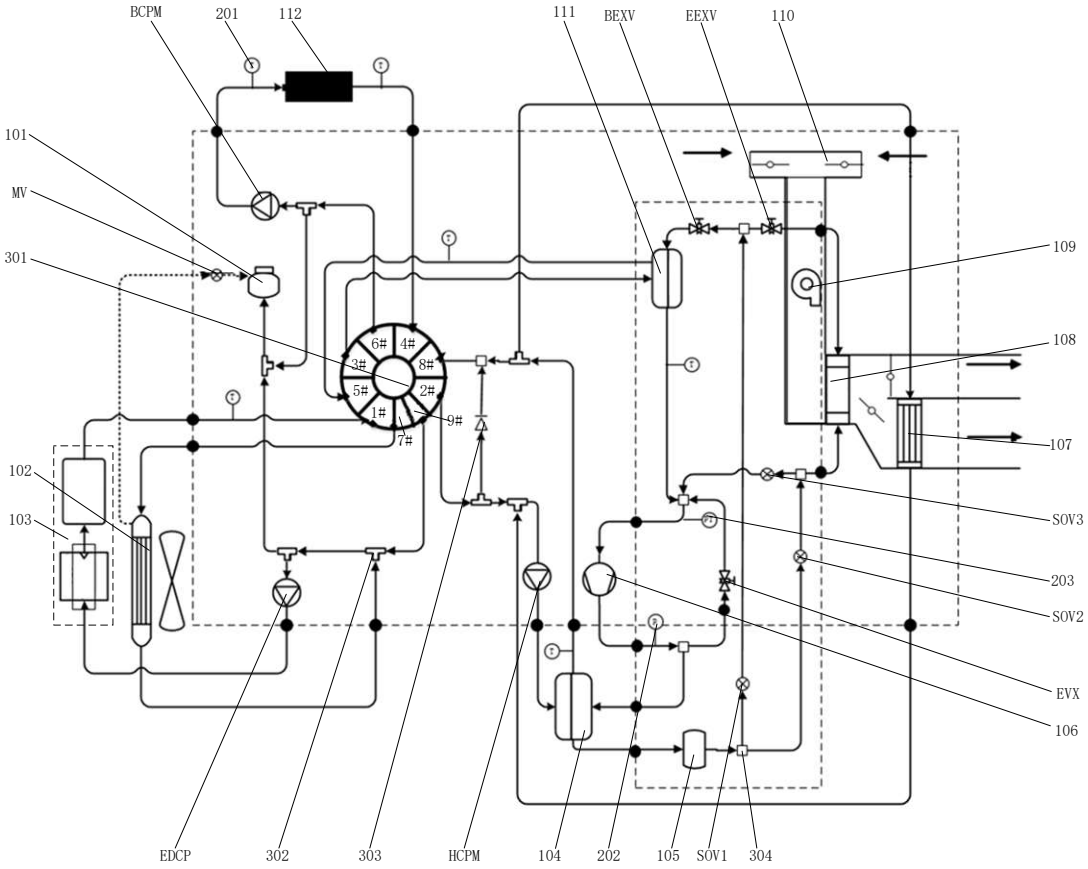

BCPM
201
112
111
BEXV
EEXV
110
101
MV
301
109
108
107
102
103
SOV3
203
SOV2
EVX
106
6#
4#
3#
8#
5#
2#
1#
7#
9#
EDCP
302
303
HCPM
104
202
105
SOV1
304

FIG. 1

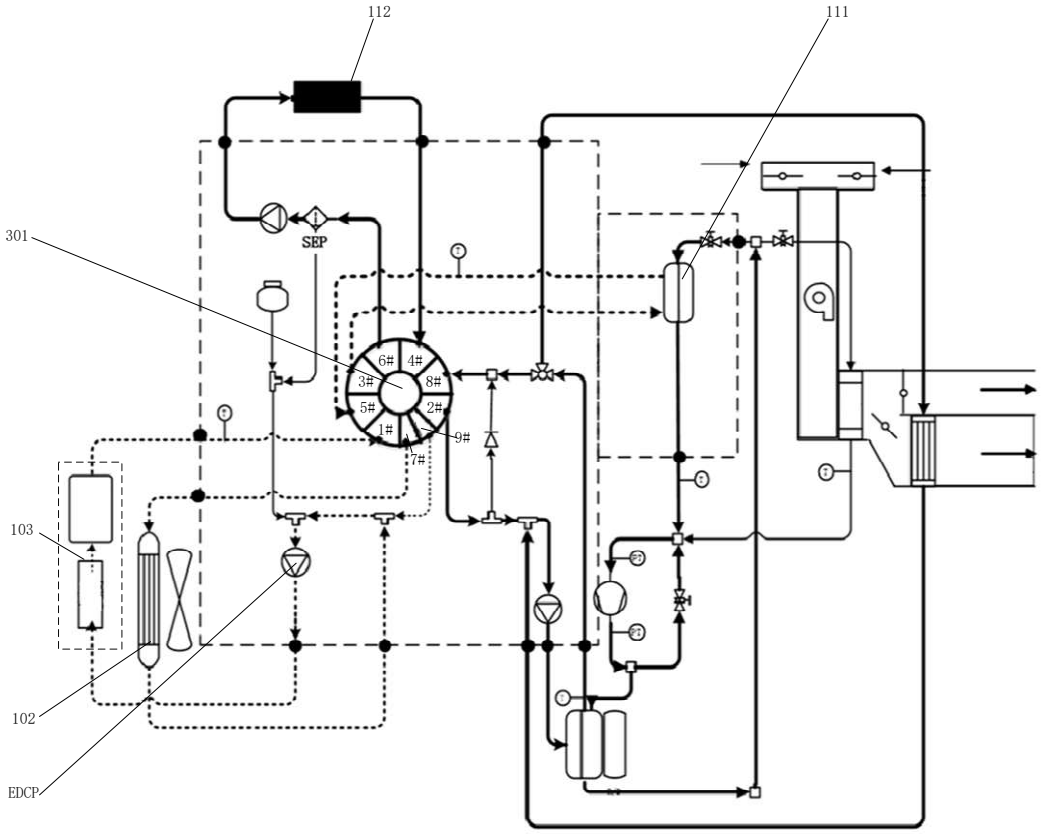


FIG. 2

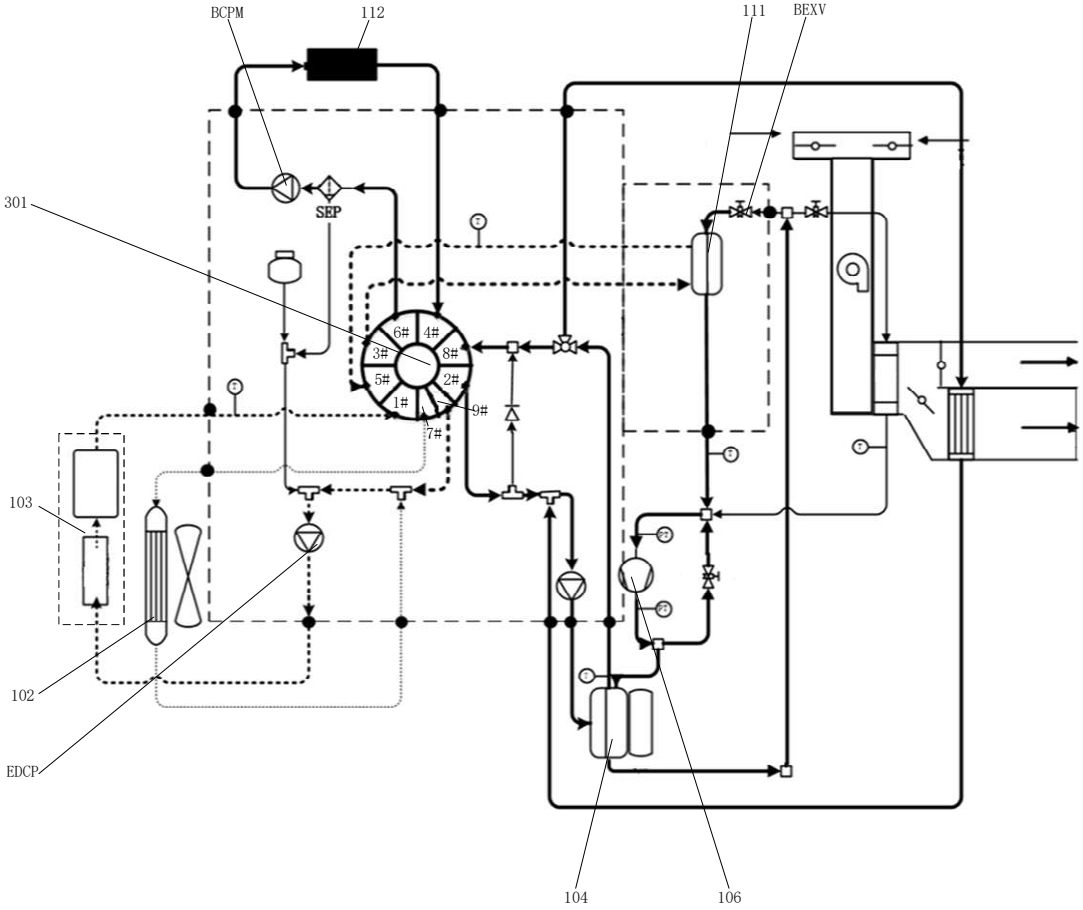


FIG. 3

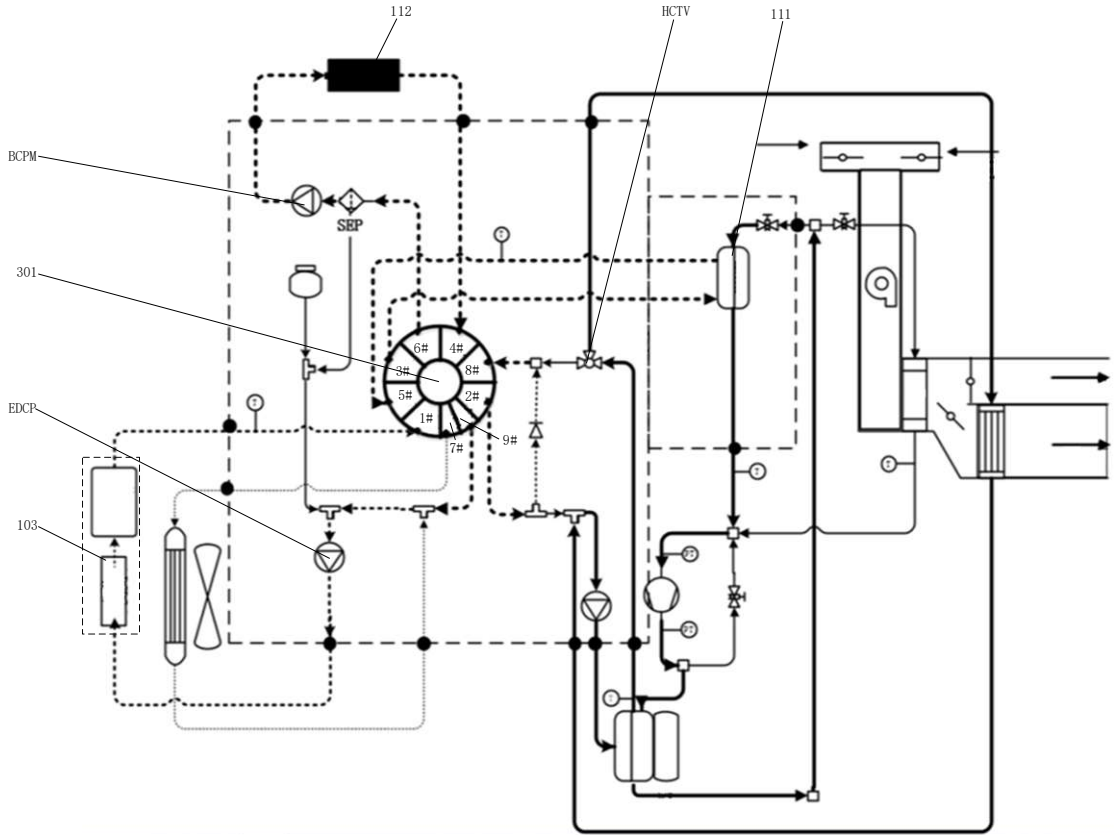

112
HCTV
111
BCPM
SEP
301
6#
4#
3#
8#
5#
2#
1#
7#
9#
EDCP
103

FIG. 4

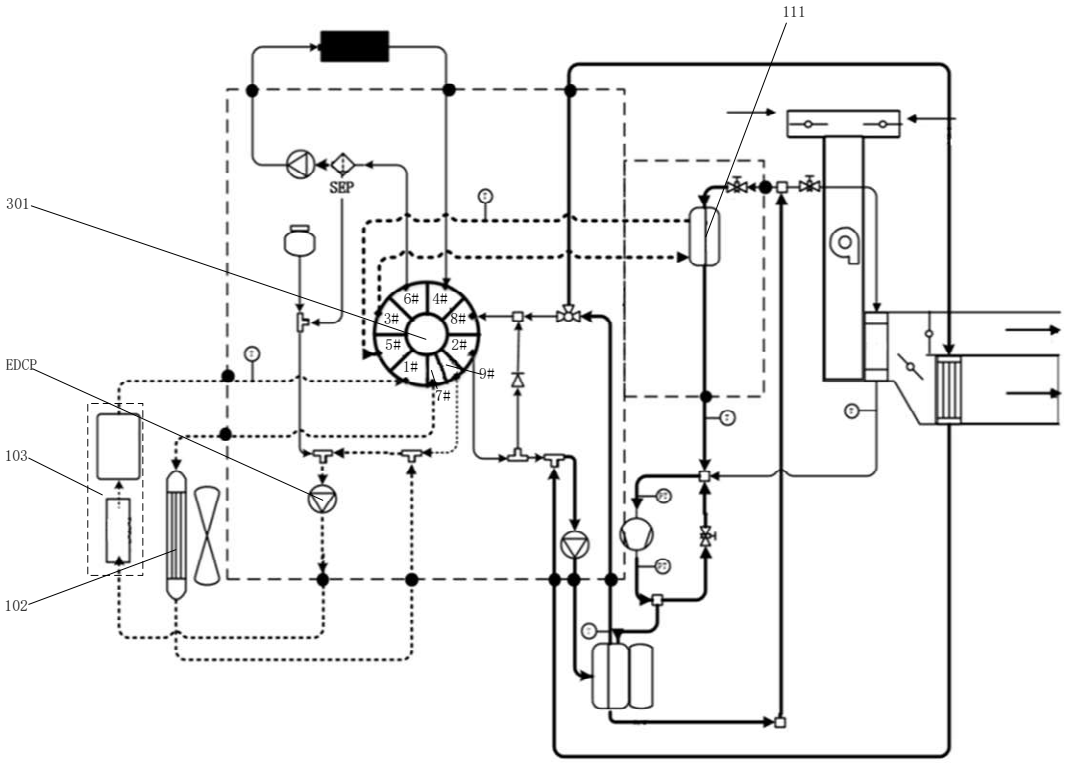

111
SEP
301
6#
4#
3#
8#
5#
2#
1#
7#
9#
EDCP
103
102

FIG. 5

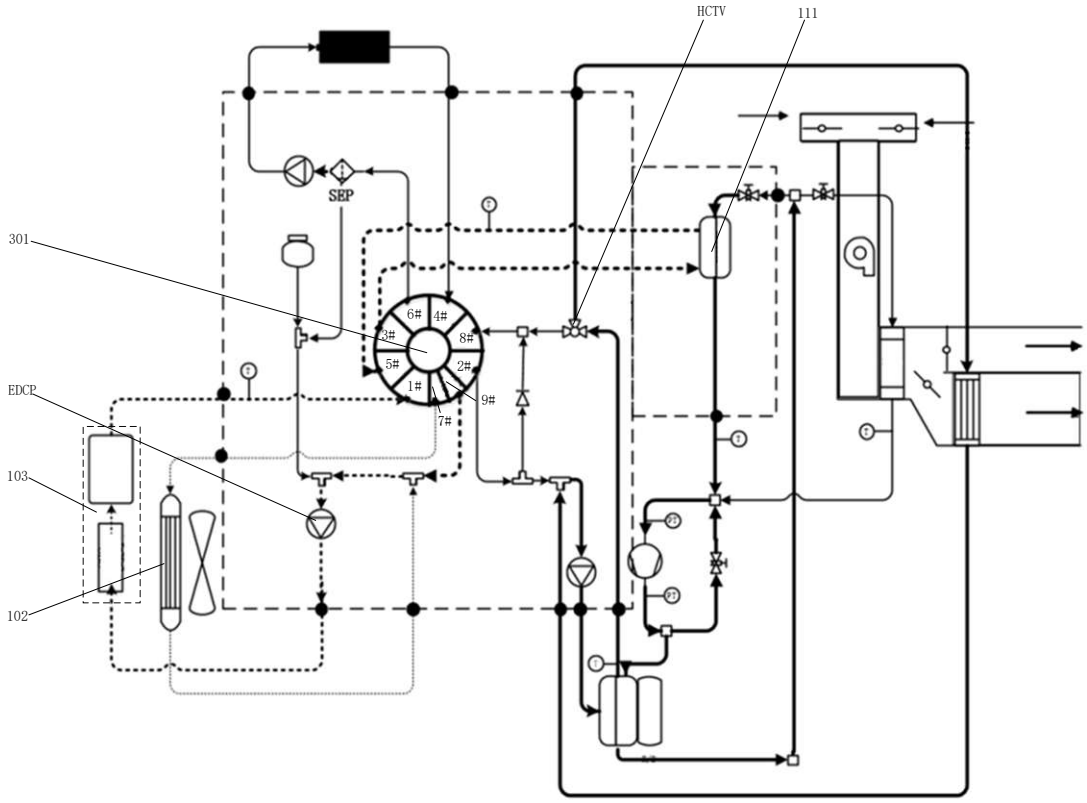

HCTV
111
SEP
301
EDCP
103
102
6#
4#
3#
8#
5#
2#
1#
7#
9#

FIG. 6

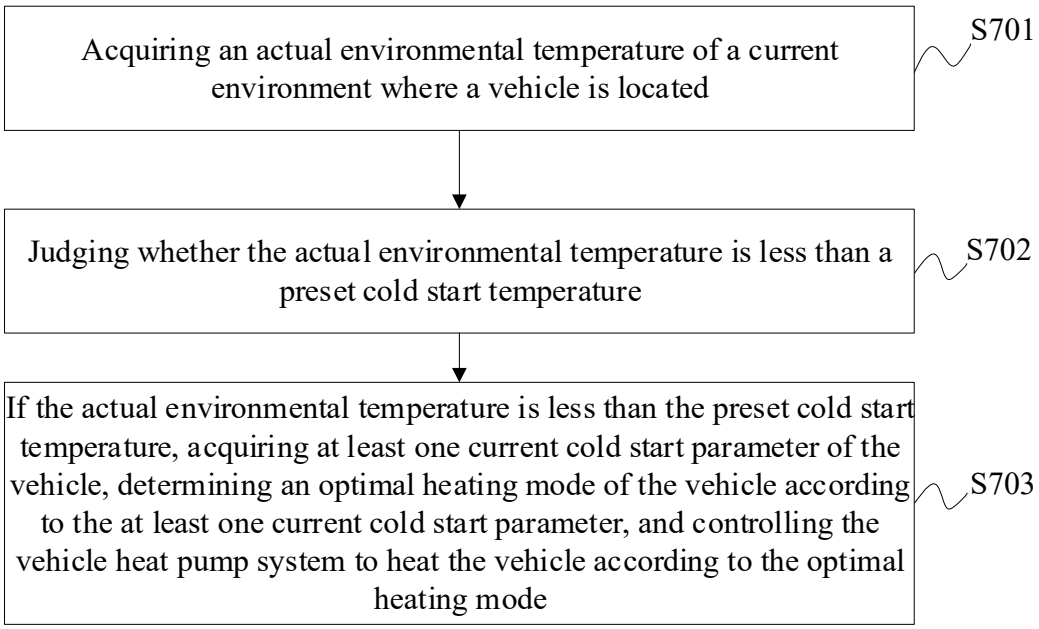

Acquiring an actual environmental temperature of a current environment where a vehicle is located
S701
Judging whether the actual environmental temperature is less than a preset cold start temperature
S702
If the actual environmental temperature is less than the preset cold start temperature, acquiring at least one current cold start parameter of the vehicle, determining an optimal heating mode of the vehicle according to the at least one current cold start parameter, and controlling the vehicle heat pump system to heat the vehicle according to the optimal heating mode
S703

FIG. 7

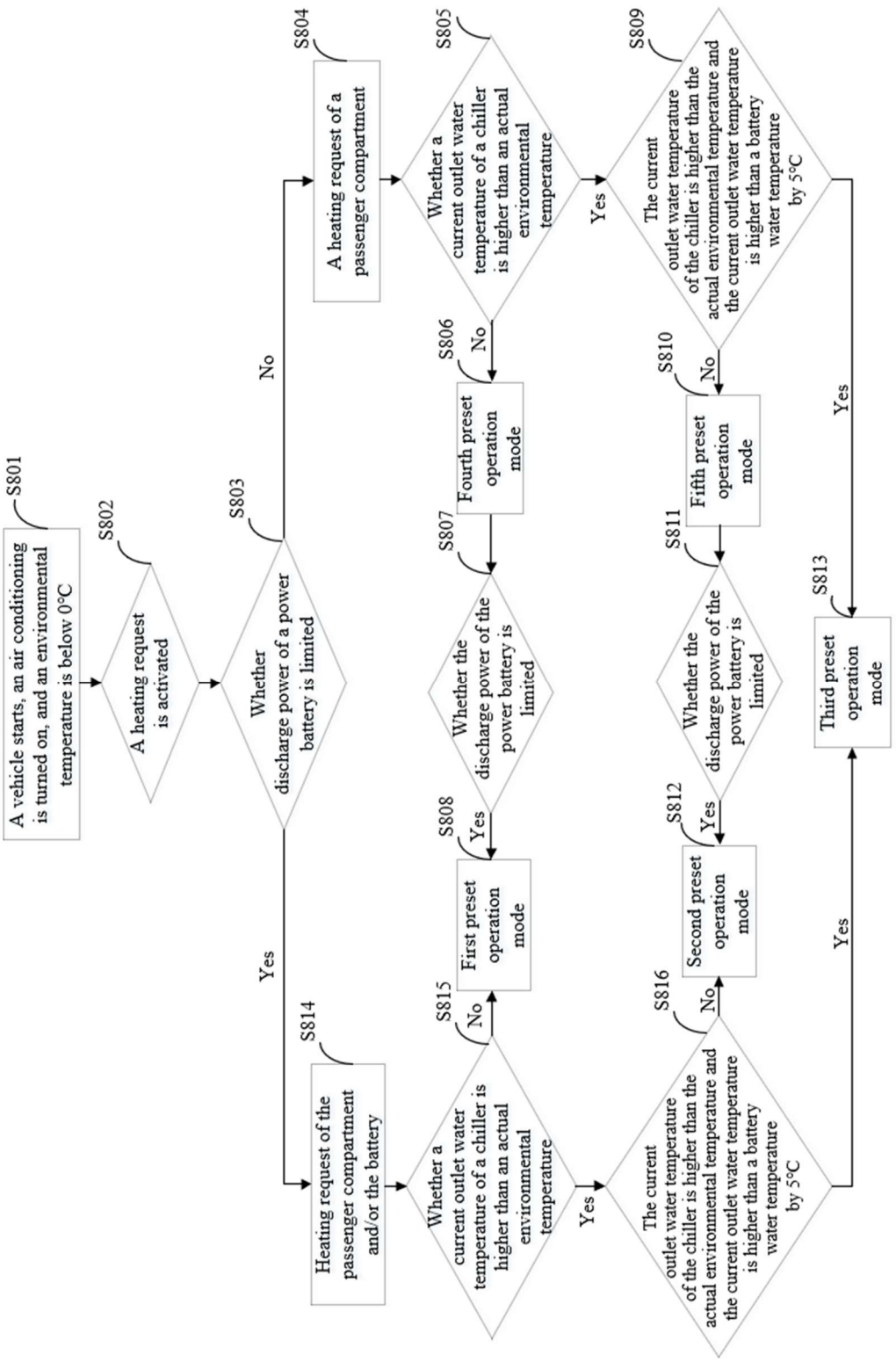

S801
A vehicle starts, an air conditioning is turned on, and an environmental temperature is below 0°C
S802
A heating request is activated
S803
Whether discharge power of a power battery is limited
No
S804
A heating request of a passenger compartment
Yes
S805
Whether a current outlet water temperature of a chiller is higher than an actual environmental temperature
No
S806
Fourth preset operation mode
Yes
S807
Whether the discharge power of the power battery is limited
Yes
S808
First preset operation mode
No
S809
The current outlet water temperature of the chiller is higher than the actual environmental temperature and the current outlet water temperature is higher than a battery water temperature by 5°C
No
S810
Fifth preset operation mode
Yes
S811
Whether the discharge power of the power battery is limited
Yes
S812
Second preset operation mode
No
S813
Third preset operation mode
Yes
S814
Heating request of the passenger compartment and/or the battery
Yes
S815
Whether a current outlet water temperature of a chiller is higher than an actual environmental temperature
Yes
S816
The current outlet water temperature of the chiller is higher than the actual environmental temperature and the current outlet water temperature is higher than a battery water temperature by 5°C
No

FIG. 8

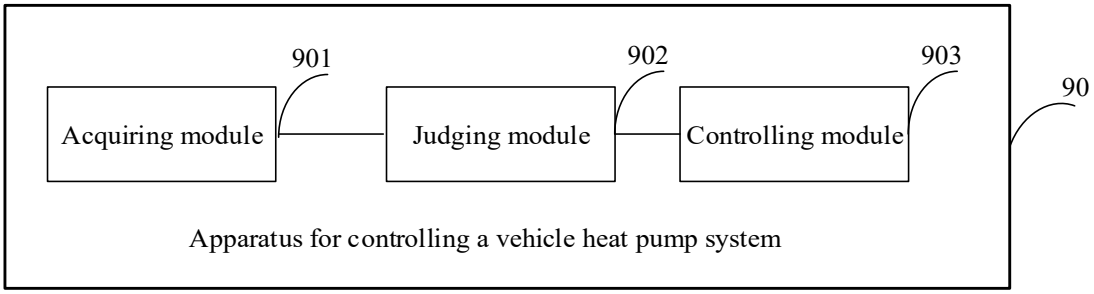

901
902
903
90
Acquiring module
Judging module
Controlling module
Apparatus for controlling a vehicle heat pump system

FIG. 9

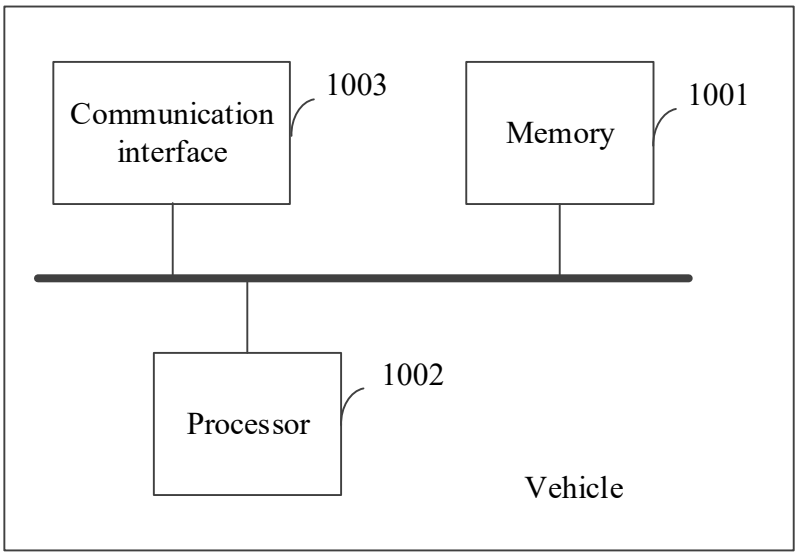

1003
1001
Communication interface
Memory
1002
Processor
Vehicle

FIG. 10