CLAIMS

What is claimed is:

1. A low-noise air conditioner, comprising a housing and a heat exchange module, wherein a partition is arranged inside the housing to divide the housing into a first cavity and at least one second cavity, the heat exchange module is arranged inside the first cavity, the second cavity comprises a first channel and a second channel, and the first channel and the second channel are respectively configured to communicate indoor air with a chamber inside the housing,

   wherein a condenser and an evaporator are further arranged inside the housing; the evaporator and the second cavity arranged with the first channel and the second channel are of different chambers; the evaporator is arranged in the first cavity, the first cavity where the evaporator is arranged is provided with an air outlet duct communicating with the first channel and a return air duct communicating with the second channel; and the first channel and the second channel are respectively configured to communicate the indoor air with the chamber where the evaporator is arranged.

2. The low-noise air conditioner according to claim 1, wherein the first channel and the second channel are respectively configured to communicate the indoor air with the first cavity.

3. The low-noise air conditioner according to claim 1, wherein a height dimension of the housing is 415-450mm, a height of the first cavity is 250-300mm, and a height of the second cavity is 100-150mm.

4. The low-noise air conditioner according to claim 1, wherein the heat exchange module comprises a compressor, and the compressor is arranged within the first cavity.

5. The low-noise air conditioner according to claim 4, wherein one or more compressors are provided in different chambers of the first cavity.

6. The low-noise air conditioner according to claim 4, wherein the compressor is arranged within the first cavity in a middle of the air conditioner or the first cavity in an end portion of the air conditioner.

7. The low-noise air conditioner according to claim 4, wherein a vibration-damping mechanism is further arranged between the compressor and an inner wall of the first cavity, and the vibration-damping mechanism comprises a base mounted on the compressor and a vibration-damping spring positioned between the base and the first cavity.

8. The low-noise air conditioner according to claim 1, wherein two condensers are provided and the two condensers are each provided at one end of the air conditioner.

9. The low-noise air conditioner according to claim 1, wherein the housing is provided with an outdoor unit air outlet corresponding to a position of the condenser and configured for communicating with outdoor air.

10. The low-noise air conditioner according to claim 1, wherein the evaporator comprises a heat exchange plate and a heat exchange fan, an output end of the heat exchange fan is arranged in a manner of facing the air outlet duct, and the heat exchange plate is positioned above the return air duct.

11. The low-noise air conditioner according to claim 10, wherein the heat exchange plate is arranged in an inclined manner.

12. The low-noise air conditioner according to claim 1, wherein the first channel comprises a first diversion cavity arranged along a length direction of the housing , the first diversion cavity is provided with an air outlet on a surface of the housing, the second channel comprises a second diversion cavity arranged along the length direction of the housing, and the second diversion cavity is provided with a return air inlet on the surface of the housing.

13. The low-noise air conditioner according to claim 12, wherein the first diversion cavity and the second diversion cavity are each arranged in a manner of extending along a length direction of the housing.

14. The low-noise air conditioner according to claim 12, wherein the air outlet is arranged on a side surface or a slanted side surface of the housing, and the return air inlet is arranged in a bottom of the housing.

15. The low-noise air conditioner according to claim 1, wherein the heat exchange module comprises a compressor, a condenser, and/or an evaporator, and the compressor, the condenser, and/or the evaporator are arranged in a same chamber or different chambers of the first cavity.

16. The low-noise air conditioner according to claim 15, wherein the first cavity forms multiple mounting cavities along a length direction of the housing through a splitter plate, and the compressor, the condenser, and the evaporator are respectively arranged in different mounting cavities.

17. The low-noise air conditioner according to claim 16, wherein a position of the partition corresponding to the evaporator is provided with an air outlet duct communicating with the first channel and a return air duct communicating with the second channel.

18. The low-noise air conditioner according to claim 1, wherein an inner wall of the housing is lined with a vibration-damping soundproofing material.

19. The low-noise air conditioner according to claim 18, wherein the vibration-damping soundproofing material comprises at least one of a polyurethane sound-absorbing layer, a polyester fiber vibration-damping layer, a rubber-plastic sponge soundproofing layer, a double-sided aluminum foil extruded board, or an Ovapro thermal insulation cotton.

20. A viewing shelter, comprising a structural frame and the low-noise air conditioner according to any one of claims 1 to 19, wherein the low-noise air conditioner is mounted on the structural frame.

21. The viewing shelter according to claim 20, wherein the structural frame comprises a crossbeam and a column, and the low-noise air conditioner is mounted on the crossbeam or suspended between the crossbeams.

22. The viewing shelter according to claim 21, wherein the crossbeam is provided with a fastener, the fastener comprises an extension that can be embedded into a slot, a surface of the housing of the air conditioner is provided with the slot, and is provided with a pre-connection port that therein accommodates a vertical movement of the extension, the pre-connection port is provided with an insertion strip that can be embedded into an opening cavity, and after the extension is embedded into the pre-connection port, the insertion strip is allowed to move relative to the opening cavity and then inserted into the opening cavity, to make a snap-fit connection between the fastener and the slot.

23. The viewing shelter according to claim 22, wherein both ends of the pre-connection port are provided with elastic clamping jaws, and when the fastener is connected to the slot, the elastic clamping jaws snap onto a bottom of the fastener so as to restrict a vertical separation of the fastener from the slot.

24. The viewing shelter according to claim 20, wherein a vibration-damping structure is provided between the low-noise air conditioner and the structural frame.