CLAIMS

[Claim 1] A cooling device comprising:

a housing including a space formed inside and a recess portion recessed inward from an outer surface;

a server provided in the housing and including a terminal protruding into the recess portion;

an optical module provided in the recess portion and connected to the terminal;

a refrigerant supply section configured to supply a refrigerant into the housing; and

a refrigerant discharge section configured to discharge the refrigerant from the housing,

wherein the housing is filled with the refrigerant supplied from the refrigerant supply section in a liquid phase state.

[Claim 2] The cooling device according to Claim 1,

wherein the optical module is in contact with an inner surface of the recess portion.

[Claim 3] The cooling device according to Claim 2,

wherein the housing includes a jacket provided protruding inward from the outer surface and formed with the recess portion,

a heat generation surface having a relatively large heat generation amount among surfaces of the optical module is in contact with the inner surface of the recess portion, and

the jacket includes a heating surface facing a side opposite to the inner surface of the recess portion in contact with the heat generation surface and configured to heat the refrigerant by transferring heat from the heat generation surface to the refrigerant in

the housing.

[Claim 4] The cooling device according to Claim 3,

wherein a plurality of the jackets are arranged in an up-down direction, and

the heating surface is a vertical surface extending in the up-down direction.

[Claim 5] The cooling device according to Claim 4,

wherein the jackets arranged in the up-down direction are provided at intervals.

[Claim 6] The cooling device according to any one of Claims 3 to 5,

wherein the jacket further includes, on the heating surface, a surface area increasing member configured to increase a surface area of the heating surface.

[Claim 7] The cooling device according to Claim 3,

wherein a plurality of the jackets are arranged in an up-down direction, and

the heating surface is an inclined surface inclined with respect to a horizontal plane.

[Claim 8] The cooling device according to Claim 7,

wherein the jackets arranged in the up-down direction are provided at intervals.

[Claim 9] The cooling device according to Claim 7 or 8,

wherein a plurality of the jackets are arranged in a horizontal direction, and

the jackets arranged in the up-down direction are disposed offset from each other in the horizontal direction such that the heating surfaces of the jackets are shifted from each other in the horizontal direction.

[Claim 10] The cooling device according to any one of Claims 1 to 5,

wherein a plurality of optical modules are accommodated in one recess portion.

[Claim 11] The cooling device according to any one of Claims 1 to 5, further comprising:

a cooling plate provided in the recess portion and being in contact with the

optical module;

a second refrigerant supply section configured to supply a second refrigerant into the cooling plate; and

a second refrigerant discharge section configured to discharge the second refrigerant from the cooling plate.

[Claim 12] The cooling device according to Claim 11,

wherein a plurality of optical modules are accommodated in one recess portion, and

the cooling plate is in contact with the plurality of optical modules.