Data Sheet

Peltier-Control Cabinet Cooler FR-316-C, Standard_DC Series

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&
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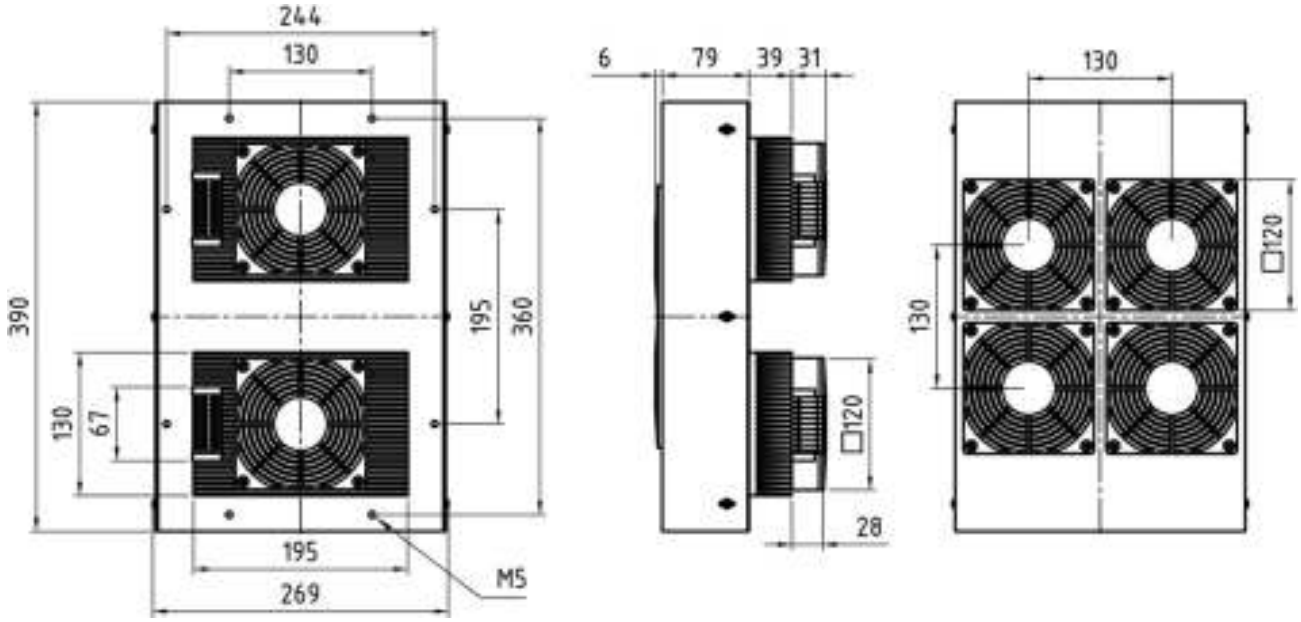
FR-316-C (NSBon-37-3) Thermoelectric Cooler or Thermoelectric Assembly is designed to remove heat around critical components within an electrical enclosure with IP66 / NEMA4 protection category. These is a thermoelectric module (thermoelectric air conditioner) using the Peltier effect. The thermoelectric modules create a temperature difference between the internal and ambient heat sinks. It makes internal air colder while heat is dissipating into the external environment. Fans help the transfer of heating from the heat sinks.

The main advantages of Thermoelectric Cooler over conventional compressor are:
- it can be controlled electronically;
- it is easily reversible when the current is reversed;
- it can work in harsh environments:
  - in high ambient temperatures or heavily polluted ambient air;
  - in application with vibrations or strong accelerations.

Technical Data FR-316-C

Supply voltage : 24 VDC
Rated input : 400 W
Max. input current : 30 A
Protection category outer side (warm) : IP67
Protection category internal side (cold) : IP20
Operating temperature range: -40°C to 70°C
Storage temperature range : -40°C to 70°C
Alarm transductor: NO-contact, max. 30 VDC, 5 A
Switch point fault message: +80°C heat sink temp.
Switch point safety shutdown: +90°C heat sink temp.
Dimensions: 390 x 269 x 155 mm
Weight : 10 kg
Fitting position: Variable

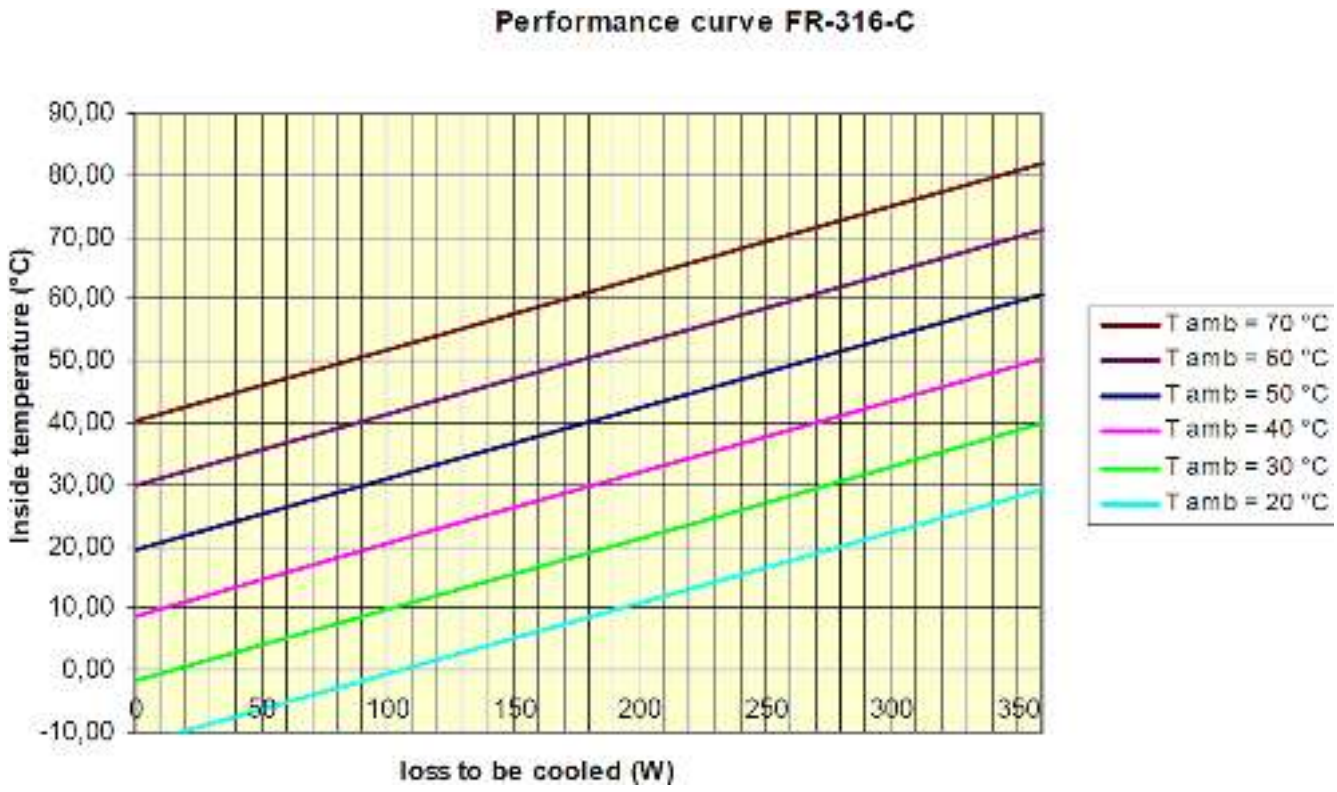
Main dimensions:



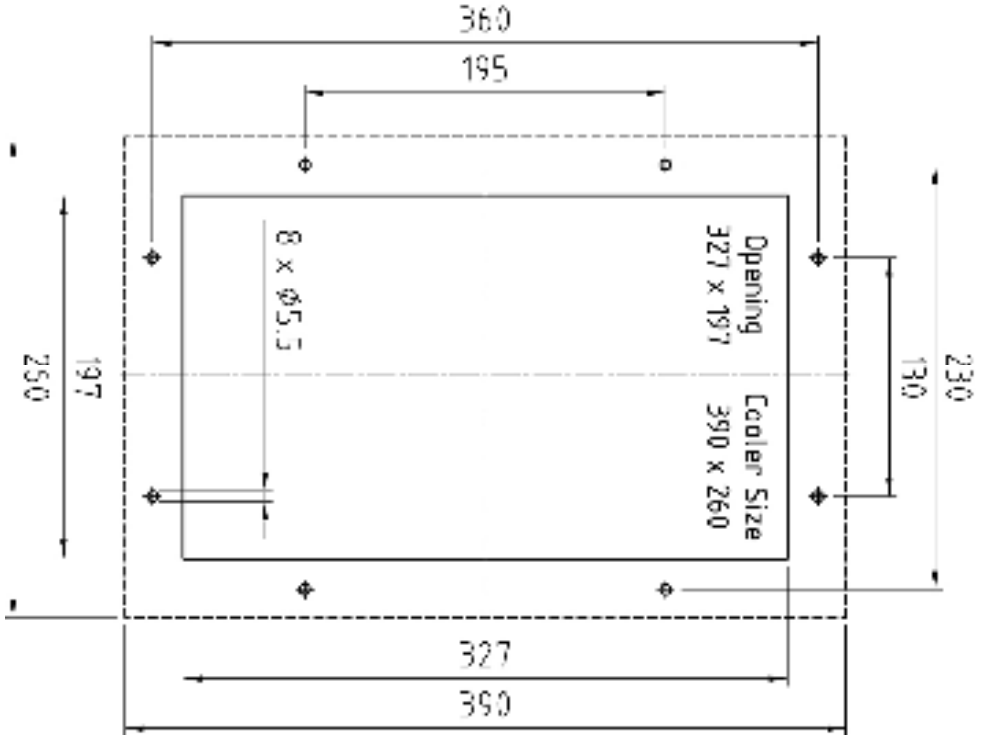
Performance diagram

The performance diagrams depict the exact performance of a cooler relative to the ambient temperature and internal temperature of the cabinet. For the layout design, the operating point is first assumed, which means that the cooling capacity of the Peltier device corresponds exactly with dissipation loss in the cabinet. That keeps the internal temperature stable. In order to determine this, the dissipation loss is first located on the X-axis of the diagram and a vertical line is drawn through it. On the Y-axis, a horizontal line is then drawn through the intersection of this vertical line and the line for maximum ambient temperature. The internal temperature can be read on this horizontal line. If the temperature is too high, the next larger cooler model is tested in the same way. If the internal temperature is clearly too low, a smaller cooler type can be used.

If the exact cooling capacity of a device at a given temperature needs to be determined, a horizontal line is first drawn through the corresponding internal temperature on the Y-axis. A vertical line is then drawn down to the X-axis through the intersection of the horizontal line and the colour-coded maximum ambient temperature line. This indicates the exact cooling capacity of the device.



The necessary opening for installation:



Terminal assignment:

Terminal	Connection
1	Peltier-Elements (+)
2	Peltier-Elements (-)
3	Peltier-Elements (+)
4	Peltier-Elements (-)
5	Not in use
6	Not in use
7	External fans (+)
8	External fans (-)
9	Internal fan (+)
10	Internal fan (-)
11	Peltier-Elements (+)
12	Peltier-Elements (-)
13	Peltier-Elements (+)
14	Peltier-Elements (-)
15	Alarm transductor (NO contact)
16	Alarm transductor (NO contact)
17	External fans (+)
18	External fans (-)
19	Internal fan (+)
20	Internal fan (-)

CE

The product „Control Cabinet Cooler – FR-316-C“ has been given the CE mark on the basis of the Directive 89/336/EEC of the Council of the European Community of 29 April 1991 for harmonization of legislation of member-states on communication systems including mutual recognition of their conformity.
This product has been designed for use with power packs bearing the CE mark.
The product „Control Cabinet Cooler – FR-316-C“ meets the requirements for a CE mark:

Interference immunity to EN 61000-6-2/VDE 0839 Part 6-2
Electromagnetic compatibility; basic standard on interference immunity

Radio interference suppression to EN 55022 Class A
Electromagnetic compatibility of equipment for information processing and telecommunication

Electric safety to EN 60950
Safety of equipment of information engineering including electric office machines.

This product has been designed for use in industrial applications. Interference immunity and the rate of emitted interference are in conformity with the directives on industrial equipment. When the product is used in residential homes and business offices interference with other equipment items (e.g. radio receivers) might occur. The user shall ensure itself that no third party will be exposed to any interference.
This declaration is delivered in the responsibility of the manufacturer

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