



Wall-mounted cooling unit

CS 9761.012

Montageanleitung Assembly Instructions

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1. Application

Enclosure cooling units are designed and built to dissipate heat from enclosures by cooling the air inside the enclosure and protecting temperature sensitive components. Enclosure cooling units are particularly suitable for the temperature range of +40°C to +55°C, where for system related reasons, comparable units such as air/air heat exchangers or fan-and-filter units cannot be used to dissipate heat effectively and economically.

The cooling units of the Rittal CS product range are designed specifically for use with modular outdoor enclosures. The roofs, cover hoods etc. necessary for mounting on CS modular enclosures are supplied with the enclosure and not included in the units.

Adapting the unit to enclosures other than the ones supplied by Rittal is only possible after consultation.

2. Technical data

Model No.		
Rated voltage		230 V
Volt / Hz		50 / 60 Hz
Dimensions mm	W	592
	H	1197
	D	151,5
Useful cooling output	L35 L35	900 W
	EN 814 L35 L50	750 W
Rated current max.		3,5 A
Start-up current		10,8 A
Nominal power consumption	L35 L35	450 W
	L35 L50	520 W
Refrigerant		R134a
p. max.		24 bar
Temperature range		- 33 to +55°C
Type of connection		via connector plug
Weight		45kg
Colour		RAL 7035
Protection category (internal/external)		IP 55
Air throughput of fans		(unimpeded airflow)
External circuit		800 m ³ /h
Internal circuit		800 m ³ /h
Temperature control		Microcontroller

Special voltages available on request

3. Assembly

Mechanical design, electrical connection and possible repair works must only be carried out by qualified personnel. Only use original spare parts!

3.1 Assembly instructions

- Prior to mounting, ensure that
- the site of the enclosure and hence the arrangement of the heat exchanger, is selected in such a way as to ensure good ventilation;
- the location is free from excessive dirt and moisture;
- the mains connection ratings, as stated on the name plate of the unit, are available;
- the ambient temperature does not exceed + 55°C;
- the packaging shows no signs of damage. Traces of oil on damaged packaging are an indication of refrigerant loss and of leakage in the unit system. Any damage to the packaging may be the cause of subsequent malfunctions;
- the enclosure is sealed on all sides. Condensation will occur if the enclosure is leaky;
- the distance of the units from the wall should not be less than 200 mm;
- air inlet and outlet are not obstructed on the inside of the enclosure;
- units should only be fitted horizontally in the specified position. Max. deviation from true horizontal: 2°;
- condensate drainage is provided (see 6.3);
- To avoid an increase in condensation, a door operated switch (e.g. PS4127.000) should be used which will switch the cooling unit off when the enclosure door is opened.

4. Electrical connection

The connection voltage and frequency must match the nominal values specified on the rating plate. For this reason, the cooling unit must be connected to the mains via a disconnecting device which ensures a contact opening of at least 3 mm in the deactivated state, such as a motor circuit-breaker. The cooling unit must not have any additional temperature control connected upstream at the supply end. The pre-fuse specified on the rating plate should be provided as line protection. Please observe the locally valid regulations when installing! Mains connection should be made to the connector plug on the unit (see fig. 4.2).

Connect the alarm interface via a 15-pole Sub-D plug
Mains connection via IEC 320 connector.
If applicable, connect the door switch via a 9-pole sub-D socket.

Fig. 4.1 Detailed wiring diagram

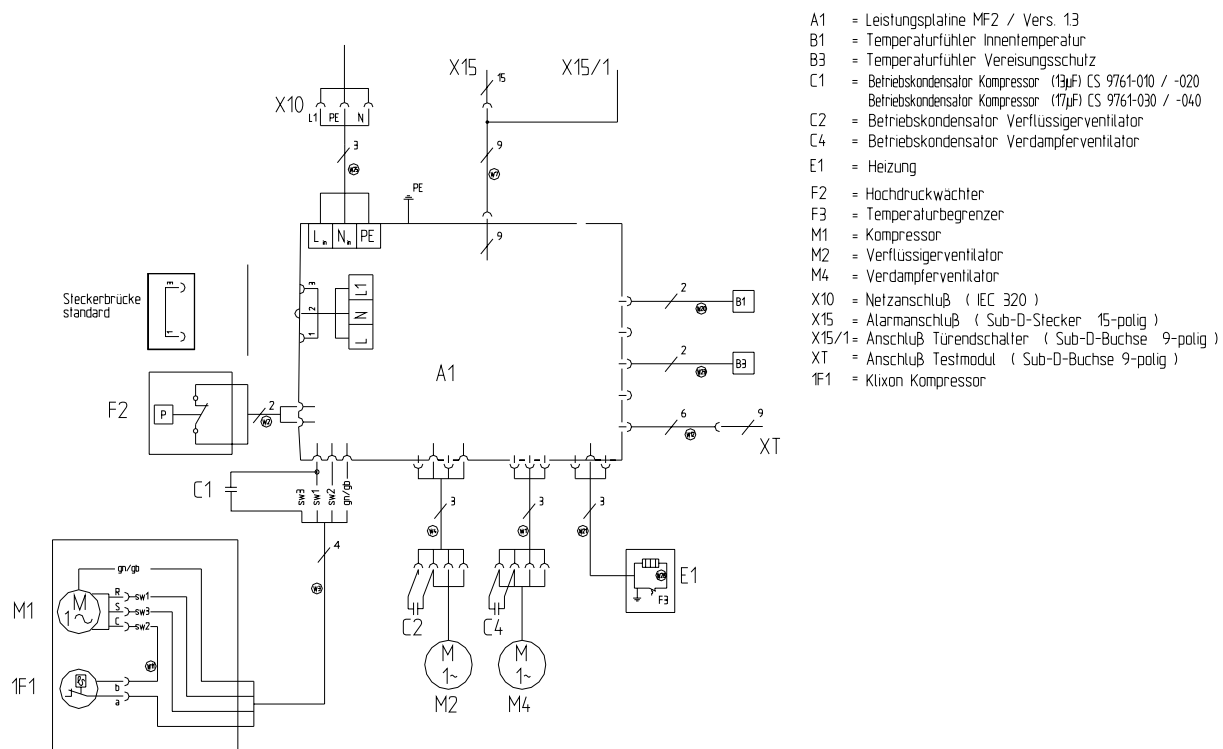


Abb. 4.2 Connector plug

Test

Sub-D 9-pol.
Buchsengehäuse

Alarm

Sub-D 15-pol.
Stiftgehäuse

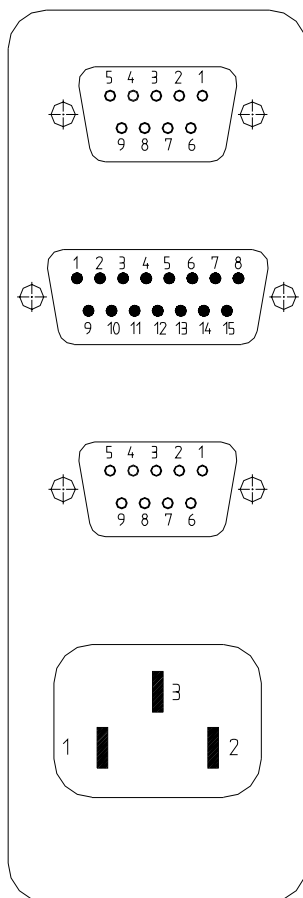
Türschalter

Sub-D 9-pol.
Buchsengehäuse

AC

1 = L
2 = N
3 = PE

Kaltgerätestecker IEC 320



Test

Alarm

Door limit switch

AC supply

Pin-Layout:

Test: (Accessories)

Alarm : Pin 1 Cooling unit failure
Pin 2 Internal fan failure
Pin 3 Temperature too high / too low
Pin 5 Apply alarm voltage
+5...+30V / max.10mA

Door limit Switch: Pin 1 Normally closed contact
Pin 2 Normally closed contact

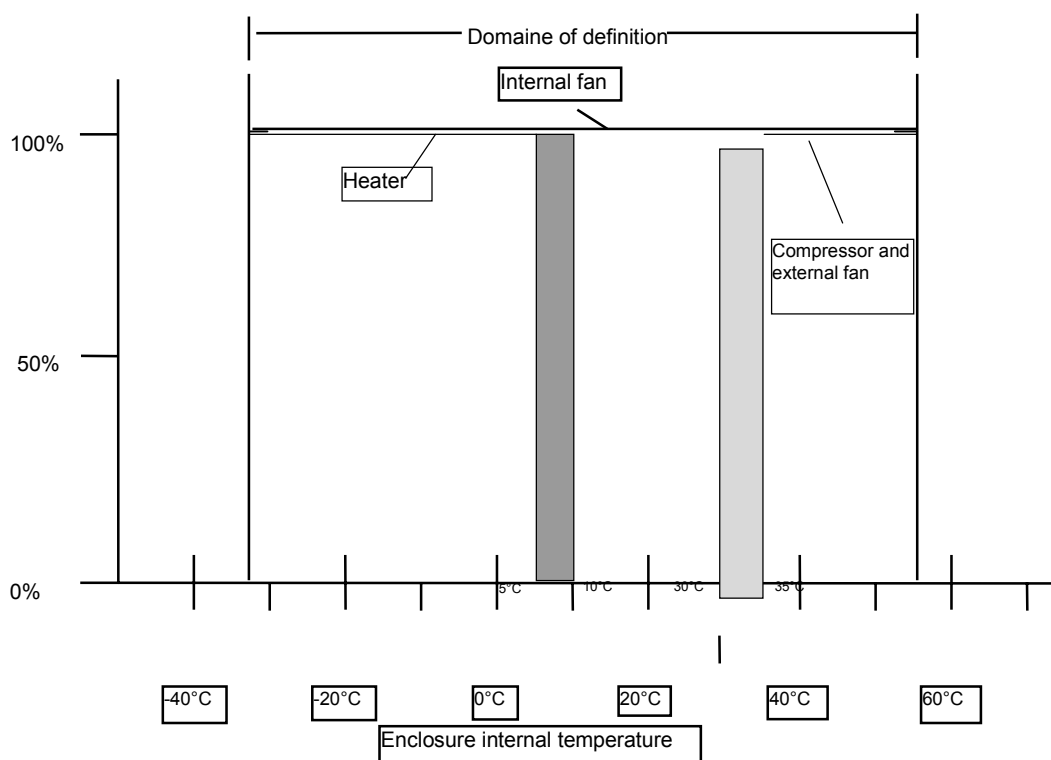
AC supply : Pin 1: L
Pin 2: N
Pin 3 PE

5. Commencing operation and control behaviour

Following the completion of mounting and a waiting period of approximately 30 minutes (to allow oil to collect in the compressor in order to ensure lubrication and cooling) electrical connection can be made.

The cooling unit operates automatically, i.e. after electrical connection, the evaporator fan will run continuously to circulate the air inside the enclosure. this results in a uniform temperature distribution in the enclosure. The compressor and condenser are controlled by a microcontroller. The minimum break time is 90 sec. The differential is 5K..

Fig. 5.1 **Functional diagram**



Settings:

Internal fan	100% full time	
Compressor and external fan	Off: =30°C, On: =35°C	(Ti)
Heater:	On: =5°C, Off: =10°C	(Ti)

6. Technical information

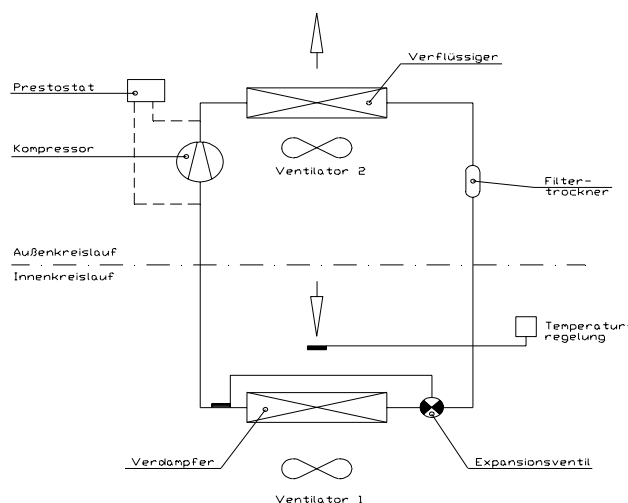
The cooling unit (compression refrigeration unit) consists of four main components:

- coolant compressor,
- evaporator,
- condenser
- and the control expansion valve,

which are connected by suitable pipework. this circuit is filled with a readily boiling substance, the coolant. The R134a (CH_2FCF_3) coolant is free from chlorine. It has an ozone destroying potential (ODP) of 0 and is therefore environmentally friendly. A filter dryer which is integrated in the hermetically sealed cooling circuit, provides effective protection against moisture, acid, dirt particles, and foreign bodies within the cooling circuit.

6.1 Operation of the cooling unit

Fig. 6.1 Functional principle



The compressor extracts the gaseous refrigerant from the evaporator and compresses it to a higher pressure in the condenser. During this process the temperature of the refrigerant rises above the ambient temperature and heat is dissipated to the environment via the surface of the condenser. Then the refrigerant is liquefied and, by means of a thermostatically controlled expansion valve, returned to the evaporator, where it evaporates at low pressure. The heat required for complete evaporation is drawn from the enclosure interior causing it to cool down. The cooling cycle is thus completed, the aforementioned process of the heat transfer starts afresh.

6.2 Safety equipment

The cooling circuit of the cooling unit embodies a component tested high-pressure monitor to VBG 20 § 7.1. which is set to maximum operating pressure and operates via an automatic reset device at recurring pressure drop.

Temperature and low-pressure monitoring will prevent the evaporator from icing up. If there is a risk of icing up, the compressor is switched off and automatically switched on again at higher temperatures. The refrigerant compressor and the fans are equipped with thermal winding protection switches against excess current and excess temperatures.

6.3 Condensate discharge

The cooling unit has an integrated condensate discharge. Condensate which may occur is collected at the bottom of the unit and discharged into the external circuit. A separate hose is not required.

6.4 General

Storage temperature: The cooling units must not be exposed to temperatures above +70°C during storage.

Transport position: The cooling units must always be transported in an upright to horizontal position.

Disposal: The closed cooling circuit contains refrigerant and oil which must be correctly disposed of in order to protect the environment. Disposal may be carried out at the Rittal works.

7. Maintenance

As a maintenance-free, hermetically sealed system, the cooling circuit has been filled in the factory with the required amount of refrigerant, tested for leaks and/or subjected to a functional trial run.

The installed maintenance-free fans run in ball races, they are protected from moisture and dust, and are fitted with a temperature monitor. The life expectancy is at least 30,000 operating hours.

The cooling unit is thus largely maintenance-free.

All that may be required from time to time is that the components of the external circuit are cleaned by compressed air. The use of a filter mat is recommended only if large particles of lint are present in the air, so that blockage of the condenser is prevented.

Caution: Prior to any maintenance work, the cooling unit must be switched free from potential on the supply side.

8. Supply includes

1 cooling unit, ready for connection

1 set of assembly instructions