Montageanleitung
Assembly Instructions
Notice de montage
Montage-instructie
Montageanvisning
Istruzioni di montaggio
Instrucciones de montaje
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 a temperature range of +40 °C to +50 °C.

2. Technical Data
(see table 2.1)

3. Mounting
The cooling unit can be mounted as standard either to the outer surface or inside the enclosure, as required. Cutouts and fixing holes should be made on the mounting surface in accordance with fig. 3.1. Cut the enclosed seal to the required length and attach to the unit in accordance with fig. 3.2. Screw the set screws, item ➀, into the blind nuts and fix them by means of a bracket, item ➁, washers, item ➂, and nuts, item ➃, in accordance with fig. 3.2. Attach the condensate drain (see 6.3).

Prior to mounting, ensure that:
• the site for the enclosure, and hence the arrangement of the cooling unit, is selected so as to ensure good ventilation;
• the location is free from excessive dirt and moisture;
• the round cut-out for air extraction is located in the upper area of the enclosure;
• the mains connection ratings, as stated on the rating plate, are available;
• the ambient temperature is no higher than specified on the rating plate;
• the packaging shows no signs of damage; the enclosure is sealed on all sides. Condensation will occur if the enclosure is leaky;
• the separation of the units from one another and from the wall should not be less than 200 mm;
• air inlet and outlet are not obstructed on the inside of the enclosure;
• units are only fitted vertically in the specified position. Max. deviation from true vertical: 2°;
• condensate discharge must be made up by means of the material provided in the dispatch bag. The discharge tube must be free from kinks and must be arranged sloping away from the unit;
• electrical connection and repair are carried out only by authorized specialist personnel. Use only original replacement parts!
• To avoid an increase in condensation, a door operated switch (e.g. PS 4127) should be used which will switch the cooling unit off when the enclosure door is opened.

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### Table 2.1 Technical Data

<table>
<thead>
<tr>
<th></th>
<th>SK 3203100</th>
<th>SK 3205100</th>
<th>SK 3204100</th>
<th>SK 3206100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage</td>
<td>230 V 50/60 Hz</td>
<td>115 V 50/60 Hz</td>
<td>230 V 50/60 Hz</td>
<td>115 V 50/60 Hz</td>
</tr>
<tr>
<td>Rated current</td>
<td>1.8 A/1.6 A</td>
<td>3.5 A/3.6 A</td>
<td>1.5 A/1.5 A</td>
<td>3.5 A/3.8 A</td>
</tr>
<tr>
<td>Starting current</td>
<td>2.7 A/2.8 A</td>
<td>4 A/4.5 A</td>
<td>1.9 A/2 A</td>
<td>4.2 A/4.5 A</td>
</tr>
<tr>
<td>Pre-fuse T</td>
<td>4 A/4 A</td>
<td>6 A/6 A</td>
<td>4 A/4 A</td>
<td>6 A/6 A</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Power consumption</td>
<td>L35 L35 275 W/280 W</td>
<td>285 W/290 W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Useful cooling output</td>
<td>DIN 3168/EN 814 L35 L35 350 W/360 W</td>
<td>320 W/345 W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refrigerant</td>
<td>R134 a, 125 g</td>
<td>R134 a, 150 g</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature range</td>
<td>+20 to +50°C</td>
<td>+20 to +50°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noise level</td>
<td>62 dB (A)</td>
<td>62 dB (A)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protection category</td>
<td>EN 60529 Internal circuit IP 54</td>
<td>IP 54</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>External circuit IP 34</td>
<td>IP 34</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions (W x H x D) mm</td>
<td>270 x 520 x 120</td>
<td>490 x 300 x 120</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>13 kg</td>
<td>15 kg</td>
<td>13 kg</td>
<td>15 kg</td>
</tr>
<tr>
<td>Colour</td>
<td>RAL 7032</td>
<td>RAL 7032</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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![Fig. 3.1 Mounting Cutout](image1)

**SK 3203100/SK 3205100**
(Vertical wall-mounting)
External/internal mounting

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![Fig. 3.2 Mounting](image2)

**SK 3204100/SK 3206100**
(Horizontal wall-mounting)
External/internal mounting
4. Electrical Connection

The connected voltage and frequency must correspond to the values stated on the rating plate. The cooling unit must be connected to the mains via an isolating device, which ensures at least 3 mm contact opening when switched off. The unit must not have any additional temperature control connected before it. Line protection should be provided by means of the pre-fuse specified on the rating plate. Observe the relevant regulations during installation!

Connect the mains connection to the plug-in terminal strip X10, see wiring diagram on page 17 (terminal L1, N, PE)

- Note! The cooling unit must only be connected via a suitable transformer to the rated voltage specified on the rating plate (see wiring diagram on page 19).
- Collective fault signal connection (terminal 3,4,5, see 5.1.2).
- Note the designations on the terminal strip (see wiring diagram).
- The unit must be disconnected prior to checking the protective earth conductor, high voltage and the insulation in the enclosure.

5. Microcontroller Adjustment

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.

5.1 Control Behaviour

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 temperature setting is made on the potentiometer on the control board. The potentiometer becomes accessible after removal of the grille (without tools) and can be set within a range of +20°C to +55°C (factory setting = 30°C). For economic reasons (energy saving) the set-point value of the enclosure’s internal temperature should be selected as low as possible.

The microcontroller provides automatic control switch-off of the condenser and the liquefier fan when the set value of the fixed switching difference of 5 K. The minimum switch-off time of both condenser and liquefier fan is 3 minutes.

5.2 Collective Fault Message

The microcontroller monitors the following faults:

- Enclosure internal temperature too high
- Sensor break.

If the internal temperature of the enclosure exceeds the set-point value by 10 K (switching hysteresis 2 K), the red LED will flash for about 100 seconds. If the high internal temperature continues beyond 100 seconds, the red LED will give a permanent light, the fault signalling relay will drop out.

The limits of the input temperature values are monitored via the microcontroller. In the event of a sensor break, the red LED will illuminate, the fault signalling relay will drop out, and the cooling unit will cool in continuous operation.

5.3 Fault Signal Contact (K1, potentiometer-free)

The fault signal relay is pulled in at normal condition. Any failure of the control voltage will also lead to drop-out of the relay and can thus be registered. The connection is made on the terminal strip X10. For contact data and assignment, see wiring diagram.

6. Technical Information

The cooling unit (compression refrigeration unit) consists of four main components: the coolant compressor, evaporator, condenser, and the choke, which are connected by suitable piping. This circuit is filled with a readily boiling substance, the coolant. The R134a (CH2FCF3) coolant is free of 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

The compressor takes the gaseous coolant from the evaporator and compresses it to a higher pressure in the condenser. During this process the temperature of the ambient temperature and heat can be dissipated to the environment via the surface of the condenser. Then the coolant is liquefied and, by means of a thermostatically controlled expansion valve, returned to the evaporator, where it evaporates at low pressure. The circuit required for complete evaporation is drawn from the enclosure interior causing it to cool down.

6.2 Safety Equipment

The cooling circuit of the cooling unit is intrinsically safe in accordance with DIN 8975. The coolant condenser and the fans are protected from excess current and excess temperature by thermal winding protection switches.

6.3 Condensate Drain

A drain pipe fitted to the evaporator divider panel ensures that any condensate which may form on the evaporator (at high air humidity, low temperatures inside the enclosure) is drained away from the bottom of the unit. For this purpose, a length of hose should be fitted to the condensate pipe connection piece (see fig. 6.2, if appropriate, remove the grille). The condensate must be able to run off freely.

8. Scope of Supply and Guarantee

1 cooling unit, ready for connection
4 set screws M6 x 25
4 nuts M6
4 washers A 6.4
1 set of assembly and operating instructions
1 drilling template
1 sealing tape 10 x 5
4 clamps
1 transparent hose 8 x 1.5 x 100

Guarantee:
This unit is covered by a 1-year guarantee from the date of supply, subject to correct usage. Within this period, the returned unit will be repaired in the factory or replaced free of charge.

The cooling unit is to be used for the cooling of enclosures only. If it is connected or handled improperly the manufacturer’s guarantee does not apply and in this case we are not liable for any damage caused.

9. Fault Message and Fault Analysis

<table>
<thead>
<tr>
<th>Fault message</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red LED illuminates</td>
<td>Ambient temperature too high</td>
<td>Temperature limit has been exceeded</td>
</tr>
<tr>
<td>Fault signalling relay drops out</td>
<td>Internal air circuit too fast</td>
<td>Air inlets and outlets must not be obstructed</td>
</tr>
<tr>
<td></td>
<td>External air circuit contaminated</td>
<td>Clean the heat exchanger module with compressed air</td>
</tr>
<tr>
<td></td>
<td>Defective fan</td>
<td>Replace</td>
</tr>
<tr>
<td></td>
<td>Defective condenser</td>
<td>Repair by refriger. expert (Rittal Service-Center)</td>
</tr>
<tr>
<td></td>
<td>Lack of coolant</td>
<td>Repair by refriger. expert (Rittal Service-Center)</td>
</tr>
<tr>
<td></td>
<td>Defective temperature sensor</td>
<td>Replace</td>
</tr>
</tbody>
</table>

Note the designations on the terminal strip (see wiring diagram).
Montage von externem Transformator
Fixing the external transformer
Montage du transformateur extérieur
Montage van externe transformator
Montaggio del trasformatore esterno
Montaje de un transformador externo

Montage Geräterückwand
Mounting the rear panel
Montage du panneau arrière
Montage achterwand van het aggregaat
Montaggio sulla parete posteriore
Montaje en el dorsal

Befestigung auf 35 mm Tragschiene
Fastening to 35 mm support rail
Fixation sur rail de support de 35 mm
Befestigung op 35 mm DIN 50 022 draagprofiel
Fixering på 35 mm profilskena DIN EN 50 022
Fissaggio sulla guida 35 mm DIN EN 50 022
Sujección sobre guías de 35 mm DIN EN 50 022
<table>
<thead>
<tr>
<th>Bezeichnung</th>
<th>Description</th>
<th>Désignation</th>
<th>Omschrijving</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 Versandbeutel</td>
<td>15 Dispatch bag</td>
<td>15 Pochette d’accessoires</td>
<td>15 Toebehørenzakje</td>
</tr>
<tr>
<td>45 Lamellengitter</td>
<td>45 Louvre grille</td>
<td>45 Grille à lames</td>
<td>45 Ventilatori rooster</td>
</tr>
<tr>
<td>40 Microcontroller</td>
<td>40 Microcontroller</td>
<td>40 Microprocesseur</td>
<td>40 Microcontroller</td>
</tr>
<tr>
<td>70 Temperaturfühler</td>
<td>70 Temperature sensor</td>
<td>70 Sonde de température</td>
<td>70 Temperatuurvoeler</td>
</tr>
<tr>
<td>5/10 Ventilator</td>
<td>5/10 Fan</td>
<td>5/10 Ventilateur</td>
<td>5/10 Ventilator</td>
</tr>
<tr>
<td>1 Verdichter</td>
<td>1 Compressor</td>
<td>1 Compressor</td>
<td>1 Compressor</td>
</tr>
<tr>
<td>90 Verdampfer</td>
<td>90 Evaporator</td>
<td>90 Evaporateur</td>
<td>90 Verdamper</td>
</tr>
<tr>
<td>100 Verflüssiger</td>
<td>100 Liquefier</td>
<td>100 Condenseur</td>
<td>100 Condensor</td>
</tr>
<tr>
<td>25 Filtertrockner</td>
<td>25 Filter dryer</td>
<td>25 Assècheur de filtre</td>
<td>25 Filterdroger</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Beteckning</th>
<th>Descrizione</th>
<th>Descrición</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>15 Tillbehörsäcke</td>
<td>15 Sacchetto accessori</td>
<td>15 Bolsa de accesorios</td>
<td>15</td>
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<tr>
<td>45 Lamellgitter</td>
<td>45 Griglia a lamelle</td>
<td>45 Rejilla</td>
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</tr>
<tr>
<td>40 Microkontroll</td>
<td>40 Microcontrollore</td>
<td>40 Microcontrolador</td>
<td>40</td>
</tr>
<tr>
<td>70 Temperaturgivare</td>
<td>70 Sonda termosensibile</td>
<td>70 Sensor térmico</td>
<td>70</td>
</tr>
<tr>
<td>5/10 Fläkt</td>
<td>5/10 Ventilatore</td>
<td>5/10 Ventilador</td>
<td>5/10</td>
</tr>
<tr>
<td>1 Kompressor</td>
<td>1 Compressore</td>
<td>1 Compresor</td>
<td>1</td>
</tr>
<tr>
<td>90 Förandrare</td>
<td>90 Evaporatore</td>
<td>90 Evaporador</td>
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</tr>
<tr>
<td>100 Kondensor</td>
<td>100 Condensatore</td>
<td>100 Condensador</td>
<td>100</td>
</tr>
<tr>
<td>25 Torkfilter</td>
<td>25 Filtro essiccatore</td>
<td>25 Secador del filtro</td>
<td>25</td>
</tr>
</tbody>
</table>
Kennlinienfeld (DIN 3168)
Performance Diagram
Diagramme des lignes
characteristiques
Karakteristik
Karakteristik kurva
Diagramma delle curve
caratteristiche
Diagrama de potencia
冷卻能力線図

Qₚₚ – Dauer-Nutzkühlleistung (W)
Cooling output
Puissance frigorifique utilisée
Nuttig koelvermogen
Kylleffa
Potenza frigorifera utilizzata
Potencia útil de refrigeración

Tᵢᵢ = Schaltschrank-Innentemperatur (°C)
Enclosure internal temperature
Temperature à l'intérieur de l'armoire
Temperatuur in de kast
Temperatur inne i skåpet
Temperatura interna dell'armadio
de mando

Tᵤᵤ = Umgebungstemperatur (°C)
Ambient temperature
Température ambiante
Omgevingstemperatuur
Omgivningstemperatur
Temperatura ambiente
Temperatura ambiente

Kennlinienfeld SK 320310/3205100
(DIN 3168) (50 Hz)

Kennlinienfeld SK 320410/3206100
(DIN 3168) (50 Hz)