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1. User manual

This instruction manual contains information and instructions to enable the user to work safely, correctly and economically on the unit. Understanding and adhering to the manual can help one:

- Avoid any dangers.
- Reduce repair costs and stoppages.
- Extend and improve the reliability and working life of the unit.

PLEASE ENSURE TO USE THE RIGHT VERSION OF THE INSTRUCTION MANUAL SUITABLE FOR YOUR UNIT.

Intended use

The unit is to be used exclusively for the dissipation of heat from control cabinets and enclosures in order to protect temperature sensitive components in an industrial environment. To meet the conditions of use, all the information and instructions in the instruction manual must be adhered to.



General danger

Indicates compulsory safety regulations which are not covered by a specific pictogram such as one of the following.



High electric voltage

Indicates electric shock danger.



Important safety instruction

Indicates instructions for safe maintenance and operation of the unit.



Attention

Indicates possible burns from hot components.



Attention

Indicates possible damage to the unit.



Instruction

Indicates possible danger to the environment.

2. Legal regulations

Liability

The information, data and instructions contained in this instruction manual are current at the time of going to press. We reserve the right to make technical changes to the unit in the course of its development. Therefore, no claims can be accepted for previously delivered units based on the information, diagrams or descriptions contained in this manual. No liability can be accepted for damage and production caused by:

- Disregarding the instruction manual
- Operating error
- Inappropriate work on or with the unit
- The use of non-specified spare parts and accessories
- Unauthorised modifications or changes to the unit by the user or his personnel

The supplier is only liable for errors and omissions as outlined in the guarantee conditions contained in the main contractual agreement. Claims for damages on any grounds are excluded.

3. Safety instructions

Upon delivery the unit is already meeting current technical standards and can therefore be safely taken into operation. Only authorised personnel is allowed to work on the unit. Unauthorised personnel must be prohibited from working on the unit. Operating personnel must inform their superiors immediately of any malfunction of the unit.

Please note that before starting to work on or with the unit, a procedure must be carried out inside the cabinet on which the unit is to be mounted.

Before commencing work inside the cabinet, the control cabinet manufacturer's instruction must be read with regards to:

- Safety instructions.
- Instructions on taking the cabinet out of operation.
- Instructions on the prevention of unauthorised cabinet reconnection.

The electric equipment meets the valid safety regulations. One can find dangerous voltages (above 50 V AC or above 100 V DC)

- Behind the control cabinet doors.
- On the power supply in the unit housing.

The unit has to be operated according to the type plate and the wiring diagram, and must be protected externally from overloading and electrical faults via suitable protective devices.



Danger through incorrect work on the unit

The unit can only be installed and maintained by technical competent and qualified personnel, using only supplied material according to the supplied instructions.



Danger from electrical voltage

Only specialised personnel are allowed to maintain and clean the unit. The personnel must ensure that for the duration of the maintenance and cleaning, the unit is disconnected from the electrical supply.



Attention

Damage to the unit through the use of inappropriate cleaning materials. Please do not use aggressive cleaning material.



Instruction

Damage to the environment through unauthorised disposal. All spare parts and associated material must be disposed according to the environmental laws.

4. Application

The cooling unit is intended to be used as a complementary accessory to larger industrial equipment. The unit is used where heat needs to be dissipated from electrical control cabinets or similar enclosures in order to protect heat sensitive components. *It is not intended for household use.*

The unit has two completely separate air circuits which ensure that the clean cabinet air does not come into contact with the ambient air which may well be dirty or polluted.

Enclosure cooling units can dissipate large quantities of heat from sealed enclosures such as electrical enclosures into the ambient air and at the same time reduce the cabinet internal temperature to below that of the ambient air.

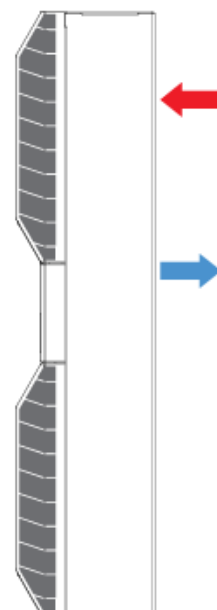
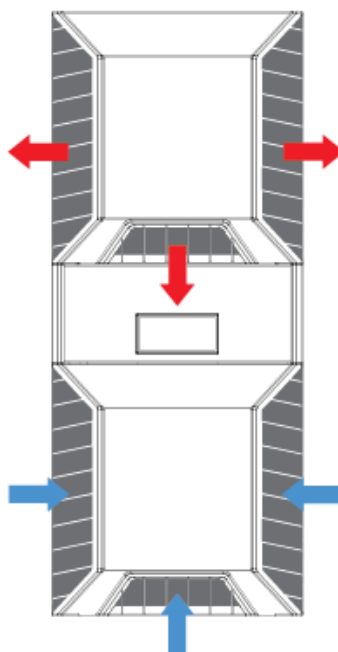
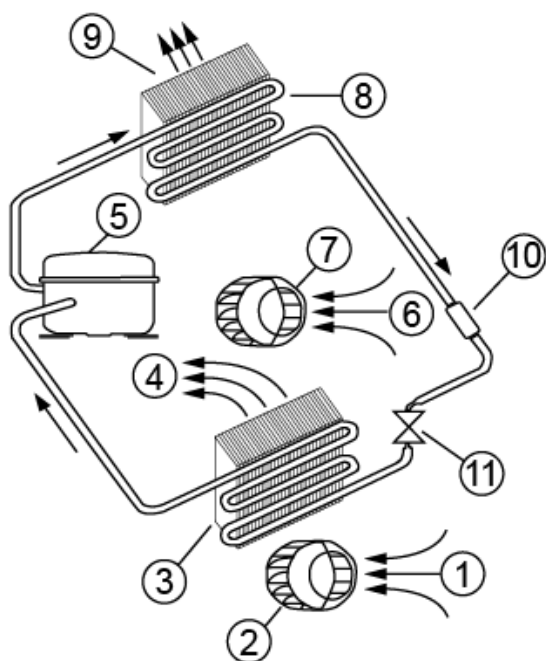
The unit can function without problems in extreme ambient conditions (e.g. dusty and oily air) with a standard operating temperature ranging between +10°C (50°F) and +60°C (131°F). Units can be ordered with an additional electrical cabinet heater. For the cooling capacities and environmental ratings please refer to the type plate data.

5. Functional principle

The cooling unit for enclosures works on the basis of a refrigeration circuit consisting of four main components: compressor, evaporator, condenser and expansion device.

The circuit is hermetically sealed and R 513A refrigerant circulates inside it (R 513A is chlorine free and has an Ozone Destruction Potential [ODP] of 0 and a Global Warming Potential [GWP] of 630). The compressor compresses the refrigerant (thus taking it to high pressure and high temperature), and pushes it through the condenser, where it is cooled by ambient air thus passing from the gas to the liquid state. At the liquid state it then passes through the capillary pipe being a much lower pressure the refrigerant arrives to the evaporator where it absorbs the necessary heat to change from liquid to gas state. The gas is then drawn back into the compressor completing the cycle.

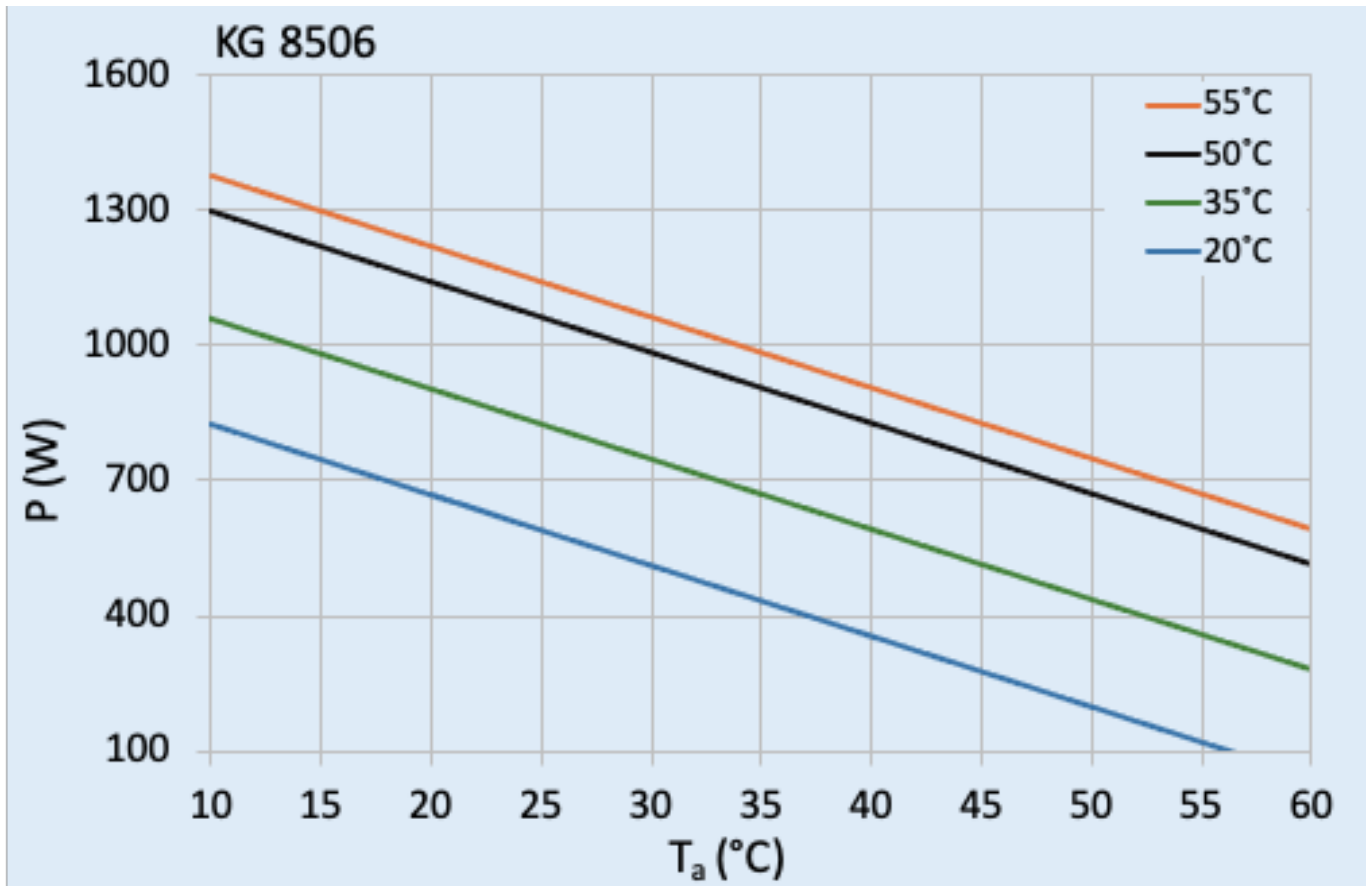
- | | |
|---------------------------|---------------------------|
| 1 Air intake cabinet side | 6 Air intake ambient side |
| 2 Radial fan cabinet side | 7 Air intake ambient side |
| 3 Evaporator | 8 Condenser |
| 4 Air outlet cabinet side | 9 Air outlet ambient side |
| 5 Compressor | 10 Filter dryer |
| | 11 Expansion device |



6. Technical data

| | |
|---|--|
| Order Number | 850610001 |
| Cooling capacity 95F/95F | 2285 BTU/hr @ 50 Hz 2320 BTU/hr @ 60 Hz |
| Cooling capacity 95F/122F | 1740 BTU/hr @ 50 Hz 1825 BTU/hr @ 60 Hz |
| EER 95F95F | 1.5 |
| Compressor type | Rotary piston |
| Refrigerant / GWP | R 513A / 630 |
| Refrigerant charge | 136 g / 4.8 oz |
| High / low pressure | 28 / 6 bar 406 / 88 psi |
| Air volume flow (system / unimpeded) | Ambient air circuit: 117 / 240 cfm Enclosure circuit: 72 / 106 cfm |
| Operating temperature range | 50°F - 140°F |
| UL temperature range | 50°F - 131°F |
| Mounting | Wall mounted / recessed |
| Housing Material | Mild steel, powder coated |
| Dimension H x W x D | 23.7 x 9.9 x 5.4 inch |
| Weight | 31 lbs. |
| Voltage / Frequency | 120 V ~ 50/60 Hz |
| UL Voltage / Frequency | 120 V ~ 60 Hz |
| Current 95F95F | 3.8 A @ 60 Hz |
| Starting current | 13 A |
| Max. current | 5.3 A |
| Nominal power 95F95F | 430 W @ 60 Hz |
| Max. power | 600 W |
| Fuse | 15 A (T) |
| Max circuit ampacity | 15 A |
| Short-circuit current rating | 5 kA |
| Rated current compressor | 3.7 A |
| Full load current fans | 0.4 A |
| Connection | 4 pole terminal block for power 5 pole terminal block for signals 3 pole terminal block for RS 485 |
| Ingress protection to EN 60 529 | Type 3, 3R, 12, 4 |
| Approvals | CE, cURus, cULus |

7. Performance graph



8. Mounting



The power supply rating on unit rating plate must comply with mains rating.



Always disconnect the power supply before opening the unit.

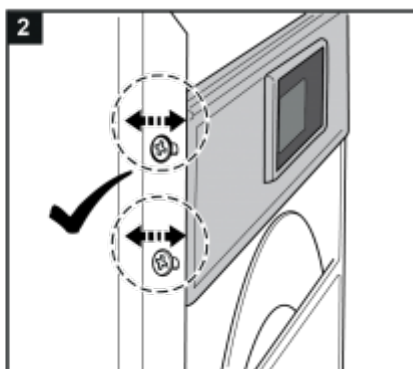
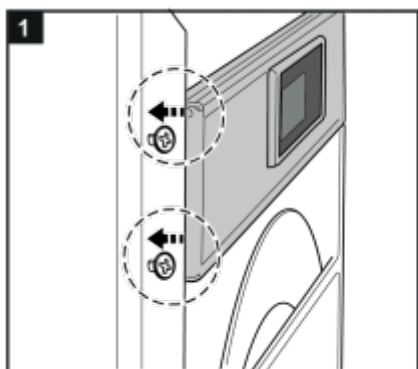
The heat load to be dissipated from enclosure should not exceed specific cooling output of the unit at any condition. At cooling unit selection always cater for a safety margin of at least 15% extra cooling output in the worst conditions.

Air inlets and outlets must be completely free from obstruction. Ensure that flows of air leaving and entering the cooling unit, internal and external, are not obstructed. It must also be ensured in accordance with UL, that the air outlet is not blowing air directly at an equipment operator. Should this be the case a barrier or duct shall be provided to redirect the airflow.

Cooling unit enclosure air suction hole must be installed in the highest possible point.. When installing the unit on a door ensure it can take the weight.

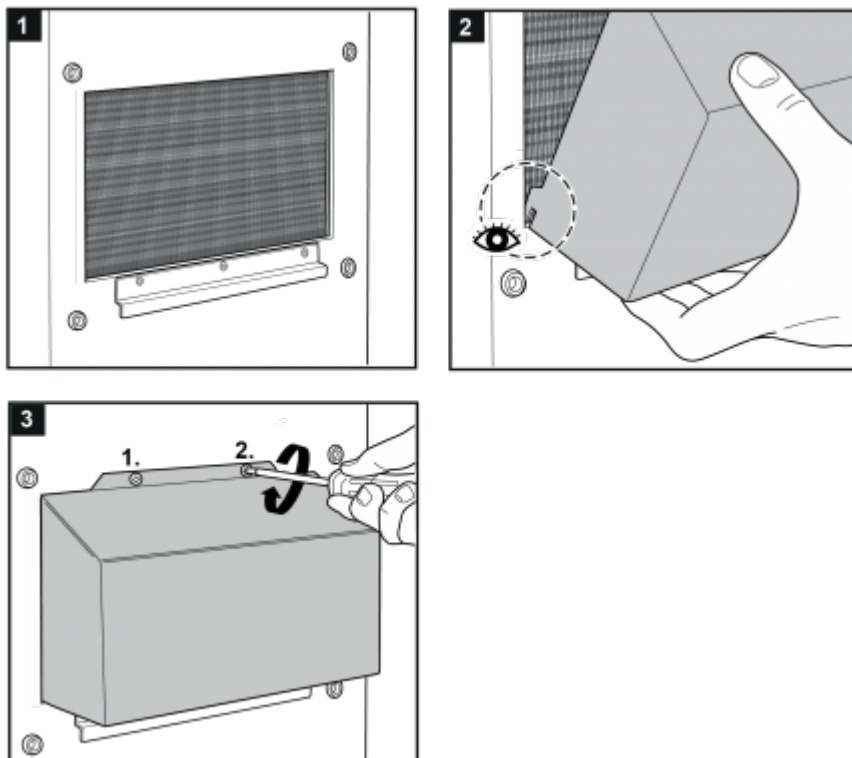
Before drilling the enclosure ensure the fixing elements and couplings will not interfere with the equipment inside the enclosure itself. Disconnect power before starting any work inside the enclosure.

If the unit is mounted in a recessed position, the controller bracket can be pulled according to the wall thickness of the enclosure outwards as per steps below.



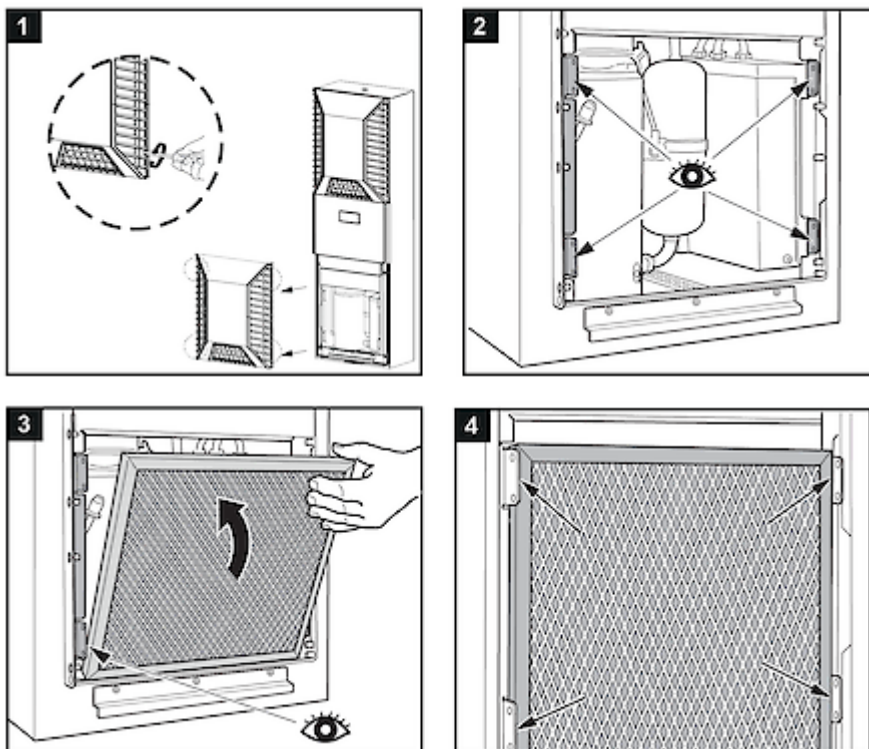
Cold air outlet duct:

When using a cold air outlet duct please follow the steps below.

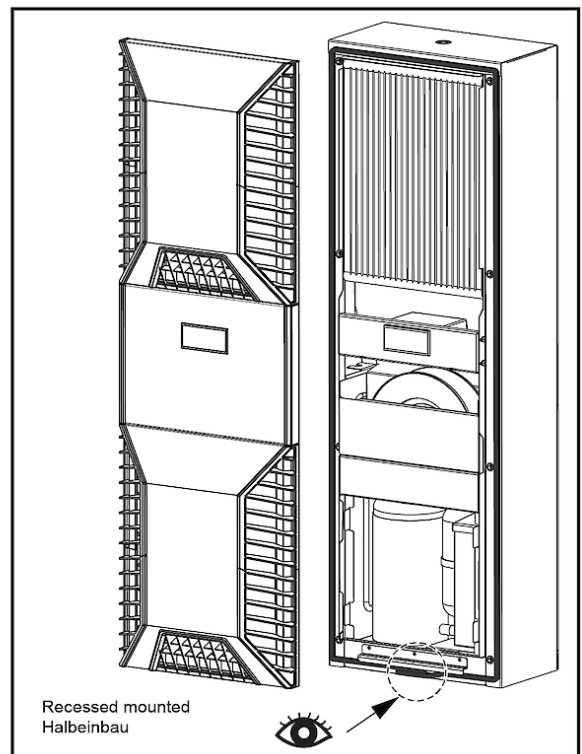
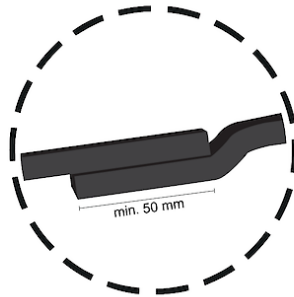
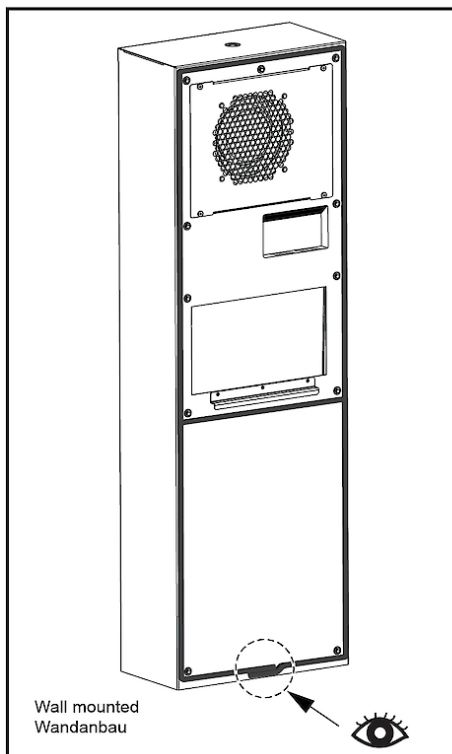


Filter installation: If you install / replace a filter please follow the steps below.

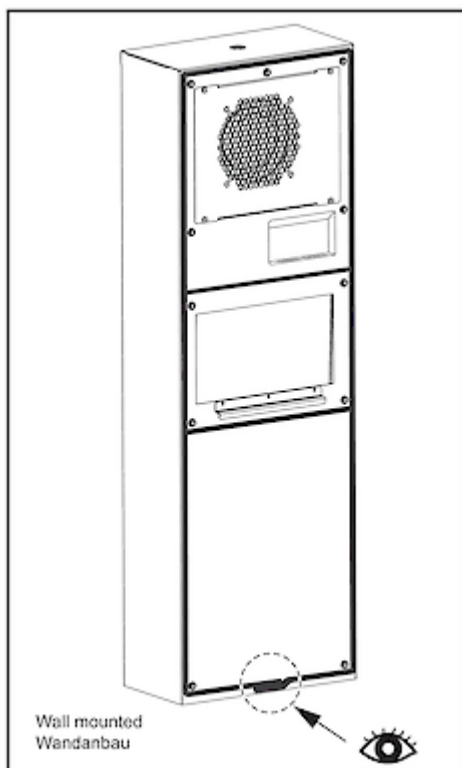
Loosen (do not completely unscrew) the 4 screws on the lower part of the front cover. Remove the bottom cover. Then proceed as shown. Once the aluminum filter is installed, reattach the cover.



Applying supplied tight tape



For KG 8562 only:



Condensate management:

High humidity and low temperatures inside the enclosure can lead to condensation on the evaporator. Condensate that flows back into the enclosure can damage sensitive control electronics. The integrated condensate evaporation of the cooling unit releases the condensate to the environment. If condensate formation is too great, additional condensate can drip into an overflow trough, which then drains off on the ambient side. In order to prevent the formation of excessive condensate, you should nevertheless:

- check the seals at regular intervals
- consider installing a door contact switch (order no. 3100001). This can prevent condensation forming when enclosure door is left open.

9. Condensate management

High humidity and low temperatures inside enclosures will cause condensation on the evaporator. Condensate that drips into the enclosure can permanently damage sensitive electronics and lead to malfunction.

SLIMLINE PRO cooling units have an automatic electrical condensate evaporation with a self-regulating PTC heating element. Condensate that forms on the evaporator is collected in a container in the internal circuit. Depending on the amount, it reaches the heating element and evaporates. The heating element is permanently on.

In the event of a malfunction, failure or excessive condensate formation, the condensate is drained out of the cooling unit from the front through the lower gill grilles. If this hose is removed, the cleaning drain **MUST** be open (see also point 17. Maintenance & Cleaning).

In order to prevent excessive condensation, you should still check the cooling unit and enclosure seals regularly and consider installing a door contact switch (order no. 3100001).

10. Mounting Principle



NOTES:

- Do not use within the first 15 minutes after installation!
- Use only the supplied mounting hardware.
- Tighten Screws to 4.5 Nm.
- Ensure the mounting surface does not warp after assembly and reinforce it if necessary.

- 1 M6 screws
- 2 M6 toothed washers
- 3 M6 flat washers
- 4 Enclosure
- 5 Mounting gasket
- 6 Lifting sling
- 7 Cover
- 8 M4 screws

Fig. 1 Recessed

Fig. 2 External

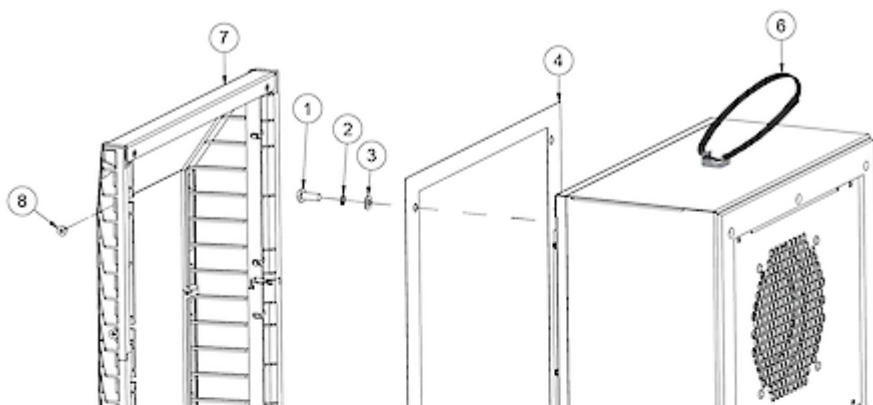


Fig. 1

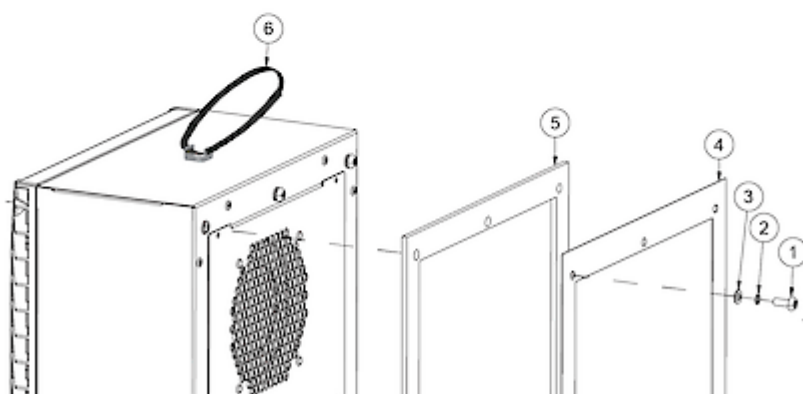


Fig. 2

12. Electrical connection



Caution, risk of death

Unconnected and / or faulty protective conductor systems can lead to dangerous voltages and electric shocks which can cause serious accidents.

Work on electrical connections may only be carried out by trained electrical engineers.

Door Switch

The unit can be switched ON and OFF via a door contact switch. When delivered the door contact terminals are bridged on the female connector. To connect the door contact switch remove the bridge and connect door contact switch. The contact must be closed when the cabinet door is closed.

Alarm Contacts

The alarm contacts have the following ratings:

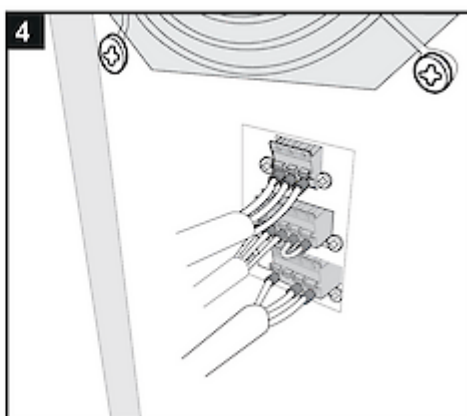
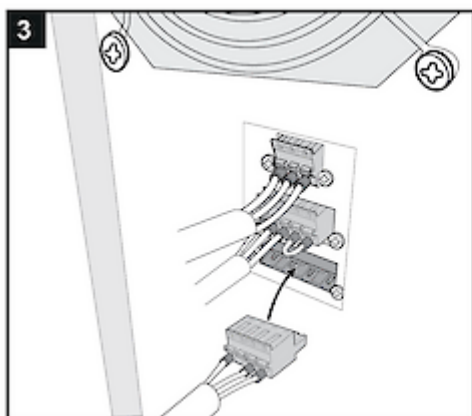
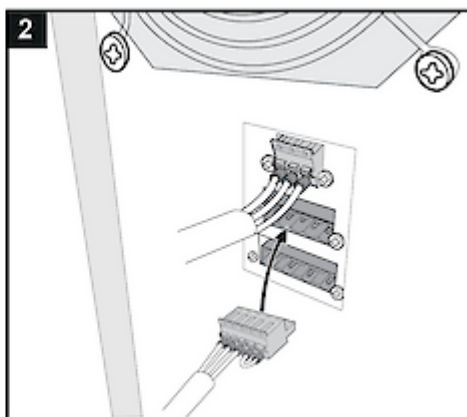
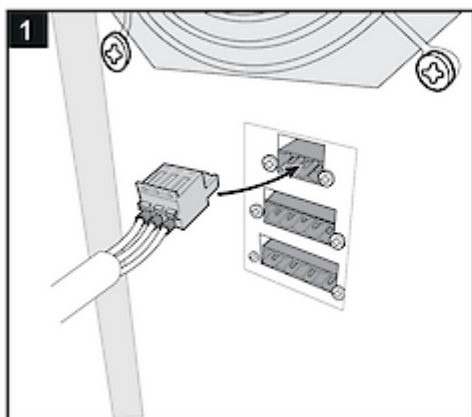
30 VDC, 2 A resistive, 6k cycles, 125 VAC, 0.5 A resistive, 6k cycles

These contacts are not suitable for fluorescent loads (neon lights, etc.) that use starters (ballasts) with phase shifting capacitors. Fluorescent lamps with electronic controllers or without phase shifting capacitors can be used, depending on the operating limits specified for each type of relay.

On power-up, connectors P2 and P3 will remain shorted for the first 5 seconds, this is not an alarm condition but part of the boot sequence.

SCCR

Refer to UL508A Supplement SB and Seifert Systems' document [Short Circuit Current Rating \(SCCR\)](#) on methods how to modify the available short circuit current within a circuit in the panel.



13. Controller

14. Wiring diagram

Power connector

| | |
|---|----|
| 1 | L1 |
| 2 | / |
| 3 | N |
| 4 | PE |

Signal connector

| | |
|---|--------------|
| 1 | Alarm (NC) |
| 2 | Alarm (COM) |
| 3 | Alarm (NO) |
| 4 | Door contact |
| 5 | Door contact |

RS 485 connector

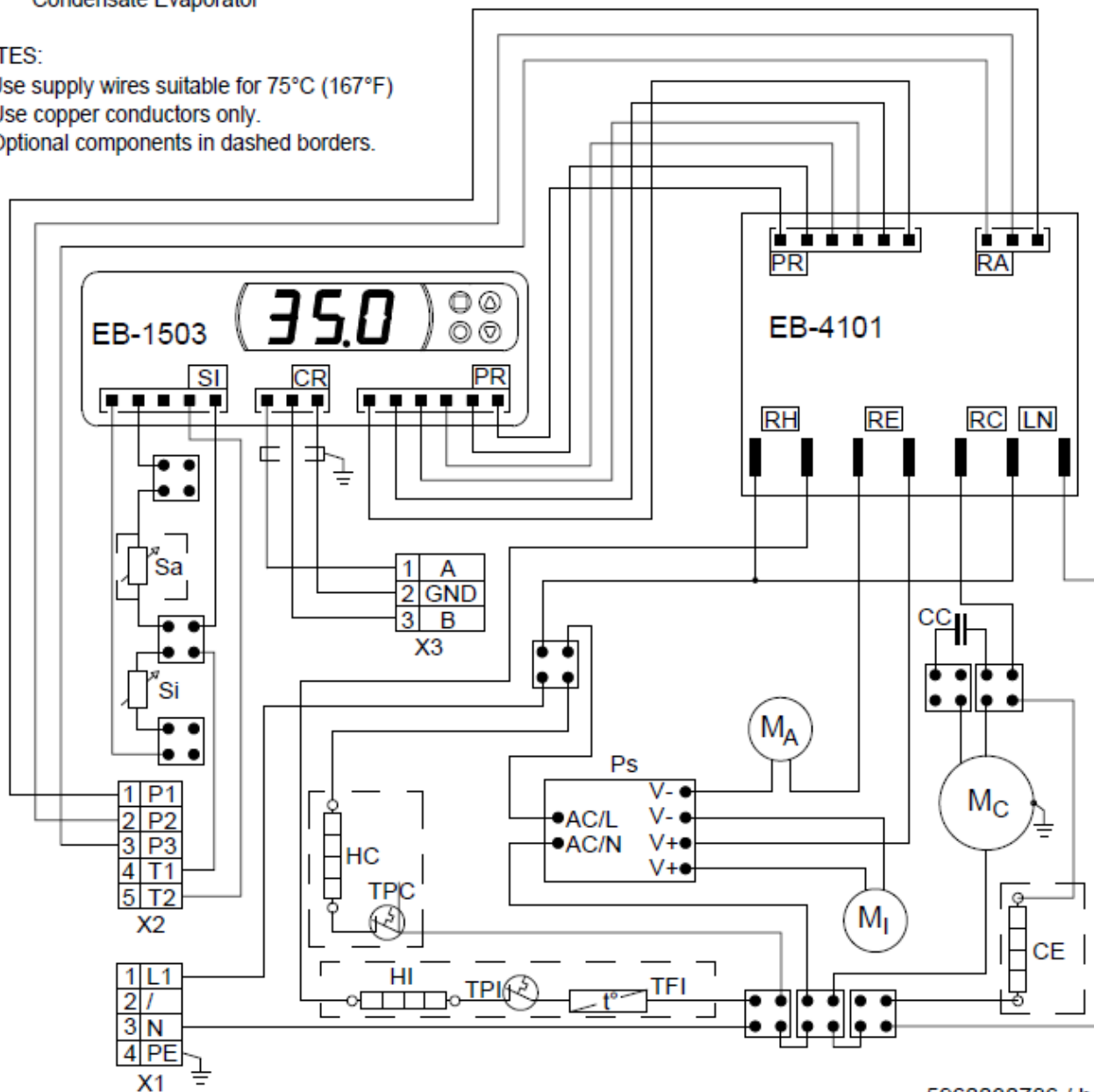
| | |
|---|-----|
| 1 | A |
| 2 | GND |
| 3 | B |

| State | Alarm contacts state |
|----------------------------|--------------------------------|
| Unit OFF | P1-P2 = Open P2-P3 = Closed |
| Unit ON | P1-P2 = Closed |
| - no alarm and door closed | P2-P3 = Open |
| - no alarm and door open | |
| Unit On | P1-P2 = Open |
| - alarm state | P2-P3 = Closed |

| | | |
|---------------------------|---------------------------------|----------------------------|
| X1: Power connector | X2: Signals/Alarms connector | X3: Master/Slave connector |
| MI: Internal fan | MA: Ambient fan | MC: Compressor |
| CC: Compressor capacitor | Si: Internal temp sensor | Sa: Ambient temp sensor |
| HI: Internal heater | HC: Compressor crankcase heater | Ps: 12VDC power supply |
| CE: Condensate Evaporator | | |

NOTES:

- 1) Use supply wires suitable for 75°C (167°F)
- 2) Use copper conductors only.
- 3) Optional components in dashed borders.



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15. Taking into operation

Attention!

The unit can be damaged by lack of lubricant. To ensure that the compressor is adequately lubricated the oil, which has been displaced during transport, must be allowed to flow back into it. The unit must therefore be allowed to stand for at least 30 min. before being connected to the mains and taken into operation. The unit / system must be protected with a MCB Type D or K.

Upon connection the internal and external fans will start working. The external fan turns off after 3 minutes, but the internal fan stays on. If the temperature inside the enclosure is higher than the set value of the controller both the compressor and external air fan start working. The cooling cycle will either stop once the air inside the enclosure reaches the set temperature minus hysteresis or once the minimum On-time is reached. The setpoint for the internal enclosure temperature is pre-set at 95°F.

The hysteresis is 3K, the minimum ON-time is 4 minutes, the minimum OFF-time is 3 minutes, for units with a cooling capacity of more than 1 kW it is usually 7 minutes.

16. Trouble shooting

| Failure | Condition | Cause | Solution |
|---------------------------------------|---|---|---|
| Unit doesn't cool | Internal fan does not work | Power not connected. | Verify power supply |
| | Internal fan works, external fan and compressor don't work | Enclosure temperature is below the control setpoint temperature | Verify values of parameter "Ct S" |
| | | Door switch contact is open | Verify door switch |
| | | Controller doesn't work | Replace controller |
| | Internal fan works, external fan and compressor don't work. Display shows alternating OFF and temperature | The sequence of the phases inside the power supply connector is incorrect | Change phases inside power supply connector |
| | External and internal fan work, compressor does not work | Compressor motor electrical failure | Have compressor replaced by qualified service technician |
| | | Capacitor for compressor failed | Replace capacitor |
| | Compressor works, external fan doesn't work | External fan needs to be replaced | Replace external fan |
| Enclosure temperature too high | Compressor and fans (external and internal) work all the time | Cooling unit undersized | Enclosure needs a cooling unit with higher capacity |
| | Compressor and external fan work in alternating mode (ON / OFF) | Thermal compressor protector triggered | Verify if ambient temperature is too high, clean condenser |
| | | Refrigerant leakage | Contact dealer/service center |
| Excessive condensate | Enclosure door open | Ambient air gets into the enclosure | Ensure door is closed, add a door switch and connect it to controller |
| | Enclosure door closed | Enclosure IP protection class is below IP54 | Seal all openings of the enclosure |
| | | Damaged or misplaced sealing strip | Repair sealing strip accordingly |

17. Maintenance & Cleaning



*Always switch power supply off before starting any maintenance on the unit.
Wait for 5 minutes for electrical components to discharge.*

The cooling unit is generally maintenance free and can be operated without filters in most environments.

If the ambient air is extremely dusty, we recommend installing filter mats (see accessories). These should be cleaned or replaced at regular intervals. Oily or greasy filter mats should be replaced immediately. Do not use a steam jet or high pressure to clean the filter mats. Do not wring out the filter mats. If the ambient air is extremely oily, we recommend the use of metal filters (see accessories). They can be cleaned with standard cleaning agents and reused. In addition the unit should have regular functional tests (approx. every 2,000 hours depending on the grade of ambient pollution).

Note: The use of filter mats / metal filters reduces the cooling capacity of the unit..

Disposal

The cooling unit contains refrigerant and small quantities of lubricating oil. Replacement, repairs and final disposal must be done according to the regulations of each country for these substances.

18. Transport & Storage

Malfunction due to transport damage

On delivery the carton box containing the unit must be examined for signs of transport damage. Any transport damage to the carton box could indicate that the unit itself has been damaged in transit which in the worst case could mean that the unit will not function.

The unit can only be stored in locations which meet the following conditions:


- temperature range: - 40°F to 158°F
- Relative humidity (at 77°F): max. 95 %
- The cooling unit should always be stored according to the installation position

Returning the unit

To avoid transport damage the unit should be returned in the original packing or in a packing case and must be strapped to a pallet. If the unit cannot be returned in the original packing please ensure that:

- A space of at least 30 mm. must be maintained at all points between the unit and the external packing.
- The unit must be shipped in the same position as it was mounted.
- The unit must be protected by shock resistant padding (hard foam corner pieces, strips or cardboard corner pieces).

19. Parts supplied / Spare parts / Accessories

| Description | QTY | Image |
|---|-----|--|
| Instruction manual | 1 | |
| CE Declaration | 1 | |
| M6 * 16 bolts | 8 |  |
| A6.4 toothed washers | 8 |  |
| A6.4 washers | 8 |  |
| 5 - pole terminal block for signals | 1 |  |
| 4 - pole terminal block for electrical connection | 1 |  |
| 3 - pole terminal block for RS 485 | 1 |  |
| Drain fitting | 1 |  |
| Foam tape | |  |

Spare parts:



| Description | Order no. |
|-------------------------------------|----------------|
| 1 Spare Part Kit - Compressor | SP-850600001-A |
| 2 Spare Part Kit - Ambient fan | SP-850600001-B |
| 3 Spare Part Kit - Internal fan | SP-850600001-C |
| 4 Spare Part Kit - Controller | SP-850600001-D |
| Spare Part Kit - Installation parts | SP-850600001-P |

Please always state the serial number of the cooling unit when ordering any spare parts. *Note:* only original spare parts should be used. For further information or queries kindly contact our service department on service.emea@seifertsystems.com

Accessories:

| Description | Order no. |
|-----------------------------------|------------------------------------|
| Washable aluminium filter | AC-8503/06-BF-1 |
| Cold air outlet duct | AC-8503/06-BZ-1 |
| External transformer 400/460 V 2~ | AC-8503/05/06-CS-1 |
| Gasket kit Type 4/4X | AC-8503/06-R-1 |
| Door switch contact | 3100001 |

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