Table of Content 862504001

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.

Conditions of 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 such as ground fault protection breakers.

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. Controller functions

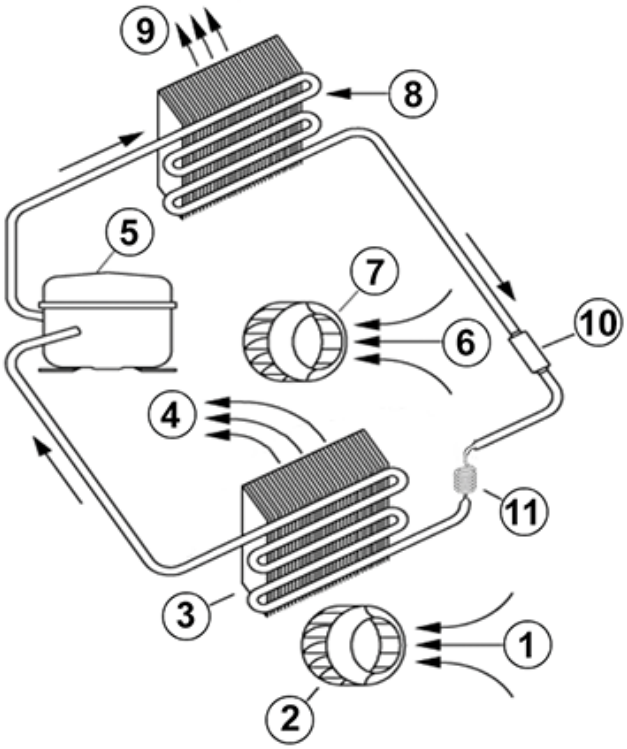
RS 485 Modbus Interface

Modbus is a serial protocol used for communication between a Master and a number of Slave Devices.The master requests information from the slaves by specifying the slave address, a read or write command and which register address it will read from or write to.Modbus can read or write a single register or multiple registers at the same time.

Register Name	Address	R/W	Sign	Factor	Comments
SET_NETWORK_COOLING_SETPOINT	0	RW	S	0.1	Cooling setpoint set from network
SET_NETWORK_HIGH_TEMP_ALARM_SETPOINT	1	RW	S	0.1	Alarm high setpoint set from network
SET_NETWORK_LOW_TEMP_ALARM_SETPOINT	2	RW	S	0.1	Alarm low setpoint set from network
SET_NETWORK_HEATER_SETPOINT	3	RW	S	0.1	Heater setpoint set from network
SET_ENABLE_FLAGS	4	RW	U	1	Customer enable flags (check enable flags sheet)
READ_CONTROL_SETPOINT	5	RO	S	0.1	Control setpoint being used by controller (network or pots)
READ_HIGH_TEMP_SETPOINT	6	RO	S	0.1	Alarm high setpoint being used by controller (network or pots)
READ_LOW_TEMP_SETPOINT	7	RO	S	0.1	Alarm low setpoint being used by controller (network or pots)
READ_HEATER_SETPOINT	8	RO	S	0.1	Heater setpoint being used by controller (network or pots)
READ_TEMP_POT	9	RO	S	0.1	Control setpoint potentiometer reading
READ_ALARM_POT	10	RO	S	0.1	Alarm high setpoint potentiometer reading
READ_HEATER_POT	11	RO	S	0.1	Heater setpoint potentiometer reading
READ_CONTROL_SENSOR	12	RO	S	0.1	Sensor reading used as internal temperature
READ_STATE	13	RO	U	1	Unit State (Check Unit State sheet)
READ_ALARM_STATUS	14	RO	U	1	Alarm status (Check Alarms sheet)
READ_OUTPUT_STATUS	15	RO	U	1	Output status (Check Output Sheet)
SET_UNIT_ADDRESS	40	RW	U	1	Sets / Reads unit address

5. Functional principle

The cooling unit for enclosures works on the basis of a refrigeration circuit consisting of four main components: compressor (1), evaporator (2), condenser (3) and expansion device (4).
The circuit is hermetically sealed and R134a refrigerant circulates inside it (R134a is chlorine free and has an Ozone Destruction Potential [ODP] of 0 and a Global Warning Potential [GWP] of 1430). 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 arrived 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.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6. Technical data

Order Number	862504001
Cooling capacity L35L35	2.55 kW
Cooling capacity L35L50	2.16 kW
Compressor	BLDC Rotary Piston
Refrigerant / GWP	R134a / 1430
Refrigerant charge	368 g / 13 oz.
High / low pressure	32 / 6 bar 464 / 87 psig
Temperature range	+10°C - +60°C
Air volume flow (system / unimpeded)	620 m³/h / 1,200 m³/h 710 m³/h / 850 m³/h
Mounting	External / Recessed
Housing Material	Mild steel, powder coated
Dimension H x W x D	1,350 x 395 x 210 mm
Weight	45 kg
Cut out dimensions	1315 x 365mm
Voltage / Frequency	115-250 V ~ 50/60 Hz
Current L35L35	9.2 A / 4.6 A
Starting current	16 A / 8 A
Max. current	12.6 A / 6.3 A
Nominal power L35L35	1.02 kW
Max. power	1.42 kW
Fuse	24 A (T) / 12 A (T)
Connection	5 pole terminal for signals 4 pole terminal for power 3 pole terminal block for RS 485 Modbus
Ingress protection	IP 55
Approvals	CE, RoHs

7. Mounting

Mounting preparations
Several points must be checked before the unit can be mounted. These checks must be made to ensure safety and the trouble-free operation of the unit. These checks must be carried out with absolute thoroughness to ensure that the unit works perfectly.

Check unit for transport damages
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.

Location and space requirements
The location of the cabinet must allow for sufficient air circulation to and from the unit.

Attention!
Damage to the unit through incorrect mounting. The unit must be mounted vertically. It is therefore also important to check, with the help of a spirit-level, that the cabinet is in a horizontal position. The max. deviation from the vertical or horizontal is 3 degrees.

Air apertures
To provide adequate air circulation and avoid temperature layers from forming, ensure that air inlet and air outlet are not partially or completely blocked by obstructions in the cabinet.

Sealing
To guarantee that the unit works perfectly ensure that:

- the control cabinet is completely sealed to min. IP54 according to EN 60529
- a good seal exists between the control cabinet and the unit
- if necessary the cabinet mounting surface should be reinforced

Danger from electrical voltage

Ensure that for the duration of the mounting operation the cabinet is disconnected from the electrical supply. Therefore take the cabinet out of operation, following the relevant instructions, before mounting work begins and take all precautions to prevent premature reconnection of the cabinet. When all mounting preparations are complete the actual mounting operation can commence.

Use of mounting template (not applicable for 19" rack mounted units)
The supplied mounting template helps to mount the cabinet air conditioner quickly. Please proceed as follows:

- Take the cabinet out of operation in the prescribed manner and secure it against unauthorized reactivation
- Fix the mounting template in the required position on the outer surface of the cabinet
- Drill the holes and cut the apertures in the required positions in the surface of the cabinet and remove the mounting template
- Stick the self-adhesive unit seals on the outer surface of the cabinet for externally mounting and on the inner surface of the cabinet for half in/half out mounting of the unit

The self-adhesive seals ensure a durable seal between the unit and the cabinet.

Mounting the unit

Only use the supplied material to mount the unit on the cabinet. Proceed as follows to secure the unit on the

cabinet:

Set the unit up on the cabinet

Screw the M6 hex. head screws together with the washers and locking washers into the M6 threaded rivets in the unit. The resistance of the earth connection between cabinet and cooling unit must be < 0.1 Ω.

Condensation drain pipe connection
The condensation drain is in the base of the unit. The condensation drain pipe should be attached as required e.g. in conditions of high humidity.

If a pipe is required it should be attached as follows:

- Remove the plastic stopper from the condensation drain in the base of the unit
- Attach a pipe connection to the drain outlet and fix the condensation pipe onto it
- Route the pipe to a drain or a collector

8. Electrical connection

Door Switch
The unit can be switched on and of 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.

9. Wiring diagram

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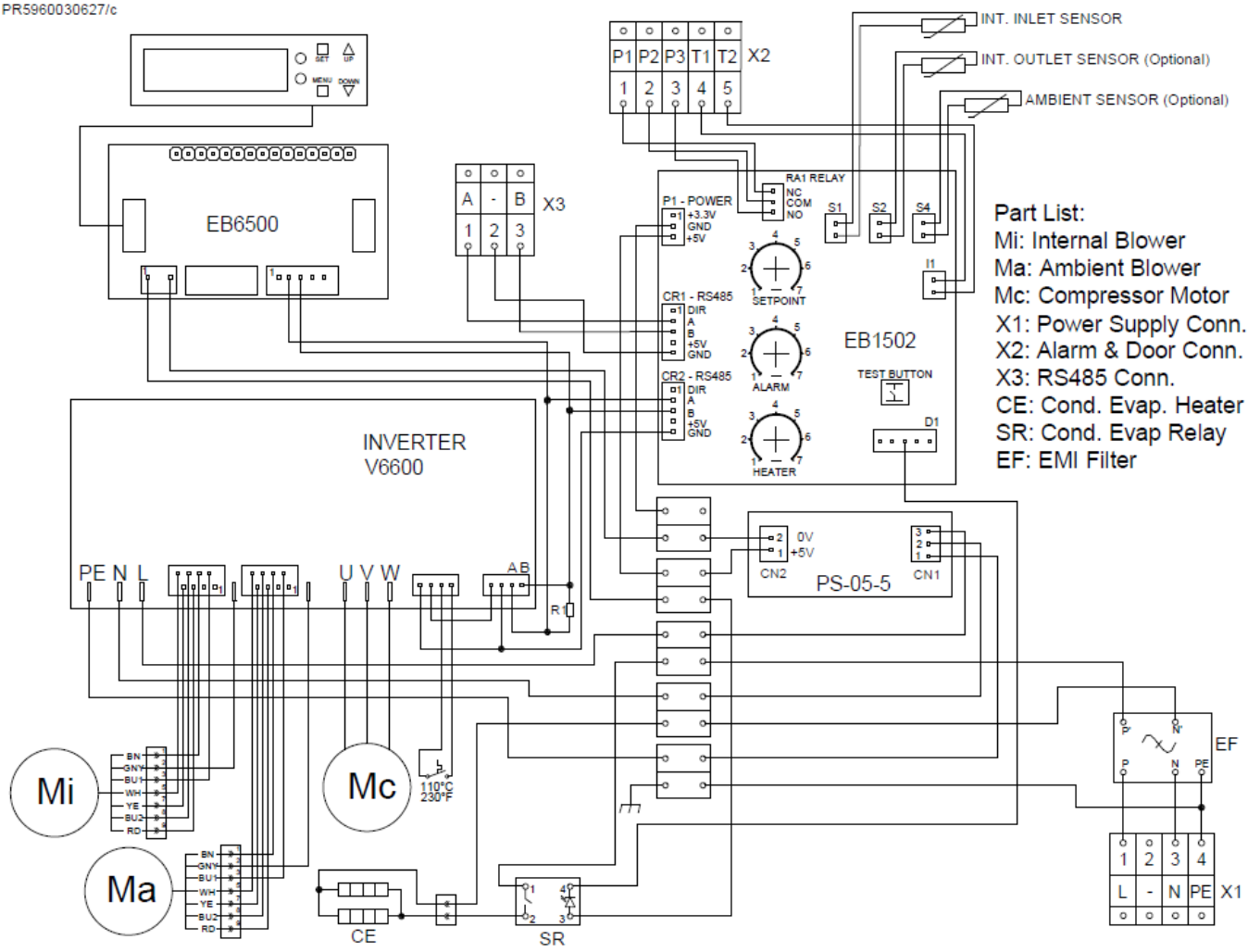

10. Taking into operation

The unit is controlled in relation to the cabinet internal temperature. A temperature sensor continuously measures the temperature of the air which is drawn into the unit from the cabinet. The required cabinet temperature for cooling operation can be set on the cabinet temperature software interface. When the cabinet temperature exceeds the set point the unit will enter cooling operation. The compressor speed is varied according to the reading taken by the sensor in such a way to operate in the most efficient manner and to reduce the switching on and off of the compressor. This helps to keep the temperature inside the control cabinet as constant as possible in order to reduce temperature induced stress on the components and fluctuating temperatures. The speeds of the ambient and internal fans are regulated for optimal performance of the unit. When the test button is pressed the compressor and the ambient fan will run for 180 sec. regardless of the cabinet temp. If the test button is pressed during the 180 sec. test-run, the unit will return to its normal operational mode.Condensation formed inside the unit is drained from the bottom of the unit.

The unit / system must be protected with a MCB Type D or K.

11. Trouble shooting

Failure	Reason	Troubleshooting
Unit doesn't start	No power supply	Check the electrical connection
	Cabinet temperature is lower than set point	Wait until the set point is reached. The unit will then start automatically. If the set point of the cabinet temperature is too high, reduce it accordingly.
	Door contact is open	Close the cabinet door or bridge the door contact.
Unit doesn't cool	Compressor is faulty	Please get in contact with one of our service partners.
	The circuit breaker of the compressor got activated	Check the cooling capacity. In case the cooling capacity is too small, install the unit at a different place or add another cooling unit.
	The evaporator and / or condenser are extremely dirty.	Evaporator and /or condenser need cleaning
Evaporator is iced up	Not enough refrigerant due to leaking cooling circuit	Refill refrigerant and re-seal cooling circuit. Please contact the manufacturer.
	Ambient temperature is much lower than the stated operating temperature range	Install the unit at a different place. The ambient temperature must be within the stated operating temperature range.
	The control cabinet is not sealed properly.	The control cabinet needs re-sealing.
	Fan or fan capacitor on the cold side are faulty	Replace fan and/or fan capacitor.
Too much condensate	Cabinet door not closed	Ensure that cabinet door is closed properly
	The cabinet is not sealed properly	The control cabinet needs re-sealing.
	Incomplete gasket between cooling unit and cabinet	Please check gasket
Uneven air circulation inside the cabinet	Cabinet air intake and air outlet are blocked	Ensure that both are unblocked and that air can circulate
	Cabinet volume too big for this cooling unit	Check the cooling capacity. In case the cooling capacity is too small, install the unit at a different place or add another cooling unit.
Condenser fan doesn't work	Fan is faulty	Replace fan
Evaporator fan doesn't work	Fan is faulty	Replace fan

Note: Before you contact one of our service partners please press the test button of the controller. Like this the fans and the evaporator are getting switched on independent of the internal cabinet temperature. In cases of emergency you can contact us under one of the tel. numbers stated on the last page.

12. Maintenance & Cleaning

The cooling unit is generally maintenance free and can be operated without filters in most environments. For units with filters these should be checked, cleaned and if necessary replaced on a regular basis. In addition the unit should have regular functional tests (approx. every 2,000 hours depending on the grade of ambient pollution).

13. Maintenance

Attention! Only use original replacement parts when repairing the unit. This ensures that the unit functions perfectly and remains safe. For further information and spare part ordering please contact us by email

under service@seifertsystems.com

Radial fan replacement: The normal working life of the fan is app. 40,000 working hours under normal conditions. Should still need to change the fan, please take note of the following:

Disconnect the unit from the mains

- Remove the unit cover
- Remove the fixing screws from the relevant fan
- To replace the cold side fan the PC-board must also be removed
- Disconnect the fan cable from the PC-board
- Mount a new radial fan
- Replace the 4 fan fixing screws
- Connect the fan cable to the PC-board and replace the board if necessary

14. 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°C to + 70°C
- relative humidity (at 25°C): max. 95 %

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 firmly fixed in the packing.

The unit must be protected by shock resistant padding (hard foam corner pieces, strips or cardboard corner pieces).

15. Parts supplied

1 x Cooling unit with individual packaging
1 x Plastic bag containing:
1 x Instruction manual
1 x CE declaration of conformity
12 x M6*16 bolts
12 x A6.4 washers
12 x A6.4 toothed washers
2 x Screw M4*12
1 x Strain relief bracket
1 x Cable gland M16*1.5
1 x Lock nut M16*1.5
1 x Cable gland M20*1.5
1 x Lock nut M20*1.5
1 x M8*12 Lifting hook
1 x O-ring

1 x Drain socket
1 x Foam tape
1 x 4 - pole terminal block for electrical connection
1 x 5 - pole terminal block for signals

Seifert Systems GmbH	**Seifert Systems Ltd.**	**Seifert Systems AG**	**Seifert Systems Inc.**	**Seifert Systems Pty Ltd.**
Albert - Einstein Str. 3	HF09/10	Wilerstrasse 16	75 Circuit Drive	105 Lewis Road
	Hal-Far Industrial Estate		North Kingstown	Wantirna South
42477 Radevormwald	Birzebbuga, BBG 3000	4563 Gerlafingen	RI 0285	3152 Victoria
Deutschland	Malta	Switzerland	USA	Australia
Tel. +49 2195 68994-0	Tel. +356 2220 7000	Tel. +41 32 675 35 51	Tel. +1 401-294-6960	Tel. +61 3 98 01 19 06
Fax +49 2195 6899420	Fax +356 2165 2009	Fax +41 32 675 44 76	Fax +1 401-294-6963	Fax. +61 3 98 87 08 45
info.de@seifertsystems.com	info@seifertsystems.com	info.ch@seifertsystems.com	info.us@seifertsystems.com	info@seifertsystems.com.au