

Instruction manual

Outdoor cabinet air conditioner and ventilation unit

VC-2900E



	Index	
1	Introduction	4
1.1	Seifert mtm Systems	4
1.2	Outdoor cabinet air conditioner	4
1.3	Legal regulations	5
1.4	Instruction manual	6
2	Safety instructions	9
2.1	Primary safety instructions	9
2.2	General safety instructions	11
3	Technical information	12
3.1	Concise unit description	12
3.2	Functional principles	12
3.3	Description of operation	12
3.4	Pictorial description	14
4	Technical data	15
4.1	Performance characteristics	16
4.2	Circuit diagram	17
5	Mounting and operational start-up	18
5.1	Mounting preparations	18
5.2	Mounting instructions	19
5.3	Electrical connection	19
6	Taking into operation	22
7	Maintenance and cleaning	23
7.1	Unit service and cleaning	23
8	Maintenance	24
8.1	Radial fan replacement	24
9	Transport and storage	25
9.1	Storage conditions	25
9.2	Returning the unit	25
10	Parts supplied	25
11	Contacts	26

EG – Declaration of conformity MRL 2006/42/EC Annex II A

The undersigned manufacturer – especially the company authorized person – the company

Seifert mtm Systems (Malta) Ltd.
HF09/10, Industrial Estate,
Hal Far, BBG3000
Malta
Telephone: (+356) 21659082
Telefax: (+356) 21659083

hereby certifies that the following installation

control cabinet air conditioner

Model: VC-2900-E

Type: _____ (see data label)

Year of manufacture: _____ (see data label)

Serial number: _____ (see data label)

described in the documentation attached here to conforms to the applicable directives as are:

EU Machinery Directive	2006/42/EC
EU Pressure equipment directive	97/23/EC, Art.3 (3)
EU Low voltage equipment directive	2006/95/EC

National Standard Specifications:

EN ISO 12100; EN 294; DIN 3168 <4.5>; EN 14511-4 <4.6>
EN 378; ENV 50205.
EN 60335-1; EN 60335-2-40;

Note:

The above installation is not subject to the requirements set forth in Appendix IV applicable to machines embodying Special Risks and Dangers as defined in the EU Mechanical Engineering Directive 89/392/EEC, following which relevant documentation will remain in the custody of the manufacturer.

Malta, 10.09.2010

Location, Date

Signature
Marco Seifert, QA

Signature
Keith Zammit, R&D

1. Introduction

1.1 Seifert mtm Systems

Seifert mtm Systems designs and manufactures thermal management systems including heat exchangers, air conditioners, fan trays, controllers, heat sinks and thermoelectric products.

1.2 Outdoor cabinet air conditioner and ventilation unit

1.2.1 Type of unit

The unit is an outdoor electrical enclosure air conditioner and ventilation unit.

- Year of manufacture (see data label)
- Model
- CE- Certification

Manufacturer:

Seifert mtm Systems Malta Ltd
HF 9/10, Ind. Est.,
Hal Far, BBG 3000-Malta

1.2.2 Conditions of use

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

1.2.3 Misuse

The unit must only be used as described under "Conditions of use." Any other utilization will be considered as misuse.

Examples of misuse are:

- Household use.
- Air-conditioning other domestic areas.

Misuse can lead to:

- Death or personal injury.
- Damage to the unit.
- Other material damage.

1.3 Legal regulations

1.3.1 Liability

The information, data and instructions in this instruction manual are current at the time of printing. 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 in this manual. No liability can be accepted for damage and production disruption caused by:

- Operations outside of the instruction manual.
- Operator errors.
- Unauthorized work on the unit.
- The use of non-specified spares and accessories.
- Unauthorized modifications or changes to the unit by the user or his personnel.

Seifert mtm Systems is only liable guarantee circumstances in this contract agreement. Claims for damages on any grounds are excluded.

1.3.2 Warranty

Warranty claims must be made immediately after the fault is discovered to Seifert mtm Systems, Inc. The warranty is valid for one years from date of delivery provided the unit has been correctly used. The warranty covers free repair at Seifert mtm Systems, RI, or at our choice, the free replacement of units returned to us pre-paid. When returning units the instructions contained in paragraph 10.2 must be followed.

The warranty is void in cases of:

- Misuse.
- Unauthorized work on or with the unit.
- Unspecified use of materials, fluids, gases or electrical supply.
- Use of non-specified spares and wearing parts.

1.3.3 Copyright

This manual and all enclosed documents are protected by copyright. Copies of the manual, in whole or part, or information as to the utilization of its contents must not be passed on to third parties without the express permission Seifert mtm Systems. Litigation for damages can be made in cases of contravention. We reserve all rights for the full exercise of industrial copyright protection.

© Copyright 2010, Seifert mtm Systems

1.4. Instruction manual

This instruction manual contains information and instructions to enable the user to work safely, correctly and economically with and on the unit. Only when the manual is understood and abide by can:

- Danger be avoided.
- Repair costs and stoppages reduced.
- Reliability and working life of the unit can be improved and extended.

1.4.1 Definitions

The main vocabulary used in this manual can be defined as follows:

Unit: Refers to the enclosure air conditioner

User: is every actual or legally entitled person who uses the unit or who can entitle others to do it.

Specialist personnel: a specialist is someone who due to training, knowledge and experience has the judgment necessary to carry out his work in a safe and correct manner. Specialist personnel are fully acquainted with safety regulations, standards, relevant regulations and working conditions.

Residual danger: refers to danger or risks which are not apparent when using the unit. For example:



- High electric voltage within the cabinet.



- Burns from hot components after the unit has been switched off.



- The cooling circuit is pressurized. There are moving parts inside the unit.

1.4.2. Pictograms and symbols contained in the text

In order to emphasize important information the following symbols and pictograms have been used in this manual.

Symbols:

- indicates specific points in a list
 - indicates separate maintenance and operating steps

Pictograms:



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 damages to the unit.



Instruction

Indicates possible danger to the environment.

1.4.3. Structure and formation of the safety instructions

All safety instructions in this manual have a standardized structure. A safety instruction is made up of several parts:

- A pictogram.
- A signal word denoting the degree of danger.
- An instruction denoting the type of danger.
- An instruction for defense against the danger

The following signal words indicate the degree of danger:

Danger: Indicates an imminent danger for person's possible consequences: death or serious injury

Attention: Indicates possible personal or material danger.

Instruction (notice): Indicates a situation which could lead to damage to property or the environment.
Possible consequences: damage of the unit itself, adjacent plant or the environment.

2. Safety instructions

2.1. Primary safety instructions

When delivered the unit meets current technical standards and can be safely taken into operation.

However, danger could originate when:

- Unauthorized or untrained personnel work on or with the unit.
- The unit is misused.

This could result in danger to persons, the unit and other property or material of the user.

2.1.1. Instruction manual

The submitted instruction manual serves to enable the user to work safely and correctly with and on the unit. It contains safety instructions which must be followed. In addition to the primary safety instructions contained in this chapter there are specific safety instructions in the other chapters. These instructions warn of dangers concerned with specific operations and must also be followed.

The instruction manual must:

- Be read and understood by everyone working on or with the unit before the work commences.
- Always be held available in a specific location on the unit.
- Be complete and in readable condition.

If the operator does not fully understand the instruction manual advice must be obtained from a specialist before work commences either;

- In the works where the unit is located or,
- At Seifert-mtm Systems

Before a dangerous situation develops.

2.1.2. User obligations

The user has many obligations to fulfill on behalf of his personnel.

The user is obliged:

- To update the manual with instructions contained in national safety and environmental regulations.
- To inform the personnel of all relevant instructions, regulations and laws.
- To ensure that all relevant instructions, regulations and laws are observed.
- To clearly delegate responsibility for operation, maintenance, cleaning and repair of the unit.
- To ensure that the delegated duties are carried out.
- To ensure that the personnel have read and understood the instruction manual especially the chapter on safety.

Instruction manual

2.1.3 Personnel

Only specialists are allowed to work on the unit. Unauthorized personnel must be prohibited from working on the unit.

Operating personnel must inform their superiors immediately if any malfunction on the unit becomes apparent.

2.1.4 The Outdoor cabinet air conditioner and ventilation unit

When working on or with the unit the following must be observed:

- Applicable current state and local laws and regulations
- The current accident prevention regulations(BGV)
- Related regulations
- The current environmental conservation regulations

The unit must only be used when in perfect working condition. When malfunctions or errors become apparent the unit must be immediately taken out of operation and the responsible personnel informed.

The unit can only be taken back into operation when its perfect working condition has been restored.

2.1.5. Safety instructions

Please note that before starting work on or with the unit certain procedures must be carried out inside the cabinet on which the unit is mounted. These are among others mounting and taking the unit in or out of operation.

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

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

2.2. General safety instructions

The electric equipment meets the valid VDE- and accident prevention and safety regulations.
Dangerous voltage exists (above 50 V AC or above 100 V DC)

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

Only use original fuses with the specified current. Switch the unit off immediately, if the electric power supply is interrupted.

Danger:

Danger from electrical voltage.

Only specialized 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.

The unit must therefore be taken out of operation according to instructions before work commences.



Danger

Danger through incorrect work on the unit.

Only specialized personnel are allowed to maintain and clean the unit. Regular maintenance and cleaning intervals must be kept to in order to ensure that the unit remains in perfect working condition and has a long working life.



Attention

Damage to the unit through the use of inappropriate cleaning materials.

Please do not use aggressive cleaning materials.



Instruction

Damage to the environment through unauthorized disposal.

All spare parts and associated materials must be disposed of with due regard for the environment.

The relevant environmental laws and regulations must be adhered to.



3. Technical information

3.1. Concise unit description

The air conditioner and ventilation unit is used where heat needs to be dissipated from outdoor cabinets in order to protect heat sensitive components.

During air conditioning operation, 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. In air conditioning mode, the unit can dissipate large quantities of heat from outdoor cabinets into the ambient air and at the same time reduce the cabinet internal temperature to below that of the ambient air.

During ventilation (economizer) mode operation, ambient air is drawn into the enclosure through a filter. Warm air from the enclosure is released into the environment.

The evaporator fans are provided as part of the air conditioner and are DC powered for battery and emergency operation purposes. The refrigeration function and condenser fan is AC powered.

The outdoor cabinet air conditioner can function without problems in extreme ambient conditions (e.g. dusty and/or high air temperature up to 125°F / 52°C).

3.2. Functional principles

The air conditioning mode of the unit functions on the principle of the compression refrigerator. The main components are: refrigerant compressor, condenser, expansion valve and evaporator. These four components of the refrigerant plant are connected with each other by pipes to form a hermetically sealed system in which the refrigerant (R134a) circulates. R134a (C₂H₂F₂) is chlorine-free and has an ozone destruction potential (ODP) of 0.

In ventilation mode operation, a motor operated flap inside the air conditioner moves so as to create ambient intake and exhaust passages.

3.3. Description of operation

When the unit is in air conditioning operation the compressor draws in refrigerant vapor from the evaporator. The necessary energy needed to vaporize the refrigerant is taken from the cabinet air which flows through the evaporator. This cools the cabinet air which is then blown back into the cabinet by a fan. The refrigerant vapor, which has been drawn in by the compressor, is pumped under high pressure into the condenser. There the heat which has been taken from the evaporator and compressor is dissipated in the ambient air which flows through the condenser. This condenses the refrigerant and the resulting heat is again passed on to the atmosphere. The expansion valve reduces the refrigerant to the necessary evaporator pressure. The introduction of heat evaporates the refrigerant. The evaporator is designed to fully evaporate the refrigerant. The refrigerant circuit is then complete.

When the unit is in ventilation mode, ambient air is drawn through an air filter at the start of the ambient intake passage. It is circulated into the cabinet by fans. The warm air is then released out of the enclosure through the exhaust passage.

3.3.1 Unit controls

The unit is controlled in relation to the cabinet internal air temperature and the ambient temperature. Sensors constantly measure the cabinet air temperature as it is drawn into the unit from the cabinet and the ambient air temperature as it is drawn from the environment. The controller decides on the mode of operation depending on the temperatures, their differential and their change direction and rate. The controller chooses the ideal operation mode to conserve energy, maintain a stable enclosure temperature and reduce component stress.

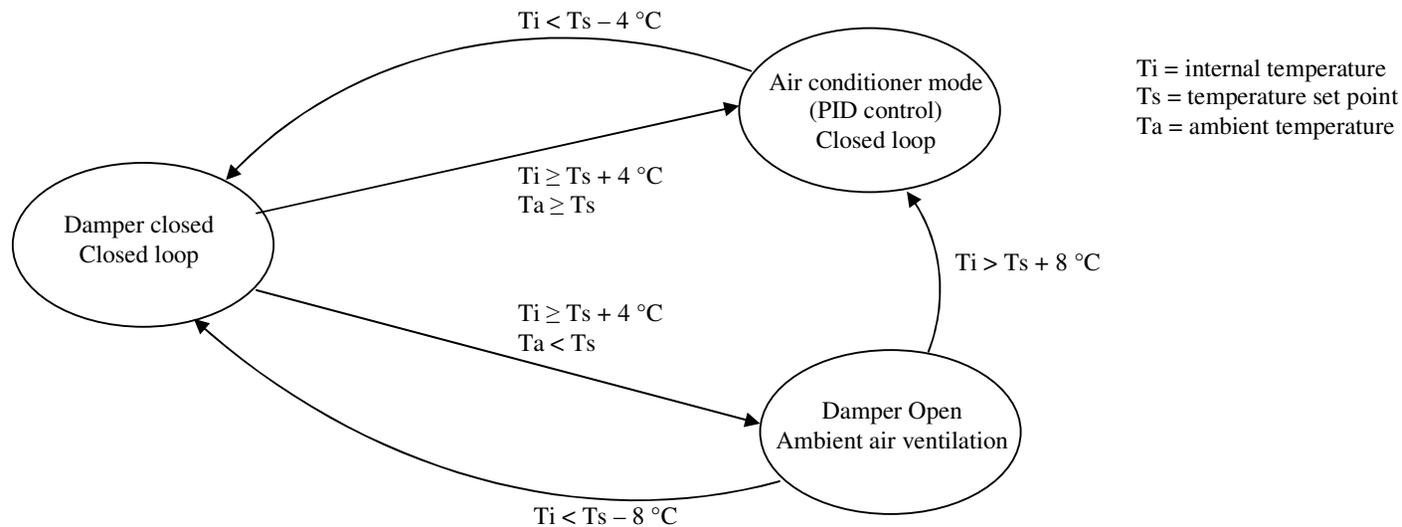
When the enclosure temperature is higher or equal than the enclosure temperature set point by 4 deg C and the ambient temperature is lower than the temperature set point, the ambient ventilation circuit is opened and the internal fans speed is controlled to maintain the required enclosure temperature. If the internal temperature is higher or equal than the enclosure temperature set point by 4 deg C and the ambient temperature is higher or equal than the temperature set point then the unit switch to the air conditioner mode, the fan internal fan will run at constant speed and the compressor will modulate its speed according to the load until the internal temperature set point is satisfied.

If the unit is in economizer mode and has the ambient ventilation circuit is open and the internal temperature is higher than the temperature set point by 8 deg C the ambient circuit will close and the units will switch to the air conditioner mode, note that there is a 2 minutes minimum time for the economizer mode. If the instead the internal temperature is 8 deg C below set point then the ambient air circuit will just close.

If the unit is in air conditioner mode and the internal temperature is less than the temperature set point by 4 deg C then the compressor is commanded to stop and the fans will modulate their speed to maintain temperature set point.

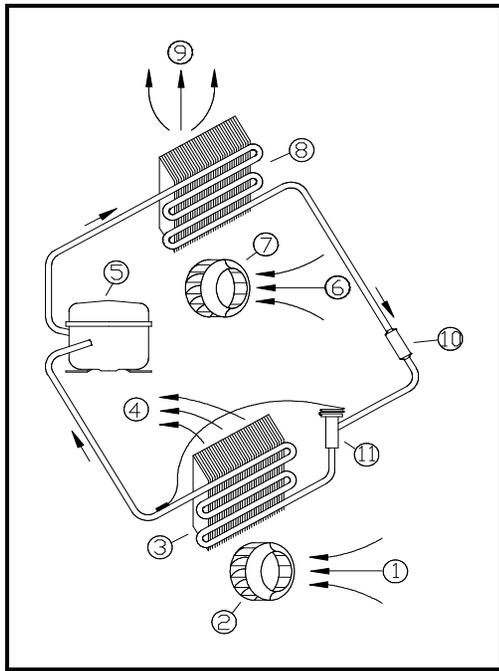
3.3.2 Unit control flow chart

REFER TO THE CONTROL SYSTEM MANUAL FOR DETAILED OPERATION AND PARAMETER ADJUSTMENT.



3.4. Pictorial description

The pictorial description shows the main components of the control cabinet air conditioner refrigeration circuit in pictorial form to aid recognition and orientation. The individual components are numbered.

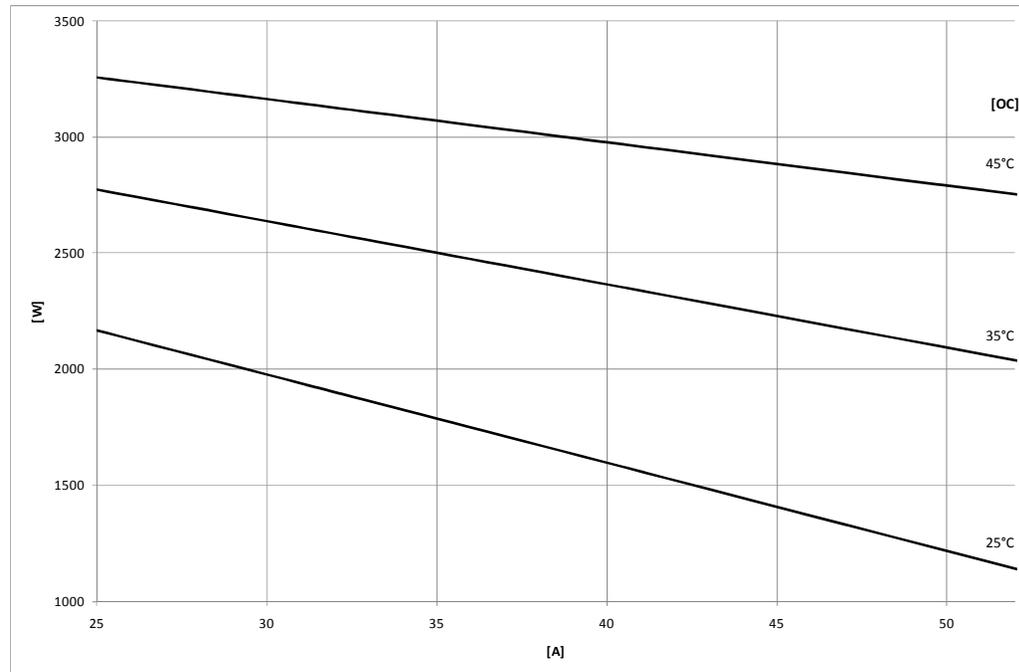


1. Air intake cabinet side.
2. Radial fan cabinet side.
3. Evaporator.
4. Air outlet cabinet side.
5. Variable speed compressor
6. Air intake ambient side.
7. Radial fan ambient side.
8. Condenser.
9. Air outlet ambient side.
10. Filter dryer..
11. Expansion valve.

Fig: Diagram of outdoor cabinet air conditioner refrigeration circuit

4.		Technical data	
		VC-2900E	
Housing material/Surface finish	Sheet Metal Steel/Powder coated		
Housing dimensions	1470 x 500 x 400 mm		
Weight	74kg		
Operational temp. range	-30°C to +52°C		
Protection rating	IP55 / IP24 (In / Out)		
Kühlleistung nach DIN 3168 L35 L35 – cooling performance to installed in outdoor cabinet-Puissance frigorifique Conform DIN 3168 L35 L35			
Maximum Cooling capacity @ 35°C/35°C (L35L35)	2500 W		
Compressor	Variable Speed Rotary piston		
Refrigerant	R 134 a		
Refrigerant load	1400g		
Max. working Pressure	PS 40 / PO 37bar		
Electrical data	AC	DC	
Voltage	230 VAC (+/- 10%)	48 VDC (36-57)	
Frequency	50 / 60 Hz	-	
Rated current	9 A	3 A	
Max. start-up current	10 A	3 A	
Power consumption when cooling	1900 W	145 W	
Fuse rating	16 A T	10 A T	
Certifications			

4.1. Performance characteristics



W = Cooling Capacity [W]
A = Ambient Temperature [°C]
OC = Outdoor Cabinet Temperature [°C]

Fig: Performance characteristics at maximum compressor speed

5. Mounting and operational start-up

**Danger:**

Danger from electrical voltage.

The unit must be mounted by specialist personnel (qualified electricians). The personnel must ensure that the cabinet is disconnected from the electrical supply for the duration of the mounting operation. Therefore take the cabinet out of operation, following the relevant instructions before mounting work commences.

**Attention:**

Danger through incorrect work on the unit.

Only specialists are allowed to put the unit into operation.

5.1. 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.

5.1.1. Transport damage check

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

5.1.2. 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 7 degrees.

5.1.3. 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.

5.1.4. Sealing

To guarantee that the unit works perfectly ensure that:

- the control cabinet is completely sealed (to min. IP55 to EN 60529).
- a good seal exists between the control cabinet and the unit.

5.2. Mounting instructions



Danger

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.

The resistance of the ground connection between cabinet and cooling unit must be $<0.1\Omega$.

5.3. Electrical connection



Danger

Danger from electrical voltage

The unit should only be connected by qualified electricians. The personnel must ensure that the unit is disconnected from the electrical supply for the duration of connection work and is protected against unauthorized reconnection.

Instruction

Check that the available voltage, frequency and fuse rating are the same as those stated on the unit data label.

5.3.1. Connection to the main electrical supply



The mains connection is made via the supplied connector blocks.

To connect the unit to the supply proceed as follows:

- Take the control cabinet out of operation in the prescribed manner
- See the connection details on the circuit diagram.
- Note the connections on the connectors from the following table.

Terminals:

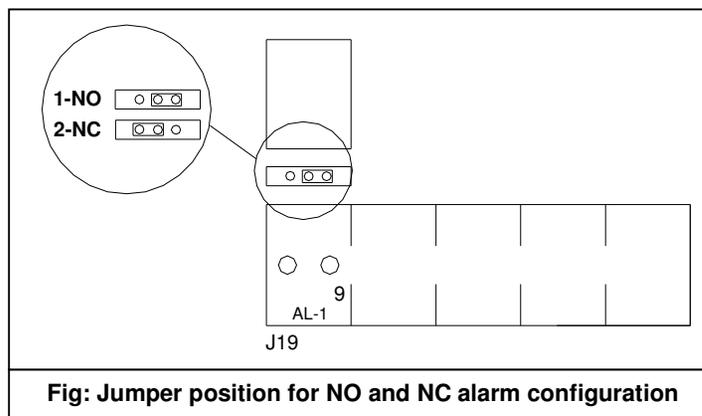
J9	Terminal 1	+48 VDC
J9	Terminal 2	0 VD
J2	Terminal 1	Live, 230VAC
J2	Terminal 2	Ground
J2	Terminal 3	Neutral, 230VAC

Instruction manual

J19	Terminal 9	Alarm 1, Alarm NO, Relay NC
J19	Terminal 10	Alarm 1, Alarm NO, Relay NC
J10	Terminal 1	Door switch NC-Normally closed to operate
J10	Terminal 2	Door switch NC-Normally closed to operate

The alarm is configured by default as NO. The NO alarm state refers to the condition when the unit is powered and no alarm exists. When an alarm exists or the unit is de-energized, the contacts are closed. NC relay contacts are used for the alarm. Under alarm conditions the relays are de-energized.

To change the alarm configuration to NC change the position of the jumper above the alarm connector to position 2 as shown in the figure below.



Instruction

- The radial fans have clockwise rotation.
- Connect the unit to the mains.
- Take the control cabinet back into operation in the prescribed manner.
- Power consumption and start-up current are stated on the data label and under technical data.

5.3.2. Fault warning connection

Alarm contacts can be factory programmed as necessary. The basic configuration used is indicated in the table below. The Red LED on the controller will indicate the alarms. The operating current for alarm contacts must be less than 1A.



Alarm	Red LED	Alarm contact
None	OFF	None
High temperature	ON	AL1
Low temperature	ON	AL1
Internal fantray failure	ON	AL1
Damper failure	ON	AL1
Compressor failure	ON	AL1
Door contact open	ON	AL1
Filter clogged	ON	AL1
Thermistor failure	ON	AL1
No AC supply	ON	AL1

The fault warning contacts for temperatures in excess of the pre-set cabinet temperature is connected via terminals 9 and 10 on the connection terminal block. The default temperature setting is set in the web interface. If required, the temperature setting can be changed to the potentiometer value. In this case the temp. adjustment range is between 25°C (left-hand stop) and 55°C (right-hand stop). When the cabinet temperature exceeds the pre-set alarm temperature the contacts 9 and 10 will close. When the cabinet temperature will fall below the pre-set alarm temperature the contacts 9 and 10 will open up once again.

To change the setting:

- Using a narrow screwdriver and working through the cabinet inlet turn the alarm temp. potentiometer on the PC-board slightly clockwise (higher) or anti-clockwise (lower).
- Please note that the setting for the alarm signal must be at least 5°C higher than the setting for the cabinet internal temperature.
- Check that the new setting meets requirements and if not repeat the above process.

REFER TO THE CONTROL SYSTEM MANUAL FOR DETAILED OPERATION AND PARAMETER ADJUSTMENT.

6. 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 15 min. after mounting before being connected to the mains and taken into operation.

The unit is controlled in relation to the cabinet internal air temperature and the ambient temperature. Sensors constantly measure the cabinet air temperature as it is drawn into the unit from the cabinet and the ambient air temperature as it is drawn from the environment. The controller decides on the mode of operation depending on the temperatures, their differential and their change direction and rate. The controller chooses the ideal operation mode to conserve energy, maintain a stable enclosure temperature and reduce component stress. When the enclosure temperature is lower than the heater set point, the ventilation circuit is closed and the heater is switched on and off to maintain the minimum cabinet air temperature required. When the enclosure temperature is higher than the enclosure temperature set point and the ambient temperature is lower, the ventilation circuit is opened and the fan speed is controlled to maintain the required enclosure temperature. When the enclosure temperature is higher than the enclosure temperature set point and the ambient temperature is also higher, the ventilation circuit is closed and the refrigeration circuit is operated. The compressor speed is controlled in order to maintain the required enclosure temperature. The ambient air fan (condenser) switches on and off together with the compressor.

The operation of the internal fans is controlled and monitored by the unit control which determines and sets the ideal operation speed. The controller controls the fans to the required speed and monitors their operation.

When initially powered, the damper motor will close the damper flap. After this movement is complete, the unit will select the appropriate operation mode and enter standard operation. The damper movement is slow. No effort should be done to move the damper faster.

REFER TO THE CONTROL SYSTEM MANUAL FOR DETAILED OPERATION AND PARAMETER ADJUSTMENT.

The default temperature setting is set in the web interface. If required, the temperature setting can be changed to the potentiometer value.

To adjust the cabinet internal temperature proceed as follows:

- Using a narrow screwdriver and working through the cabinet inlet grill turn the cabinet temperature potentiometer on the PC-board slightly clockwise (higher) or anti-clockwise (lower).
- Check that the new adjustment meets the necessary requirements. If necessary repeat the procedure.

When the test button is pressed the compressor and the ambient fan will run for 100 sec. regardless of the cabinet temp. During this period the green LED on the PC-board will blink twice as fast as normal. If the test button is pressed during the 100 sec. test-run, the unit will return to its normal operational mode. The test-run can not be activated during the min. compressor shut-down time.

7. Maintenance and cleaning



Danger

Danger from electrical voltage.

Maintenance and cleaning must be carried out by specialists (electricians). The personnel must ensure that for the duration of this work the unit and the cabinet are disconnected from the electrical supply and protected against unauthorized reactivation.



Danger

Danger through incorrect work on the unit.

The instructions in the cabinet manufacturer's manual must be adhered to.



Attention

Damage to the unit through incorrect maintenance and repair.

Maintenance and repair of the refrigerant circuit must be carried out by the manufacturer or another specialist.

7.1. Unit service and cleaning



Danger

Danger from electrical voltage.

The service and cleaning of the unit must be undertaken by specialists. The personnel must ensure that for the duration of the cleaning work the unit and the cabinet are disconnected from the electrical supply and protected against unauthorized reconnection.

- Regularly clean the ambient intake filter.

Danger

Danger from electrical voltage.

Instruction

Never use aggressive cleaning fluids or materials. Disconnect the air conditioner from the mains.

- Remove the filter housing from the lid by unscrewing the retaining screws on the front.
- Remove the filter element from inside the filter housing.
- Clean the filter element by vacuum, blowing or rinsing in water.
- Check the condensor and clean if necessary.
- Refit the filter element and filter housing.
- Check the air outlet grills to be free from dirt and clean if necessary.

8. Maintenance

Attention

Only use original replacement parts when repairing the unit. This ensures that the unit functions perfectly and remains safe.

8.1. Fan replacement

The normal working life of the fan is ca. 30.000 working hours under normal conditions.
Should a fan need replacing:



Danger

Danger from electrical voltage

Maintenance work on the unit must be carried out by specialists (qualified electricians). The personnel must ensure that for the duration of the work the unit and the cabinet are disconnected from the electrical supply and protected against unauthorized reconnection.

Disconnect the unit from the mains.

- Remove the required access covers and internal components
- Remove the fixing screws from the relevant fan.
- Disconnect the fan cable from the PC-board or mating connector
- Mount a new radial fan.



Attention

Damage to the unit through incorrect work.

Ensure that the correct polarity is maintained. The fans should have clockwise rotation.

- Replace the 4 fan fixing screws.
- Connect the fan cable to the PC-board or mating connector.
- Refit the required access covers and internal components.
- Close the unit and take it back into operation.



Instruction

Danger to the environment through unauthorized disposal.

Dispose of used parts with due regard for the environment and in accordance with environmental laws and regulations.

- Dispose of the old fan in the prescribed manner.

9. Transport and storage



Attention

Malfunction due to transport damage

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

9.1. Storage conditions

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 %**

9.2. Returning the unit



Attention

Damage to the unit through incorrect transport

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).

10. Parts supplied

VC-2900 E

1	Outdoor cabinet air conditioner
1	2-pole DC power female connector
1	3-pole AC power female connector
1	10- pole alarm female connector
2	2-pole male connector with bridged alarm contacts
16	M6x16 mounting screws & toothed washers
1	Mounting gasket set
1	Mounting support angle
1	Power input cable

VC-2900E

11. Contacts

Seifert mtm Systems GmbH

Egerstraße 3, 58256 Ennepetal
Germany

Tel: (+49) 2333 834 0
Fax : (+49) 2333 834 133
E -mail: info@seifert-mtmsystems.de
www.seifert-mtmsystems.de

Seifert mtm Systems (Malta) Ltd.

HF09/10, Industrial Estate, Hal Far BBG3000
Malta

Tel : (+356) 21 659082
Fax : (+356) 21 659083
E-mail: info@seifert-mtmsystems.com
www.seifert-mtmsystems.com

Seifert mtm Systems Inc.

75 Circuit Drive, USA North Kingstown RI 02852
United States of America

Tel: (+1) 401 294 6960
Fax : (+1) 401 294 6963
E -mail: info@seifertinc.com
www.seifertinc.com

IPT Seifert mtm Systems Korea

#303, Namdong Sanggong B/D
632-1 Gojan-Dong, Mandong-Gu
Incheon, 405-817 Korea

Te l: (+82) 70-8254-7709
Fax : (+82) 32-817-8709
E -mail: yongjin2528@hotmail.com

Bayern, Baden-Württemberg, Rheinland-Pfalz

Daniel Schrankenmüller
Verkauf/Sales

Vorstadtstr. 26, 78713 Schramberg
Telefon/Telephone/ Téléphone : (+49) 7402-9384922
Telefax/Telefax/Télécopieur : (+49) 7402-9384933
E-mail: schrankenmueller@seifert-mtmsystems.de

Seifert mtm Systems AG

Wilerstraße 16, CH – 4563 Gerlafingen
Switzerland

Telephone : (+41) 32 67 53 55 1
Telefax : (+41) 32 67 54 47 6
E-mail: info@seifert-mtmsystems.ch
www.seifert-mtmsystems.ch