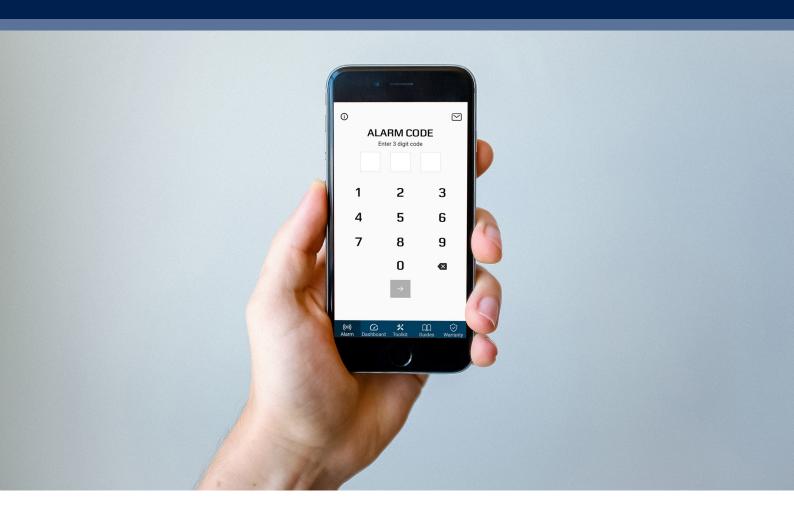
Alarm Descriptions **Star Cool Refrigeration Unit**



Model SCI-20/40/CA and SCU-20/40

Version 810900E March 2021





1. Preface

This version of the manual is dated March 2021, edited by Maersk Container Industry AS. All rights reserved.

This user's manual is valid for software version 0357 or newer versions.

The information herein is subject to change without notice and does not represent a commitment on any part of Maersk Container Industry AS. While the information herein is assumed to be accurate, Maersk Container Industry AS assumes no responsibility for any errors or omissions that may appear in this documentation.

This manual is valid for:

Model SCI - 20/40/CA and SCU - 20/40

Software version 0357

2. Warnings

Do not operate or maintain this refrigeration unit until you have familiarized yourself completely with the equipment and operation of this unit by reading the instructions in this manual.

Do not perform any welding on the unit before disconnecting the power plug. Furthermore, disconnect the power measurement module and main controller (and modem if present).

Disconnect the main power supply to the unit before inspecting the interior of the controller box.

The unit is charged with R134a or R513A and ester oil BSE 55. Do not use any other refrigerant or oil. Do not use contaminated refrigerant or oil. Never release any refrigerant into the atmosphere. Use recovery equipment according to present legislation.

During maintenance, please observe that refrigerants operate with high and low temperatures in combination with high pressures, which may cause personal injuries if not handled properly.

During recovery and maintenance of the refrigerant, personal protection equipment must be worn.

Do not trap any liquid refrigerant inside pipes during soldering work. This may lead to an explosion of the pipes.

Please note that some unit models do not have Schräder valves installed for Psuc and Pdis transmitters.

We do not recommend cleaning the inside of a reefer container with soap/chemicals with a PH value below 7. However, if this occurs, clean the evaporator coil through the inspection hatches with a soap that has a PH value between 7 and 9. This cleaning is vital to reduce the risk of copper damage in the evaporator coil.

Do not enter the container, including opening the service hatches, when the oxygen level is below 20.9%. Ventilation is necessary before entering, either for repairing the unit or unloading. Stay away from doors while venting.

Human response to low oxygen atmosphere:

| Oxygen content of air | Symptoms of a person exposed |
|-----------------------|---|
| 20.9% | Level in ambient air - no effect. |
| 15% - 19% | May impair coordination and induce early symptoms in persons who have coronary, pulmonary, or circulatory problems. |
| 12% - 15% | Respiration and pulse increase, impaired coordination, poor perception and judgement. |
| 10% - 12% | Respiration increases further in rate and depth, poor judgement, and bluish lips. |
| 8% - 10% | Mental failure, fainting, unconsciousness, an ash-coloured face, blue lips, nausea, and vomiting. |
| 6% - 8% | 8 minutes - 100% fatal, 4-5 minutes - recovery with treatment. |
| 4% - 6% | Coma within 40 seconds, convulsions, respiration ceases, death. |

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4. Legend

| Short name | Name |
|------------|-----------------------------------|
| AAS | Alarm Action System |
| Act | Actual |
| ACT | Automatic Cold Treatment |
| AirEx | Air exchange |
| AKS | Danfoss pressure transmitter |
| AL | Alarm |
| Atm | Atmosphere |
| AV | Automatic Ventilation |
| CA | Controlled Atmosphere |
| CalUs1 | Calibration USDA sensor 1 |
| CalUs2 | Calibration USDA sensor 2 |
| CalUs3 | Calibration USDA sensor 3 |
| CapReq | Requested capacity |
| Com | Communication |
| Cond | Condenser |
| Cpr | Compressor |
| СТ | Cold treatment |
| Cur | Current |
| Err | Error |
| Evap | Evaporator |
| F | Frequency |
| Fact | Compressor actual frequency |
| FC | Frequency converter |
| Fcpr | Compressor frequency |
| FcprAct | Compressor frequency actual |
| FcprReq | Compressor frequency requested |
| Fpower | Power supply frequency converter |
| FT | Function test |
| FW | Firmware |
| Н | Heater |
| Hevap | Evaporator heater |
| HP | High pressure |
| HPS | High pressure switch |
| Hpump | Vacuum pump motor heating element |
| I | Current |
| I1 | Current phase 1 |
| I2 | Current phase 2 |
| 13 | Current phase 3 |
| Ifc | Current in AC compressor motor |
| Init | Initialization |
| ITI | Intelligent Trip Inspection |
| LED | Light emitting diode |
| LP | Low pressure |
| М | Motor |
| Mcond | Condenser motor |
| Mcpr | Compressor motor |

| Short name | Name |
|------------|--|
| Mevap | Evaporator motor |
| Mevap1 | Evaporator motor 1 |
| Mevap2 | Evaporator motor 2 |
| MOP | Maximum operating pressure |
| Mpump | Vacuum pump motor |
| MTS | Multi Temperature Setpoints program |
| NSK/DST | Saigonomya/DST P100 pressure transmitter |
| ОН | Overheat |
| Р | Pressure |
| PCB | Printed circuit board |
| Pdis | Discharge pressure |
| Pmem | Pressure membrane |
| Psuc | Suction pressure |
| PTI | Pre Trip Inspection |
| PTI Short | Pre Trip Inspection Short |
| Ptot | Power total |
| PWM | Pulse Width Modulation |
| Pwr | Power |
| Req | Requested |
| RH | Relative humidity |
| RHset | Relative humidity setpoint |
| RMM | Remote Monitoring Modem |
| S | Switch contact key |
| SC | Star Cool |
| Set | Setpoint |
| SH | Superheat |
| Shp | High pressure switch |
| Sup | Supply |
| Т | Temperature |
| Tact | Actual temperature |
| Tamb | Ambient temperature |
| TC | Calculated condenser temperature |
| Tcargo | Cargo temperature |
| TCmin | Temperature condensor minimum |
| Tevap | Evaporator temperature |
| Tfc | Frequency converter temperature |
| Tint | Tinternal (controller board) |
| T0 | Calculated suction temperature |
| Tret | Return air temperature |
| Tset | Temperature setpoint |
| Tsuc | Suction temperature |
| Tsup | Supply air temperature average |
| Tsup1 | Supply air temperature 1 |
| Tsup2 | Supply air temperature 2 |
| Tusda1 | USDA 1 temperature |
| | |

| Short name | Name |
|-----------------------------|-----------------------------------|
| Tusda2 | USDA 2 temperature |
| Tusda3 | USDA 3 temperature |
| Ubat | Battery voltage |
| Udc | DC voltage in frequency converter |
| U/f Voltage/frequency ratio | |
| V | Valve |
| Veco | Economizer valve |
| Vexp | Expansion valve |
| Vhg | Hot gas valve |

5. Alarms

The alarm list holds all active and inactive alarms. By pressing (a) all active alarms are shown. The full list of active/inactive alarms, fatal alarms, and warnings can be accessed by pressing (PT) and viewing line T00. If any alarms are in the list, the icon (a) is displayed in upper left corner of the main display.

Alarm handling is to protect the unit and the cargo, and to inform the user in case of error conditions. Alarm handling is split into 2 parts:

1. Detect an abnormal situation and report it as an alarm.

2. React on the alarms and compensate for them (AAS - Alarm Action System).

An alarm can have 4 different levels:

- Log: Information for service. Only in the datalog, not on the display.

No risk to cargo.

- Warning: Warning of an abnormal situation, but the unit continues to operate with

unchanged or little change in functionality in the actual running mode.

No risk to cargo.

- Alarm: The unit operates with reduced or changed functionality.

Risk to cargo.

Fatal Alarm: The unit potentially stops working and needs servicing immediately.

Serious risk to cargo!

All alarms in the 4 levels can have two states:

- Active: The alarm is active.

- Inactive: The alarm is no longer active. The alarm can be acknowledged from the alarm list.

The 4 alarm levels will be treated by the controller in the following way:

| Alarm type | Datalog | Alarm list | Red LED | Cargo risk |
|-------------|---------|------------|--|------------------|
| Log | Yes | No | OFF | No risk to cargo |
| Warning | Yes | Yes | OFF | No risk to cargo |
| Alarm | Yes | Yes | SLOW FLASH 2% ON, 98% OFF Duty time of 3 sec | Risk to cargo |
| Fatal Alarm | Yes | Yes | QUICK FLASH 80% ON, 20% OFF Duty time of 1 sec | |

Alarm handling is made to detect abnormal situations, possibly solve issues, and report the problems. The alarm types indicate for the operator, how severe the problem is for the safety of the cargo. Some problems are fluctuant where the problem may be fixed if the unit restarts. Some of the alarms are only warnings but will restart the unit to try to solve the problem. There is an individual time-out period for the alarms. A Warning will not stop the unit permanently. If a problem with Warning type continues to be active over a period, the problem seems to be of a more stable and therefore more severe character and another alarm is triggered with alarm type Alarm.

The AAS (Alarm Action System) will substitute a missing or malfunctioning sensor with one of the other sensors and thereby try to keep the cargo safe for as long as absolutely possible. The substitution may lead to a deteriorated control precision, especially in Freeze mode, but the unit is not fully stopped until there are no further sensors to substitute with. The unit may try to restart to see if the malfunctioning is fluctuant. For example, if there is no substitution for a sensor or the substitute sensor is also faulty, alarm 611 "Too many sensor err" is raised and the specific sensor(s) are listed separately in the alarm list.

The alarm list can include a maximum of 16 active/inactive alarms. In case of an empty alarm list, $\sqrt{}$ and "No alarms" is shown.

An active alarm is shown as Acc AAnnn, where cc is the list number from 01 to 16, and nnn is the actual alarm number. An inactive alarm is shown as Acc IAnnn, where cc is the list number from 01 to 16, and nnn is the actual alarm number.

An active alarm is not deletable from the list, but may change to the inactive state when the cause of the alarm is eliminated.

An inactive alarm is deletable from the list by pressing igoplus when displaying the alarm.

5.1 Detailed alarm description

In the following, all alarms are listed with a description, possible causes, and trouble shooting instructions.

- Alarm text is the text shown in the controller display.
- If Log is marked with a cross, then the alarm is logged in the data log.
- If Alarm is marked with a cross, then an error is shown in the controller alarm list.
- The following alarm light texts can be shown:
- Off: Indicates that the alarm diodes are de-energized and there are no active alarms.
- Slow flash: Indicates that the diodes are turned on shortly every 3 sec. and that there are

active alarm(s).

- Quick flash: Indicates that the diodes are turned on for 0.8 sec. every 1 sec. and that there

are active fatal alarm(s).

When troubleshooting several alarms, it is generally advisable to start with the active alarm that has the lowest number and then move up to the active alarms with higher numbers. Remember that some alarms have a time-out of 30 sec. or more.

5.2 Alarm list

The following list includes a view of all alarms as listed on the display with a description text. This list is continuously updated. Be sure to visit **alarm.starcool.com** for the latest version.

| Id | Display text | Description | Alarm type | | | |
|-------|--------------------------------|--|-------------|--|--|--|
| 1. Te | 1. Temperature sensor alarms | | | | | |
| 102 | Tret invalid | Return air temperature sensor invalid | Alarm | | | |
| 105 | Tsup 1 invalid | Supply air temperature sensor 1 invalid | Alarm | | | |
| 108 | Tsup 2 invalid | Supply air temperature sensor 2 invalid | Alarm | | | |
| 111 | Tusda 1 out of range | USDA 1 temperature sensor invalid | Log | | | |
| 114 | Tusda 2 out of range | USDA 2 temperature sensor invalid | Log | | | |
| 117 | Tusda 3 out of range | USDA 3 temperature sensor invalid | Log | | | |
| 120 | Tcargo out of range | Cargo temperature sensor invalid | Log | | | |
| 123 | Tevap invalid | Evaporator temperature sensor invalid | Warning | | | |
| 126 | Tsuc invalid | Suction temperature sensor invalid | Alarm | | | |
| 129 | Tamb invalid | Ambient temperature sensor invalid | Alarm | | | |
| 132 | Tpump invalid | Vacuum pump temperature sensor invalid | Alarm | | | |
| 148 | Tsup error | Supply air temperature error | Alarm | | | |
| 2. Pr | essure transmitter alarms | | | | | |
| 202 | Pdis unrealistic | Tc value is above the limit that is realistic for the system | Alarm | | | |
| 203 | Pdis invalid | Compressor discharge pressure transmitter invalid | Alarm | | | |
| 206 | Psuc unrealistic | T0 value is below the limit that is realistic for the system | Alarm | | | |
| 207 | Psuc invalid | Compressor suction pressure transmitter invalid | Alarm | | | |
| 214 | Pmem invalid | Vacuum pump pressure transmitter invalid | Alarm | | | |
| 3. Ot | her sensors | | | | | |
| 302 | RH invalid | Relative humidity sensor invalid | Alarm | | | |
| 303 | AirEx invalid | Air exchange sensor short circuit | Alarm | | | |
| 306 | HPS switch - K1 | High pressure switch is active | Fatal alarm | | | |
| 310 | CO ₂ sensor invalid | CO ₂ sensor communication missing | Alarm | | | |
| 313 | O ₂ sensor invalid | ${\rm O_2}$ sensor communication missing | Alarm | | | |
| 314 | Replace CO ₂ sensor | Replace CO ₂ sensor | Warning | | | |
| 315 | Replace O ₂ sensor | Replace O ₂ sensor | Warning | | | |

| 1418 Invalid power sup | 4. Po | wer alarms | | |
|--|-------|---------------------------------------|--|--|
| Mevap 2 over heat | 400 | Mevap 1 over heat | Evaporator motor 1 overheat | Fatal alarm |
| 4022 Meond over heat Condenser motor overheat Fatal alarm 403 Mournp over heat Vacuum pump motor overheat Alarm 418 Invalid power sup U1-2 and U1-3 and U2-3 overvortage Fatal alarm 418 Invalid power sup U1-2 and U1-3 and U2-3 overcurrent Fatal alarm 421 Over current I1-2 and I1-3 and I2-3 overcurrent Fatal alarm 424 Power frequency Phase direction not detectable Fatal alarm 430 Cpr connection Power requency too high Fatal alarm 430 Cpr connection Power requency too high Fatal alarm 430 Cpr connection Power requency too high Fatal alarm 430 Cpr connection Power requency too high Alarm 430 Cpr connection PC string in Local mode Alarm 581 Compressor connection PC string in Local mode Alarm 582 Compressor cover current Alarm 510 PC Lev V fault PC serth fault Alarm 511 In Compressor cover current <td>401</td> <td></td> <td>Evaporator motor 2 overheat</td> <td>Fatal alarm</td> | 401 | | Evaporator motor 2 overheat | Fatal alarm |
| 415 Invalid power sup U1-2 and U1-3 and U2-3 overvoltage Fatal alarm 418 Invalid power sup U1-2 and U1-3 and U2-3 undervoltage Fatal alarm 421 Over current I1-2 and I1-3 and U2-3 undervoltage Fatal alarm 423 No phase direction Phase direction not detectable Fatal alarm 424 Power frequency Phase frequency error Log 57 Frequency too high Fatal alarm 430 Cpr connection Power realer from FC to compressor faulty Alarm 501 FC Clocal control FC setting in Local mode Alarm 502 FC 24 Vault FC short circuit Alarm 510 Compressor connection FC short circuit Alarm 511 Compressor cover current Alarm 512 Compressor over current Alarm 513 Compressor overload Alarm 514 Invalid power sup FC undervoltage fault Alarm 515 Invalid power sup FC overveltage fault Alarm 516 FC Supply error Power supply error indication Alarm 517 FC over temp FC over temperature fault Alarm 518 FC Inrush FC inrush fault Alarm | 402 | | | Fatal alarm |
| Invalid power sup | 403 | Mpump over heat | Vacuum pump motor overheat | Alarm |
| Invalid power sup | 415 | | | Fatal alarm |
| No phase direction Phase direction not detectable Fatal alarm Power frequency Phase frequency error Log Power frequency to high Fatal alarm Fatal alarm Power frequency to high Fatal alarm Fatal Compressor over current Fatal Alarm Fatal Fata | 418 | | | Fatal alarm |
| Passe direction Phase direction not detectable Fatal alarm | 421 | Over current | II-2 and II-3 and I2-3 overcurrent | Fatal alarm |
| 424 Power frequency Phase frequency error Log 425 Frequency too high Power frequency too high Fatal alarm 420 Or connection Power cable from PC to compressor faulty Alarm 5. FC alarms FC local control FC setting in Local mode Alarm 5. PC alarms FC clocal control FC setting in Local mode Alarm 5. PC alarms FC connection FC short circuit Alarm 5. PO Compressor consection FC sett fault Alarm 5. In Compressor connection FC earth fault Alarm 5. Compressor over current Alarm 5. Compressor over current Alarm 5. Invalid power sup FC owerchange fault Alarm 5. FC supply error Power supply error indication Alarm 5. FC over temp FC over temperature fault Alarm 5. FC over temp FC over temperature fault Alarm 5. FC phase loss Power supply error indication Log 5. FC phase loss Power supply error indication Log 5. FC alarm undefined Unclear error in FC Ala | | | | |
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| Section Power cable from FC to compressor faulty | | · , | | <u> </u> |
| 5. FC alarms 501 FC local control FC setting in Local mode Alarm 508 Compr connection FC short circuit Alarm 509 FC 24 V fault FC internal 24 V supply fault Alarm 510 Compr connection FC earth fault Alarm 511 Compr overconnection FC earth fault Alarm 512 Compr overconnection FC earth fault Alarm 513 Compr overload Compressor overcurrent Alarm 514 Invalid power sup FC undervoltage fault Alarm 515 Invalid power sup FC undervoltage fault Alarm 516 FC supply error Power supply error indication Alarm 517 FC over temp FC over temperature fault Alarm 518 FC inrush FC inrush Fault Alarm 519 FC internal error Frequency converter high voltage fault warning Alarm 519 FC clairm undefined Unclear error in FC 510 FC elarm undefined Unclear error in FC 511 FC comm timeout The FC has tripped and stopped 512 FC comm timeout The FC has tripped and stopped 610 No control sensors Supply air sensor 1, supply air sensor 2, return air sensor all malfunctioning Fatal alarm 611 No watercooling Water-cooling fault Fatal alarm 612 Alarm 613 FC open Alarm Alarm 614 Config AlirEx Type Air exchange valve open in conflict with settings Alarm 615 Config AlirEx Type Air exchange valve open in conflict with settings Alarm 616 Config AlirEx Type Air exchange valve open in conflict with settings Alarm 617 Alarm yespens err Too many (controlling) sensors have errors Log 618 Loss of cooling Attempts to cool down but Tsup is above Tret Fatal alarm 619 Alor years and the proper of the pro | | | | |
| 508 Compr connection FC short circuit Alarm 509 FC 24 V fault FC internal 24 V supply fault Alarm 510 Compr connection FC earth fault Alarm 511 Compr over current Compressor overload Alarm 513 Invalid power sup FC overload Alarm 514 Invalid power sup FC overloage fault Alarm 516 FC supply error Power supply error indication Alarm 517 FC over temp FC over temperature fault Alarm 518 FC Inrush FC inrush fault Alarm 519 FC plase loss Power supply error indication Log 510 FC plase loss Power supply error indication Log 510 FC clarenal error Frequency converter high voltage fault warning Alarm 510 FC clarenal error Frequency converter high voltage fault warning Alarm 510 FC laternal error Frequency converter high voltage fault warning Alarm 511 FC plase loss Power s | | | , | 1 |
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| 517 FC over temp FC over temperature fault Alarm 518 FC inrush FC inrush fault Alarm 519 FC internal error Frequency converter high voltage fault warning Alarm 520 FC phase loss Power supply error indication Log 530 FC alarm undefined Unclear error in FC Alarm 531 PCB temperature FC critical temperature Alarm 532 FC comm timeou The FC has tripped and stopped Alarm 6. Operation alarms Compressor restart fail Alarm 6. Operation alarms Supply air sensor 1, supply air sensor 2, return air sensor all malfunctioning Fatal alarm 601 No control sensors Supply air sensor 1, supply air sensor 2, return air sensor all malfunctioning Fatal alarm 603 In range fault In-range fault Fatal alarm 604 AirEx open Air exchange valve open in conflict with settings Alarm 605 Config AirEx Type Air exchange valve open insping Alarm 610 Defrost time exceed Max. defrost time exceeded Log </td <td>516</td> <td><u> </u></td> <td>-</td> <td> </td> | 516 | <u> </u> | - | |
| 518 FC inrush FC inrush fault Alarm 519 FC internal error Frequency converter high voltage fault warning Alarm 523 FC phase loss Power supply error indication Log 530 FC alarm undefined Unclear error in FC Alarm 531 PCB temperature FC critical temperature Alarm 532 Blocked rotor Compressor restart fail Alarm 533 FC comm timeout The FC has tripped and stopped Alarm 6. Operation alarms Alarm Alarm 600 No control sensors Supply air sensor 1, supply air sensor 2, return air sensor all malfunctioning Fatal alarm 601 No watercooling Water-cooling fault Alarm 602 No control sensors Supply air sensor 1, supply air sensor 2, return air sensor all malfunctioning Fatal alarm 603 In range fault In-range fault Alarm 604 No watercooling Water-cooling fault Fatal alarm 605 Config AirEx Type Air exchange valve open in conflict with settings Alarm | 517 | | | |
| 519 FC internal error Frequency converter high voltage fault warning Alarm 523 FC phase loss Power supply error indication Log 530 FC alarm undefined Unclear error in FC Alarm 531 PCB temperature FC critical temperature Alarm 532 Blocked rotor Compressor restart fail Alarm 533 FC comm timeout The FC has tripped and stopped Alarm 6. Operation alarms The FC has tripped and stopped Alarm 6. Operation alarms Supply air sensor 1, supply air sensor 2, return air sensor all malfunctioning Fatal alarm 601 No control sensors Supply air sensor 1, supply air sensor 2, return air sensor all malfunctioning Fatal alarm 601 No watercooling Water-cooling fault Alarm 603 In range fault In-range fault Fatal alarm 604 AirEx open Air exchange valve open in conflict with settings Alarm 605 Config AirEx Type Air exchange type missing Alarm 606 Config AirEx Type Air exchange type missing < | 518 | · · · · · · · · · · · · · · · · · · · | | Alarm |
| 523 FC phase loss Power supply error indication Log 530 FC alarm undefined Unclear error in FC Alarm 531 PCB temperature FC critical temperature Alarm 532 Blocked rotor Compressor restart fail Alarm 533 FC comm timeout The FC has tripped and stopped Alarm 6. Operation alarms The FC has tripped and stopped Alarm 6. Operation alarms Supply air sensor 1, supply air sensor 2, return air sensor all malfunctioning Fatal alarm 601 No control sensors Supply air sensor 1, supply air sensor 2, return air sensor all malfunctioning Fatal alarm 601 No watercooling Water-cooling fault Alarm 602 Air Ex open Air exchange valve open in conflict with settings Alarm 608 Config AirEx Type Air exchange type missing Alarm 609 Config AirEx Type Air exchange type missing Log 611 Too many sensor err Too many (controlling) sensors have errors Log 623 Loss of cooling Attempts to cool down but Tsup is above | 519 | FC internal error | Frequency converter high voltage fault warning | - |
| FC alarm undefined Unclear error in FC Alarm PCB temperature FC critical temperature Alarm | 523 | FC phase loss | | Log |
| 532 Blocked rotor Compressor restart fail Alarm 533 FC comm timeout The FC has tripped and stopped Alarm 6. Operation alarms 600 No control sensors Supply air sensor 1, supply air sensor 2, return air sensor all malfunctioning Fatal alarm 601 No watercooling Water-cooling fault Alarm 603 In range fault In-range fault Fatal alarm 607 AirEx open Air exchange valve open in conflict with settings Alarm 608 Config AirEx Type Air exchange type missing Alarm 610 Defrost time exceed Max. defrost time exceeded Log 611 Too many sensor err Too many (controlling) sensors have errors Log 623 Loss of cooling Attempts to cool down but Tsup is above Tret Fatal alarm 624 Config valve type System identifies controller was changed Alarm 630 Manual phase dir Manually selected phase direction Warning 650 O₂ low The O₂ sensor measures low O₂ levels in container Alarm 651 CO₂ high The CO₂ sensor measures low O₂ levels in container <td>530</td> <td>· · · · · · · · · · · · · · · · · · ·</td> <td></td> <td> </td> | 530 | · · · · · · · · · · · · · · · · · · · | | |
| 532 Blocked rotor Compressor restart fail Alarm 533 FC comm timeout The FC has tripped and stopped Alarm 6. Operation alarms 600 No control sensors Supply air sensor 1, supply air sensor 2, return air sensor all malfunctioning Fatal alarm 601 No watercooling Water-cooling fault Alarm 603 In range fault In-range fault Fatal alarm 607 Airex open Air exchange valve open in conflict with settings Alarm 608 Config AirEx Type Air exchange type missing Alarm 610 Defrost time exceed Max. defrost time exceeded Log 611 Too many sensor err Too many (controlling) sensors have errors Log 623 Loss of cooling Attempts to cool down but Tsup is above Tret Fatal alarm 624 Config valve type System identifies controller was changed Alarm 630 Manual phase dir Manually selected phase direction Warning 650 O₂ low The O₂ sensor measures low O₂ levels in container Alarm 651 CO₂ high The CO₂ sensor measures low O₂ levels in container <td>531</td> <td>PCB temperature</td> <td>FC critical temperature</td> <td>Alarm</td> | 531 | PCB temperature | FC critical temperature | Alarm |
| 6. Operation alarms 600 No control sensors Supply air sensor 1, supply air sensor 2, return air sensor all malfunctioning Fatal alarm 601 No watercooling Water-cooling fault Alarm 603 In range fault In-range fault Fatal alarm 606 AirEx open Air exchange valve open in conflict with settings Alarm 607 AirEx open Air exchange type missing Alarm 608 Config AirEx Type Air exchange type missing Alarm 610 Defrost time exceed Max. defrost time exceeded Log 611 Too many sensor err Too many (controlling) sensors have errors Log 623 Loss of cooling Attempts to cool down but Tsup is above Tret Fatal alarm 630 Manual phase dir Manually selected phase direction Warning 630 Manual phase dir Manually selected phase direction Warning 650 O ₂ low The O ₂ sensor measures low O ₂ levels in container Alarm 651 CO ₂ high The CO ₂ sensor measures high CO ₂ levels in container 652 Vacuum fault Vacuum pump unable to reach the required pressure Alarm 653 Mpump heat element Vacuum pump operating temperature is low 654 Mpump temp high Motor for vacuum pump is overheated Alarm 655 Mpump service Vacuum pump operating in wrong direction Fatal alarm 656 Mpump start failure Vacuum pump operating in wrong direction Fatal alarm 657 Mpump start failure Vacuum pump cannot start due to bad U/f ratio Alarm 668 Check coil Coil(s) acting suspicious Warning 659 Mevap lo contactor Mevap low contactor detected to be faulty (only in heating) Alarm | 532 | · · · · · · · · · · · · · · · · · · · | | Alarm |
| 600No control sensorsSupply air sensor 1, supply air sensor 2, return air sensor all malfunctioningFatal alarm601No watercoolingWater-cooling faultAlarm603In range faultIn-range faultFatal alarm607AirEx openAir exchange valve open in conflict with settingsAlarm608Config AirEx TypeAir exchange type missingAlarm610Defrost time exceedMax. defrost time exceededLog611Too many sensor errToo many (controlling) sensors have errorsLog623Loss of coolingAttempts to cool down but Tsup is above TretFatal alarm630Manual phase dirManually selected phase directionWarning650O2 lowThe O2 sensor measures low O2 levels in containerAlarm651CO2 highThe CO2 sensor measures high CO2 levels in containerFatal alarm652Vacuum faultVacuum pump unable to reach the required pressureAlarm653Mpump heat elementVacuum pump operating temperature is lowAlarm654Mpump temp highMotor for vacuum pump is overheatedAlarm655Mpump serviceVacuum pump needs an oil and filter changeWarning657Mpump start failureVacuum pump operating in wrong directionFatal alarm658Mpump start failureVacuum pump cannot start due to bad U/f ratioAlarm660Check coilCoil(s) acting suspiciousWarning661Check contactorContactor(s) acting suspicious <td< td=""><td>533</td><td>FC comm timeout</td><td>The FC has tripped and stopped</td><td>Alarm</td></td<> | 533 | FC comm timeout | The FC has tripped and stopped | Alarm |
| 601No watercoolingWater-cooling faultAlarm603In range faultIn-range faultFatal alarm607AirEx openAir exchange valve open in conflict with settingsAlarm608Config AirEx TypeAir exchange type missingAlarm610Defrost time exceedMax. defrost time exceededLog611Too many sensor errToo many (controlling) sensors have errorsLog623Loss of coolingAttempts to cool down but Tsup is above TretFatal alarm624Config valve typeSystem identifies controller was changedAlarm630Manual phase dirManually selected phase directionWarning650O2 lowThe O2 sensor measures low O2 levels in containerAlarm651CO2 highThe CO2 sensor measures high CO2 levels in containerFatal alarm652Vacuum faultVacuum pump unable to reach the required pressureAlarm653Mpump heat elementVacuum pump operating temperature is lowAlarm654Mpump temp highMotor for vacuum pump is overheatedAlarm655Mpump start failureVacuum pump needs an oil and filter changeWarning657Mpump start failureVacuum pump operating in wrong directionFatal alarm660Check coilCoil(s) acting suspiciousWarning661Check corlactorContactor(s) acting suspiciousWarning662Mevap lo contactorMevap low contactor detected to be faulty (only in heating)Alarm | 6. Op | eration alarms | | • |
| In range fault In-range fault In-range fault Fatal alarm Air Ex open Air exchange valve open in conflict with settings Alarm Config Air Ex Type Air exchange type missing Alarm Defrost time exceed Max. defrost time exceeded Log Config Air Ex Type Too many (controlling) sensors have errors Log Loss of cooling Attempts to cool down but Tsup is above Tret Fatal alarm Config valve type System identifies controller was changed Alarm Manual phase dir Manually selected phase direction Warning Manual phase dir Manually selected phase direction Warning Co ₂ low The O ₂ sensor measures low O ₂ levels in container Alarm Co ₃ high The CO ₂ sensor measures high CO ₂ levels in container Fatal alarm Mpump heat element Vacuum pump unable to reach the required pressure Alarm Mpump heat element Vacuum pump operating temperature is low Alarm Mpump temp high Motor for vacuum pump is overheated Alarm Mpump service Vacuum pump operating in wrong direction Fatal alarm Mpump start failure Vacuum pump operating in wrong direction Fatal alarm Mpump start failure Vacuum pump cannot start due to bad U/f ratio Alarm Check coil Coil(s) acting suspicious Warning Mevap lo contactor Mevap low contactor detected to be faulty (only in heating) Alarm | 600 | No control sensors | Supply air sensor 1, supply air sensor 2, return air sensor all malfunctioning | Fatal alarm |
| 607 AirEx open Air exchange valve open in conflict with settings Alarm 608 Config AirEx Type Air exchange type missing Alarm 610 Defrost time exceed Max. defrost time exceeded Log 611 Too many sensor err Too many (controlling) sensors have errors Log 623 Loss of cooling Attempts to cool down but Tsup is above Tret Fatal alarm 624 Config valve type System identifies controller was changed Alarm 630 Manual phase dir Manually selected phase direction Warning 650 O ₂ low The O ₂ sensor measures low O ₂ levels in container Alarm 651 CO ₂ high The CO ₂ sensor measures high CO ₂ levels in container Fatal alarm 652 Vacuum fault Vacuum pump unable to reach the required pressure Alarm 653 Mpump heat element Vacuum pump operating temperature is low Alarm 654 Mpump temp high Motor for vacuum pump is overheated Alarm 655 Mpump start failure Vacuum pump perating in wrong direction Fatal alarm 656 Mpump start failure Vacuum pump cannot start due to bad | 601 | No watercooling | Water-cooling fault | Alarm |
| 608Config AirEx TypeAir exchange type missingAlarm610Defrost time exceedMax. defrost time exceededLog611Too many sensor errToo many (controlling) sensors have errorsLog623Loss of coolingAttempts to cool down but Tsup is above TretFatal alarm624Config valve typeSystem identifies controller was changedAlarm630Manual phase dirManually selected phase directionWarning650O2 lowThe O2 sensor measures low O2 levels in containerAlarm651CO2 highThe CO2 sensor measures high CO2 levels in containerFatal alarm652Vacuum faultVacuum pump unable to reach the required pressureAlarm653Mpump heat elementVacuum pump operating temperature is lowAlarm654Mpump temp highMotor for vacuum pump is overheatedAlarm656Mpump serviceVacuum pump needs an oil and filter changeWarning657Mpump start failureVacuum pump operating in wrong directionFatal alarm658Mpump start failureVacuum pump cannot start due to bad U/f ratioAlarm660Check coilCoil(s) acting suspiciousWarning661Check contactorContactor(s) acting suspiciousWarning662Mevap lo contactorMevap low contactor detected to be faulty (only in heating)Alarm | 603 | In range fault | In-range fault | Fatal alarm |
| 610Defrost time exceedMax. defrost time exceededLog611Too many sensor errToo many (controlling) sensors have errorsLog623Loss of coolingAttempts to cool down but Tsup is above TretFatal alarm624Config valve typeSystem identifies controller was changedAlarm630Manual phase dirManually selected phase directionWarning650O2 lowThe O2 sensor measures low O2 levels in containerAlarm651CO2 highThe CO2 sensor measures high CO2 levels in containerFatal alarm652Vacuum faultVacuum pump unable to reach the required pressureAlarm653Mpump heat elementVacuum pump operating temperature is lowAlarm654Mpump temp highMotor for vacuum pump is overheatedAlarm656Mpump serviceVacuum pump needs an oil and filter changeWarning657Mpump start failureVacuum pump operating in wrong directionFatal alarm658Mpump start failureVacuum pump cannot start due to bad U/f ratioAlarm660Check coilCoil(s) acting suspiciousWarning661Check contactorContactor(s) acting suspiciousWarning662Mevap lo contactorMevap low contactor detected to be faulty (only in heating)Alarm | 607 | AirEx open | Air exchange valve open in conflict with settings | Alarm |
| 611Too many sensor errToo many (controlling) sensors have errorsLog623Loss of coolingAttempts to cool down but Tsup is above TretFatal alarm624Config valve typeSystem identifies controller was changedAlarm630Manual phase dirManually selected phase directionWarning650O2 lowThe O2 sensor measures low O2 levels in containerAlarm651CO2 highThe CO2 sensor measures high CO2 levels in containerFatal alarm652Vacuum faultVacuum pump unable to reach the required pressureAlarm653Mpump heat elementVacuum pump operating temperature is lowAlarm654Mpump temp highMotor for vacuum pump is overheatedAlarm656Mpump serviceVacuum pump needs an oil and filter changeWarning657Mpump start failureVacuum pump operating in wrong directionFatal alarm658Mpump start failureVacuum pump cannot start due to bad U/f ratioAlarm660Check coilCoil(s) acting suspiciousWarning661Check contactorContactor(s) acting suspiciousWarning662Mevap lo contactorMevap low contactor detected to be faulty (only in heating)Alarm | 608 | Config AirEx Type | Air exchange type missing | Alarm |
| 623Loss of coolingAttempts to cool down but Tsup is above TretFatal alarm624Config valve typeSystem identifies controller was changedAlarm630Manual phase dirManually selected phase directionWarning650O2 lowThe O2 sensor measures low O2 levels in containerAlarm651CO2 highThe CO2 sensor measures high CO2 levels in containerFatal alarm652Vacuum faultVacuum pump unable to reach the required pressureAlarm653Mpump heat elementVacuum pump operating temperature is lowAlarm654Mpump temp highMotor for vacuum pump is overheatedAlarm656Mpump serviceVacuum pump needs an oil and filter changeWarning657Mpump start failureVacuum pump operating in wrong directionFatal alarm658Mpump start failureVacuum pump cannot start due to bad U/f ratioAlarm660Check coilCoil(s) acting suspiciousWarning661Check contactorContactor(s) acting suspiciousWarning662Mevap lo contactorMevap low contactor detected to be faulty (only in heating)Alarm | 610 | Defrost time exceed | Max. defrost time exceeded | Log |
| 624Config valve typeSystem identifies controller was changedAlarm630Manual phase dirManually selected phase directionWarning650O2 lowThe O2 sensor measures low O2 levels in containerAlarm651CO2 highThe CO2 sensor measures high CO2 levels in containerFatal alarm652Vacuum faultVacuum pump unable to reach the required pressureAlarm653Mpump heat elementVacuum pump operating temperature is lowAlarm654Mpump temp highMotor for vacuum pump is overheatedAlarm656Mpump serviceVacuum pump needs an oil and filter changeWarning657Mpump start failureVacuum pump operating in wrong directionFatal alarm658Mpump start failureVacuum pump cannot start due to bad U/f ratioAlarm660Check coilCoil(s) acting suspiciousWarning661Check contactorContactor(s) acting suspiciousWarning662Mevap lo contactorMevap low contactor detected to be faulty (only in heating)Alarm | 611 | Too many sensor err | Too many (controlling) sensors have errors | Log |
| 630Manual phase dirManually selected phase directionWarning650O2 lowThe O2 sensor measures low O2 levels in containerAlarm651CO2 highThe CO2 sensor measures high CO2 levels in containerFatal alarm652Vacuum faultVacuum pump unable to reach the required pressureAlarm653Mpump heat elementVacuum pump operating temperature is lowAlarm654Mpump temp highMotor for vacuum pump is overheatedAlarm656Mpump serviceVacuum pump needs an oil and filter changeWarning657Mpump start failureVacuum pump operating in wrong directionFatal alarm658Mpump start failureVacuum pump cannot start due to bad U/f ratioAlarm660Check coilCoil(s) acting suspiciousWarning661Check contactorContactor(s) acting suspiciousWarning662Mevap lo contactorMevap low contactor detected to be faulty (only in heating)Alarm | 623 | Loss of cooling | Attempts to cool down but Tsup is above Tret | Fatal alarm |
| 650 O ₂ low The O ₂ sensor measures low O ₂ levels in container Alarm 651 CO ₂ high The CO ₂ sensor measures high CO ₂ levels in container Fatal alarm 652 Vacuum fault Vacuum pump unable to reach the required pressure Alarm 653 Mpump heat element Vacuum pump operating temperature is low Alarm 654 Mpump temp high Motor for vacuum pump is overheated Alarm 656 Mpump service Vacuum pump needs an oil and filter change Warning 657 Mpump start failure Vacuum pump operating in wrong direction Fatal alarm 658 Mpump start failure Vacuum pump cannot start due to bad U/f ratio Alarm 660 Check coil Coil(s) acting suspicious Warning 661 Check contactor Contactor(s) acting suspicious 662 Mevap lo contactor Mevap low contactor detected to be faulty (only in heating) | 624 | Config valve type | System identifies controller was changed | Alarm |
| 651 CO ₂ high The CO ₂ sensor measures high CO ₂ levels in container Fatal alarm 652 Vacuum fault Vacuum pump unable to reach the required pressure Alarm 653 Mpump heat element Vacuum pump operating temperature is low Alarm 654 Mpump temp high Motor for vacuum pump is overheated Alarm 656 Mpump service Vacuum pump needs an oil and filter change Warning 657 Mpump start failure Vacuum pump operating in wrong direction Fatal alarm 658 Mpump start failure Vacuum pump cannot start due to bad U/f ratio Alarm 660 Check coil Coil(s) acting suspicious Warning 661 Check contactor Contactor(s) acting suspicious Warning 662 Mevap lo contactor Mevap low contactor detected to be faulty (only in heating) Alarm | 630 | Manual phase dir | Manually selected phase direction | Warning |
| 652Vacuum faultVacuum pump unable to reach the required pressureAlarm653Mpump heat elementVacuum pump operating temperature is lowAlarm654Mpump temp highMotor for vacuum pump is overheatedAlarm656Mpump serviceVacuum pump needs an oil and filter changeWarning657Mpump start failureVacuum pump operating in wrong directionFatal alarm658Mpump start failureVacuum pump cannot start due to bad U/f ratioAlarm660Check coilCoil(s) acting suspiciousWarning661Check contactorContactor(s) acting suspiciousWarning662Mevap lo contactorMevap low contactor detected to be faulty (only in heating)Alarm | 650 | O ₂ low | The O ₂ sensor measures low O ₂ levels in container | Alarm |
| 653Mpump heat elementVacuum pump operating temperature is lowAlarm654Mpump temp highMotor for vacuum pump is overheatedAlarm656Mpump serviceVacuum pump needs an oil and filter changeWarning657Mpump start failureVacuum pump operating in wrong directionFatal alarm658Mpump start failureVacuum pump cannot start due to bad U/f ratioAlarm660Check coilCoil(s) acting suspiciousWarning661Check contactorContactor(s) acting suspiciousWarning662Mevap lo contactorMevap low contactor detected to be faulty (only in heating)Alarm | 651 | CO ₂ high | The CO ₂ sensor measures high CO ₂ levels in container | Fatal alarm |
| Mpump temp high Motor for vacuum pump is overheated Alarm Mpump service Vacuum pump needs an oil and filter change Warning Mpump start failure Vacuum pump operating in wrong direction Fatal alarm Mpump start failure Vacuum pump cannot start due to bad U/f ratio Alarm Check coil Coil(s) acting suspicious Warning Check contactor Contactor(s) acting suspicious Warning Mevap lo contactor Mevap low contactor detected to be faulty (only in heating) Alarm | 652 | Vacuum fault | Vacuum pump unable to reach the required pressure | Alarm |
| 656Mpump serviceVacuum pump needs an oil and filter changeWarning657Mpump start failureVacuum pump operating in wrong directionFatal alarm658Mpump start failureVacuum pump cannot start due to bad U/f ratioAlarm660Check coilCoil(s) acting suspiciousWarning661Check contactorContactor(s) acting suspiciousWarning662Mevap lo contactorMevap low contactor detected to be faulty (only in heating)Alarm | 653 | Mpump heat element | Vacuum pump operating temperature is low | Alarm |
| 657Mpump start failureVacuum pump operating in wrong directionFatal alarm658Mpump start failureVacuum pump cannot start due to bad U/f ratioAlarm660Check coilCoil(s) acting suspiciousWarning661Check contactorContactor(s) acting suspiciousWarning662Mevap lo contactorMevap low contactor detected to be faulty (only in heating)Alarm | 654 | Mpump temp high | Motor for vacuum pump is overheated | Alarm |
| 658 Mpump start failure Vacuum pump cannot start due to bad U/f ratio Alarm 660 Check coil Coil(s) acting suspicious Warning 661 Check contactor Contactor(s) acting suspicious Warning 662 Mevap lo contactor Mevap low contactor detected to be faulty (only in heating) Alarm | 656 | Mpump service | Vacuum pump needs an oil and filter change | Warning |
| 660Check coilCoil(s) acting suspiciousWarning661Check contactorContactor(s) acting suspiciousWarning662Mevap lo contactorMevap low contactor detected to be faulty (only in heating)Alarm | 657 | Mpump start failure | Vacuum pump operating in wrong direction | Fatal alarm |
| 661 Check contactor Contactor(s) acting suspicious Warning 662 Mevap lo contactor Mevap low contactor detected to be faulty (only in heating) Alarm | 658 | Mpump start failure | Vacuum pump cannot start due to bad U/f ratio | Alarm |
| 662 Mevap lo contactor Mevap low contactor detected to be faulty (only in heating) Alarm | 660 | Check coil | Coil(s) acting suspicious | Warning |
| | 661 | Check contactor | Contactor(s) acting suspicious | Warning |
| Mevap hi contactor Mevap high contactor detected to be faulty (only in heating) Alarm | 662 | Mevap lo contactor | Mevap low contactor detected to be faulty (only in heating) | Alarm |
| | 663 | Mevap hi contactor | Mevap high contactor detected to be faulty (only in heating) | Alarm |

| | | | 1 |
|-------|-----------------------------|---|-------------|
| 664 | Mevap contactors (both) | Both Mevap contactors detected to be faulty (only in heating) | Alarm |
| 665 | Hevap contactor | Hevap contactors detected to be faulty (only in heating) | Alarm |
| 666 | Reduced refr. flow | The flow of refrigerant in the system is reduced | Alarm |
| 670 | CA memb/hose leak | Vacuum pump has stopped due to leak | Alarm |
| 671 | Mpump vacuum loss | Vacuum pump has stopped due to loss of vacuum in the system | Alarm |
| 672 | Mpump oil low | Vacuum pump oil level is detected as being low | Alarm |
| 7. Co | mmunication alarms | | |
| 700 | No FC/Contr com | FC missing | Fatal alarm |
| 710 | No userpanel com | (Can only be seen in StarView) | Log |
| 720 | No SPM com | Communication to power module is missing | Alarm |
| 730 | No RH sens com | RH sensor is missing | Log |
| 740 | No CO ₂ sens com | CO ₂ sensor is missing or communication lost | Log |
| 750 | No SSC com | CA module is missing or communication is lost | Log |
| 760 | No O ₂ sens com | O ₂ sensor is missing or communication lost | Log |
| 780 | Modem | Sekstant gateway modem | Log |
| 8. Te | st alarms | | |
| 800 | Func test failed | Function test fault | Warning |
| 801 | Controller | Controller internal voltage reference fault | Warning |
| 802 | Air Ex Open | Manual airex is opened preventing other function tests to succeed | Warning |
| 803 | Reduced refr. flow | The flow of refrigerant in the system is reduced | Warning |
| 805 | Idle current | Unit idle overcurrent fault | Warning |
| 810 | Mevap cur LO speed | Evaporator motor low speed current fault | Warning |
| 811 | Mevap cur HI speed | Evaporator motor high speed current fault | Warning |
| 812 | Mevap current OFF | Evaporator motor off current fault | Warning |
| 815 | Mcond cur LO speed | Condenser motor low speed current fault | Warning |
| 816 | Mcond cur HI speed | Condenser motor high speed current fault | Warning |
| 817 | Mcond current OFF | Condenser motor off current fault | Warning |
| 819 | Contactor error | Contactor(s) acting suspicious | Warning |
| 820 | Hevap current ON | Evaporator heater on current fault | Warning |
| 821 | Hevap current OFF | Evaporator heater off current fault | Warning |
| 822 | Hevap current error | Hevap current failure | Warning |
| 826 | Hpump current ON | Heat vacuum pump too high or too low | Warning |
| 827 | Hpump current OFF | Measured current is too high when heater is turned off | Warning |
| 828 | Mpump oil level | Low oil in the vacuum pump | Warning |
| 830 | Mpump current error | Mpump current failure | Warning |
| 831 | Pmem sensor | Pmem above or below 1000 mBar (±60 mBar) after Mpump off for 300 sec. | Warning |
| 832 | CO ₂ sensor | No reading or value above 1% | Warning |
| 833 | O ₂ sensor | No reading or value out of range | Warning |
| 836 | Pmem vacuum | Unable to create vacuum | Warning |
| 837 | Pmem ambient | Not measuring Pmem pressure 1000 mBar (±60 mBar) | Warning |
| 838 | Mpump ON current | Current failure | Warning |
| 839 | Mpump OFF current | Current in off position is too high | Warning |
| 840 | Valve leaks | Valve leak fault | Warning |
| 841 | K1 contactor welded | Contactor damaged (always drawn) making FC always powered | Warning |
| 842 | Expansion valve | Expansion valve fault | Warning |
| 844 | Hot gas valve | Hot gas valve fault | Warning |
| 846 | FC check | FC internal fault | Warning |
| 847 | High press switch | High pressure switch fault | Warning |
| 848 | Temp press invalid | Temperature and pressure sensor malfunctioning | Warning |
| 849 | Valve error | Check that compressor can operate valves failed | Warning |
| 850 | PTI test failed | PTI test fault | Warning |
| 851 | Alarm is active | Active alarms turning ITI checkmark off | Warning |
| 852 | FC self test | FC self test not passed | Warning |
| 032 | i C Sell test | i C seii test iiut passeu | I vvariiiig |

| ٥٢٢ | DTI Took C | DTI FOC ask faulk | I waning |
|-------|---------------------------------------|---|--|
| 855 | PTI Tset 5 | PTI 5°C set fault | Warning |
| 860 | PTI Tset 0 | PTI 0°C set fault | Warning |
| 861 | Broken valve plates | Compressor mass flow indicates valve plate has become defect | Warning |
| 862 | LowRefrig/ExvBlock | Compressor mass flow too low | Warning |
| 863 | Expansion valve leak | Valve leaks fault | Warning |
| 870 | PTI defrost | PTI defrost fault | Warning |
| 880 | PTI Tset -18 | PTI -18°C set fault | Warning |
| 884 | Psuc invalid | Compressor suction pressure transmitter invalid | Warning |
| 885 | Tsup1 invalid | Supply air temperature sensor 1 invalid | Warning |
| 886 | Tsup2 invalid | Supply air temperature sensor 2 invalid | Warning |
| 887 | Tevap invalid | Evaporator temperature sensor invalid | Warning |
| 888 | Tsuc invalid | Suction temperature sensor invalid | Warning |
| 889 | Tret invalid | Return air temperature sensor invalid | Warning |
| 890 | PTI Tset 13 | PTI test fault | Warning |
| 894 | RH sensor | RH sensor communication missing | Warning |
| 895 | CO ₂ sensor | The CO ₂ sensor communication and CO ₂ level are tested | Warning |
| 896 | O ₂ sensor | The O ₂ sensor communication and O ₂ level are tested | Warning |
| 897 | Hpump broken | Vacuum pump could not be heated | Warning |
| 899 | ITI failed | ITI test fault | Log |
| 9. Co | ntroller alarms | | |
| 902 | Battery malfunction | Battery malfunctioning | Alarm |
| 904 | Datalog error | SCCU6 data log fault | Alarm |
| 905 | Database corrupt | SCCU6 database fault | Log |
| 907 | Realtime error | Real-time clock needs checking | Alarm |
| 953 | Temp ref 1 LO | Controller internal voltage reference fault | Warning |
| 954 | Temp ref 1 HI | Controller internal voltage reference fault | Warning |
| 955 | Temp ref 2 LO | Controller internal voltage reference fault | Warning |
| 956 | Temp ref 2 HI | Controller internal voltage reference fault | Warning |
| 961 | Pdis sens sup LO | Controller internal voltage reference fault | Log |
| 962 | Pdis sens sup HI | Controller internal voltage reference fault | Log |
| 963 | Psuc sens sup LO | Controller internal voltage reference fault | Log |
| 964 | Psuc sens sup HI | Controller internal voltage reference fault | Log |
| 965 | Controller sup LO | Controller internal voltage reference fault | Log |
| 966 | Controller sup HI | Controller internal voltage reference fault | Log |
| 967 | AirExMot sup LO | Controller internal voltage reference fault | Log |
| 968 | AirExMot sup HI | Controller internal voltage reference fault | Log |
| 969 | AirEx sens sup LO | Controller internal voltage reference fault | Log |
| 970 | AirEx sens sup HI | Controller internal voltage reference fault | Log |
| 971 | Sensor bus sup LO | Controller internal voltage reference fault | Log |
| 971 | Sensor bus sup HI | Controller internal voltage reference fault | Log |
| 972 | SUP6 SPM6 sup LO | Supply voltage SUP6 SPM6 low | Log |
| 973 | · · · · · · · · · · · · · · · · · · · | | |
| | SUP6 SPM6 sup HI | Supply voltage SUP6 SPM6 high | Log |
| 975 | Internal sup LO | 12 V supply voltage low on SMC6 | Log |
| 976 | Internal sup HI | 12 V supply voltage high on SMC6 | Log |
| 977 | Pmem sens sup LICH | Controller internal voltage reference fault | Log |
| 978 | Pmem sens sup HIGH | Controller internal voltage reference fault | Log |
| 990 | Firmware update fail | Failed to activate firmware | Alarm |
| 991 | Config model mode | Model code missing | Alarm |
| 994 | Req min SW352-11 | The software which has been uploaded to the controller is not compatible with the current hardware version, please use software 0352 rev. 11 or newer | Alarm |
| 995 | Contr internal error | Controller module must be replaced | Alarm |
| 998 | Could not detect CA | Unable to detect CA | Alarm |
| 999 | Keyboard failure | Indication of defective keyboard or connection | Warning |
| | | | |

5.3 Temperature sensor alarms (AL 1XX)

| 102 | Tret invalid Ala | | | | Alarm | |
|------------------|---|--------------|--------------|-----------------|--------------|------------|
| Description | Return air temperature sensor invalid. | | | | | |
| Cause | Unexpected behaviour in old software version. | | | | | |
| | Cable has been improperly spliced. | | | | | |
| | Indication of defective return air temperature sensor or its measuring circuitry. | | | | | |
| | Active alarms AL 1 | .00 or AL 10 | 01 (if CIM 5 | software). | | |
| | • Temperature sense -50°C (-58°F) or a | | | | | |
| Trouble shooting | Try to correct the controller. | error by up | loading the | latest software | e version to | the |
| | 2. Inspect the sensor done splice, cut or | | | | | |
| | 3. If alarms AL 100 c | or AL 101 ar | e active, ch | neck their trou | ble shooting | first. |
| | 4. Disconnect the sensor cable for sensor Tret from the connector on the main controller, according to the wiring schematics inside in the control cabinet. | | | | | |
| | 5. Measure the resistance between the two wires. If the resistance is out of range, see "Temperature sensor - resistance table", the temperature sensor and cable are defective and should be replaced. | | | | | |
| Criteria | Sensor is defective an value from AAS system | | | | | d by a |
| Controller | Replaced by new valu | e from AAS | system. | | | |
| action | Log | Χ | Alarm | Х | Alarm light | Slow flash |
| Consequence | Deteriorated control p | recision in | Freeze mod | le. | , | |
| Elimination | When sensor value becomes valid, it is marked as inactive in the alarm list and may then be deleted. Value must be valid for 60 sec. to set alarm inactive. | | | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data | Detection/error 1 = Max limit 2 = Min limit 5 = Relations 6 = Connection 7 = Derivatives 8 = Ventilation mode | Low limit | High limit | Actual value | | |

| 105 | Tsup 1 invalid Alarn | | | | | | |
|------------------|---|---|------------|--|--|--|--|
| Description | Supply air temperature sensor 1 invalid. | | | | | | |
| Cause | Unexpected behaviour in old software version. | | | | | | |
| | Cable has been improperly spliced. | Cable has been improperly spliced. | | | | | |
| | Indication of defective supply air tempera or sensor not mounted correctly in unit. | ature sensor, its measuring | circuitry | | | | |
| | Active alarms AL 103 or AL 104 (if CIM 5) | Active alarms AL 103 or AL 104 (if CIM 5 software). | | | | | |
| | Temperature sensor reading is out of vali -50°C (-58°F) or above +100°C (+212°F) | | | | | | |
| | Difference between Tsup1 and Tsup2 is la 1°C difference for more than 30 min. up min. | | e than 3 | | | | |
| Trouble shooting | 1. Try to correct the error by uploading the controller. | latest software version to | the | | | | |
| | 2. Inspect the sensor cable for damages an done splice, cut out the damaged part ar | | | | | | |
| | 3. If alarms AL 103 or AL 104 are active, ch | neck their trouble shooting | first. | | | | |
| | Check that both sensors, Tsup1 and Tsup2 are mounted correct in the supply air pockets. | | | | | | |
| | 5. Disconnect the sensor cable for sensor Ts controller, according to the wiring scheme | • | | | | | |
| | 6. Measure the resistance between the two range, see "Temperature sensor - resista and cable are defective and should be reposition." | nce table", the temperature | | | | | |
| Criteria | Value is below alarm limit -50°C (-58°F) or a between Tsup1 and Tsup2 is more than 1°C 30 sec. for alarm activation. | | | | | | |
| Controller | Replacement by new value from AAS system | 1. | | | | | |
| action | Log X Alarm | X Alarm light | Slow flash | | | | |
| Consequence | Deteriorated control precision in Chill mode. | | | | | | |
| Elimination | When sensor value becomes valid, it is marked as inactive in the alarm list and may then be deleted. Value must be valid for 60 sec. to set alarm inactive. | | | | | | |
| | Parm 1 Parm 2 Parm 3 | Parm 4 Parm 5 | | | | | |
| Log data | Detection/error 1 = Max limit 2 = Min limit 5 = Relations 6 = Connection 7 = Derivatives 8 = Ventilation mode | Actual value | | | | | |

| 108 | Tsup 2 invalid | | | | | Alarm | | |
|------------------|---|--|---------------|-----------------|----------------|--------------|--|--|
| Description | Supply air temperature | Supply air temperature sensor 2 invalid. | | | | | | |
| Cause | Unexpected behavi | iour in old | software ve | rsion. | | | | |
| | Cable has been im | properly sp | oliced. | | | | | |
| | Indication of defect or sensor not mour | | | ature sensor o | r its measurir | ng circuitry | | |
| | Active alarms AL 1 | 06 or AL 1 | 07 (if CIM 5 | software). | | | | |
| | Temperature sensor reading is out of valid range: -50°C (-58°F) or above +100°C (+212°F). | | | | | | | |
| | Difference betweer 1°C difference for i min. | | | | | ore than 3 | | |
| Trouble shooting | Try to correct the econtroller. | Try to correct the error by uploading the latest software version to the controller. | | | | | | |
| | 2. Inspect the sensor done splice, cut ou | | | | | | | |
| | 3. If alarms AL 106 or | r AL 107 a | re active, ch | neck their trou | ble shooting | first. | | |
| | 4. Check that both se air pockets. | nsors, Tsu | p1 and Tsup | 2 are mounte | d correct in t | he supply | | |
| | 5. Disconnect the sen controller, accordin | | | • | | | | |
| | 6. Measure the resistance between the two wires. If the resistance is out of range, see "Temperature sensor - resistance table", the temperature sensor and cable are defective and should be replaced. | | | | | | | |
| Criteria | Value is below alarm li between Tsup1 and Ts Value invalid for 30 se | up2 is mor | e than 1°C | for 30 min. or | | | | |
| Controller | Replacement by new v | alue from | AAS system | 1. | | | | |
| action | Log | Χ | Alarm | Х | Alarm light | Slow flash | | |
| Consequence | Deteriorated control p | | | | | | | |
| Elimination | When sensor value bed may then be deleted. | | be valid fo | | | | | |
| | | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | Detection/error 1 = Max limit 2 = Min limit 5 = Relations 6 = Connection 7 = Derivatives 8 = Ventilation mode | Low limit | High limit | Actual value | | | | |

| 111 | Tusda 1 ou | it of ran | ige | | | Log |
|------------------|---|--|---------------|-------------------------------------|---------------|------------------|
| Description | USDA 1 tempera | ture sensor | invalid. | | | |
| Cause | Unexpected | oehaviour ir | old softwar | re version. | | |
| | Cable has be | en imprope | rly spliced. | | | |
| | Indication of or sensor not | | | | or or its mea | suring circuitry |
| | Active alarms | Active alarms AL 109 or AL 110 (if CIM 5 software). | | | | |
| | | erature sensor reading is out of valid range: (-58°F) or above +100°C (+212°F). | | | | |
| Trouble shooting | Try to correct controller. | t the error b | y uploading | the latest sof | tware versior | to the |
| | 2. Inspect the s | | | es and poor spl art and splice t | | |
| | 3. If alarms AL | 109 or AL 1 | .10 are activ | e, check their | trouble shoo | ting first. |
| | | Disconnect the sensor cable for sensor Tusda1 from the connector on the main controller, according to the wiring schematics inside in the control cabinet. | | | | |
| | range, see "7 | . Measure the resistance between the two wires. If the resistance is out of range, see "Temperature sensor - resistance table", the temperature sensor and cable are defective and should be replaced. | | | | |
| Criteria | Activated by UW | S. | 1 | - | | |
| Controller | | | | | | |
| action | Log | Χ | Alarm | | Alarm light | Off |
| Consequence | If cold treatment | t (CT) is act | ivated, it wi | II be affected. | | |
| Elimination | Alarm is not active until the u | | | | gain. The ala | rm remains |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data | Detection/error 1 = Max limit 2 = Min limit | Low limit | High limit | Actual value | | |

| 114 | Tusda 2 ou | t of rar | nge | | | Log |
|------------------|---|---|---------------|----------------------------------|----------------|-------------|
| Description | USDA 2 temperat | ure sensor | invalid. | | | |
| Cause | Unexpected b | ehaviour ir | n old softwa | re version. | | |
| | Cable has been | en imprope | rly spliced. | | | |
| | | Indication of defective supply air temperature sensor or its measuring circuitry or sensor not mounted correctly in unit. | | | | |
| | Active alarms AL 112 or AL 113 (if CIM 5 software). | | | | | |
| | | Temperature sensor reading is out of valid range: -50°C (-58°F) or above +100°C (+212°F). | | | | |
| Trouble shooting | Try to correct controller. | the error b | by uploading | g the latest so | ftware version | n to the |
| | 2. Inspect the se done splice, c | | | es and poor sp art and splice | | |
| | 3. If alarms AL 1 | 12 or AL 1 | .13 are activ | ve, check their | trouble shoo | ting first. |
| | | I. Disconnect the sensor cable for sensor Tusda1 from the connector on the main controller, according to the wiring schematics inside in the control cabinet. | | | | |
| | range, see "Te | 5. Measure the resistance between the two wires. If the resistance is out of range, see "Temperature sensor - resistance table", the temperature sensor and cable are defective and should be replaced. | | | | |
| Criteria | Activated by UWS | 5. | | | | |
| Controller | | | | | | |
| action | Log | X | Alarm | | Alarm light | Off |
| Consequence | If cold treatment | (CT) is act | ivated, it w | ill be affected. | | |
| Elimination | Alarm is not active active until the ur | | | | | rm remains |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data | Detection/error 1 = Max limit 2 = Min limit | Low limit | High limit | Actual value | | |

| 117 | Tusda 3 ou | it of rar | ige | | | Log |
|------------------|---|--|---------------|-------------------------------------|---------------|-------------|
| Description | USDA 3 tempera | ature sensor | invalid. | | | |
| Cause | Unexpected | behaviour ir | n old softwa | re version. | | |
| | Cable has be | en imprope | rly spliced. | | | |
| | | Indication of defective supply air temperature sensor or its measuring circuitry or sensor not mounted correctly in unit. | | | | |
| | Active alarms | Active alarms AL 115 or AL 116 (if CIM 5 software). | | | | |
| | | rature sensor reading is out of valid range: (-58°F) or above +100°C (+212°F). | | | | |
| Trouble shooting | Try to correc controller. | t the error b | by uploading | the latest sof | tware versior | to the |
| | 2. Inspect the s done splice, | | | es and poor spl art and splice t | | |
| | 3. If alarms AL | 115 or AL 1 | .16 are activ | e, check their | trouble shoo | ting first. |
| | | Disconnect the sensor cable for sensor Tusda1 from the connector on the main controller, according to the wiring schematics inside in the control cabinet. | | | | |
| | range, see " | . Measure the resistance between the two wires. If the resistance is out of range, see "Temperature sensor - resistance table", the temperature sensor and cable are defective and should be replaced. | | | | |
| Criteria | Activated by UW | 'S. | ' | - | | |
| Controller | | | | | | |
| action | Log | Х | Alarm | | Alarm light | Off |
| Consequence | If cold treatmen | t (CT) is act | ivated, it wi | II be affected. | | |
| Elimination | Alarm is not active until the u | | | | gain. The ala | rm remains |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data | Detection/error 1 = Max limit 2 = Min limit | Low limit | High limit | Actual value | | |

| 120 | Tcargo out of range Log | | | | |
|------------------|--|--|--|--|--|
| Description | Cargo temperature sensor invalid. | | | | |
| Cause | Unexpected behaviour in old software version. | | | | |
| | Cable has been improperly spliced. | | | | |
| | Indication of defective supply air temperature sensor or its measuring circuitry or sensor not mounted correctly in unit. | | | | |
| | Active alarms AL 118, AL 119 (if CIM 5 software). | | | | |
| | Temperature sensor reading is out of valid range: -50°C (-58°F) or above +100°C (+212°F). | | | | |
| Trouble shooting | Try to correct the error by uploading the latest software version to the controller. | | | | |
| | 2. Inspect the sensor cable for damages and poor splices. If there is a poorly done splice, cut out the damaged part and splice the cable properly. | | | | |
| | 3. If alarms AL 118 or AL 119 are active, check their trouble shooting first. | | | | |
| | 4. Disconnect the sensor cable for sensor Tusda1 from the connector on the main controller, according to the wiring schematics inside in the control cabinet. | | | | |
| | . Measure the resistance between the two wires. If the resistance is out of range, see "Temperature sensor - resistance table", the temperature sensor and cable are defective and should be replaced. | | | | |
| Criteria | Activated by UWS. | | | | |
| Controller | | | | | |
| action | Log X Alarm Alarm light Off | | | | |
| Consequence | If cold treatment (CT) is activated, it will be affected. | | | | |
| Elimination | Alarm is not active even if the sensor comes in range again. The alarm remains active until the unit has been rebooted (power cycle). | | | | |
| | Parm 1 Parm 2 Parm 3 Parm 4 Parm 5 | | | | |
| Log data | Detection/error Low limit High limit Actual value 1 = Max limit 2 = Min limit | | | | |

| 123 | Tevap invalid | | | | Warning | |
|------------------|---|---|---------------|-----------------|---|--|
| Description | Evaporator temperature sensor invalid. | | | | | |
| Cause | Unexpected behave | iour in old | software ve | ersion. | | |
| | Cable has been im | nproperly sp | oliced. | | | |
| | Indication of defect circuitry. | ctive evapoi | rator tempe | rature sensor | or its measuring | |
| | Active alarms AL 1 | • Active alarms AL 121 or AL 122 (if CIM 5 software) | | | | |
| | • Temperature sens -50°C (-58°F) or a | | | | | |
| Trouble shooting | Try to correct the controller. | . Try to correct the error by uploading the latest software version to the controller. | | | | |
| | | Inspect the sensor cable for damages and poor splices. If there is a poorly done splice, cut out the damaged part and splice the cable properly. | | | | |
| | 3. If alarms AL 121 of | or AL 122 a | re active, cl | neck their trou | ble shooting first. | |
| | | | | | connector on the main the control cabinet. | |
| | range, see "Tempe | 5. Measure the resistance between the two wires. If the resistance is out of range, see "Temperature sensor - resistance table", the temperature sensor and cable are defective and should be replaced. | | | | |
| Criteria | | /alue below alarm limit -50°C (-58°F) or above +100°C (+212°F). Value must be nvalid for 30 sec. for alarm activation. | | | | |
| Controller | Replacement by new | value from | AAS system | ١. | | |
| action | Log | Χ | Alarm | Х | Alarm light Off | |
| Consequence | | | | , | | |
| Elimination | When sensor value be may then be deleted. | | | | e in the alarm list and et alarm inactive. | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data | Detection/error 1 = Max limit 2 = Min limit 5 = Relations 6 = Connection 7 = Derivatives 8 = Ventilation mode | Low limit | High limit | Actual value | | |

| 126 | Tsuc invalid | | | | | Alarm |
|------------------|---|--|---------------|------------------|--------------|------------|
| Description | Suction temperature sensor invalid. | | | | | |
| Cause | Unexpected behave | iour in old | software ve | rsion. | | |
| | Cable has been im | properly sp | oliced. | | | |
| | Indication of defect | ctive suction | n temperatu | ire sensor or it | ts measuring | circuitry. |
| | Active alarms AL 1 | Active alarms AL 124 or AL 125 (if CIM 5 software). | | | | |
| | • Temperature senser-50°C (-58°F) or a | | | | | |
| Trouble shooting | 1. Try to correct the controller. | , | | | | |
| | | Inspect the sensor cable for damages and poor splices. If there is a poorly done splice, cut out the damaged part and splice the cable properly. | | | | |
| | 3. If alarms AL 124 of | or AL 125 a | re active, cl | neck their trou | ble shooting | first. |
| | 4. Disconnect the ser controller, according | | | | | |
| | 5. Measure the resist range, see "Tempe and cable are defe | erature sen | sor - resista | nce table", the | | |
| Criteria | | Value below alarm limit -50°C (-58°F) or above $+100$ °C (+212°F). Value must be invalid for 30 sec. for alarm activation. | | | | |
| Controller | Replacement by new | value from | AAS system | ١. | | |
| action | Log | Х | Alarm | Х | Alarm light | Slow flash |
| Consequence | Superheat control dea | | | | | |
| Elimination | When sensor value be may then be deleted. | ecomes vali | d, it is mark | ked as inactive | in the alarm | list and |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data | Detection/error 1 = Max limit 2 = Min limit 5 = Relations 6 = Connection 7 = Derivatives 8 = Ventilation mode | Low limit | High limit | Actual value | | |

| 129 | Tamb invali | d | | | | Alarm |
|------------------|--|---|--------------|------------------|---------------|--------------|
| Description | Ambient temperate | ure sensor i | invalid. | | | |
| Cause | Unexpected be | haviour in o | old software | version. | | |
| | Cable has beer | improperly | / spliced. | | | |
| | Indication of delay | Indication of defective supply ambient sensor or its measuring circuitry. | | | | cuitry. |
| | Active alarms A | Active alarms AL 127 or AL 128. | | | | |
| | • Temperature se -50°C (-58°F) | | | | | |
| Trouble shooting | Try to correct t controller. | . Try to correct the error by uploading the latest software version to the controller. | | | | o the |
| | | Inspect the sensor cable for damages and poor splices. If there is a poorly done splice, cut out the damaged part and splice the cable properly. | | | | |
| | 3. If alarms AL 12 | 27 or AL 12 | 8 are active | , check their tr | ouble shootir | ng first. |
| | 4. Disconnect the controller, acco | | | | | |
| | range, see "Ter | 5. Measure the resistance between the two wires. If the resistance is out of range, see "Temperature sensor - resistance table", the temperature sensor and cable are defective and should be replaced. | | | | |
| Criteria | Value below alarm invalid for 30 sec. | | | above +100°C | C (+212°F). V | alue must be |
| Controller | Replacement by ne | ew value fro | m AAS syst | tem. | | |
| action | Log | Х | Alarm | X | Alarm light | Slow flash |
| Consequence | No consequence as | s to control | • | | | |
| Elimination | Alarm inactive afte | er power cy | cle. | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data | Detection/error: 1 = Max limit 2 = Min limit | Low limit | High limit | Actual value | | |

| 132 | Tpump inva | alid | | | | Alarm |
|------------------|--|--|--------------|----------------|-------------|------------|
| Description | Vacuum pump te | mperature s | sensor inval | id. | | |
| Cause | Unexpected b | ehaviour in | old softwar | e version. | | |
| | Cable has been | en improper | ly spliced. | | | |
| | Temperature | Temperature sensor Tpump or its cable is defective. | | | | |
| | | Temperature sensor reading is out of valid range: Below -35°C (-31°F) or above +130°C (+266°F). | | | | |
| Trouble shooting | Try to correct controller. | . Try to correct the error by uploading the latest software version to the controller. | | | | |
| | | Inspect the sensor cable for damages and poor splices. If there is a poorly done splice, cut out the damaged part and splice the cable properly. | | | | |
| | | Disconnect the sensor cable for sensor Tpump from the connector on the controller module, according to the wiring schematic inside the control cabinet. | | | | |
| | range, see "To | . Measure the resistance between the two wires. If the resistance is out of range, see "Temperature sensor - resistance table", the temperature sensor and cable are defective and should be replaced. | | | | |
| Criteria | Reading below -3 | 5°C (-31°F |) or above - | +130°C (+266° | PF). | |
| Controller | | | | | | |
| action | Log | Χ | Alarm | Х | Alarm light | Slow flash |
| Consequence | It is not possible | to control t | he heating e | element in the | vacuum pum | ıp. |
| Elimination | When the sensor and may then be | | | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data | Detection/error: 1 = Max limit 2 = Min limit | Low limit | High limit | Actual value | | |

| 148 | Tsup erro | or | | | | Alarm | |
|------------------|-------------------------|--|-----------------|---------|-------------|------------|--|
| Description | Supply air ten | Supply air temperature error. | | | | | |
| Cause | Unexpecte | d behaviour in | old software v | ersion. | | | |
| | Cable has | Cable has been improperly spliced. | | | | | |
| | Tsup1 and | Tsup2 deviate | s too much. | | | | |
| Trouble shooting | Try to corr controller. | , | | | | | |
| | | . Inspect the sensor cable for damages and poor splices. If there is a poorly done splice, cut out the damaged part and splice the cable properly. | | | | | |
| | 3. Check trou | 3. Check trouble shooting information for AL 105 and AL 108. | | | | | |
| Criteria | | Difference between Tsup1 and Tsup2 integrated to more than 30°C_min, e.g. 1°C for 30 minutes, 6°C for 5 minutes or 30°C for 1 minute. | | | | | |
| Controller | No control act | ion. | | | | | |
| action | Log | Х | Alarm | Х | Alarm light | Slow flash | |
| Consequence | Deteriorated of | control precisio | n in Chill mode | 2. | | | |
| Elimination | Power cycle to | set alarm ina | ctive. | | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Tsup1 | Tsup2 | Tevap | Tret | | | |

5.4 Pressure transmitter alarms (AL 2XX)

| 202 | Pdis unre | Pdis unrealistic Alarm | | | | |
|------------------|---------------------------------|---|-------------|--------|-------------|------------|
| Description | Tc value is abo | c value is above the limit that is realistic for the system. | | | | |
| Cause | Connector | Connector for high pressure transmitter X22. | | | | |
| | Cable has be | een improperl | ly spliced. | | | |
| Trouble shooting | Disconnect 2. Inspect the | Ensure screw terminals on X22 are correctly tightened and connected. Disconnect and reconnect the controller plug X22. Inspect the sensor cable for damages and poor splices. If there is a poorly done splice, cut out the damaged part and splice the cable properly. | | | | |
| Criteria | Tc > 80 °C for | c > 80 °C for more than 30 seconds. | | | | |
| Controller | | | | | | |
| action | Log | Χ | Alarm | X | Alarm light | Slow flash |
| Consequence | Unit stops. | | | | | |
| Elimination | Unit restarts at marked as inac | | | | | . Alarm is |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data | Actual Tc | Actual Tret | Actual Tamb | | | |

| Cause Trouble shooting | Unexpected behaving Cable has been implication of defection of defection of the connector for high the High pressure transpection of the Cable for high pressure transpection of the Cable for high pressure the Main controller defection of the HP transpection of the Cable (AKS): | properly splice properly splice tive compress pressure transmitter Pdis of sure transmit lve. efective. in display with according to nitter. cable for dar ed part and secure transmit error by uploa | th service gapilice the cab | n. e pressure trans not correctly m ective. uge. Disconnect chematics insid | t the cable for e the control c | Pdis from abinet and |
|--------------------------|--|--|--|--|--|--|
| Trouble shooting | Cable has been im Indication of defect circuitry. Connector for high High pressure tran Cable for high press Check Schrader va X22 and cable is do Main controller def Compare pressure the main controller from the HP trans Inspect the sensor cut out the damage Try to correct the ec Check that the contransmitter AKS or | properly splice tive compress pressure transmitter Pdis of soure transmitlye. efective. in display with according to nitter. cable for dared part and secure by uploadenector is more | sed. sor discharge nsmitter Pdis defective. tter Pdis defe | e pressure trans not correctly mective. uge. Disconnect chematics inside | t the cable for e the control c | Pdis from abinet and |
| Trouble shooting | Indication of defective circuitry. Connector for high High pressure tran Cable for high pressure the Kallon Cable for high pressure the Cable for high pressure the main controller defective main controller from the HP transmitter the damage. Try to correct the each check that the contransmitter AKS or | pressure transmitter Pdis of saure transmitler. efective. in display with according to nitter. cable for dared part and serror by uploatinector is months. | nsmitter Pdisdefective. tter Pdis defective d | not correctly mective. uge. Disconnect chematics inside the corrections of the correction of the corr | t the cable for e the control c | Pdis from abinet and |
| Trouble shooting | circuitry. Connector for high High pressure tran Cable for high press Check Schrader va X22 and cable is do Main controller def Compare pressure the main controller from the HP transn Inspect the sensor cut out the damage Try to correct the econ transmitter AKS or | pressure tra smitter Pdis of sure transmi lve. efective. in display with according to nitter. cable for dar ed part and serror by uploa | nsmitter Pdis defective. tter Pdis defe th service ga the wiring s mages and po | not correctly mective. uge. Disconnect chematics inside the corrections of the correction of the corr | t the cable for e the control c | Pdis from abinet and |
| Trouble shooting | High pressure tran Cable for high press Check Schrader va X22 and cable is do Main controller def Compare pressure the main controller from the HP transm Inspect the sensor cut out the damage Try to correct the econtransmitter AKS or | smitter Pdis of source transmiture. efective. in display with according to nitter. cable for darked part and secure by uploadinector is more source. | th service ga the wiring s | uge. Disconnect chematics insid | t the cable for e the control c | abinet and |
| Trouble shooting | Cable for high press Check Schrader va X22 and cable is de Main controller def Compare pressure the main controller from the HP transm Inspect the sensor cut out the damage Try to correct the econ transmitter AKS or | ssure transminute. efective. in display with according to nitter. cable for dared part and serror by uploates. | th service ga the wiring s mages and po plice the cab | uge. Disconnect chematics insid oor splices. If th | e the control c | abinet and |
| Trouble shooting | Check Schrader va X22 and cable is de Main controller def Compare pressure the main controller from the HP transm Inspect the sensor cut out the damage Try to correct the econtransmitter AKS or | lve. efective. in display with according to nitter. cable for dared part and serror by uploates | th service ga the wiring s mages and po plice the cab | uge. Disconnect chematics insid oor splices. If th | e the control c | abinet and |
| Trouble shooting | X22 and cable is do Main controller def Compare pressure the main controller from the HP transn Inspect the sensor cut out the damage Try to correct the e Check that the con transmitter AKS or | efective. in display with according to nitter. cable for dared part and serror by uploansector is more | the wiring s mages and po plice the cab | chematics insid | e the control c | abinet and |
| Trouble 1. shooting | Main controller def Compare pressure the main controller from the HP transn Inspect the sensor cut out the damage Try to correct the e Check that the con transmitter AKS or | in display with according to nitter. cable for dared part and serror by uploated in the control of the control | the wiring s mages and po plice the cab | chematics insid | e the control c | abinet and |
| Trouble shooting 1. | Compare pressure the main controller from the HP transmore cut out the damage. Try to correct the example Check that the contransmitter AKS or | in display with according to mitter. cable for dared part and serror by uploated in motion in m | the wiring s mages and po plice the cab | chematics insid | e the control c | abinet and |
| shooting | the main controller from the HP transn Inspect the sensor cut out the damage. Try to correct the each check that the contransmitter AKS or | r according to nitter. cable for dar ed part and s error by uploa nector is mo | the wiring s mages and po plice the cab | chematics insid | e the control c | abinet and |
| | cut out the damage Try to correct the e Check that the con transmitter AKS or | ed part and serror by uploa error by uploa enector is mo | plice the cab | | nere is a poorly | done splice, |
| 2. | Check that the con transmitter AKS or | nector is mo | ading the late | | | • , |
| 3. | transmitter AKS or | | | est software ver | sion to the cor | ntroller. |
| 4. | the cable (ARS). | · NSK respect | | | | |
| | 1 Supply 3 dutput 2 Ground 2 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | Sup | ound oply voltage Ø0.95" _(Ø24.0) Typ | | | |
| | Figure for AKS | Figure for | NSK | | | |
| 5. | Check the cable (magnetic cable). | neasure the re | esistance in tl | ne cable). If the | cable is defect | tive, replace |
| | Mount the cable for wire on main controller. AKS: If voltage is becable is defective. NSK: If voltage is leadle is defective. Mount signal wire. AKS: If voltage is bemain controller. NSK: If the voltage replace main controller. | oller. Measure below 0.5 V D If voltage is below 0.37 V If voltage is below 0.5 V Measure volt between 0.5 V e is between | e voltage bet DC, transmitt between 0.5 DC, transmit between 0.37 age between DC and 4.5 0.37 V DC ar | ween wire and (er or connection V DC and 4.5 V tter or connection V DC and 4.0 V SIGNAL and GIV DC and this and 4.0 V DC and | GND on main of between trance on between trance on between trance on DC, continue ND. I this alarm is | controller. esmitter and to 6. ensmitter and e to 6. eive, replace still active, |
| | lue below alarm limi ralid for 30 sec. for a | | | e 30/31.9 BarE | (435/462 Psi) | . Value |
| Controller Log | 9 | Х | Alarm | Х | Alarm light | Slow flash |
| Consequence | | | | | | |
| Elimination Whose | nen transmitter value deleted. Value must | e becomes va t be valid for | lid, it is mark 60 sec. to se | ced as inactive i t alarm inactive | n alarm list an | d may then |
| | rm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data 1 = 2 = | tection/error = Max limit = Min limit = Internal sensor diagnostics | Low limit | High limit | Actual value | | |

| 206 | Psuc unre | Psuc unrealistic Alarm | | | | | | |
|------------------|---------------------------|--|-----------------|----------------|-------------|------------|--|--|
| Description | T0 value is bel | T0 value is below the limit that is realistic for the system. | | | | | | |
| Cause | • Connector | Connector for low pressure transmitter X22. | | | | | | |
| | Cable has be | Cable has been improperly spliced. | | | | | | |
| Trouble shooting | Disconnect 2. Inspect the | Ensure screw terminals on X22 are correctly tightened and connected. Disconnect and reconnect the controller plug X22. Inspect the sensor cable for damages and poor splices. If there is a poorly done splice, cut out the damaged part and splice the cable properly. | | | | | | |
| Criteria | T0 < -65 °C fo | T0 < -65 °C for more than 30 seconds. | | | | | | |
| Controller | | | | | | | | |
| action | Log | X | Alarm | X | Alarm light | Slow flash | | |
| Consequence | Compressor is | slowed down a | and only operat | ting at 20 Hz. | | | | |
| Elimination | | When sensor value is in a realistic range, it is marked as inactive in the alarm list and may then be deleted. Value must be valid for 30 sec. to set alarm inactive. | | | | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | Actual T0 | Actual Tret | Actual Tamb | | | | | |

| 207 | Psuc invalid | | | | | Alarm | | | | |
|---|--|--|--|--|--|--|--|--|--|--|
| Description | Compressor suction pr | essure transn | nitter invalid. | | ' | • | | | | |
| Cause | Unexpected behavior | iour in old sof | tware versio | n. | | | | | | |
| | Cable has been im | properly splic | ed. | | | | | | | |
| | Indication of defection circuitry. | tive compress | sor suction pi | ressure transm | itter or its me | asuring | | | | |
| | Connector for sucti | ion pressure t | ransmitter P | suc not correct | ly mounted. | | | | | |
| | Suction pressure tr | ansmitter Ps | uc defective. | | | | | | | |
| | Cable for suction p | ressure trans | mitter Psuc o | lefective. | | | | | | |
| | Check Schrader va | lve. | | | | | | | | |
| | X22 and cable is defined to the second cable is defined as | efective. | | | | | | | | |
| | Main controller def | ective. | | | | | | | | |
| Trouble shooting | Compare pressure main controller acc the suction pressure | ording to the | wiring scher | | | | | | | |
| | 2. Inspect the sensor cut out the damage | | | | here is a poor | ly done splice, | | | | |
| | 3. Try to correct the e | Try to correct the error by uploading the latest software version to the controller. | | | | | | | | |
| | transmitter AKS or the cable (AKS): | transmitter AKS or NSK respectively. The earth stud must be on the opposite side of the cable (AKS): | | | | | | | | |
| Ground Supply voltage © 1 Supply 3 output 2 Ground C 2 Ground Output Output | | | | | | | | | | |
| | Figure for AKS | Figu | re for NSK | | | | | | | |
| | 5. Check the cable (m replace cable. | neasure the r | esistance in t | he cable). If th | ne cable is def | ective, | | | | |
| | 6. Mount the cable for wire on main contr | | | | | | | | | |
| | AKS: If voltage is be cable is defective. NSK: If voltage is leader is defective. 7. Mount signal wire. AKS: If voltage is be main controller. NSK: If the voltage replace main control | If voltage is to below 0.37 V If voltage is to Measure voltoetween 0.5 V e is between 0.600 is between 0.600 is between 0.600 is between 0.600 is setween 0.600 | Detween 0.5 NDC, transmit petween 0.37 age between 4.5 DC and 4.5 DC 37 V DC and 4.5 | V DC and 4.5 V ter or connecti V DC and 4.0 SIGNAL and G V DC and this d 4.0 V DC and | / DC, continue fon between tr V DC, continu GND. alarm is still a d this alarm is | to 6. ransmitter and e to 6. active, replace still active, | | | | |
| Criteria | Value below alarm limi 30 sec. for alarm active | | ·13 Psi) or ab | ove 11.8 BarE | (171 Psi). Val | ue invalid for | | | | |
| Controller action | Log | Х | Alarm | X | Alarm light | Slow flash | | | | |
| Consequence | | | | | | | | | | |
| Elimination | When sensor value bed deleted. Value must be | | | | larm list and n | nay then be | | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | | | |
| Log data | Detection/error 1 = Max limit 2 = Min limit 8 = Internal sensor diagnostics | Low limit | High limit | Actual value | | | | | | |

| 214 | Pmem inva | lid | | | | Alarm | |
|------------------|---|---|---|--|---|-----------------|--|
| Description | Vacuum pump pro | essure tran | smitter inva | ılid. | | | |
| Cause | Unexpected by | ehaviour in | old softwar | e version. | | | |
| | Cable has bee | n imprope | rly spliced. | | | | |
| | Connector for | pressure t | ransmitter F | mem not corr | ectly mounte | d. | |
| | Vacuum pump | pressure | transmitter | Pmem defectiv | ve. | | |
| | Cable for vacu | ium pump | pressure tra | nsmitter Pme | m defective. | | |
| Trouble shooting | Try to correct controller. | Try to correct the error by uploading the latest software version to the controller. | | | | | |
| | 2. Inspect the se splice, cut out | | | | | a poorly done | |
| | Schneider (gro Schneider (gro | 3. Check the resistance on contactor coil K9 and K10 between A1 and A2. Schneider (grey type) coil resistance is 6-8 Ω Schneider (green type) coil resistance is 8-10 Ω Danfoss coil resistance is 5-6 Ω | | | | | |
| | 4. Check that the | connector | is mounted | correctly acco | ording to the v | viring diagram. | |
| | a. Check the defective, | | | sistance in the | e cable). If the | e cable is | |
| | according If voltage transmitte If not, thei If voltage | oltage betwanto wiring some some some some some some some some | ween signal chematic. 2 V DC, trare is defective gnal wire. Mc 0.2 V DC a | wire and GND smitter or cor e. easure voltage | on controller inection betwo between SIG nd this alarm | module | |
| Criteria | Pmem out of rang | je for more | than 30 se | С. | | | |
| Controller | | | | | | | |
| action | Log | Х | Alarm | Χ | Alarm light | Slow flash | |
| Consequence | | | | | | | |
| Elimination | When the transm deleted. Value mu | | | | | d can be | |

5.5 Other sensor alarms (AL 3XX)

| 302 | RH invalid Alarm | | | | | | | |
|------------------|---|---|---------------|-----------------|------------------|------------------|--|--|
| Description | Relative humidity sensor invalid. | | | | | | | |
| Cause | Unexpected behaviour in old software version. | | | | | | | |
| | Indication of defe | ective relat | tive humid | ity sensor | or its measurin | g circuitry. | | |
| | Relative humidity | Relative humidity sensor RH or cable defective. | | | | | | |
| | X10 cable is defective. | | | | | | | |
| | Main controller d | efective. | | | | | | |
| Trouble shooting | Try to correct the controller. | Try to correct the error by uploading the latest software version to the controller. | | | | | | |
| | | 2. Disconnect the cable for RH on the main controller according to the wiring schematics inside the control cabinet and from the RH sensor. | | | | | | |
| | 3. If the cable by in | spection is | defective | , replace ca | able. | | | |
| | the controller. Me | 4. Dismount the sensor from the cable. Dismount the cable terminals from the controller. Measure the resistance between the terminals at the controller end. If the resistance is less than 230 Ω , the cable is defective and must be replaced. | | | | | | |
| | 5. Mount the cable for RH in controller cabinet and on the sensor. Disconnect signal wire on main controller. Measure voltage between wire and GND on the main controller. If voltage is below 0.5 V DC, sensor or connection between sensor and cable is defective. If voltage is between 0.5 V DC and 10 V DC, continue to 5. | | | | | | | |
| | 6. Mount signal wire between 0.5 V D controller. | | | | | | | |
| Criteria | Value below alarm li alarm activation. | mit 10% R | H or above | e 110% RF | I. Value invalid | for 120 sec. for | | |
| Controller | | | | | | | | |
| action | Log | X | Alarm | X | Alarm light | Slow flash | | |
| Consequence | Dehumidification im | · | | | | | | |
| Elimination | When sensor value then be deleted. Val | ue must be | e valid for | 120 sec. to | set alarm ina | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | Error type 1 = Max value exceeded 2 = Min value exceeded 4 = Modbus comm error | Low limit | High limit | Actual value | | | | |

| 303 | AirEx inv | alid | | | | Alarm |
|------------------|-------------------------------|---|----------------------------------|------------------------------|-----------------------------------|--|
| Description | Air exchange s | sensor short | circuit. | | | |
| Cause | Unexpecte | d behaviour i | in old softwa | re version. | | |
| | Indication | of a loose co | nnection, de | fective or la | ck of air excha | ange sensor. |
| | AirEx is ou | t of calibration | n. | | | |
| | Air exchan | ge sensor Air | Ex or cable | defective. | | |
| | X23 cable i | is defective. | | | | |
| | Main contr | oller defectiv | e. | | | |
| Trouble shooting | 1. Try to correct controller. | ect the error | by uploading | g the latest s | software versi | on to the |
| | 2. If the cable | e by inspection | on is defectiv | /e, replace c | able. | |
| | value show cable for A | 3. Calibrate the air exchange see "Calibration of air exchange sensor". If the value shown in controller is wrong or alarm still active then disconnect the cable for AirEx on the main controller according to the wiring schematics inside the control cabinet and from the AirEx sensor. | | | | |
| | signal wire main contr | on main cor coller. If the v cable is defo | ntroller. Meas voltage is ove | sure voltage er 4.0 V DC, | between wire sensor or con | sor. Disconnect and GND on the nection between DC and 4.0 V |
| | | 0.2 V DC an | | | GNAL and GNE n is still active | D. If the voltage e, replace the |
| Criteria | Value above a | larm limit 22 | 5 m³/hour. | | | |
| Controller | | | | , | | |
| action | Log | Х | Alarm | X | Alarm light | Slow flash |
| Consequence | | | | | | |
| Elimination | | When sensor value becomes valid, it is marked as inactive in alarm list and may then be deleted. | | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data | | Low limit | High limit | Actual value | | |

| 306 | HPS swit | tch - K1 | | | | Fatal alarm | | |
|-------------------|--|---|-------------------------|----------------------|------------------------|--|--|--|
| Description | High pressure | switch is activ | /e. | | | | | |
| Cause | Discharge High press Ambient Condens Condens Manual HP pipe High press X15 cable | High pressure due to: Ambient temperature is over spec. limit +50°C (+122°F). Condenser blocked. Condenser fan motor is not running or wrong direction. Manual valve after compressor closed. HP pipe damaged. High pressure switch or cable is defective. | | | | | | |
| | Wrong prePressure tr | or defective. ssure transmi ansmitter def oller defective | | tion in relatior | n to transmitte | er type. | | |
| Trouble shooting | temperatu 2. If condens removed. In no limitation cooling is rwater cooli 3. Check that 4. If not runn and AL 426 | init uses cooling refrigerant R134a or R513A and it is very difficult to operate at eratures above specification. Indenser coil is blocked, clean the condenser coil to secure any residues is ved. It is critical that the condenser is free from fouling and/or dust and there is nitation for air to go to and from the condenser. If no failure are found and extraing is needed water can be sprayed on the condenser inlet bottom up or if unit has cooling installed then use the water cooler for extra cooling down. It is that the condenser fan is running forward see arrows on unit. It running - Check that there are no alarm for the condenser fan motor, AL 402 AL 426. Also that the fan can rotate freely. | | | | | | |
| | Check that damaged at a damaged | there are no damages to the pipes after the compressor. Repair if they are and check refrigerant level. If the cable for high pressure switch on the main controller according to the ematics inside the control cabinet. The voltage between the two connectors for the high pressure switch on the PCB. If the voltage is below 15 V AC, measure resistance of compressor/FC coil Danfoss (\pm 5-6 Ω) / Schneider (\pm 8-10 Ω) / ABB (\pm 11-13 Ω) cable (measure the resistance in the cable). If the cable is defective, replace high pressure switch. The essure transmitter is according to "Configuration:" (F08) and set controller to transmitter type AKS/NSK. Check with gauge that pressure transmitter is | | | | | | |
| Criteria | Pressure is about 1326.3 psi ± 1 | 0.2 psi), Cut- | in: 15.9 BarE | ± 0.7 Bar (23 | | | | |
| Controller action | Frequency con Log | troller is stop | ped and unit s Alarm | x X | Alarm light | Quick flash | | |
| Consequence | Unit stops. | | | | | | | |
| Elimination | | | | | | ked as inactive in o set alarm inactive. | | |
| Log data | Parm 1 | Parm 2 Pdis 6 sec | Parm 3 | Parm 4 Psuc 6 sec | Parm 5 FCtemp 6 see | С | | |

| 310 | CO ₂ senso | r invalid | | | | Alarm | |
|-------------------|---|--|------------------|-----------------|----------------|---------------|--|
| Description | CO ₂ sensor com | munication m | nissing. | | | * | |
| Cause | Unexpected | behaviour in | old software v | ersion. | | ' | |
| | Communication | tion with CO ₂ | sensor. | | | | |
| | Defective Co | O ₂ sensor. | | | | | |
| | COMRH cabl | le, RH-cable a | nd/or COMCA | cable is defea | ctive. | | |
| Trouble shooting | ensure that | 1. To ensure correct troubleshooting and to prevent unnecessary replacements, ensure that the controller is running the latest software version - before proceeding to step 2. | | | | | |
| | 2. Verify that the shape. | Verify that the sensor is mounted correctly and that all cables are in good shape. | | | | | |
| | | 3. Verify cable connections between controller and sensor (according to the wiring diagram on the controller door). | | | | | |
| | 4. Verify correct on connecto | | ge (10-14V D0 | C) to the senso | or between pir | n 1 and pin 4 | |
| Criteria | Communication | with CO ₂ sen | sor not possib | le for min. 2 i | min. | ' | |
| Controller action | CA: Start membrane pump AV+: - | | | | | | |
| action | Log | X | Alarm | X | Alarm light | Slow flash | |
| Consequence | CO ₂ level can no | ot be regulate | d. | | | | |
| Elimination | When the senso | or value becor e deleted. | nes valid, it is | marked as in | active in the | alarm list | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Detection/ error: 1 = Max limit 2 = Min limit 8 = Internal sensor diagnostics | Low limit | High limit | Actual value | | | |

| 313 | O ₂ sensor | invalid | | | | Alarm | |
|------------------|---|--|---------------|-----------------|-----------------|-----------------|--|
| Description | O ₂ sensor comm | nunication m | issing. | | | | |
| Cause | Unexpected | Unexpected behaviour in old software version. | | | | | |
| | Communication | Communication with O₂ sensor. | | | | | |
| | COMRH cabl | e, RH-cable | and/or COM | CA cable is c | lefective. | | |
| | Defective O ₂ | sensor. | | | | | |
| Trouble shooting | ensure that | 1. To ensure correct troubleshooting and to prevent unnecessary replacements, ensure that the controller is running the latest software version - before proceeding to step 2. | | | | | |
| | 2. Verify that the shape. | ne sensor is i | mounted cori | rectly and tha | at all cables a | re in good | |
| | 3. Verify cable connections between controller and sensor (according to the wiring diagram on the controller door). | | | | | | |
| | 4. Verify correct 4 on connect | | age (10-14V | DC) to the s | ensor betwee | n pin 1 and pin | |
| Criteria | Communication | with O ₂ sens | sor not possi | ible for min. | 2 min. | | |
| Controller | Open air exchange 4%. | | | | | | |
| action | Log | Х | Alarm | X | Alarm light | Slow flash | |
| Consequence | O ₂ level can not | be regulate | d. | | | | |
| Elimination | When the senso | | mes valid, it | is marked a | s inactive in | the alarm list | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Detection/ error: 1 = Max limit 2 = Min limit 8 = Internal sensor diagnostics | Low limit | High limit | Actual value | | | |

| 314 | Replace C | O, sens | or | | | Warning |
|------------------|---|-------------------------|-------------------------|--------------|----------------|-----------------|
| Description | Replace CO ₂ se | ensor. | | | | |
| Cause | Unexpected | d behaviour | in old softwa | are version. | | |
| | CO₂ measu | rement afte | r calibration | (PTI) is out | of range. | |
| | Sensor mea active. | asurement o | out of range | from last PT | I (calibration |) and CA/AV+ is |
| Trouble shooting | 1. Try to correct controller. | ect the error | by uploadir | g the latest | software ver | sion to the |
| | 2. Replace CC | ₂ sensor wit | h new. | | | |
| Criteria | After a passed and 0.34%. | PTI test, the | e CO ₂ meası | urement valu | ue should be | between -0.26% |
| Controller | Alarm. | | | | | |
| action | Log | Χ | Alarm | Χ | Alarm light | Off |
| Consequence | | | | | | |
| Elimination | When the sensor value becomes valid, the alarm is marked as inactive in the alarm list and may then be deleted. | | | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data | CO ₂ meas | | | | | |

| 315 | Replace C |), senso | r | | | Warning |
|------------------|---|--|-------------------------|---------------|-----------------|---------------|
| Description | Replace O ₂ ser | isor. | | | | |
| Cause | Unexpected | d behaviour | in old softw | are version. | | |
| | O ₂ measure | ement after | calibration (| PTI) is out o | of range. | |
| | Sensor mea active. | asurement o | ut of range | from last PT | I (calibration) | and CA/AV+ is |
| | Only active | when CA/A | V+ is active | | | |
| Trouble shooting | 1. Try to correct controller. | Try to correct the error by uploading the latest software version to the controller. | | | | |
| | 2. Replace O ₂ | sensor. | | | | |
| Criteria | After a passed and 21,4%. | PTI test, th | e O ₂ measur | ement value | e should be b | etween 20,4% |
| Controller | Alarm. | | | | | |
| action | Log | Х | Alarm | Χ | Alarm light | Off |
| Consequence | | | | | | |
| Elimination | When the sensor value becomes valid, the alarm is marked as inactive in the alarm list and may then be deleted. | | | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data | O ₂ meas | | | | | |

5.6 Power alarms (AL 4XX)

| 400 | Mevap 1 d | verhe | at | | | Fatal alarm | | |
|-------------------|--|--|-----------------|-----------------|----------------------------|---------------------------------------|--|--|
| Description | Evaporator moto | r 1 overhea | t. | | | | | |
| Cause | Unexpected | behaviour ii | n old software | e version. | | | | |
| | Indication of | an overhea | ited motor or | a loose thern | nistor cable co | nnection. | | |
| | Damage on or | cable for Me | evap 1. | | | | | |
| | Cable for me | asuring eva | porator moto | r 1 overheat | defective. | | | |
| | Evaporator n | notor 1 defe | ective. | | | | | |
| Trouble | 1. Try to correc | t the error l | by uploading | the latest soft | tware version | to the controller. | | |
| shooting | 2. Disconnect the motor plug and inspect if the cable's female plug has been damaged, deformed, or enlarged which can cause the bad connection between plug and motor. Repair or replace if necessary. | | | | | | | |
| | Check that p correctly tight | | the main con | troller is conn | ected properly | y and screws are | | |
| | 4. Turn the unit If it cannot t | | | ch and see if | the evaporato | r fan can turn freely. | | |
| | 5. Check the Me | evap 1 cabl | e plug is fully | inserted into | the motor. | | | |
| | 6. Check the co | ntinuity in t | the Mevap 1 o | cable betweer | the plug and | the control box. | | |
| | 7. If the motor | is hot, it ma | ay be overloa | ded and jamr | ned or defectiv | ve. | | |
| | 8. Measure the | fan motor a | at the connec | tor according | to below: | | | |
| | and 6 should | Terminal 1,2 and 3 should all read the same value (example 300 Ohm). Terminal 4, 5 and 6 should read half the value of the low speed (150 Ohm). If not, connector or motor is defective. Replace motor. | | | | | | |
| | CL3 CL2 CL1 | K6 2 1 4 3 6 5 INTERLOCK K7B 53* 54* 63* 64* K7 2 1 4 3 6 5 | | | 2 6 6 2 * For Danfoss vers | Mevap 1 Mevap 2 Mevap 2 4 Mevap 2 | | |
| Criteria | Value above high | | | | | | | |
| Controller action | Both evaporator | | | Lv | | | | |
| | Log | | Alarm | X | Alarm light | Quick flash | | |
| Consequence | Air circulation in | | | | inactivo in ala | urm list and may then | | |
| Elimination | be deleted. Contr speed for the firs | When overheating disappears, alarm will be marked as inactive in alarm list and may then be deleted. Control is again released, but fan motors will only be allowed to operate at low speed for the first 5 min. If the error does not reoccur, problem will be considered solved and evaporator fan high speed is again released. | | | | | | |
| | Parm 1 F | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | | | High limit | Actual value | | | | |

| 401 | Mevap 2 o | verhea | at | | | Fatal alarm | | | | |
|------------------|--|--|-------------------------------|--------------------------------|--------------------------------|--|--|--|--|--|
| Description | Evaporator moto | r 2 overh | eat. | | | | | | | |
| Cause | Unexpected I | behaviour | in old softv | vare version | | | | | | |
| | Indication of | an overh | eated motor | r or a loose | thermistor ca | ble connection. | | | | |
| | Damage on company | Damage on cable for Mevap 2. | | | | | | | | |
| | Cable for me | Cable for measuring evaporator motor 1 overheat defective. | | | | | | | | |
| | Evaporator m | Evaporator motor 2 defective. | | | | | | | | |
| Trouble shooting | Try to correct controller. | | | ing the lates | t software ve | ersion to the | | | | |
| | Disconnect the damaged, deplug and motor | formed, o | r enlarged v | vhich can ca | | olug has been onnection between | | | | |
| | 3. Check that p are correctly | | | controller is | connected p | roperly and screws | | | | |
| | 4. Turn the unit turn freely. I | | | | see if the eva | porator fan can | | | | |
| | 5. Check the Me | evap 2 ca | ble plug is f | ully inserted | l into the mot | tor. | | | | |
| | 6. Check the co box. | ntinuity ii | n the Mevap | 2 cable bet | ween the plu | g and the control | | | | |
| | 7. If the motor | . If the motor is hot, it may be overloaded and jammed or defective. | | | | | | | | |
| | 8. Measure the | 3. Measure the fan motor at the connector according to below: | | | | | | | | |
| | | K6 2 1 4 3 6 5 INTERLOCK K7B 53* 54* 63* 64* K7 2 1 4 3 6 5 | | | *For Danfoss version | Mevap 1 Mevap 1 Mevap 2 Mevap 2 | | | | |
| Criteria | Value above high | n alarm lii | mit 10K Ohr | n. | | | | | | |
| Controller | Both evaporator | fan moto | rs are stopp | ed. | | | | | | |
| action | Log X | | Alarm | Х | Alarm light | Quick flash | | | | |
| Consequence | Air circulation in | | | | | | | | | |
| Elimination | then be deleted. | Control is peed for t | s again rele the first 5 m | ased but far in. If error o | n motors will does not reoc | alarm list and may only be allowed to cur, problem will be ased. | | | | |
| | Parm 1 Pa | rm 2 | Parm 3 | Parm 4 | Parm 5 | | | | | |
| Log data | | | High limit | Actual value | | | | | | |

| 402 | Mcond overheat | Fatal alarm | | | | | | |
|------------------|---|--------------------------------------|--|--|--|--|--|--|
| Description | Condenser motor overheat. | | | | | | | |
| Cause | Unexpected behaviour in old software version. | | | | | | | |
| | Indication of an overheated motor or a loose thermistor cabl | e connection. | | | | | | |
| | Condenser motor defective. | | | | | | | |
| | Cable for measuring condenser motor overheat defective. | | | | | | | |
| | Main controller defective. | | | | | | | |
| Trouble shooting | Try to correct the error by uploading the latest software vers controller. | sion to the | | | | | | |
| | 2. Disconnect the motor plug and inspect if the cables female pludamaged, deformed, or enlarged which can cause the bad complug and motor. Repair or replace if necessary. | | | | | | | |
| | 3. Turn the unit off. See if the condenser fan can turn freely. If it replace the motor. If the motor is hot, it may be overloaded a defective. | | | | | | | |
| | 4. If the cable for McondOH by inspection is defective, if unable replace it. | e to repair cable, | | | | | | |
| | 5. Disconnect the cable for Mcond on the main controller accord schematics inside the control cabinet. | ling to the wiring | | | | | | |
| | 6. Measure the resistance in the cable. If the resistance is more cable or the motor is defective and should be replaced. If the less than 5 k Ω , the cable and motor should be OK. | | | | | | | |
| | 7. Turn unit on again. Measure the voltage across the connecto should be between 4.80 V DC and 5.20 V DC. | r for Mcond. It | | | | | | |
| | a. If the voltage is inside the above range, connect sensor again. Measure the voltage across the thermistor and check the voltage. If the voltage is less than 2.5 V DC, the measurement is OK. If the alarm after 30 sec. is still active in the display, the main controller is defective - replace the main controller. | | | | | | | |
| | b. If the voltage is outside the range, main controller is defe error might affect the voltage. Check other alarms before controller. | | | | | | | |
| Criteria | Value above top alarm limit 10K Ohm. | | | | | | | |
| Controller | Condenser fan motor is stopped. | | | | | | | |
| action | | Quick flash | | | | | | |
| Consequence | Air circulation in container stops causing unit to stop. | | | | | | | |
| Elimination | When overheating disappears, alarm will be marked as inactive i may then be deleted. Control is again released, but fan motor wi to operate at low speed for the first 5 min. If the error does not will be considered solved and condenser fan high speed is again | ill only be allowed reoccur, problem | | | | | | |

| 403 | Mpump | overhea | nt | | | Alarm | | | | |
|------------------|-----------------------------|--|--|--|---|------------------|--|--|--|--|
| Description | Vacuum pur | np motor ove | erheat. | | | | | | | |
| Cause | • Unexped | ted behaviou | ur in old softw | vare version. | , | | | | | |
| | Loose th | ermistor cab | le connection | ١. | | | | | | |
| | Vacuum | Vacuum pump motor defective. | | | | | | | | |
| | Cable fo | Cable for measuring vacuum pump motor overheat defect. | | | | | | | | |
| | Controlle | Controller module defective. | | | | | | | | |
| Trouble shooting | 1. Try to co controlle | | or by uploadir | ng the latest sof | tware version | to the | | | | |
| | damaged | d, deformed, | | pect if the cable which can cause f necessary. | | | | | | |
| | can turn | freely. If not | t, perform oil | er of the vacuu check. See troud d and jammed | uble shooting | | | | | |
| | | | | uding the pin pe ective or impos | | th connector | | | | |
| | | ect the cable sion and cori | | om the controll | er module (X1 | .4) and check | | | | |
| | If the re should b | sistance is m e replaced. | | le. Ω , the cable or , the cable and | | | | | | |
| | | | in. Measure to 3.2V DC and | he voltage over d 3.4V DC. | the Mpump o | connector X14. | | | | |
| | Meas If the If the | sure the volta e voltage is le e alarm after | age over the ess than 2.5 30 sec. is sti | ove range, conn sensor and che V DC, the meas Il active on the controller modi | ck the voltage surement is O display, the c | e. K. | | | | |
| | or ar | other error r | | nge, the contro he voltage. Che e. | | | | | | |
| Criteria | | | limit 10k Ohr | | | | | | | |
| Controller | | | d until alarm | 1 | | I a . | | | | |
| action | Log | X | Alarm | X | Alarm light | Slow flash | | | | |
| Consequence | | f CO ₂ is stop | - | ا اندین مما ال | diameter to the | | | | | |
| Elimination | When overh may then be | | tne alarm wi | ii be marked as | inactive in th | e alarm list and | | | | |
| Lon data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | | | |
| Log data | | Low limit | High limit | Actual value | | | | | | |

| 415 | Invalid p | ower si | ир | | | Fatal alarm | | |
|-------------------|------------------------------------|---|--|--|---|---|--|--|
| Description | U1-2 and U1- | -3 and U2-3 | over voltage | e. | | • | | |
| Cause | Unexpect | ed behaviou | r in old soft | ware versior | 1. | | | |
| | Indication | of error in | container su | pply voltage | e between pha | ases. | | |
| | • The unit i | s supplied w | ith a voltage | e above spe | cified level. | | | |
| Trouble shooting | 1. Try to cor controller | | or by upload | ing the lates | st software ve | rsion to the | | |
| | 2. Measure t | the voltage a | applied to th | e unit. | | | | |
| | 3. Apply cor | rect voltage | to the unit. | | | | | |
| | 4. The FC wi | 4. The FC will be destroyed if it is running at a too high voltage. | | | | | | |
| | measurer bypass po then phas | nent differs ower module se direction a | the power need the PCB by present then cw. | nodule PCB i ssing \ se If condense | may be defect lecting the Co er fan rotates | the display. If the cive. Replace or infiguration menu, in the wrong ery unit start up. | | |
| Criteria | Value above | top alarm lir | nit 535/560 | Volt. | | | | |
| Controller action | Controller bro | | | . After 30 se | ec. the unit re | starts with a | | |
| action | Log | Х | Alarm | Х | Alarm light | Quick flash | | |
| Consequence | Unit stops. | | | | _ | | | |
| Elimination | Alarm will be limit. It may | | | other phase | voltage meas | suring is below | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | Limit | U1-2 | U2-3 | U1-3 | NetFreq | | | |

| 418 | Invalid p | ower s | ир | | | Fatal alarm | | |
|------------------|------------------------------------|--|--|---|---------------------------------|---|--|--|
| Description | U1-2 and U1- | -3 and U2-3 | under volta | age. | | | | |
| Cause | Unexpect | ed behaviou | ır in old soft | ware version | ٦. | | | |
| | Indication | Indication of error in container supply voltage between phases. | | | | | | |
| | The unit i | s supplied v | vith a voltag | e below spe | cified level. | | | |
| | Defective | Power mod | ule PCB. | | | | | |
| Trouble shooting | Try to corcontroller | | or by upload | ding the late | st software ve | ersion to the | | |
| | 2. Measure | the voltage | applied to th | ne unit. | | | | |
| | 3. Apply cor | rect voltage | to the unit. | ı | | | | |
| | | 4. The FC will not be able to maintain stable speed of the compressor motor due to a too low voltage and therefore the unit will make a restart. | | | | | | |
| | measurer bypass po direction | nent differs ower module and then cw | the power rePCB by previous If condens | module PCB essing (3) se er fan rotate | may be defec electing config | the display. If the tive. Replace or uration then phase g direction, choose | | |
| Criteria | Value below | ow alarm lii | mit 300 Volt | | - | | | |
| Controller | Controller bronormal startu | , | | c. After 30 se | ec. the unit re | estarts with a | | |
| | Log | Х | Alarm | X | Alarm light | Quick flash | | |
| Consequence | Unit stops. | | | | | | | |
| Elimination | Alarm will be limit. It may | | | nother phase | voltage mea | suring is above | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log uata | Limit | U1-2 | U2-3 | U1-3 | NetFreq | | | |

| 421 | Over cur | rent | | | | Fatal alarm | |
|------------------|--------------------------------------|--|---|--|--------------------------|---|--|
| Description | I1-2 and I1-3 | and I2-3 ov | ver current. | | | | |
| Cause | Unexpecte | ed behaviou | r in old softv | ware versior | 1. | | |
| | Indication | Indication of short circuit in electric installations of Star Cool unit. | | | | | |
| | The unit is | s using too r | much power | on one pha | se. | | |
| | Defective | Power modu | ıle PCB. | | | | |
| Trouble shooting | 1. Try to correct controller. | | or by upload | ing the lates | st software ve | rsion to the | |
| | 2. The voltag | ge may have | e been too k | ow for too lo | ng. | | |
| | 3. Check pow | ver cables fo | or short circ | uits and dan | nages. | | |
| | 4. Check cab | 4. Check cables for heaters and motors for short circuits and damages. | | | | | |
| | measuren bypass po direction a | nent differs, wer module and then cw. | the power r PCB by pres If condense | nodule PCB ssing \ se er fan rotate | may be defecting configu | the display. If the citive. Replace or uration then phase g direction, choose | |
| Criteria | Value above ι | ıpper alarm | limit 20 Am | p. | | | |
| Controller | | | | | | | |
| action | Log | Χ | Alarm | X | Alarm light | Quick flash | |
| Consequence | Unit stops. | | | | | | |
| Elimination | | | · | | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Limit | I1 | I2 | I3 | Ifc | | |
| Info | This alarm is | used for ser | vice purpos | es. The fuse | es are protect | ing the unit. | |

| 423 | No phase | direction | on | | | Fatal alarm | |
|------------------|-------------------------------------|--|---------------|--------------|-----------------------------------|--------------------|--|
| Description | Phase directio | n not detect | able. | | | | |
| Cause | Unexpecte | d behaviour | in old softw | are versior | ١. | | |
| | | y be lacking the detection | | ay be extre | mely high noi | ise in one or more | |
| | The unit is | supplied wi | th an unstal | ole voltage. | ı | | |
| | The power | frequency is | s out of spe | cified range | 2 . | | |
| | Defective I | Power modu | le PCB. | | | | |
| Trouble shooting | 1. Try to corr controller. | Try to correct the error by uploading the latest software version to the controller. | | | | | |
| | 2. Check if vo | 2. Check if voltage on all 3 phases is within specified range. | | | | | |
| | 3. Verify that | power frequ | uency is with | nin specifie | d range. | | |
| | 4. Check/repl | ace power r | nodule PCB. | | | | |
| | 5. If 1-4 are phase dire counterclo | ction on the | | | er or set the c ne F05 to cloc | | |
| Criteria | Impossible to | detect phase | e sequence | in power su | apply. | | |
| Controller | Unit does not | start up. | | | | | |
| action | Log | Х | Alarm | Х | Alarm light | Quick flash | |
| Consequence | Unit stops. | , | | | | | |
| Elimination | Alarm will be i established. A | | | | en phase sequ | uence can be | |
| l on data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | | | | | | | |

| 424 | Power fre | equency | | | | Log |
|------------------|--|----------------|----------------|---------------|---------------|------------------------|
| Description | Phase frequent | cy error. | | | | |
| Cause | Unexpected | d behaviour i | n old softwar | e version. | | |
| | Indication (| of error on St | tarCool unit p | ower supply. | ı | |
| | The unit is | supplied with | n an unstable | voltage. | | |
| | The power | frequency is | out of specif | ied range. | | |
| Trouble shooting | 1. Try to correct controller. | ect the error | by uploading | the latest so | ftware versio | n to the |
| | 2. Check if voltage on all 3 phases is within specified range. | | | | | |
| | 3. Verify that phases. | all 3 phases | are applied t | o the unit an | d for example | e not just 2 |
| | 4. Verify that | power freque | ency is within | specified rai | nge. | |
| | 5. Apply corre | ect voltage to | the unit. | | | |
| Criteria | Value out of lin | nits. Power fi | requency mu | st be betwee | n 42.5 Hz and | d 62.5 Hz. |
| Controller | None | | | | | |
| action | Log | Х | Alarm | | Alarm light | Off |
| Consequence | At very low free can take place; | | | | | ormal operation ly. |
| Elimination | Power frequen | cy within ran | ge again. | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data | Frequency | | | | | |

| 425 | Frequen | cy too h | igh | | | Fatal alarm | |
|------------------|------------------------------|--|----------------|---------------|----------------|--------------|--|
| Description | Power freque | Power frequency too high warning. | | | | | |
| Cause | Unexpect | ed behaviou | r in old softv | vare version | | | |
| | Power ge | nerator adju | sted to too h | nigh frequen | cy. | | |
| | The power | er frequency | is out of spe | cified range | | | |
| Trouble shooting | 1. Try to concontroller | | or by upload | ng the lates | t software ver | rsion to the | |
| | 2. Adjust th | 2. Adjust the frequency of the power generator to a lower frequency. | | | | | |
| | 3. Verify tha | nt power free | quency is wit | hin specified | l range. | | |
| | 4. Apply cor | rect voltage | to the unit. | | | | |
| Criteria | Power freque | ncy above 7 | '0 Hz. | | | | |
| Controller | Unit stop flag | | | | | | |
| action | Log | Χ | Alarm | Χ | Alarm light | Quick flash | |
| Consequence | Reduced cap | acity of unit. | | | | | |
| Elimination | Power freque | ency within r | ange again. | | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | | Frequency | | | | | |

| 430 | Cpr conno | Cpr connection Alarm | | | | | |
|------------------|-------------------------------|---------------------------------|----------------|-----------------|----------------|-----------------|--|
| Description | Power cable from | om FC to con | npressor is fa | ulty. | | | |
| Cause | Unexpected | d behaviour i | n old softwar | e version. | | | |
| | | of error with r is not using | • | between FC a | and compresso | or. The | |
| | The power | cable between | en the FC and | d the compre | ssor motor is | defective. | |
| | The curren | t measuring | circuit in the | FC is faulty. | | | |
| | The compre | essor motor i | is damaged. | | | | |
| Trouble shooting | 1. Try to correct controller. | , | | | | | |
| | 2. Check if su | pply voltage | on all 3 phas | ses is within s | specified rang | e. | |
| | 3. Check that damaged. | the power ca | able between | the FC and t | the compress | or motor is not | |
| | 4. Measure th | at the compr | ressor motor | is not damag | jed. | | |
| | 5. The FC ma | y be defectiv | e. | | | | |
| Criteria | FC is running b | out the curre | nt draw less | than 0,5A fro | m the FC. | | |
| Controller | FC reset proce | dure 2. | | | | | |
| action | Log | Х | Alarm | Х | Alarm light | Slow flash | |
| Consequence | Controller will | retry after 1 | min. | | | | |
| Elimination | | | | | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | | Fact | Idc | | | | |

5.7 Frequency converter (FC) alarms (AL 5XX)

For some of the alarms in this section, the FC may be faulty and must be replaced. For continuing operation until replacement is possible, the unit can be rewired and started for emergency operation: See "Emergency Operation" in the Operating and Service Manual.

| 501 | FC local o | control | | | | Alarm |
|------------------|-------------------------------|--|----------------|----------------|----------------|-----------------------------------|
| Description | FC setting in L | ocal mode. | | | | |
| Cause | Unexpecte | d behaviour i | n old softwar | e version. | | |
| | Cable FC-c | om periodica | lly defective. | | | |
| | Internal fa | ult in the FC. | | | | |
| | Defective I | FC. | | | | |
| Trouble shooting | 1. Try to corr controller. | ect the error | by uploading | the latest so | oftware versio | n to the |
| | 2. Check that | the cable FC | C-com is conn | ected and no | t damaged. | |
| | 3. If the alarr | m is then still | active, the F | C is defective | e and must be | e replaced. |
| | | | | | | d for emergency ervice Manual. |
| Criteria | FC in the local | mode. | | | | |
| Controller | | | | | | |
| action | Log | X | Alarm | Х | Alarm light | Slow flash |
| Consequence | Unit stops. | | | | | |
| Elimination | 1 | Alarm will be marked as inactive in alarm list when local mode is reset on frequency converter. Alarm may then be deleted. | | | | |
| l on data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data | FCTemp | Fact | IFC | Psuc | Pdis | |

| 508 | Compr co | nnectio | n | | | Alarm | |
|------------------|--|---|----------------|---------------|------------------------|----------------------------|--|
| Description | FC short circui | it. | | | | | |
| Cause | Unexpecte | Unexpected behaviour in old software version. | | | | | |
| | Short-circu | uit on the FC | power outpu | t. | | | |
| | Damaged (| cable and/or | plugs. | | | | |
| Trouble shooting | Try to corr controller. | ect the error | by uploading | the latest s | oftware versio | n to the | |
| | motor. Che Compresso V-Y 1.15 9 U-X 1.15 9 W-Z 1.15 9 Also ensur Meggering Value abov Value belo | There is a short-circuit on the compressor motor (Mcpr) terminals or in the motor. Check the cable and replace if it is defective. Compressor coil resistance: V-Y 1.15 Ω U-X 1.15 Ω W-Z 1.15 Ω Also ensure to check to ground Meggering: Value above 5 MΩ = OK Value below 5 MΩ = Remove terminal block and measure again on windings directly. a. If still below, replace compressor. | | | | | |
| | | | oe rewired fo | r emergency | \prime operation: Se | placement ee "Emergency | |
| Criteria | Short circuit ir Amp. | n compressor | or its termin | nals. Motor c | urrent has bee | en above 40 | |
| Controller | FC reset proce | | | | | | |
| action | Log | X | Alarm | Х | Alarm light | Slow flash | |
| Consequence | Unit stops. | | | | | | |
| Elimination | Alarm will be in deleted. | marked as in | active in alar | m list when | reset by FC, a | nd can then be | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | FCTemp | Fact | IFC | Psuc | Pdis | | |

| 509 | FC 24 V fa | ault | | | | Alarm |
|------------------|---|-----------------|---------------|----------------|----------------|-----------------------------------|
| Description | FC internal 24 | V supply fau | lt. | | | |
| Cause | Unexpected | d behaviour i | n old softwar | e version. | | |
| | Internal fa | ult in the FC. | | | | |
| Trouble shooting | 1. Try to correct controller. | ect the error | by uploading | the latest so | oftware versio | n to the |
| | 2. Switch off | the unit and | wait 10 min. | before switch | hing on the ui | nit again. |
| | 3. If the alarr | n is then still | active, the F | C is defective | e and must be | e replaced. |
| | | | | | | d for emergency ervice Manual. |
| Criteria | Internal 24 V | supply error. | | | | |
| Controller | FC reset proce | dure 2. | | | | |
| action | Log | Х | Alarm | Х | Alarm light | Slow flash |
| Consequence | Unit stops. | | | | | |
| Elimination | Alarm will be marked as inactive in alarm list when reset by FC. Alarm may then be deleted. | | | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data | FCTemp | Fact | IFC | Psuc | Pdis | |

| 510 | Compr co | nnection | 1 | | | Alarm | |
|------------------|----------------------------|---------------|-----------------------------|----------------|---------------------|---------------------------|--|
| Description | FC earth fault. | | | | | | |
| Cause | Unexpected | d behaviour i | n old softwar | e version. | | | |
| | Isolation date | amaged on tl | he FC power | output to the | compressor. | | |
| | Defective F | Defective FC. | | | | | |
| | Damaged of | cable and/or | plugs. | | | | |
| Trouble shooting | Try to correct controller. | ect the error | by uploading | the latest so | oftware versio | n to the | |
| | 2. The power isolation. C | | compressor le and replac | ` ' | , , | efective | |
| | 3. Measure re | sistance pha | se to ground | (must be ab | ove 2 M Ω). | | |
| | | he unit can b | | emergency | | lacement ee "Emergency | |
| Criteria | Leakage curre 3 ms. | nt from phas | e to ground o | of FC. Curren | t 10 A for mo | re than | |
| Controller | FC reset proce | dure 2. | | | | | |
| action | Log | Х | Alarm | Х | Alarm light | Slow flash | |
| Consequence | Unit stops. | | | | | | |
| Elimination | Alarm will be n deleted. | narked as ina | ctive in alarm | n list when re | set by FC. Ala | rm may then be | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | FCTemp | Fact | IFC | Psuc | Pdis | | |

| 511 | Compr ov | er curre | nt | | | Alarm | |
|-------------|-------------------------------|--|---|-----------------|---------------------------------|----------------------------------|--|
| Description | Compressor o | ver current. | | | | | |
| Cause | Unexpecte | d behaviour i | n old softwar | e version. | | | |
| | Unstable p | ower supply | (Generator/G | Genset). | | | |
| | The compi | essor motor | draws too mu | uch current. | | | |
| | Defective | Defective motor cable, compressor or FC. | | | | | |
| | Condenser | blocked due | to dirt and re | esidue. | | | |
| Trouble | 1. Try to uplo | ad the latest | software ver | sion to the c | ontroller. | | |
| shooting | 2. If "Wait – unstable p | Adapting to gower supply. | | | | ting to an | |
| | | Wait – Adapti 0 Hz, find a b | | | displayed an | d compressor is | |
| | | to emergency , to avoid FC | | ntil a better p | oower supply o | can be | |
| | 3. Turn off ur | nit and wait 1 | 0 min. before | e turning on | the unit again | | |
| | | | | | | is alarm comes ve and must be | |
| | | lock or FC ma | run several min. without alarm, the motor cable, may be defective and must be replaced if the alarm | | | | |
| | 6. Clean cond | denser. | | | | | |
| | 7. Rewire the found. See | | | | etter power so ing and Servi | | |
| Criteria | FC overloaded | I. Current abo | ove 38 Amp f | or approx. 1 | sec. | | |
| Controller | FC reset proce | edure 2. | | | | | |
| action | Log | X | Alarm | Х | Alarm light | Slow flash | |
| Consequence | Unit stops. | | | | | | |
| Elimination | Alarm will be r deleted. | marked as ina | ctive in alarm | list when re | set by FC. Alaı | rm may then be | |
| l on data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | FCTemp | Fact | IFC | Psuc | Pdis | | |

| 513 | Compr ov | erload | | | | Alarm | | |
|-------------------|---|--|-----------------------------|------------------------|-----------------|-------------------------------|--|--|
| Description | Compressor ov | Compressor overload. | | | | | | |
| Cause | The FC car | not deliver e | nough power | to the comp | oressor. | | | |
| | • Cable not i | mounted corr | ecly or defec | t. | | | | |
| | Compresso | r terminal bl | ock high resi | stance due t | o corrosion. | | | |
| | Insufficient | cooling for t | the FC. | | | | | |
| | Defective of | compressor. | | | | | | |
| Trouble shooting | | | jenerate eno | | | peratures, the n be cooled by | | |
| | 2. Check refri | gerant level | + Veco opera | ition. | | | | |
| | 3. Check that and nothin | | ng the FC to between the | | | ly tightened | | |
| | 4. Impedance | measured o | n FC termina | ls: | | | | |
| | U-V 0.7 Ω | V-W 0.7 | Ω W-U 0.7 | Ω if resistance | stance is not e | equal go to 4. | | |
| | Compresso | 5. Check the motor cable and replace it if it is defective. Clean both FC + Compressor surface. Tighten bolts properly for better cooling (Apply thermo paste if available). | | | | | | |
| | Meggering Value abov Value belov compresso If value sti | U-X 1.19 to to check to the to $M\Omega = M\Omega$ w 5 $M\Omega = RC$ r Il below, repl | Ω W-Z 1.1 ground < | al block and | measure agai | n, directly: the | | |
| | 7. The compr | essor is wear | ing down and | drawing inc | reasingly pow | er from the FC. | | |
| Criteria | Compressor ov | verloaded. Cu | ırrent has be | en above 24 | Amp for 20 s | ec. | | |
| Controller action | FC reset proce | | 1 | I | 1 | Γ | | |
| | Log | Х | Alarm | X | Alarm light | Slow flash | | |
| Consequence | Unit stops. | roctorted cft | or 10 min ^ | larm will be | marked as in- | ctive in slaves | | |
| Elimination | The FC will be list when reset | by FC. Alarr | m may then b | e deleted. | | ctive in alarm | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | FCTemp | Fact | IFC | Psuc | Pdis | | | |

| 514 | Invalid po | ower sup | ply | | | Alarm | |
|------------------|-------------------------------|---|----------------|-----------------|------------------|-----------------------------------|--|
| Description | FC undervoltag | ge fault. | | | | | |
| Cause | Unexpected | d behaviour i | n old softwar | e version. | | | |
| | The FC is s | The FC is supplied with too low voltage for continuous operation. | | | | | |
| | Defective F | C. | | | | | |
| Trouble shooting | Try to correct controller. | ect the error | by uploading | the latest so | ftware versio | n to the | |
| | 2. Supply unit | with correct | power volta | ge according | to specification | on. | |
| | | 3. If voltage is within specification and not unstable, the FC may be defective and must be replaced. | | | | | |
| | | | | • | | d for emergency ervice Manual. | |
| Criteria | Supply voltage depends on the | | | AC with full lo | oad. The mini | mum voltage | |
| Controller | FC shut-down. | | | | | | |
| action | Log | Χ | Alarm | Χ | Alarm light | Slow flash | |
| Consequence | Unit stops. | | | | | | |
| Elimination | Alarm will be m deleted. | narked as ina | ctive in alarm | list when res | set by FC. Alar | m may then be | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | FCTemp | Fact | IFC | Psuc | Pdis | | |

| 515 | Invalid po | Invalid power supply Alarm | | | | | | |
|------------------|----------------------------|---|-----------------|---------------|--|-----------------------------------|--|--|
| Description | FC overvoltage | e fault. | | | | | | |
| Cause | Unexpected | Unexpected behaviour in old software version. | | | | | | |
| | The FC is s | upplied with | too high volt | age for conti | nuous operati | on. | | |
| | Defective F | ·C. | | | | | | |
| Trouble shooting | Try to correct controller. | ect the error | by uploading | the latest so | ftware versio | n to the | | |
| | | | | | to specification to specification to the total to the tot | on. The FC will down. | | |
| | 3. If voltage i | s within spec be replaced. | cification and | not unstable | , the FC may | be defective | | |
| | | | | | | d for emergency ervice Manual. | | |
| Criteria | Supply voltage | of FC is mo | re than 550 \ | / AC (800 V I | DC). | | | |
| Controller | FC reset proce | dure 2. | | | | | | |
| action | Log | Х | Alarm | Х | Alarm light | Slow flash | | |
| Consequence | Unit stops. | | | | | | | |
| Elimination | Alarm will be n deleted. | narked as ina | ictive in alarm | list when res | set by FC. Alai | m may then be | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | FCTemp | Fact | IFC | Psuc | Pdis | | | |

| 516 | FC supply | FC supply error Alarm | | | | | | |
|-------------|--------------------------------|-----------------------|---------------------------------|----------------|-----------------|-----------------|--|--|
| Description | Power supply | error indication | on. | | | | | |
| Cause | Unexpected | d behaviour i | n old softwar | e version. | | | | |
| | Unstable p | ower supply | (Generator/G | Genset). | | | | |
| | One or mo | re phases are | e not applied | to the FC. | | | | |
| Trouble | 1. Try to uplo | ad the latest | software ver | sion to the co | ontroller. | | | |
| shooting | 2. If "Wait – A unstable po | | enset" is sho Wait until ad | | | ting to an | | |
| | | | ng to genset' better power : | | displayed an | d compressor is | | |
| | 3. Verify that | all 3 phases | are present a | and voltage is | s correct. | | | |
| | 4. Verify that | voltage diffe | rence betwee | en the 3 phas | ses is less tha | n 20 V AC. | | |
| | 5. Rewire the found. See | | | | tter power so | | | |
| Criteria | FC cannot mai has been activ | | | too much rip | pple in DC vol | tage). AL 523 | | |
| Controller | FC reset proce | dure 1. | | | | | | |
| action | Log | Χ | Alarm | Χ | Alarm light | Slow flash | | |
| Consequence | Unit stops. | | | | | | | |
| Elimination | Alarm will be n deleted. | narked as ina | ctive in alarm | list when res | set by FC. Alai | rm may then be | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | FCTemp | Fact | IFC | Psuc | Pdis | | | |

| 517 | FC over temp Alarm |
|------------------|--|
| Description | FC over temperature fault. |
| Cause | Air gap between FC and compressor. |
| | Insufficient cooling for the FC. |
| | Lack of refrigerant. |
| | Defect Veco valve. |
| | FC operates at operating limits. |
| Trouble shooting | 1. Check for refrigerant. Refrigerant level should be visible at sight glass. The FC cooling is, if lack off refrigerant, the first failure. |
| | 2. The FC cooling is dependent on a tight and flush mounting on the compressor endshield. A small airgap between compressor and FC will reduce the FC cooling. Follow procedure below: |
| | 3. Dismount FC and clean both compressor and FC. Make sure that all 4 "studs" on the compressor are tightened correctly, before mounting the FC again (Even smallest air gap is critical). |
| | 4. Check the FC. Motor cable between FC and compressor. The cable may be jammed between FC and compressor. |
| | a. Apply new thermal paste on FC contact area, and mount the FC again. |
| | b. Check that all bolts fixing the FC to the compressor are tightened and nothing is jammed between the FC and the compressor. Heat transfer paste should be used between FC and compressor. |
| | c. If this alarm appears more than once: Dismount FC and check motor cable before mounting the FC again. Tighten bolts properly for better cooling. |
| | 5. Check Veco that it can open properly and check controller for burned output to Veco. Eg. activate Veco in manual mode and listen for the "clicksound". |
| | 6. If unit is running in critical situations, the unit can be rewired for emergency operation. See "Emergency Operation" in the Operating and Service Manual. |
| Criteria | FCM 375: temperature exceeds $+85^{\circ}$ C ($+185^{\circ}$ F), or above $+78^{\circ}$ C ($+172^{\circ}$ F) for more than 15 min. FC 2.0: temperature exceeds $+95^{\circ}$ C ($+203^{\circ}$ F) for more than 15 min. |
| Controller | FC reset procedure 2. |
| action | Log X Alarm X Alarm light Slow flash |
| Consequence | Unit stops and restarts when FC has cooled down. |
| Elimination | Alarm will be marked as inactive in alarm list when reset by FC. Alarm may then be deleted. |
| Log data | Parm 1 Parm 2 Parm 3 Parm 4 Parm 5 |
| Log data | FCTemp Fact IFC Psuc Pdis |

| 518 | FC inrush | | | | | Alarm | | |
|------------------|----------------------------------|--|-----------------|----------------|---|---------------|--|--|
| Description | FC inrush fault | FC inrush fault. | | | | | | |
| Cause | Unexpected | d behaviour i | n old softwar | e version. | | | | |
| | The FC has | had too ma | ny restarts w | ithin short ti | me. | | | |
| | CIM5: Man | CIM5: Manual activation of contactor (K8) on/off too many times. | | | | | | |
| | CIM6: Man | ual activation | n of contacto | r (K1) on/off | too many tim | es. | | |
| | Loose power | er connection | n for the FC. | | | | | |
| | Loose FC-c | om cable for | communicat | ion with the | FC. | | | |
| | Defective F | C. | | | | | | |
| Trouble shooting | Try to correct controller. | ect the error | by uploading | the latest s | oftware versio | n to the | | |
| | 2. Verify that | supply powe | r for the unit | is stable an | d within specif | ication. | | |
| | 3. Check the | FC-com cable | e for damage | s and loose | connection. | | | |
| | 4. Check supp | oly power cal | oles for the F | C. | | | | |
| | | nt available, | the unit can l | be rewired fo | . If there is no or emergency of I Service Manu | operation: | | |
| Criteria | May occur if F(primary side). | | | | | | | |
| Controller | FC reset proce | dure 1. | | | | | | |
| action | Log | Х | Alarm | Х | Alarm light | Slow flash | | |
| Consequence | Unit stops and | restarts afte | er some min. | | , | | | |
| Elimination | Alarm will be n may then be d | | active in the a | larm list whe | en reset by the | FC. The alarm | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log uata | FCTemp | Fact | IFC | Psuc | Pdis | | | |

| 519 | FC inte | rnal err | or | | | Alarm |
|------------------|----------------------------|--|-------------------------------|---|-------------------------------|------------|
| Description | Frequency | inverter inte | ernal error d | etected. | | |
| Cause | Unexpe | cted behavi | our in old so | ftware version. | | |
| | Defective | Defective FC. | | | | |
| Trouble shooting | 1. Try to controll | | rror by uplo | ading the latest soft | ware version | to the |
| | | | nternal failu y can be del | re. See if there show | uld be other F | C alarms |
| | | 3. Turn off the unit for 10 min. and then start again. If this alarm becomes active again, the FC has a permanent internal fault and must be replaced. | | | | |
| | | | | vailable, the unit ca eration" in the Oper | | |
| Criteria | Internal err | or in FC. | , | | | |
| Controller | FC reset pr | ocedure 2. | | | | |
| action | Log | Х | Alarm | Х | Alarm light | Slow flash |
| Consequence | Unit stops. | | | | | |
| Elimination | converter. A | Alarm reset requires that supply voltage is disconnected from frequency converter. Alarm will be marked as inactive in alarm list when reset by FC. The alarm may then be deleted. | | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data | FCTemp | Fact | IFC | Internal error word low 16 bits | Internal erro high 16 bits | or word |

| 523 | FC phase | FC phase loss Log | | | | | |
|-------------|----------------------------------|---|--------------------------------|----------------|--------------------------------|-----------------|--|
| Description | Power supply | error indication | on. | | | | |
| Cause | Unexpecte | Unexpected behaviour in old software version. | | | | | |
| | Unstable p | ower supply | (Generator/G | lenset). | | | |
| | One or mo | re phases are | e not applied | to the FC. | | | |
| Trouble | 1. Try to uplo | ad the latest | software ver | sion to the co | ontroller. | | |
| shooting | 2. If "Wait – Augustable p | | enset" is sho Wait until ad | | | ting to an | |
| | | | ng to genset" etter power s | | displayed an | d compressor is | |
| | 3. Verify that less than 1 | | ls are the san | ne for all 3 p | hases (voltag | e difference | |
| | 4. Supply uni | t with correct | power volta | ge according | to ISO Stand | ard. | |
| | 5. Rewire the found. See | | , , | | tter power so ng and Servio | | |
| Criteria | More than 70 | V diff. in min | ./max. for ph | ases in powe | r supply. | | |
| Controller | | | | | | | |
| action | Log | X | Alarm | | Alarm light | Off | |
| Consequence | If not solved, | this problem | can cause FC | to stop due | to alarm 516 | • | |
| Elimination | Warning will b then be delete | | inactive in al | arm list wher | reset by FC. | Alarm may | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log uata | FCTemp | Fact | IFC | Psuc | Pdis | | |

| 530 | FC alarn | n undefii | ned | | | Alarm |
|------------------|-----------------------------|-----------------|----------------|------------------------|----------------------------|------------|
| Description | Unclear erro | r in FC. | | | | |
| Cause | Unexpec | ted behaviou | r in old softw | are version. | | |
| Trouble shooting | 1. Try to co controlle | | or by uploadir | ng the latest so | ftware versio | n to the |
| Criteria | FC error rep | ort. | | | | |
| Controller | FC reset procedure 0. | | | | | |
| action | Log | X | Alarm | X | Alarm light | Slow flash |
| Consequence | The compres | ssor will not s | start. | | | |
| Elimination | | | | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data | FCTemp | Fact | IFC | Alarm word low 16 bits | Alarm word high 16 bits | |

| 531 | PCB temp | perature | | | | Alarm | | |
|------------------|-----------------------------|---------------------------------|---------------|---------------|------------------------------------|--------------------------------|--|--|
| Description | Critical FC PCE | Critical FC PCB temperature. | | | | | | |
| Cause | Air gap be | tween FC and | l compressor. | | | | | |
| | Insufficien | t cooling for t | he FC. | | | | | |
| | Lack of ref | rigerant. | | | | | | |
| | Defect Vec | Defect Veco valve. | | | | | | |
| | FC operate | es at operatin | g limits. | | | | | |
| Trouble shooting | | refrigerant. Roif lack off refi | | | visible at sigh | t glass. The FC | | |
| | endshield. | | ip between co | | mounting on t nd FC will red | the compressor luce the FC | | |
| | on the con | | tightened cor | | Make sure the mounting th | at all 4 "studs" e FC again | | |
| | 4. Check the jammed be | FC. Motor cal etween FC an | | | ressor. The ca | able may be | | |
| | a. Apply no | ew thermal pa | aste on FC co | ntact area, a | and mount the | e FC again. | | |
| | nothing is | | een the FC a | nd the compi | essor are tight ressor. Heat t | | | |
| | | | | | nt FC and che erly for better | ck motor cable cooling. | | |
| | 5. Check Vec to Veco. Eq | | | | controller for l sten for the " | | | |
| | 6. If unit is ru operation. | | | | | r emergency ervice Manual. | | |
| Criteria | FC PCB tempe | rature exceed | d 85°C. | | | | | |
| Controller | FC reset proce | | | · | | , | | |
| action | Log | X | Alarm | Х | Alarm light | Slow flash | | |
| Consequence | If not solved, | this problem | can cause FC | to stop. | | | | |
| Elimination | | [| l | T | l <u> </u> | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| | FCTemp | Fact | IFC | Psuc | Pdis | | | |

| 532 | Blocked r | Blocked rotor Alarm | | | | | |
|-------------|---------------------------|--|---------------|-----------------|---------------|--------------------------------|--|
| Description | Compressor re | Compressor restart fail. | | | | | |
| Cause | Unexpected | Unexpected behaviour in old software version. | | | | | |
| | Compresso | r motor not t | urning due to | high pressu | re difference | Pdis - Psuc. | |
| Trouble | 1. Try to uplo | Try to upload the latest software version to the controller. If pressure difference Pdis – Psuc is more than 5 bar, then hot gas might not open, try to open hot gas valve by permanent magnet. Check solenoid coil and/or check controller output. | | | | | |
| shooting | open, try t | | | | | | |
| | | pressor pisto | | | | he compressor nay be jammed | |
| Criteria | Motor current | above 24 Am | p for approx | . 10 sec | | | |
| Controller | | , | | | , | | |
| action | Log | Χ | Alarm | Х | Alarm light | Slow flash | |
| Consequence | After 5 x resta attempts. | rt, alarm is g | iven and unit | t stops after a | additional 10 | restart | |
| Elimination | Alarm inactive | after power | cycle. | | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | FCTemp | Fact | IFC | Psuc | Pdis | | |

| 533 | FC comm | timeout | : | | | Alarm | |
|------------------|---|---|---------------|---------------|---------------|-----------------------------------|--|
| Description | The FC has tr | ipped and sto | pped. | | | | |
| Cause | Unexpecte | Unexpected behaviour in old software version. | | | | | |
| | Other alar | ms have tripp | ped (stopped) | the FC. | | | |
| | Defective | FC. | | | | | |
| Trouble shooting | · ' | . Try to correct the error by uploading the latest software version to the controller. | | | | | |
| | | 2. The FC has tripped due to another AL 5XX alarm and then stopped. See if there should be other FC alarms (AL 5XX) and act accordingly to these. | | | | | |
| | 3. Turn the unit off for 10 min. and then start it again. If this alarm becomes active again, the FC may have an internal fault and must be replaced. | | | | | | |
| | | | | | | l for emergency ervice Manual. | |
| Criteria | The FC has st | opped due to | an error and | must be rese | et. | | |
| Controller | FC reset proce | edure 2. | | | | | |
| action | Log | X | Alarm | X | Alarm light | Slow flash | |
| Consequence | There is no co before restart | • | e FC is ready | again. The Fo | C may need to | o cool down | |
| Elimination | | | | | | | |
| l on data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | FCTemp | Fact | IFC | Psuc | Pdis | | |

5.8 Operation alarms (AL 6XX)

| 600 | No contr | ol senso | ors | | | Fatal alarm | |
|------------------|----------------------------------|--|---------------|--------------|-------------|-------------|--|
| Description | | Supply air sensor 1, supply air sensor 2, return air sensor, and evaporator sensor are all malfunctioning. | | | | | |
| Cause | Unexpecte | d behaviour | in old softw | are version. | | | |
| | Sensors a | re malfuncti | oning. | | | | |
| | • X22, X23, | X24 and X2 | 5 cable are | defective. | | | |
| | Main conti | roller is defe | ctive. | | | | |
| Trouble shooting | · ' | Try to correct the error by uploading the latest software version to the controller. | | | | | |
| | 2. Verify all o | 2. Verify all other sensor alarms AL 100 to AL 3XX and try to remove these alarms. | | | | | |
| | 3. If this alar | m remains | active, repla | ce main con | troller. | | |
| Criteria | No valid contr | ol sensor va | lues. | | | | |
| Controller | Unit stop flag. | | | | | | |
| action | Log | Χ | Alarm | Χ | Alarm light | Quick flash | |
| Consequence | Unit stops. | | | | | | |
| Elimination | possible to co the control se | When one of the control sensor values enters into the valid area, it is again possible to control container temperature. For reliability reasons at least one of the control sensor values must be valid for 30 sec. before sensor may be used as control reference again. | | | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | | | | | | | |

| 601 | No water | rcooling | | | | Alarm | |
|------------------|--|---|----------------|----------------|----------------|------------------|--|
| Description | Water-cooling | fault. | | | | | |
| Cause | Unexpecte | Unexpected behaviour in old software version. | | | | | |
| | Water coo | ling selected | and no water | cooling activ | e. | | |
| | Insufficier | nt water cooli | ng capacity. | | | | |
| | If progran | n is chosen, v | varning can o | ccur in units | without water | cooling. | |
| Trouble shooting | | Try to correct the error by uploading the latest software version to the controller. | | | | | |
| | Verify that water cooling hoses are applied and water is running when selecting water cooling. | | | | | | |
| | 3. Verify that | the water is | not too hot ar | nd not able to | be used for co | poling the unit. | |
| Criteria | Compressor of (+140°F) in r | | | eeds limit for | water-cooling | , +60°C | |
| Controller | | | | | | | |
| action | Log | Χ | Alarm | X | Alarm light | Slow flash | |
| Consequence | | | | | | | |
| Elimination | | Alarm will be marked as inactive in alarm list next time water-cooling is activated. Alarm may then be deleted. | | | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | | Tc | WC off | | | | |

| 603 | In range | fault | | | | Fatal alarm | |
|-------------|---|--|---------------------------------|---------------|----------------|---------------------------------------|--|
| Description | In-range fault | | | | | | |
| Cause | Unexpecte | ed behaviour | r in old softw | vare version | | | |
| | • Container | doors are o | pen or gaske | et defective. | | | |
| | Not enoug | h refrigeran | t for the cor | npressor. | | | |
| | Incorrect I | Psuc reading | J. | | | | |
| | Insufficien | Insufficient airflow through evaporator. | | | | | |
| | Insufficien | t airflow thr | ough conde | nser. | | | |
| | • Defective | hot gas valv | e (leaking). | | | | |
| Trouble | 1. The unit w | vill continue | the cooling | but the next | steps could l | be checked anyway. | |
| shooting | 2. Try to corr controller. | ect the erro | r by uploadi | ng the lates | t software ve | rsion to the | |
| | 3. If other al | arms – follo | w troublesh | ooting for th | ese alarms. | | |
| | 4. Check con | tainer doors | and gasket | s. | | | |
| | 5. If Psuc reads -1 bar (-14.5 psi), check connector at the sensor and at X22 of the controller by disconnecting and reconnecting the connector. If still reading -1 bar (-14.5 psi), compare Psuc reading with the service gauges. | | | | | | |
| | filled with | | locking air c | | | e evaporator is orator motors can | |
| | | | r is filled wit rotate (turn | | | rculation. Check if | |
| | 8. Check hot gas valve for leaking. Let the compressor run in manual for some time. Stop compressor and see if the suction pressure rises more than normal. If valve is defective, replace valve. | | | | | | |
| Criteria | Temperature rafter that in o | | | | | m 30 min. and | |
| Controller | | | | | | | |
| action | Log | Х | Alarm | X | Alarm light | Quick flash | |
| Consequence | If error is dete | | - | | | · · · · · · · · · · · · · · · · · · · | |
| Elimination | Alarm will be may then be o | | nactive in al | arm list whe | en in-range is | reached and alarm | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | | Tset | Tact | | | | |

| 607 | AirEx ope | en | | | | Alarm |
|------------------|------------------------------------|--|----------------|-----------------|----------------|-----------------|
| Description | Air exchange | valve open in | conflict with | settings. | | |
| Cause | Unexpecte | ed behaviour | in old softwar | e version. | | |
| | Air exchar | ige valve ope | n in freeze m | ode or CA/AV | '+ mode. | |
| | Air exchar | ige: RH set p | oint is betwee | en 50% and 6 | 54%. | |
| | Cable or a | ir exchange s | sensor defecti | ve or not cali | brated correct | tly. |
| Trouble shooting | | 1. Calibrate the air exchange sensor (see Controller System Menu decal for air exchange sensor calibration). | | | | |
| | 2. Try to corr controller. | 2. Try to correct the error by uploading the latest software version to the controller. | | | | |
| | 3. See and cl | lear error for | alarm AL 305 | | | |
| | | | | s closed, cable | | ange sensor or |
| Criteria | Air exchange set point betw | | | | | lification with |
| Controller | | | | | | |
| action | Log | Χ | Alarm | X | Alarm light | Slow flash |
| Consequence | Deteriorated of | control precis | ion. | | | |
| Elimination | Alarm will be may then be deleted. | Alarm will be marked as inactive in alarm list when air exchange is closed and may then be deleted. | | | | |
| l an data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data | | | | | | |

| 608 | Config Ai | rEx type | | | | Alarm | |
|------------------|---------------|--|----------------|-----------|----------------|------------|--|
| Description | Air exchange | type missing. | • | | | | |
| Cause | Air exchar | ige type is se | t to NONE in | Settings. | | | |
| Trouble shooting | 1. Go to Sett | ings and Configuration on valve typ | figuration, an | | er 35m³/h or 7 | 75m³/h | |
| Criteria | | | | | | | |
| Controller | | | | | | | |
| action | Log | Х | Alarm | Х | Alarm light | Slow flash | |
| Consequence | | | | | | | |
| Elimination | | Alarm will be marked as inactive in alarm list when air exchange is set and may then be deleted. | | | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |

| 610 | Defrost | t time exc | eed | | | Log | |
|------------------|--|--|---|---------------------------|---|---------------------------|--|
| Description | Max. defro | st time exceede | ed. | | | | |
| Cause | Unexpe | cted behaviour | in old software v | ersion. | | | |
| | There h | nas been too mi | uch ice in the eva | porator. | | | |
| | The hea | aters are not we | orking/defective. | | | | |
| | Defective | ve Psuc pressur | e transmitter. | | | | |
| | Defective | Defective Pdis pressure transmitter. | | | | | |
| | Defective | Defective Tevap evaporator temperature sensor. | | | | | |
| | Lack of | refrigerant. | | | | | |
| Trouble shooting | | Try to correct the error by uploading the latest software version to the controller. | | | | | |
| | 2. Check a | and clear other | alarms first. Che | ck refrigera | nt level. | | |
| | 3. Check pressure transmitter configuration and confirm values from Psuc and Pdis by comparing them to gauge readings. | | | | | | |
| | been us | sed current for d 3 should be a | time to remove the heaters on the bove 6 A when the wer, check if ther | ne informatione heater sy | on menu - Cur rmbol, ^도 , is s | rent phase hown on the | |
| | 5. Run a F | TI test after th | e cargo is unload | ed. | | | |
| Criteria | Defrost tim | ne has exceeded | d 60 min. | | | | |
| Controller | | | | | | | |
| action | Log | X | Alarm | | Alarm light | Off | |
| Consequence | All the ice | may not have b | een melted with | a deteriorat | ed yield. | | |
| Elimination | | be marked as ir e and may the | nactive when a ne n be deleted. | ew defrosting | g is terminated | d on | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | | Max defrost time | | | | | |

| 611 | Too many sense | or erro | rs | | | Log | |
|------------------|---|---|-------------|----------|-------------|-----|--|
| Description | Too many (controlling) | sensors hav | ve errors. | | | , | |
| Cause | If too many (control correct temperature control". | | | | | | |
| | Unexpected behavio | Unexpected behaviour in old software version. | | | | | |
| | One or more temper | rature sens | ors are def | ective. | | | |
| | One or more pressu | re transmit | ters are de | fective. | | | |
| Trouble shooting | | 1. This alarm only appears when one or more controlling sensors have failure and there are no substitute sensors. | | | | | |
| | Try to correct the er controller. | 2. Try to correct the error by uploading the latest software version to the controller. | | | | | |
| | 3. See alarm list for the | 3. See alarm list for the specific sensors. | | | | | |
| Criteria | Can not substitute fault | Can not substitute faulty sensors with value from another sensor. | | | | | |
| Controller | | | | | | | |
| action | Log | Х | Alarm | | Alarm light | Off | |
| Consequence | Deteriorated control pre | cision in th | e frozen m | ode. | | | |
| Elimination | When a sensors slot valuand may then be delete | | | | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Parm 1 Parm 2 Parm 3 Parm 4 Parm 5 Alarm reason: 1 = T0 Invalid 2 = Tsuc and Tevap invalid 3 = Minimum 3 sensors (Tsup1, Tsup2, Tret, Tevap, Tsuc) invalid | | | | | | |

| 623 | Loss of o | cooling | | | | Fatal alarm | | |
|------------------|---------------------------|---|-----------------------------|---------------|------------------------|--|--|--|
| Description | The refrigera | tion systems | tries to coo | l down but 1 | Гsup is above | Tret. | | |
| Cause | Unexpect | ed behaviou | r in old softw | are version | | | | |
| | System le | ak - loss of | refrigerant. | | | | | |
| | Defective | compressor | valve plate(| s). | | | | |
| | Defective | Defective compressor. | | | | | | |
| | Defective | Defective valves. | | | | | | |
| | Evap fan | direction. | | | | | | |
| Trouble shooting | 1. Try to cor | | or by uploadi | ng the lates | t software ve | rsion to the | | |
| | 2. Check ref | rigerant leve | el. If low, find | d leak point, | repair and re | echarge unit. | | |
| | | 3. Check the function of these valves: Vexp, Veco and Vhg. Perform a function test and troubleshoot according to the test alarms. | | | | | | |
| | refrigeran | t from the c Defective va | ompressor a | nd check LP | and HP valve | essor. Recover the e plates for of the cylinder is | | |
| | 5. Replace to possible of | | compressor part of the c | | | olates is not | | |
| | | eck Evap far schematic. | motor direc | ction, make | sure the wirir | ng is according to | | |
| Criteria | | ange LED is | off AND requ | uested capa | city is -100. <i>A</i> | is 0.5°C below All above criterias | | |
| Controller | Unit stop flag | | | | | | | |
| action | Log | Х | Alarm | Х | Alarm light | Quick flash | | |
| Consequence | Unit stops un | til it is powe | r cycled. | | | | | |
| Elimination | | | 1 | | | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| | Tret | Tsup | FCType | FreqAct | Hevap% | | | |

| 624 | Config va | alve type | | | | Alarm |
|------------------|---------------------------|---|-----------------|-------------------------------|-----------------|------------|
| Description | System ident | fies that the o | controller was | changed. | | |
| Cause | Unexpecte | ed behaviour i | n old software | version. | | |
| | I | has been rep er. 2, Ver. 3). | laced, requires | s manually set | ting of valve v | version |
| Trouble shooting | · ' | 1. Try to correct the error by uploading the latest software version to the controller. | | | | |
| | | 2. Manually select the valve version in the Configuration menu on line F09. If in doubt which valve version is installed, please refer to bulletin 00143. | | | | |
| Criteria | | | | hanged, when one power dow | | panel and |
| Controller | | | | | , | |
| action | Log | X | Alarm | Х | Alarm light | Slow flash |
| Consequence | Possibility for | non-optimal | operation. | | | |
| Elimination | The operator on line F09. | The operator must manually select the valve version in the Configuration menu on line F09. | | | | |
| l on data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data | | | | | | |

| 630 | Manual p | Manual phase dir Warning | | | | | | |
|------------------|---|---|--|---------------|-----------------|-----------------|--|--|
| Description | Manually sele | cted phase d | lirection. | | | | | |
| Cause | Unexpect | Unexpected behaviour in old software version. | | | | | | |
| | Indication | Indication of insufficient yield or defective controller. | | | | | | |
| | The user | has selected | a manual phas | se direction. | | | | |
| Trouble shooting | 1. Try to cor controller | | r by uploading | the latest so | oftware versio | n to the | | |
| | direction. | 2. The quality of the power frequency is so poor that the user must decide phase direction. Apply valid power supply to the unit. Ensure condenser fan is running the right direction if no better power supply is available. | | | | | | |
| | 3. There is a failure in the power wiring for the unit. Check that there are 3 valid phases for the unit. | | | | | | | |
| | again and | see if the ph | phase direction nase can be de power measure | tected now. | If phases still | can not be | | |
| | 5. The main | controller is | defective. Rep | lace main co | ntroller. | | | |
| Criteria | User has mar | nually selecte | d phase direct | ion. | | | | |
| Controller | Use the selec | ted phase di | rection. | | | | | |
| action | Log | X | Alarm | Χ | Alarm light | Off | | |
| Consequence | User controls | the rotation | direction of th | e motors. | | | | |
| Elimination | When switche | ed to automa | tic, the alarm | is marked as | inactive and | can be deleted. | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | | | Manual phase dir. CW/CCW | | | | | |

| 650 | O, low | | | | | Alarm | | | |
|------------------|--|--|--------------------------|---------------|----------------|--|--|--|--|
| Description | The O ₂ sensor | measures lo | ow O ₂ levels | the in contai | ner. | | | | |
| Cause | Unexpecte | d behaviour | in old softwa | are version. | | | | | |
| | • The syster | The system is not able to vent fresh air into the container. | | | | | | | |
| | Lack of oil | Lack of oil in the vacuum pump. | | | | | | | |
| | Automatic | Automatic air exchange defect. | | | | | | | |
| | • O ₂ sensor | defect. | | | | | | | |
| Trouble shooting | Try to corr controller. | , | | | | | | | |
| | 2. See if the automatic air exchange valves are open. If not, try to open them in Manual mode. | | | | | | | | |
| | 3. Check oil l | evel (must b | e above min | imum level). | | | | | |
| | 4. See if the | vacuum pum | np is running | | | | | | |
| | contair | | damper to | | | enough O_2 in the til the O_2 level is | | | |
| Criteria | O ₂ level < O ₂ | setpoint – 0. | $3 * O_2$ setpo | int. | | | | | |
| Controller | Run pump. | | | | | | | | |
| action | Log | X | Alarm | Х | Alarm light | Slow flash | | | |
| Consequence | If not flushed thereby deter | | cargo might | experience | anaerobic res | piration and | | | |
| Elimination | When the sen and may then | | comes valid, | it is marked | as inactive ir | the alarm list | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | | |
| Log uata | | Limit | Actual | Setpoint | | | | | |

| 651 | CO, high | | | | | Fatal alarm | |
|-------------------|--|--|-------------------------|----------------|-------------|------------------|--|
| Description | The CO ₂ sens | or measures | high CO ₂ le | vels in the c | ontainer. | | |
| Cause | Air exchar | nge motor d | efective. | | | | |
| | CO₂ senso | r defective. | | | | | |
| Trouble | 1. Check val | ves and air e | exchange mo | odule for ob | structions. | | |
| shooting | 2. Check cor | nections ac | cording to w | iring schema | atic. | | |
| | 3. Replace C | O ₂ sensor ar | nd run air ex | change mar | nually. | | |
| Criteria | CO ₂ level > C | CO, level > CO, setpoint + 0.5 * CO, setpoint (and rising). | | | | | |
| Controller action | CA: Open fresh air valve 0-100% (CO2 value is 1,0% above setpoint -> CO2 high limit AV+: No action | | | | | | |
| | Log | Χ | Alarm | Х | Alarm light | Quick flash | |
| Consequence | If CO ₂ is not r | emoved fro | m the contai | ner, this will | cause damag | ge to the cargo. | |
| Elimination | | When the sensor value becomes valid, it is marked as inactive in the alarm list and may then be deleted. | | | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | | Limit | Actual | Setpoint | | | |

| 652 | Vacuum | fault | | | | Alarm | |
|------------------|--|---------------------------------|-----------------------------------|---|----------------------------|---------------------------|--|
| Description | Vacuum pun | np unable to | reach the rec | uired pressure. | | | |
| Cause | Unexpec | ted behaviou | r in old softw | are version. | | | |
| | Lack of compared to the co | oil. | | | | | |
| | • Leak in \ | acuum syste | m or membra | ane. | | | |
| | Defective | Defective pressure sensor. | | | | | |
| | Vacuum | pump is defe | ctive. | | | | |
| | Contacto | r/controller. | | | | | |
| Trouble shooting | Try to co controlle | | r by uploading | g the latest softv | vare version to | o the | |
| | | | | ooting for AL 403 roceed with 3. | 3. | | |
| | 3. The vacu | ium pump is | not running. | | | | |
| | | | etallic switch i epending on r | s connected acc nodel). | ording to the | wiring | |
| | not, | check the cor | ntroller outpu | ode, to see if th t. If it does, che ace the vacuum p | ck the contac | | |
| | 4. The vacu | ium pump is | running. | | | | |
| | a. Perfo | rm "Vacuum | system test". | | | | |
| Criteria | Pump on > ! | min and Pm | em > 135 ml | 3ar in 15 min, aı | nd CO ₂ act > C | CO ₂ set + 2%. | |
| Controller | | | | | 1 | | |
| action | Log | Х | Alarm | X | Alarm light | | |
| Consequence | | | | sure, the memb the container. | rane does no | t work and is | |
| Elimination | | ensor value be en be deleted | | , it is marked as | inactive in th | ne alarm list | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | | Limit | Actual | Pump on time | | | |

| 653 | Mpump | heat ele | ment | | | Alarm | | |
|------------------|------------------------------|--|-----------------|-------------------------------|----------------|--------------|--|--|
| Description | Vacuum pur | np operating | temperature | is low. | | | | |
| Cause | Unexpect | ted behaviou | r in old softw | are version. | , | | | |
| | Very low | ambient tem | perature. | | | | | |
| | Defective | Defective temperature sensor Tpump. | | | | | | |
| | Defective | e heating eler | ment. | | | | | |
| | Defective | e contactor K | 10. | | | | | |
| Trouble shooting | · ' | Try to correct the error by uploading the latest software version to the controller. | | | | | | |
| | 2. Check th | e contactor. | | | | | | |
| | 3. Check th | ne controller p | olug for the te | emperature senso | or. | | | |
| | 4. Ensure t sensor p | | correctly mo | unted and inserte | ed completely | in the | | |
| | 5. Defective | e heating elei | ment. | | | | | |
| | | e contactor not Ω . If not repl | | leating element, ing element. | there should | be approx | | |
| Criteria | Heating pun | np on for 50 i | minutes; Tpu | mp < Tamb + 5° | C. | | | |
| Controller | | | | | | | | |
| action | Log | X | Alarm | Х | Alarm light | Slow flash | | |
| Consequence | Condensatio | n of water va | por in the pu | mp housing. | | | | |
| Elimination | | ensor value be en be deleted | | , it is marked as i | nactive in the | e alarm list | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | | Limit | Actual | Heater on time | | | | |

| 654 | Mpump t | emp hig | h | | | Alarm | | |
|------------------|-------------------------------|--|---------------|----------------|-----------------|------------------|--|--|
| Description | Motor for vacu | um pump is | overheated. | | | | | |
| Causes | Unexpecte | d behaviour | in old softwa | are version. | | | | |
| | Very high | ambient tem | perature. | | | | | |
| | Lack of oil | | | | | | | |
| | Missing on | e power pha | se into the p | ump. | | | | |
| | Vacuum pi | ump motor is | overheated | | | | | |
| | Vacuum pi | ump is defec | tive or jamm | ed. | | | | |
| Trouble shooting | Try to corr controller. | , | | | | | | |
| | | 2. Check if the fan for the vacuum pump can turn freely. If it cannot turn, remove any obstacle. | | | | | | |
| | 3. Check that | the vacuum | housing is no | ot blocked. | | | | |
| | 4. Check that | the oil level | in the pump | is correct. | | | | |
| | 5. Check that | the heating | element is tu | irned off, and | d check the he | eater contactor. | | |
| | 6. Check that | the tempera | ture sensor - | Γpump is inst | alled correctly | y. | | |
| | | the above so 9°F), replace | | | pump seems | to be more than | | |
| Criteria | Tpump > 115 | °C (239°F). | | | | | | |
| Controller | Stop vacuum | pump. | | | | | | |
| action | Log | X | Alarm | Х | Alarm light | Slow flash | | |
| Consequence | The CA syster | n will not be | able to remo | ove CO2 fron | n the contain | er. | | |
| Elimination | AL 654 will be | come invalid | when the te | emperature d | lecreases. | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | | Limit | Actual | | | | | |

| 656 | Mpump ser | vice | | | | Warning | | | |
|-------------------|--|--|--|--|---|---|--|--|--|
| Description | Vacuum pump need | | r change. | | | | | | |
| Cause | Pump runtime | > 2000 h. | | | | | | | |
| Trouble shooting | 1. Upload the late: 2. Pump running I line R08 Vacuu 3. Turn the unit of 4. Dismount the v 5. Visually inspect 6. Use a mirror, n place the filter 7. Dismount the b 8. If installed, loo the flat spring of 9. Remove the filt hook. 10. Attach the aday 2 fingers and b 11. Clean the end of attached ensur the top. 12. Gently position with 1 Nm and 13. If no adapter is into its position force on the sp 14. Check the position and should not misaligned, adj 15. Clean the end of its 4 screws tig 16. Drain oil from the | st software vernours can be were pump oil/file of and disconners around pump of there are a nobile phone of best possible. Sen the screw counter clockwer. Check that of the vacuum ing that it is possible of the vacuum pump of the vacuum pump the vacuum p | riewed in the t. ect the power cover by rem ny oil leakage amera, or released from the filter or and the filter or and piece and m. sen the screw clockwise. Tight over tighter spring. It shows when bein correct positioned correct positioned in the filter or and turn it on and select line l. inge the value of and view I and render spring. It shows when bein correct position pump housing m. Important the top exceed the mand turn it on and select line l. inge the value of and view I and render select line l. in the change and its 4 so the change are service means and its 4 so the change are service means and its 4 so the change are service means are service means and its 4 so the change are service means are service means are service means are service means are service and its 4 so the change are service means are service means are service means are service and its 4 so the change are service means are service means are service and its 4 so the change are service means are service means are service and its 4 so the change are service means are service and its 4 so the change are service means are service are service and its 4 so the change are service means are service and its 4 so the change are service are service and its 4 so the change are service are service and its 4 so the change are service are service and its 4 so the change are service are service and its 4 so the change are service and its 4 so the change are service are service and its 4 so the change are service are service and its 4 so the change are service and its 4 so the change are service are service and its 4 so the change are service are service are service and its 4 so the change are service are service and its 4 so the change are service are ser | to the unit. oving the 4 ses or discolor move the pu ter by remove holds the flat ove it. ing is not left to that the pin bow between g and then it rectly in the second to prevent ould be perfectly in the second to prevent output be perfectly in the sec | screws. uration of the property of the filter end of the filter end of the adapter of the new housing with the four screws of the spring and alignew (7 mm) to puncturing the extly aligned with your fingers to 15 Nm. If the black exhere the black exhere the suring the ornest to 15 Nm. If the property of the suring the suring the suring the ornest to 15 Nm. If the black exhere black plug noting the ornest to 15 Nm. If the black exhere the suring the ornest to 15 Nm. If the suring according according to the suring according to the suring suring the suring suring the suring | n order to re- ws. Iter in place. Turn remove it with a and cap is between and the filter. filter with o-ring he wire bow at the adapter, first gn the flat spring apply adequate e filter end cap. ith the housing s. If it is haust cover with ext to the sight ing is intact and 0 ml oil (item no. ight glass. ange the value of e. The value ng to the | | | |
| Criteria | Pump runtime > 20 | 000 h. | | | | | | | |
| Controller action | Log | X | Alarm | X | Alarm light | Off | | | |
| Consequence | Unit cannot pass Co will decrease pump | | | l change eve | ery 2000 pump | running hours | | | |
| Elimination | When the alarm becomes inactive, it can be deleted. | | | | | | | | |
| Log data | Parm 1 0 = Service interval of 2000 h exceeded 1 = Oil level below critical level | Parm 2 Time since last service Time spent in oil level detection(s) | Parm 3 N/A Avg supply voltage (V) | Parm 4 N/A Energy used (Wh) | Parm 5 N/A Energy thres | hold (Wh) | | | |

| 657 | Mpum | start f | ailure | | , | Fatal alarm | | |
|-------------|---|-----------------------------------|---------------|--------------------|-----------------|----------------|--|--|
| Description | Vacuum pı | ump operati | ng in the w | rong direction. | | | | |
| Cause | Unexpe | ected behav | iour in old s | software version | • | | | |
| | Wrong | Wrong phase direction. | | | | | | |
| | Supply | Supply voltage to pump defective. | | | | | | |
| | Pressure | re tansmitte | er defective. | | | | | |
| | Vacuur | n hose leak | | | | | | |
| | • Leaks i | n the vacuu | ım system. | | | | | |
| | Contact | tor defectiv | e. | | | | | |
| Trouble | 1. Try to correct the error by uploading the latest software version to the controller. | | | | | | | |
| shooting | 2. Power cycle the controller. | | | | | | | |
| | 3. Check contactor K10. | | | | | | | |
| | 4. Check | pump conne | ection accor | ding to the wirin | ng schematic. | | | |
| | 5. See "V | acuum syste | em test". | | | | | |
| | 6. Check | the pressure | e transmitte | er Pmem. | | | | |
| Criteria | Pump ON | > 7 sec and | Pmem > 6 | 00 mBar. | | | | |
| Controller | Stop Mpun direction is | | m is either | when the unit is | power cycled | d or the phase | | |
| action | Log | Х | Alarm | Х | Alarm light | Quick flash | | |
| Consequence | Vacuum pı | ımp stop ar | nd CA non-f | unctionable. | | | | |
| Elimination | When the | alarm becor | mes inactive | e, it can be delet | ed. | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | | Limit | Actual | Pump on time | CO ₂ | | | |

| 658 | Mpump | start f | ailure | | | Alarm | | |
|------------------|---------------------|--|--------------|----------------|----------------|-----------------|--|--|
| Description | Vacuum pu | Vacuum pump cannot start due to bad U/f ratio. | | | | | | |
| Cause | Bad po | wer supply | to the unit. | | | | | |
| | | U/f ratio is outside its legal operational envelope and the CA system wants the pump to run. | | | | | | |
| Trouble shooting | 1. Check is source. | • | upply or try | conencting the | unit to anothe | r correct power | | |
| Criteria | l ' | U/f ratio is outside its legal operational envelope and the CA system wants the pump to run. | | | | | | |
| Controller | | | | | | | | |
| action | Log | Χ | Alarm | Х | Alarm light | Slow flash | | |
| Consequence | The CA sys | stem is not | running opt | imally. | | | | |
| Elimination | | The alarm becomes inactive when the U/f ration is inside its legal envelope for more than 1 minute. | | | | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | | | | | | | | |

| 660 | Check o | oil | | | | | Warning | |
|-------------|------------------------------|---|--------------|-------------|-------------|----------------|----------------|--|
| Description | Coil(s) actir | ng suspicious | 5. | | | | | |
| Cause | One or r | more coils ne | eeds insped | ction. | | | | |
| | Controll | er output ele | ectronic de | fect. | | | | |
| | Coil clos | e circuit. | | | | | | |
| | Coil ope | Coil open circuit. | | | | | | |
| | Solenoid | Solenoid coil. | | | | | | |
| | Controll | er output vo | ltages. | | | | | |
| Trouble | 1. Measure | output volt | ages (X19) | with a m | ulti-meter | – OK range 2 | 2.5V to 6.5V. | |
| shooting | 2. Repeat | 1. with relate | ed coil disc | onnected | to check o | output. | | |
| | connect | 3. If voltage is out of OK range, measure the resistance of the component connected to the "defective" controller output – OK range Valve solenoid coil: approx. 6-7 Ω . | | | | | | |
| | 4. Replace | components | according | to 1., 2. a | and 3. | | | |
| | 5. See serv | vice bulletin | "00053 Co | ntroller ou | ıtput volta | ges" for furth | ner. | |
| Criteria | Hardware fe | eedback sigr | al indicatir | ng trouble | detected. | | | |
| Controller | | | | | | | | |
| action | Log | | Х | Alarm | X | Alarm light | | |
| Consequence | If a coil, cor to cargo. | ntrolling a va | lve, is malf | unctioning | , cooling | can be disable | ed adding risk | |
| Elimination | Power cycle | will inactiva | ite alarm. | | | | | |
| | Parm 1 | | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| | Coil | Value | | | | | | |
| | Veco | 512 | | | | | | |
| 1 4-4- | Vexp | 2048 | | | | | | |
| Log data | If more that | ļ | | | | | | |
| | coil fails, va accumulate | llues are d e.g Veco sult in value | | | | | | |

| 661 | Check contacto | r | | | Warning | | |
|------------------|--|---|-------------|-------------|-------------------------|--|--|
| Description | Contactor(s) acting sus | picious. | | | | | |
| Cause | One or more contact | tors needs | inspectio | n. | | | |
| | Controller output ele | ectronic de | efect. | | | | |
| | Contactor close circ | uit. | | | | | |
| | Contactor open circle | uit. | | | | | |
| | Contactor coil. | Contactor coil. | | | | | |
| | Controller output vo | ltages. | | | | | |
| Trouble shooting | to 6.5V. In case of a will be too high), th | 1. Measure output voltages (X16, X17, X18) with a multi-meter – OK range 2.5V to 6.5V. In case of a contactor coil is short circuited (hence the current draw will be too high), the controller voltages output will shut off and the measured output voltage is 0 Vdc. | | | | | |
| | 2. Repeat 1. with relat | ed contact | or disconr | ected to c | heck output. | | |
| | 3. If voltage is out of 0 connected to the "d approx. 5-6 Ω (Dan | efective" c | ontroller o | utput – O | K range Contactor coil: | | |
| | 4. Replace components | s according | g to 1., 2. | and 3. | | | |
| | 5. See service bulletin information. | "00053 Cd | ontroller o | utput volta | ages" for further | | |
| Criteria | Hardware feedback sigr | nal indicati | ng trouble | detected. | | | |
| Controller | | , | | | | | |
| action | Log | Х | Alarm | Х | Alarm light Off | | |
| Consequence | Depending on which cor disabled adding risk to | | entially is | malfunctio | ning, cooling can be | | |
| Elimination | Power cycle will inactive | ate alarm. | | | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Contactor Value K2 CCW Z K3 Hevap K4 Mcond L K5 Mcond H K6 Mevap L Z K7 Mevap H K8 CW 128 K9 Mpump 16384 K10 Mheat 32768 If more than one contactor fails, values are accumulated e.g K2 CCW and K6 Mevap L result in value 2 + 32 = 34. | | - | - | | | |

| 662 | Mevap | lo cont | actor | | | Alarm | | |
|-------------|--|---|---------------|-------------------|------------------|------------|--|--|
| Description | Mevap low | contactor c | detected to | be faulty (only i | n heating). | | | |
| Cause | One or | more conta | ctors needs | s inspection. | | | | |
| | • Contro | ller output e | electronic de | efect. | | | | |
| | Contact | tor close cir | cuit. | | | | | |
| | Contact | Contactor open circuit. | | | | | | |
| | • Contac | Contactor coil. | | | | | | |
| | • Contro | Controller output voltages. | | | | | | |
| Trouble | 1. In Man | ual mode, v | erify that th | e fans are physic | cally running. | | | |
| shooting | 2. If alarr | n is active to | gether with | AL 661, check v | viring. | | | |
| | 2.5V to draw v | 3. Measure output voltages (X16, X17, X18) with a multi-meter – OK range 2.5V to 6.5V. In case of a contactor coil is short circuited (hence the current draw will be too high), the controller voltages output will shut off and the measured output voltage is 0 Vdc. | | | | | | |
| | 4. Repeat | point 3 wit | h related co | ntactor disconn | ected to check | output. | | |
| | 5. If voltage is out of OK range, measure the resistance of the component connected to the "defective" controller output – OK range Contactor coil: approx. 5-6 Ω (Danfoss), 8-10 Ω (Schneider), 11-13 Ω (ABB). | | | | | | | |
| | 6. See se inform | | n "00053 Co | ontroller output | voltages" for fu | ırther | | |
| Criteria | Current co | nsumption | is not as ex | pected. | | | | |
| Controller | Compensa | ites for Meva | apLo failure | by running with | MevapHi. | | | |
| action | Log | X | Alarm | Х | Alarm light | Slow flash | | |
| Consequence | Increased | power cons | umption and | d entering fan e | mergency mode | е. | | |
| Elimination | Power cyc | le will inacti | vate the ala | rm. | | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |

| 663 | Mevap | hi cont | actor | | | Alarm | | |
|-------------|--|---|---------------|-------------------|---------------------|-------------|--|--|
| Description | Mevap hig | h contactor | detected to | be faulty (only | in heating). | | | |
| Cause | One or | more conta | ctors needs | s inspection. | | | | |
| | Contro | ller output e | electronic de | efect. | | | | |
| | Contact | tor close cir | cuit. | | | | | |
| | Contact | Contactor open circuit. | | | | | | |
| | • Contac | Contactor coil. | | | | | | |
| | • Contro | ller output v | oltages. | | | | | |
| Trouble | 1. In Mar | ual mode, v | erify that th | e fans are physic | cally running. | | | |
| shooting | 2. If alarr | n is active to | gether with | AL 661, check v | viring. | | | |
| | 2.5V to draw v | 3. Measure output voltages (X16, X17, X18) with a multi-meter – OK range 2.5V to 6.5V. In case of a contactor coil is short circuited (hence the current draw will be too high), the controller voltages output will shut off and the measured output voltage is 0 Vdc. | | | | | | |
| | 4. Repeat | point 3 wit | h related co | ntactor disconn | ected to check or | utput. | | |
| | 5. If voltage is out of OK range, measure the resistance of the component connected to the "defective" controller output – OK range Contactor coil: approx. 5-6 Ω (Danfoss), 8-10 Ω (Schneider), 11-13 Ω (ABB). | | | | | | | |
| | 6. See se inform | | n "00053 C | ontroller output | voltages" for furt | ther | | |
| Criteria | Current co | nsumption | s not as ex | pected. | | | | |
| Controller | Compensa | ites for Meva | apHi failure | by running with | MevapLo. | | | |
| action | Log | X | Alarm | Х | Alarm light | Slow flash | | |
| Consequence | Lower ven | tilation and | entering fa | n emergency mo | ode. Potential risl | k to cargo. | | |
| Elimination | Power cyc | le will inacti | vate the ala | rm. | | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |

| 664 | Mevap | contac | tors (bo | th) | | Alarm |
|--|--|----------------|---------------|-------------------|---|--------------|
| Description | Both Meva | ap contactor | s detected t | to be faulty (onl | y in heating). | |
| Cause | • Proble | m with the i | nterlock. | | | |
| | One or | r more conta | actors needs | s inspection. | | |
| | Contro | oller output | electronic de | efect. | | |
| | Contact | ctor close ci | cuit. | | | |
| | Contact | ctor open cir | cuit. | | | |
| | Contact | ctor coil. | | | | |
| | Contro | oller output | voltages. | | | |
| Trouble shooting | Measure output voltages (X16, X17, X18) with a multi-meter – OK range 2.5V to 6.5V. In case of a contactor coil is short circuited (hence the current draw will be too high), the controller voltages output will shut off and the measured output voltage is 0 Vdc. | | | | | |
| | 2. Repea | t point 1 wit | h related co | ntactor disconn | ected to check or | utput. |
| | conne | cted to the " | defective" o | controller output | sistance of the co : – OK range Con , 11-13 Ω (ABB). | tactor coil: |
| | 4. See se inform | | n "00053 C | ontroller output | voltages" for furt | ther |
| Criteria | Current co | onsumption | is not as ex | pected. | | |
| Controller | Release a | ll contactors | except K2/ | K8 and the FC c | ontactor (K1). | |
| action | Log | X | Alarm | X | Alarm light | Slow flash |
| Consequence | Unit stops | . Potential r | isk to cargo | | | |
| Elimination | Power cyc | le will inacti | vate the ala | ırm. | | |
| Log data Parm 1 Parm 2 Parm 3 Parm 4 Parm 5 | | | | | Parm 5 | |
| | | | | | | |

| 665 | Hevap | contact | tor | | | Alarm | | |
|-------------|---|---|----------------|-------------------|-------------------|------------|--|--|
| Description | Hevap con | tactors dete | ected to be | faulty (only in h | eating). | | | |
| Cause | One or | more conta | actors needs | s inspection. | | | | |
| | Contro | ller output e | electronic de | efect. | | | | |
| | • Contac | tor close cir | cuit. | | | | | |
| | Contactor open circuit. | | | | | | | |
| | Contactor coil. | | | | | | | |
| | • Contro | ller output v | voltages. | | | | | |
| Trouble | 1. Verify i | n Manual m | ode. | | | | | |
| shooting | 2. If alarr | n is active to | ogether with | AL 661, check v | viring. | | | |
| | 3. Measure output voltages (X16, X17, X18) with a multi-meter – OK range 2.5V to 6.5V. In case of a contactor coil is short circuited (hence the current draw will be too high), the controller voltages output will shut off and the measured output voltage is 0 Vdc. | | | | | | | |
| | 4. Repeat | point 3 wit | h related co | ntactor disconn | ected to check or | utput. | | |
| | 5. If voltage is out of OK range, measure the resistance of the component connected to the "defective" controller output – OK range Contactor coil: approx. 5-6 Ω (Danfoss), 8-10 Ω (Schneider), 11-13 Ω (ABB). | | | | | | | |
| | | 6. See service bulletin "00053 Controller output voltages" for further information. | | | | | | |
| Criteria | Current co | nsumption | is not as ex | pected. | | | | |
| Controller | | | | | | | | |
| action | Log | Х | Alarm | Х | Alarm light | Slow flash | | |
| Consequence | Reduced c | apacity. Pot | ential risk to | o cargo. | | | | |
| Elimination | Power cyc | le will inacti | vate the ala | rm. | | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |

| 666 | Reduce | ed refr. | flow | | | Alarm | | | |
|------------------|--|--|---------------|------------------------------------|---|-------------------------------------|--|--|--|
| Description | The flow o | f refrigerant | in the syst | em is reduced. | | • | | | |
| Cause | • Expans | sion valve is | incorrectly | configured in th | e controller. | | | | |
| | Soleno | id coil conn | ector is defe | ective. | | | | | |
| | Soleno | Solenoid coil is defective. | | | | | | | |
| | Lack of | Lack of refrigerant in the system. | | | | | | | |
| | • Expans | sion valve is | not functio | ning correctly. | | | | | |
| Trouble shooting | menu, | line S05 Co | nfiguration, | and check the va | configured. Go to alue of line F09 Va alve details, see b | alve version is | | | |
| | | 2. Check the resistance between the solenoid coil and the controller X19 terminal 3-4. It should be 5-6 Ω . | | | | | | | |
| | | remove the on the sole | | t the solenoid co | il and measure th | ne resistance | | | |
| | 4. If the r | esistance is | ok, replace | the connector fo | r the solenoid coi | l. | | | |
| | 5. If the r | esistance is | not ok, repl | ace the solenoid | coil. | | | | |
| | 6. Measure output voltages on the connector X19 with a multimeter. It should be between 2.5-6.5 V. If not, measure the output voltages directly on the controller terminals. If still not within range, replace the main controller. If within range, replace the connector X19. | | | | | | | | |
| | 7. Check if Tsuc is showing the correct temperature, access cover is installed and sensor is mounted and insulated correctly. | | | | | | | | |
| | | | | orrect pressure in calibrated mani | n the bottom left of fold. | corner of the | | | |
| | | | | | on. E.g. blocked (airs or dents, etc. | | | | |
| | | that there is There should | | | stem and that th | ere are no | | | |
| | 11. Check | Vexp with pe | ermanent m | agnet if opens w | vith a firm clicking | sound. | | | |
| | | n is still action | | | lve. When compl | eted power | | | |
| Criteria | | | | tive expansion v | alve. | | | | |
| Controller | | | | | | | | | |
| action | Log | Х | Alarm | Х | Alarm light | Slow flash | | | |
| Consequence | Reduced c | ooling capa | city. Potenti | al risk to cargo. | | | | | |
| Elimination | When the | | 1 | e, it can be delet | ted. | | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | | |
| Log data | Vexp | Tamb | Psuc | Pdis | Result: 0 = Not run 1 = Pressure no 2 = Valve defect 3 = Passed | essure not acheived ve defective | | | |

| 670 | CA memb/hose leak Aları | | | | | | | |
|------------------|--|--|--|--|--|--|--|--|
| Description | | oump has sto | | o leak. | | | | |
| Cause | Memb | rane is leaki | ng. | | | | | |
| | • Vacuu | ım pump hos | se is leaking | | | | | |
| Trouble shooting | | the hose co | | nto the vacuum p | ump and the me | mbrane are | | |
| | Manua | al Operation. | Change the | | ce menu and sele 1 from Auto to Ma n. | | | |
| | 3. Disconnect the vacuum hose at the vacuum pump and plug the vacuum pump inlet. | | | | | | | |
| | | 4. If the membrane pressure in the Information menu on line I18 is below 30 mBar, go to point 7. If the pressure is above 30 mBar go to point 9. | | | | | | |
| | is tigh If the conne is in o Check | 5. Connect the hose back onto the vacuum pump and ensure the connection is tight. Disconnect the vacuum hose at the membrane and plug or seal it. If the membrane pressure on line I18 is still below 30 mBar, the membrane connection or the membrane itself is leaking. Replace the membrane. If the unit is in operation with cargo, be aware of possible high CO2 level and low O2 level. Check this on the controller main display. Vent the container according to the Operating and Service Manual before removing the right hand inspection cover. | | | | | | |
| | 6. If the membrane pressure on line I18 is above 30 mBar, check the hose for leaks and repair or replace it. Ensure it is connected correctly. After repair or replacement of the vacuum hose, conduct a container leak test according to the Operating and Service Manual. This is not possible on units in operation with cargo. | | | | | | | |
| | 7. Connect the hose back onto the vacuum pump and ensure the connection is tight. Install a manometer at the transmitter inlet and check the reading is similar to the display reading. If not, replace the pressure transmitter. | | | | | | | |
| | the di Runtir hours | splay, check ne counters, is above or a | the vacuum line R08 Va approaching | pump running ho cuum pump oil/fi 2000, perform a | oressure (above 3 ours in the Servic lt. If the number mandatory vacu d Service Manual | e menu, S04 of running um pump oil | | |
| | pump in the the po and sl misali check | oil level is all Operating are sition of the nould not be gned, adjust that there is | pove minimund Service M flat spring. able to mov it into the c no damage | um. Fill with the of lanual) until max It should be perfore e when being rot orrect position. In | changed, check to correct oil type (a imum level is rea ectly aligned with ated with your fire refitting it in the the filter. | s specified sched. Check the housing ngers. If it is completely, | | |
| | 10. Repla | ce the vacuu | m pump. | | | | | |
| Criteria | | | | mBar and incre n less than 20 se | ased from opera ec (rise time). | ting pressure | | |
| Controller | Mpump s | tops, CA is d | eactivated, | and AV+ is activ | ated. | | | |
| action | Log | X | Alarm | X | Alarm light | Slow flash | | |
| Consequence | | O2 control. | | | | | | |
| Elimination | settings. | | | | vated again with | the previous | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | Rise time | Pmem amb | Pmem current | Pmem when on | | | | |

| 671 | Mpum | o vacuu | m loss | | | Alarm | | |
|------------------|--|---|-----------------------------|-------------------|---|-----------------|--|--|
| Description | Vacuum p | ump has sto | pped due t | o loss of vacuun | n in the system. | | | |
| Cause | • Vacuur | m pump oil | level is low. | | | | | |
| | Vacuur | n pump filte | er is damag | ed or not install | ed correctly. | | | |
| | Vacuur | n pump is o | lefective. | | | | | |
| Trouble shooting | 1. If alarr first. | n 670 and/c | or 672 are al | lso active, check | troubleshooting f | or those alarms | | |
| | counte above | 2. Check the vacuum pump running hours in the Service menu, S04 Runtime counters, line R08 Vacuum pump oil/filt. If the number of running hours is above or approaching 2000, perform a mandatory vacuum pump oil and filter change according to the Operating and Service Manual. | | | | | | |
| | pump of in the of the postand should be misaliged to the contraction of the contraction o | 3. If the vacuum pump oil and filter has not been changed, check that the vacuum pump oil level is above minimum. Fill with the correct oil type (as specified in the Operating and Service Manual) until maximum level is reached. Check the position of the flat spring. It should be perfectly aligned with the housing and should not be able to move when being rotated with your fingers. If it is misaligned, adjust it into the correct position. If it has fallen off completely, check that there is no damage to the filter before refitting it in the correct position. If the filter has been damaged, replace the filter. | | | | | | |
| | | 4. Check the hose connections onto the vacuum pump and the membrane are tight and secured correctly. | | | | | | |
| | Manua | Operation. | Change the | | ce menu and sele If from Auto to Ma On. | | | |
| | 6. Discon inlet. | nect the vac | cuum hose a | t the vacuum pu | imp and plug the | vacuum pump | | |
| | mBar, i | install a mai | nometer at t | he transmitter in | nenu on line I18 is nlet and check the ne pressure transr | reading is | | |
| | | | is showing t e vacuum pu | | pressure (above 3 | 0 mBar) as the | | |
| Criteria | | | | | eased from operations sec (rise time). | ting pressure | | |
| Controller | Mpump sto | ops, CA is d | eactivated, | and AV+ is activ | vated. | | | |
| action | Log | Х | Alarm | Х | Alarm light | Slow flash | | |
| Consequence | Reduced C | 2 control. | | | | | | |
| Elimination | Power cycl settings. | le the unit. | CA will auto | omatically be act | ivated again with | the previous | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | Rise time | Pmem amb | Pmem current | Pmem when on | | | | |

| 672 | Mpump | oil low | <i>I</i> | | | Alarm | | | |
|------------------|--|---|----------------------------|----------------------------------|---|----------------|--|--|--|
| Description | Vacuum pu | ımp oil leve | l is detected | d as being low. | | | | | |
| Cause | Vacuun | n pump oil l | evel is low. | | | | | | |
| | Vacuun | n pump filte | er is damage | ed or not installe | ed correctly. | | | | |
| | Vacuun | n pump is d | efective. | | | | | | |
| Trouble shooting | counter above o | s, line R08 or approachi | Vacuum pur ing 2000, pe | np oil/filt. If the | Service menu , Son number of runnir ory vacuum pum Manual. | ng hours is | | | |
| | pump of in the Country the post and should be contracted by the country the country the country to the country tha | 2. If the vacuum pump oil and filter has not been changed, check that the vacuum pump oil level is above minimum. Fill with the correct oil type (as specified in the Operating and Service Manual) until maximum level is reached. Check the position of the flat spring. It should be perfectly aligned with the housing and should not be able to move when being rotated with your fingers. If it is misaligned, adjust it into the correct position. If it has fallen off completely, check that there is no damage to the filter before refitting it in the correct position. If the filter has been damaged, replace the filter. | | | | | | | |
| | | 3. Check the hose connections onto the vacuum pump and the membrane are tight and secured correctly. | | | | | | | |
| | Manual | 4. Start the pump manually by going to the Service menu and selecting line S01 Manual Operation. Change the value of line M01 from Auto to Manual. Go down to line M10 and change the value from Off to On. | | | | | | | |
| | 5. Disconr inlet. | nect the vac | uum hose a | t the vacuum pu | mp and plug the | vacuum pump | | | |
| | mBar, iı | nstall a mar | nometer at t | he transmitter in | nenu on line I18 i let and check the e pressure transr | e reading is | | | |
| | | | s showing tle vacuum pu | | ressure (above 3 | 0 mBar) as the | | | |
| Criteria | | | | mbar and incre n more than 20 | ased from opera sec (rise time). | ting pressure | | | |
| Controller | | | | | | | | | |
| action | Log | Χ | Alarm | Х | Alarm light | Slow flash | | | |
| Consequence | Reduced C | A efficiency | and eventu | ıal pump damag | e. | | | | |
| Elimination | Power cycl | e the unit. | | | | | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | | |
| Log data | Rise time | Pmem amb | Pmem current | Pmem when on | | | | | |

5.9 Communication alarms (AL 7XX)

| 700 | No FC/ | Contr com | | | | Fatal alarm | | | |
|------------------|----------------------------|---|--------------|---------------|-----------------|-------------------|--|--|--|
| Description | FC missing | | | | | | | | |
| Cause | Unexpe | cted behaviour in | old softwa | are version | | | | | |
| | Indicati | on of defective Fo | C, lack of o | r improper | connection. | | | | |
| | Commu | Communication with FC broken. | | | | | | | |
| | Power \ | voltage to the FC | not applied | d (wired for | r emergency o | operation?). | | | |
| | Defective | ve FC. | | | | | | | |
| | X8 cabl | e is defective. | | | | | | | |
| | Main co | ontroller defective | | | | | | | |
| Trouble shooting | | Try to correct the error by uploading the latest software version to the controller. | | | | | | | |
| | | 2. Verify that cable FC-com is mounted correctly according to wiring diagram inside the controller cabinet and not being damaged. | | | | | | | |
| | 3. Check t | 3. Check that power to the FC is not wired for emergency operation. | | | | | | | |
| | 4. Verify t | 4. Verify that there are correct voltages on all 3 phases for the FC. | | | | | | | |
| | | e with a multimet cable FC-com. | er that the | ere is a sma | all DC signal o | on the connector | | | |
| | | nere is no signal: troller. | The main o | controller is | s defective. R | eplace the main | | | |
| | no I ope | nere is signal: The FC replacement av ration: See "Eme nual. | vailable, th | e unit can | be rewired fo | r emergency | | | |
| Criteria | Communic | ation with FC not | possible. | | | | | | |
| Controller | FC reset pr | | | | | | | | |
| action | Log | X | Alarm | Х | Alarm light | Quick flash | | | |
| Consequence | Unit stops. | | | | | | | | |
| Elimination | When sens then be de | | valid, it is | marked as | s inactive in a | larm list and may | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | | |
| Log data | FC type | Communication Quality | | | | | | | |

| 710 | No userpa | anel con | ı (Seen i | n StarV | riew) Log |
|------------------|---|--------------------------------|----------------|---------------|--|
| Description | No communica | tion with dis | play. | | |
| Cause | Unexpected | d behaviour i | n old softwa | re version | |
| | Indication (| of defective of | display, lack | of or impr | oper connection. |
| | Communication | ation with dis | splay broken | | |
| | Defective d | lisplay. | | | |
| | X11 cable i | s defective. | | | |
| | Main contro | oller defectiv | e. | | |
| Trouble shooting | 1. Try to correct controller. | ect the error | by uploading | the lates | st software version to the |
| | | cable COM is ram inside th | | | nd is not damaged) according to |
| | 3. Verify that | there are co | rrect voltage | s 12 V DC | C on wire 1. |
| | | ith a multime r PCB for cal | | re is a sm | all DC signal on the wires 2 and |
| | a. If there is no signal: The main controller is defective. Replace the main controller. | | | | |
| | b. If there is signal: The display is defective and must be replaced. If there is no display permanent replacement available, a substitution display can be used for setting values and evaluate the unit's status. | | | | |
| Criteria | Communication | n via the disp | olay is not po | ossible. | |
| Controller | None. Unit can | perform noi | rmally withou | ut the disp | olay. |
| action | Log | Χ | Alarm | | Alarm light Off |
| Consequence | User not able t | | | | |
| Elimination | When commur and may then | | e display is a | active, it is | s marked as inactive in alarm lis |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 |
| Log data | | | | | Which node is unit connected to 1 (bit0) = LUP 2 (bit1) = LPM 4 (bit2) = RH 8 (bit3) = CO2 16 (bit4) = CA (LOM module) 32 (bit5) = O2 64 (bit6) = O2 SST 128 (bit7) = Not used 256 (bit8) = LPM200 512 (bit9) = FC |

| 720 | No SPM c | om | | | | Alarm | |
|-------------------|-------------------------------|---|-----------------|--------------|--|------------------|--|
| Description | No communica | ation. | | | | | |
| Cause | Unexpecte | d behaviour | in old softwa | re version | • | | |
| | Indication | of defective | power modu | le, lack of | or improper co | onnection. | |
| | Communic | ation with po | wer module | SPM6 brol | ken. | | |
| | • 12 V DC to | the power r | nodule SPM6 | not applie | ed. | | |
| | Defective p | ower modul | e SPM6. | | | | |
| | X11 cable | is defective. | | | | | |
| | Main contr | oller defectiv | e. | | | | |
| Trouble shooting | 1. Try to correct controller. | ect the error | by uploading | g the lates | t software ver | sion to the | |
| | | power modu to wiring diag | | | | not damaged) | |
| | 3. Verify that | plugs are pr | operly conne | ected. | | | |
| | 4. Verify that | there are co | rrect voltage | es on all 3 | phases for the | e power module. | |
| | | 5. Measure with a multimeter that there is a small DC signal on the connector PCB for power module-com. | | | | | |
| | a. If there control | _ | : The main c | ontroller is | defective. Re | place the main | |
| | | | | | ective and mu | ist be replaced. | |
| Criteria | Communicatio | n with contro | oller not poss | sible. | | | |
| Controller action | | l., | | Lv | A. 1. 1. | | |
| | Log Unit stops. | X | Alarm | X | Alarm light | Slow flash | |
| Consequence | | value hecome | es valid it is | marked as | inactive in al | arm list and may | |
| Elimination | then be delete | | 23 valia, it is | marked as | inactive in ai | arm not and may | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | | | | | Which node is unit connected to 1 (bit0) = LUP 2 (bit1) = LPM 4 (bit2) = RH 8 (bit3) = CO2 16 (bit4) = CA (LOM module) 32 (bit5) = O2 64 (bit6) = O2 SST 128 (bit7) = Not used 256 (bit8) = LPM200 512 (bit9) = FC | | |

| Description | | ens com | | | | Log | |
|------------------|--|------------------------------|--------------------------------|----------------|---|-------------------|--|
| | RH sensor communication missing. | | | | | | |
| Cause | • Unexpec | ted behaviou | ur in old soft | ware version | | | |
| | Indication of defective RH sensor, or lack of or improper connection. | | | | | | |
| | Communication with RH sensor broken. | | | | | | |
| | Defective | RH sensor. | | | | | |
| | X10 cable | e is defectiv | e. | | | | |
| | Main controller defective. | | | | | | |
| | CO₂ sens | or defective | (for some m | nodels). | | | |
| | O₂ senso | r defective (| for some mo | dels). | , | | |
| Trouble shooting | 1. Try to co controlle | | or by upload | ing the lates | t software ver | rsion to the | |
| | | | com is mount side the conti | | | maged) according | |
| | 3. Verify the | at plugs are | properly con | nected. | | | |
| | | at there are 1 and 2 on 1 | | ges 12 V DC | between 1 ar | nd 4 on X10 or | |
| | 5. If model has CO_2 and or O_2 sensor, see troubleshooting for AL 740 and or AL 760 in "Operating and service manual Controlled Atmosphere" | | | | | | |
| | 6. Measure with a multimeter that there is a small DC signal between 2 and 3 on X10, and between 2 and 3 on X75. | | | | | | |
| | a. If there is no signal: The main controller is defective and must be replaced. | | | | | | |
| | b. If the | re is signal: | The RH sens | sor is defecti | ve and must b | pe replaced. | |
| Criteria | Communicat | ion with RH | sensor not p | ossible. | | | |
| Controller | | | | | | | |
| action | Log | Χ | Alarm | | Alarm light | Off | |
| Consequence | Dehumidifica | | | | | | |
| Elimination | When senso then be dele | ted. | mes valid, it | is marked as | | larm list and may | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | | | | | Which node is unit connected to 1 (bit0) = LUP 2 (bit1) = LPM 4 (bit2) = RH 8 (bit3) = CO2 16 (bit4) = CA (LOM module) 32 (bit5) = O2 64 (bit6) = O2 SST 128 (bit7) = Not used 256 (bit8) = LPM200 | | |

| 740 | No CO, s | ens com | 1 | | | Log | | |
|---|---|--|--------------------------|-------------|---|---|--|--|
| Description | CO ₂ sensor is | missing or o | communicati | on is lost. | | | | |
| Cause | Communi | cation to CO | ₂ sensor lost | | | | | |
| | CO ₂ senso | • CO ₂ sensor is missing. | | | | | | |
| | CO ₂ senso | r is defectiv | e. | | | | | |
| | COMRH ca | able and or F | RH-cable are | defective. | | | | |
| | Main cont | roller defecti | ve. | | | | | |
| Trouble | | | | | | | | |
| shooting | 2. Check voltage supply 12V DC and communication - small AC voltage 3 and 4 on X10. | | | | | voltage between | | |
| 3. If only AL 740 active, then check the CO ₂ sensor. Possibly test with a CO ₂ sensor. | | | | | | with another | | |
| | 4. If AL 740 | 4. If AL 740 is still active, replace the controller module. | | | | | | |
| Criteria | No communio | ation for 2 r | nin. | | | | | |
| Controller | | | | | | | | |
| action | Log | Х | Alarm | | Alarm light | Off | | |
| Consequence | Not possible t | | | | | | | |
| Elimination | Alarm may be | e deleted wh | en inactive. | | | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | | | | | 1 (bit0) = LUP 2 (bit1) = LPM 4 (bit2) = RH 8 (bit3) = CO2 | (LOM module) (SST lot used PM200 | | |

| 750 | No SSC | com | | | | Log | |
|------------------|--------------|---|----------------|---------------|--|--|--|
| Description | CA module | is missing or | communicat | ion is los. | | | |
| Cause | Unexped | cted behavio | ur in old soft | ware version | | | |
| | CA mod | ule is missin | g. | | | | |
| | Commu | nication to C | A module los | t. | | | |
| | CA mod | ule defective | | | | | |
| Trouble shooting | 1. Try to co | | or by uploadi | ng the latest | software vers | ion to the | |
| | 2. If one o | r more alarm | ns are active, | check wires | , plugs, and c | connectors. | |
| | 3. Check v | oltage supply | y according t | o the wiring | schematic. | | |
| | | 4. If only AL 750 active, then check the connection to the CA module and correct if faulty. If not, then replace the CA module. | | | | | |
| Criteria | No commur | nication for 2 | min. | | | | |
| Controller | | | | , | | | |
| action | Log | Х | Alarm | | Alarm light | Off | |
| Consequence | Not possible | e to run CA. | | | | | |
| Elimination | | | | | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | | | | | 1 (bit0) = L 2 (bit1) = L 4 (bit2) = R 8 (bit3) = C | PM H O2 CA (LOM module) O2 O2 SST : Not used : LPM200 | |

| 760 | No O, s | ens com | | | L | _og | |
|------------------|--------------------------|---|--------------------------|---------------|---|--|--|
| Description | O ₂ sensor is | missing or | communicati | on lost. | | | |
| Cause | Unexpe | cted behavio | ur in old soft | ware version | 1. | | |
| | • Commu | nication to th | ne O ₂ sensor | lost. | | | |
| | Defective | • Defective O ₂ sensor. | | | | | |
| | • COMRH | cable, RH-ca | able, and/or | COMCA cable | e is defective. | | |
| | Controll | er module de | efective. | | | | |
| Trouble shooting | | Try to correct the error by uploading the latest software version to the controller. | | | | | |
| | 2. If one o | r more alarn | ns are active | , check wires | , plugs and cor | nnectors. | |
| | 3. Check v | oltage accor | ding to wire | diagram. | | | |
| | | 4. If only AL 760 is active, then check connection to the O ₂ sensor and correct if faulty. If not, replace the CA module. | | | | | |
| Criteria | No commur | nication for 2 | min. | | | | |
| Controller | | | | | | | |
| action | Log | Х | Alarm | | Alarm light C | Off | |
| Consequence | | e to run CA. | | | | | |
| Elimination | <u> </u> | | hen inactive | | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | | | | | 1 (bit0) = LUP 2 (bit1) = LPM 4 (bit2) = RH 8 (bit3) = CO2 | 1 2 A (LOM module) 2 2 SST Not used LPM200 | |

| 780 | Modem | | | | | Log | | |
|-------------|------------------------|---|------------------|-----------------------|-------------|-----|--|--|
| Description | Sekstant gateway | modem alaı | rm. | | | | | |
| Cause | Gateway gene | rated an ala | rm due to shock | or angle. | | | | |
| | Gateway was | Gateway was connected but connection has been lost. | | | | | | |
| Trouble | 1. Check modem | Check modem device for impact damage. Replace modem if damaged. | | | | | | |
| shooting | 2. Check wires ar | nd plug conne | ections from the | controller to t | the modem. | | | |
| Criteria | | he reefer has been subjected to shocks or operated in a unrecommended rientation. 2 minute timeout with no communication. | | | | | | |
| Controller | | | | | | | | |
| action | Log | X | Alarm | | Alarm light | Off | | |
| Consequence | No communication | n possible. | | | | | | |
| Elimination | Alarm may be del | eted when ir | nactive. | | | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | 0 = Connection timeout | N/A | N/A | N/A | N/A | | | |
| Log data | 1 = Shock/Angle | 0 = Shock | Shock | Angle duration (s) | | | | |
| | | 1 = Angle | Amplitude (g) | 22.46.6.7 (5) | | | | |

5.10 Test alarms (AL 8XX)

| 800 | Func to | est failed | | | | Warning | |
|------------------|-------------|--|--------------|--------------|-------------|-----------------|--|
| Description | Function to | est fault. | | | | | |
| Cause | Unexpe | ected behaviour ir | old softwa | re version. | | | |
| | One or | One or more of the individual test steps have failed. | | | | | |
| Trouble shooting | | Try to correct the error by uploading the latest software version to the controller. | | | | | |
| | 2. See ind | dividual AL 8XX al | arms for ca | iuse. | | | |
| Criteria | One or mo | re of the individu | al test step | s have faile | ed. | | |
| Controller | FC will soc | n trip with error ! | 516 and sto | p compres | sor. | | |
| action | Log | Χ | Alarm | X | Alarm light | Off | |
| Consequence | Deteriorat | ed control precision | on and capa | acity. | | | |
| Elimination | | ents are normal, alue must be valid | | | | and may then be | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Step ID | Failure reason Bit 1 = Mpump oil needs change | | Seconds | Alarm count | | |

| 801 | Control | ler | | | | Warning | |
|------------------|---|--|-----------------------------|----------------------------|---------------------------------|----------------|--|
| Description | Controller i | nternal voltage ref | erence fault | | | | |
| Cause | Unexpected behaviour in old software version. | | | | | | |
| | Power supply for main controller is not sufficient. | | | | | | |
| | Main co | ntroller defective. | | | | | |
| Trouble shooting | 1. Try to c controll | orrect the error by er. | uploading t | he latest sof | tware version | to the | |
| | 2. See trowith 3. | uble shooting for a | ccompanied | alarms. If n | one appears, | then proceed | |
| | 3. Clear ot | ther active sensor | alarms. | | | | |
| | | ver supply or power for the main contr | | main control | ler defective. | Measure | |
| | V Do Hum | sure voltage for al C for temperature nidity sensor must sensor or cable is | sensors, Airl be between | Ex sensor an 12.00 V DC | d pressure tra and 34.00 V [| ansmitters. | |
| | AC - | b. Measure outlet on transformer between T3 and T4. Correct range 15.30 V AC – 24.30 V AC. Measure between T5 and T6. Correct range 18.86 V AC – 30.00 V AC. If within range transformer is OK. | | | | | |
| | | oltage is OK, the meplaced. | nain controlle | er is defectiv | e and main co | ontroller must | |
| Criteria | One or mor | One or more of the internal reference voltages are out of limits. | | | | | |
| Controller | | n trip with AL 516 | | | | , | |
| action | Log | X | Alarm | Х | Alarm light | Off | |
| Consequence | Test failed. | | <u> </u> | | | | |
| Elimination | | then be deleted as | 1 | · | l | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Step ID | 0 = Alarm 953 1 = Alarm 954 2 = Alarm 955 3 = Alarm 956 4 = Alarm 961 5 = Alarm 962 6 = Alarm 963 7 = Alarm 964 8 = Alarm 965 9 = Alarm 975 11 = Alarm 976 12 = Alarm 970 14 = Alarm 996 | | | | | |

| 802 | Air Ex Op | Air Ex Open | | | | | |
|------------------|---------------|---|-----------------|---------------|-----------------------------------|---------|--|
| Description | Manual air ex | change is op | ened preventi | ng other fund | tion tests to su | ucceed. | |
| Cause | | | | | tion of "Tempe larm (802) is a | | |
| Trouble shooting | | 1. Close the manual airex and re-run "Temperature and Pressure sensors function test" by running FT or PTI again. | | | | | |
| Criteria | Air exchange | Air exchange is opened. Air exchange > 0%. | | | | | |
| Controller | | | | | | | |
| action | Log | X | Alarm | X | Alarm light | Off | |
| Consequence | Test failed. | | | | | | |
| Elimination | Alarm may th | en be delete | d after test co | mpleted. | | | |
| l an data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Step ID | | | | | | |

| 803 | Reduce | ed refr. | flow | | | Warning | | | |
|------------------|---|--|---------------|-----------------------------------|--|-----------------|--|--|--|
| Description | The flow o | f refrigerant | in the syst | em is reduced. | | | | | |
| Cause | • Expans | sion valve is | incorrectly | configured in th | ne controller. | | | | |
| | Soleno | id coil conne | ector is defe | ective. | | | | | |
| | Soleno | id coil is def | ective. | | | | | | |
| | Lack of | f refrigerant | in the syste | em. | | | | | |
| | • Expans | sion valve is | not functio | ning correctly. | | | | | |
| Trouble shooting | menu, | line S05 Cor | nfiguration, | and check the va | configured. Go to alue of line F09 Va alve details, see b | alve version is | | | |
| | | the resistand should be 5 | | the solenoid coil | and the controlle | r X19 terminal | | | |
| | 1 | remove the on the sole | | t the solenoid co | oil and measure th | ne resistance | | | |
| | 4. If the r | If the resistance is ok, replace the connector for the solenoid coil. | | | | | | | |
| | 5. If the r | esistance is | not ok, repl | ace the solenoid | coil. | | | | |
| | betwee termina | 6. Measure output voltages on the connector X19 with a multimeter. It should be between 2.5-6.5 V. If not, measure the output voltages directly on the controller terminals. If still not within range, replace the main controller. If within range, replace the connector X19. | | | | | | | |
| | | if Tsuc is sho is mounted | | | re, access cover i | s installed and | | | |
| | | | _ | orrect pressure in calibrated man | n the bottom left ifold. | corner of the | | | |
| | | | | | on. E.g. blocked (airs or dents, etc. | | | | |
| | | that there is There should | _ | • | stem and that th | ere are no | | | |
| | 11. Check | Vexp with pe | ermanent m | agnet if opens w | vith a firm clicking | sound. | | | |
| | 12. If alarm is still active, replace the expansion valve. When completed power cycle the unit and run the Vexp test. | | | | | | | | |
| Criteria | | | | ive expansion v | alve. | | | | |
| Controller | | | | - | | | | | |
| action | Log | X | Alarm | Х | Alarm light | Off | | | |
| Consequence | Reduced c | ooling capad | city. Potenti | al risk to cargo. | | | | | |
| Elimination | When the | alarm becor | nes inactive | e, it can be delet | ted. | | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | | |
| Log data | Step ID | Tamb | Psuc | Pdis | Result: 0 = Not run 1 = Pressure not 2 = Valve defect 3 = Passed | | | | |

| 805 | Idle curr | ent | | | | Warning |
|------------------|-------------------------|--|-----------------|---------------|----------------|---------|
| Description | Unit idle over | current fault. | | | | |
| Cause | Unexpecte | d behaviour | in old softwa | ire version. | | |
| | • There is a | short-circuit | in the main | controller. | | |
| | The power | module PCE | B is defective. | | | |
| Trouble shooting | Try to corr controller. | , , , , | | | | |
| | 2. Check cab | 2. Check cables for sensors for damages. | | | | |
| | 3. The main | controller is | defective. Re | place the mai | in controller. | |
| Criteria | Idle current e | xceeds limit | of 0.3 A with | only controll | er running. | |
| Controller | | | | | | |
| action | Log | Χ | Alarm | X | Alarm light | Off |
| Consequence | Test failed. | | | | | |
| Elimination | Alarm may th | en be delete | d after test c | ompleted. | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data | Step ID | Idle | I1 | I2 | 13 | |

| 810 | Mevap c | ur LO spo | eed | | | Warning | |
|------------------|-------------------------------|---|-----------------|----------------|-----------------|--------------|--|
| Description | Evaporator m | notor low spee | ed current fau | ılt. | | | |
| Cause | Unexpect | ed behaviour | in old softwa | re version. | | | |
| | Evaporate | or motor jamr | med or defect | ive. | | | |
| | Evaporato | Evaporator motor cables defective. | | | | | |
| | Bad conn | ection in plug | | | | | |
| | Evaporato | or motor cable | es wired wron | g in controlle | er cabinet. | | |
| Trouble shooting | 1 | . Try to correct the error by uploading the latest software version to the controller. | | | | | |
| | | 2. Check the evaporator motor fans can rotate freely. Turn off power first. Replace motor or make it turn freely again. | | | | | |
| | 3. Check eva | aporator moto | or cables for c | lamages. | | | |
| | 4. Check tha | at the evapora | ator motor ca | bles are mou | nted correctly. | | |
| Criteria | Evaporator fa on one or mo | | e exceeded c | urrent limit a | t low speed. 0 | .6 – 0.7 Amp | |
| Controller | | | | | | | |
| action | Log | X | Alarm | Х | Alarm light | Off | |
| Consequence | Test failed. | | | | | | |
| Elimination | Alarm may th | nen be delete | d after test co | mpleted. | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Step ID | INom | I1 | I2 | 13 | | |

| 811 | Mevap co | ur HI spe | eed | | | Warning | |
|------------------|---|--|----------------|----------------|----------------|---------|--|
| Description | Evaporator m | otor high spe | eed current fa | ault. | | | |
| Cause | Unexpecte | ed behaviour | in old softwa | re version. | | | |
| | Evaporato | r motor jamı | med or defect | tive. | | | |
| | Evaporato | Evaporator motor cables defective. | | | | | |
| | Bad conne | Bad connection in plug. | | | | | |
| | Evaporato | r motor cable | es wired wro | ng in controll | er cabinet. | | |
| Trouble shooting | | . Try to correct the error by uploading the latest software version to the controller. | | | | | |
| | | 2. Check the evaporator motor fans can rotate freely. Turn off power first. Replace motor(s) or make it turn freely again. | | | | | |
| | 3. Check eva | aporator moto | or cables for | damages. | | | |
| | 4. Check tha | nt the evapor | ator motor ca | bles are mou | unted correct. | | |
| Criteria | Evaporator fa 50 Hz: 1.8 – 60 Hz: 2.1 – | 1.9 Amp. | ve exceeded (| current limit | at high speed. | | |
| Controller | | | | | | | |
| action | Log | Х | Alarm | X | Alarm light | Off | |
| Consequence | Test failed. | | | | | | |
| Elimination | Alarm may th | en be delete | d after test c | ompleted. | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Step ID | INom | I1 | I2 | 13 | | |

| 812 | Mevap c | urrent O | FF | | | Warning |
|------------------|------------------------------|--|----------------|-----------------|-----------------|---------|
| Description | Evaporator m | notor off curre | ent fault. | | | |
| Cause | Unexpect | ed behaviour | in old softwa | ire version. | | |
| | Defective | evaporator r | notor contact | or. | | |
| | Defective | contactor dr | iver circuit. | | | |
| Trouble shooting | · ' | Try to correct the error by uploading the latest software version to the controller. | | | | |
| | 2. Check the | 2. Check the evaporator motor contactor for defects. Replace the contactor. | | | | |
| | 3. Check tha | at the evapor | ator motor ca | bles are mou | inted correctly | |
| Criteria | Evaporator fa | an motors ha | ve exceeded | off current lin | nit. | |
| Controller | | | | | | |
| action | Log | X | Alarm | Х | Alarm light | Off |
| Consequence | Test failed. | | | | | |
| Elimination | Alarm may th | nen be delete | d after test c | ompleted. | | |
| I on data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data | Step ID | INom | I1 | I2 | I3 | |

| 815 | Mcond cu | ır LO spe | eed | | | Warning |
|------------------|----------------------------|--|-----------------|-----------------|-----------------|--------------|
| Description | Condenser mo | tor low spee | d current fau | lt. | | |
| Cause | Unexpecte | d behaviour | in old softwa | re version. | | |
| | Condenser | motor jamn | ned or defecti | ive. | | |
| | Condenser | motor cable | defective. | | | |
| | Bad conne | ction in plug | | | | |
| | Condenser | motor cable | wired wrong | ly in controlle | er cabinet or ı | motor. |
| Trouble shooting | Try to correct controller. | Try to correct the error by uploading the latest software version to the controller. | | | | |
| | | Check the condenser motor fan can rotate freely. Turn off power first! Replace motor or make it turn freely again. | | | | |
| | 3. Check mot | or cable for | damages. | | | |
| | 4. Check that | the condens | ser motor cab | ole is mounte | d correctly. | |
| Criteria | Condenser fan | motor has e | exceeded cur | rent limit at l | ow speed. 0.2 | 2 – 0.3 Amp. |
| Controller | | | | | | |
| action | Log | Х | Alarm | X | Alarm light | Off |
| Consequence | Test failed. | | | | | |
| Elimination | Alarm may the | en be deleted | d after test co | mpleted. | | |
| l on data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data | Step ID | INom | I1 | I2 | 13 | |

| 816 | Mcond c | Mcond cur HI speed Warning | | | | | | |
|------------------|---|---|-----------------|-----------------|-----------------|-----|--|--|
| Description | Condenser n | notor high spe | eed current fa | ult. | | | | |
| Cause | Unexpect | ed behaviour | in old softwa | re version. | | | | |
| | Condense | er motor jamr | med or defect | ive. | | | | |
| | Condense | er motor cable | e defective. | | | | | |
| | Condense | er motor cable | e wired wrong | ly in controll | er cabinet. | | | |
| Trouble shooting | | Try to correct the error by uploading the latest software version to the controller. | | | | | | |
| | | 2. Check the Condenser motor fan can rotate freely. Turn off power first! Replace motor or make it turn freely again. | | | | | | |
| | 3. Check m | otor cable for | damages. | | | | | |
| | 4. Check th | at the conden | ser motor cal | oles are mour | nted correctly. | | | |
| Criteria | Condenser for 50 Hz: 0.7 - 60 Hz: 1.0 - | | exceeded cur | rent limit at l | nigh speed. | | | |
| Controller | | | | | | | | |
| action | Log | X | Alarm | X | Alarm light | Off | | |
| Consequence | Test failed. | | | | | | | |
| Elimination | Alarm may t | hen be delete | d after test co | ompleted. | | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | Step ID | INom | I1 | I2 | 13 | | | |

| 817 | Mcond cu | Mcond current OFF Warning | | | | | |
|------------------|--|--|-----------------|----------------|--------------|-----|--|
| Description | Condenser mo | tor off curre | nt fault. | | | | |
| Cause | Unexpecte | d behaviour | in old softwa | re version. | | | |
| | Defective of | condenser m | otor contacto | or. | | | |
| | Defective of | contactor dri | ver circuit. | | | | |
| Trouble shooting | Try to corr controller. | Try to correct the error by uploading the latest software version to the controller. | | | | | |
| | 2. Check the condenser motor contactor for defects. Replace the contactor. | | | | | | |
| | 3. Check that | the conden | ser motor cat | ole is mounte | d correctly. | | |
| Criteria | Condenser far | motor has | exceeded off | current limit. | | | |
| Controller | | | | | | | |
| action | Log | Χ | Alarm | X | Alarm light | Off | |
| Consequence | Test failed. | | | | | | |
| Elimination | Alarm may the | en be delete | d after test co | ompleted. | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Step ID | INom | I1 | I2 | 13 | | |

| 819 | Contact | or error | | | | Warning | |
|-------------------|----------------------|--|-----------------|-----------------|-----------------|---------|--|
| Description | Contactor(s) | acting suspicio | ous. | | | | |
| Cause | One or n | nore contactors | needs inspec | tion. | | | |
| | Controlle | r output electro | onic defect. | | | | |
| | Contacto | Contactor close circuit. | | | | | |
| | Contacto | Contactor open circuit. | | | | | |
| | Contacto | r coil. | | | | | |
| | Controlle | r output voltag | es. | | | | |
| Trouble shooting | to 6.5V. be too hi | 1. Measure output voltages (X16, X17, X18) with a multi-meter – OK range 2 to 6.5V. In case a contactor coil is short circuited (hence the current draw be too high), the controller's voltage output will shut off and the measured output voltage will be 0 Vdc. | | | | | |
| | 2. Repeat p | oint 1 with rela | ted contactor | disconnected | to check outp | out. | |
| | connecte | e is out of OK rand to the "defection of Ω (Danfoss) | tive" controlle | r output – OK | range for cor | | |
| | 4. See serv informat | ice bulletin "00 ion. | 053 Controllei | r output voltag | ges" for furthe | er | |
| Criteria | Only active | during ITI. | | | | | |
| Controller action | Fan speed fo active. | rced to low or | high speed. If | neither possi | ole alarm 661 | becomes | |
| action | Log | Х | Alarm | | Alarm light | Off | |
| Consequence | ITI failed an | d checkmark is | cleared. | | | | |
| Elimination | Power cycle | the unit to clea | r the warning | | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Step ID | Contactor error mask: K3 = 0x0004 K6 = 0x0020 K7 = 0x0040 | | | | | |

| 820 | Hevap co | urrent O | N | | | Warning | |
|------------------|------------------------------|---|----------------|----------------|-------------------------------------|----------|--|
| Description | Evaporator h | eater on curr | ent fault. | | | | |
| Cause | Unexpect | ed behaviour | in old softwa | re version. | | | |
| | Check cor | ntactor. | | | | | |
| | Heaters d | lefective. | | | | | |
| | Heater po | wer cable de | fective. | | | | |
| Trouble shooting | Try to corcontroller | | r by uploading | g the latest s | oftware version | n to the | |
| | 2. Check vo | 2. Check voltage in/out of heater contactor, for all 3 phases. | | | | | |
| | | 3. Check the power cable for the heaters for defects. Replace cables if they are defective. | | | | | |
| | to find th | e défective he | | ing schemation | r for the heate cs inside in the | • | |
| Criteria | Evaporator h | eater has exc | ceeded on cur | rent limit. | | | |
| Controller | | | | | | | |
| action | Log | Х | Alarm | Х | Alarm light | Off | |
| Consequence | Test failed. | | | | | | |
| Elimination | Alarm may th | nen be delete | d after test c | ompleted. | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log uata | Step ID | Ilimit | I1 | I2 | 13 | | |

| 821 | Hevap c | urrent O | FF | | | Warning | |
|------------------|--------------|--|-----------------|--------------|--------------|---------|--|
| Description | Evaporator h | neater off cur | rent fault. | | | | |
| Cause | • Unexpec | ted behaviou | r in old softw | are version. | | | |
| | Defective | heater cont | actor. | | | | |
| | Defective | contactor di | river circuit. | | | | |
| Trouble shooting | | Try to correct the error by uploading the latest software version to the controller. | | | | | |
| | 2. Check th | 2. Check the heater contactor for defects. Replace the contactor. | | | | | |
| | 3. Check th | at the heater | power cable | are mounted | l correctly. | | |
| Criteria | Evaporator h | neater has ex | ceeded off cu | rrent limit. | | | |
| Controller | | | | | | | |
| action | Log | Χ | Alarm | Χ | Alarm light | Off | |
| Consequence | Test failed. | | | | | | |
| Elimination | Alarm may t | hen be delete | ed after test o | completed. | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Step ID | Ilimit | I1 | I2 | 13 | | |

| 822 | Hevap cı | Hevap current error Warning | | | | | |
|------------------|---|-----------------------------|-----------------|------------------|----------------|-----------|--|
| Description | Hevap curren | t failure. | | | | | |
| Cause | Current o | utside limits i | n ITI test. | | | | |
| Trouble shooting | 1. Try to cor | | by uploading | g the latest s | oftware versio | on to the | |
| | 2. Check vol | tage in/out o | f heater cont | actor, for all 3 | 3 phases. | | |
| | 3. Check the power cable for the heaters for defects. Replace cables if they are defective. | | | | | | |
| | 4. The heater(s) are defective. Dismount the power for the heaters one by one to find the defective heater, see wiring schematics inside in the controller cabinet. Replace the defective heater. | | | | | | |
| Criteria | Evaporator h | eater has exc | eeded on/off | current limit | | | |
| Controller | | ' | | , | , | | |
| action | Log | X | Alarm | Х | Alarm light | Off | |
| Consequence | Test failed. | | | | | | |
| Elimination | Alarm may th | nen be delete | d after test co | ompleted. | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| _og data | Step ID | Ilimit | I1 | I2 | 13 | | |

| 826 | Hpump c | urrent C | N | | | Warning | | |
|------------------|-------------------------|------------------------------|----------------|--------------|----------------------------------|----------------------|--|--|
| Description | Heat vacuum | pump too hi | gh or too lov | ٧. | | | | |
| Cause | Unexpecte | ed behaviour | in old softw | are version. | | | | |
| | Defective | Defective cables. | | | | | | |
| | Defective | Defective heating element. | | | | | | |
| | Defective | Defective controller module. | | | | | | |
| | Defective | power meas | | | | | | |
| Trouble shooting | Try to corr controller. | , | | | | | | |
| | 2. Check the | connections | according to | the wiring | schematic. | | | |
| | 3. Defective | heating elem | nent, see AL | 653. | | | | |
| | | | | | display readi stroller module | ng. If reading e. | | |
| Criteria | Current < Im | in = 0,5*(U/ | 973,2) or cu | rrent > Imax | x = 1,5*(U/97 | 73,2). | | |
| Controller | | | | | | | | |
| action | Log | Х | Alarm | Х | Alarm light | Off | | |
| Consequence | Cannot pass I | PTI. | | | | | | |
| Elimination | Alarm may be | e deleted afte | er the test is | complete. | | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | Step ID | Ilimit | I1 | I2 | 13 | | | |

| 827 | Hpump c | urrent C | FF | | | Warning | |
|------------------|-------------------------|-----------------------------|----------------|----------------|-------------|---------|--|
| Description | Measured cur | rent is too hi | gh when hea | iter is turned | l off. | | |
| Cause | Unexpecte | ed behaviour | in old softwa | are version. | | | |
| | Mheat con | Mheat controller defective. | | | | | |
| | Defective | controller mo | odule. | | | | |
| | Defective | contactor. | | | | | |
| Trouble shooting | Try to corr controller. | , | | | | | |
| | 2. If no acco | mpanied alar | ms, check co | ontactor K10 | | | |
| Criteria | 0.5 Amp if off | | | | | | |
| Controller | | | | | | | |
| action | Log | X | Alarm | Χ | Alarm light | Off | |
| Consequence | Cannot pass F | PTI. | | | | | |
| Elimination | Alarm may be | deleted afte | er the test is | complete. | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log uata | Step ID | Ilimit | I1 | I2 | 13 | | |

| 828 | Pump oi | Pump oil level Warning | | | | | |
|-------------|--|------------------------|-------------------------|-----------------------|--------------|------|--|
| Description | Low oil in the | e vacuum pum | ıp. | | | | |
| Cause | Oil level i | n the vacuum | pump is below | v the limit. | | | |
| Trouble | 1. Check the | vacuum pum | p sight glass fo | or oil leakage. | | | |
| shooting | 2. Check oth | ner areas of the | e vacuum pum | p for leakage. | | | |
| | 3. Check the flat spring or adapter and the filter are correctly positioned and are not damaged. If the filter is damaged, replace the filter. | | | | | | |
| | 4. Refill 300 | ml oil. If filter | has been repla | aced, fill 350 m | ıl oil. | | |
| Criteria | If actual ene | rgy is below th | ne energy limit | of 15 Wh. | | | |
| Controller | | | | | | | |
| action | Log | Х | Alarm | X | Alarm light | Off | |
| Consequence | PTI test faile | d. | | | | | |
| Elimination | Alarm may b | e deleted afte | r the test is co | mplete. | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Step ID | Time spent (sec) | Avg. supply voltage (V) | Energy actual (Wh) | Energy limit | (Wh) | |

| 830 | Mpum | p current ei | ror | | | Warning | |
|-------------|-------------|---|---------------------|------------|----------------|-----------------|--|
| Description | Mpump cı | ırrent failure. | | | | | |
| Cause | • Currer | nt outside limits in | ITI test. | | | | |
| | K9 cor | ntactor defective. | | | | | |
| Trouble | 1. Try to | correct the error b | y uploading the la | test softw | are version to | the controller. | |
| shooting | 2. Check | the oil level. It sh | nall be at least mi | nimum lev | el. | | |
| | 3. If no a | 3. If no accompanied alarms, check contactor K9. If K9 is defective, replace. | | | | | |
| | | ne pump manually 0.9 - 1.3 A, repla | | | e current is o | utside the | |
| Criteria | Vacuum p | ump current is ou | tside its limit 0.9 | - 1.3 Amp |). | | |
| Controller | | | | | | | |
| action | Log | Х | Alarm | Х | Alarm light | Off | |
| Consequence | Test failed | l. | | | | | |
| Elimination | Alarm ma | y then be deleted | after test comple | ted. | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Step ID | Avg Off Current | Avg On Current | | | | |

| 831 | Pmem se | Pmem sensor Warning | | | | | |
|------------------|-------------------------------|--|--------------|-----------------|----------------|-------------|--|
| Description | Pmem above of | or below 1000 r | mBar (±60 | mBar) afte | r Mpump off f | or 300 sec. | |
| Cause | Unexpecte | d behaviour in | old softwar | e version. | , | | |
| | Measure o | r hardware erro | or. | | | | |
| | Pmem defe | ective. | | | | | |
| Trouble shooting | Try to correct controller. | Try to correct the error by uploading the latest software version to the controller. | | | | | |
| | 2. See troubl | e shooting for a | accompanie | ed alarms A | L 211 and AL | 212. | |
| Criteria | Reading out o | f range. 950 m | Bar < norm | nal < 1060 | mBar. | | |
| Controller | | | | | | | |
| action | Log | Х | Alarm | Х | Alarm light | Off | |
| Consequence | Cannot pass P | TI. | | | | | |
| Elimination | Alarm may be | deleted after t | he test is c | omplete. | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Step ID | Airex motor | Pmem | CO ₂ | O ₂ | | |

| 832 | CO ₂ sense | or | | | | Warning | |
|------------------|-------------------------------|--|--------------|----------------------|-----------------|------------------|--|
| Description | No reading or | value above 1º | %. | | | | |
| Cause | Unexpecte | d behaviour in | old softwar | e version. | | | |
| | Defective of | cable or sensor. | | | | | |
| | Communic | ation to CO2 se | ensor lost. | | | | |
| | CO2 senso | CO2 sensor is missing. | | | | | |
| | CO2 senso | CO2 sensor is defective. | | | | | |
| | COMRH ca | COMRH cable and or RH-cable are defective. | | | | | |
| | Main contr | oller defective. | | | | | |
| Trouble shooting | Try to correct controller. | Try to correct the error by uploading the latest software version to the controller. | | | | | |
| | 2. If one or n | nore alarms are | active, ch | eck wires, ¡ | plugs, and co | nnectors. | |
| | | tage supply 12' and 4 on X10. | V DC and c | ommunicat | ion - small A | C voltage | |
| | 4. If only AL CO2 senso | | n check the | e CO2 sense | or. Possibly te | est with another | |
| | 5. If AL 740 i | s still active, re | place the c | ontroller m | odule. | | |
| Criteria | Reading out of | f range (norma | l range 0-1 | % CO ₂). | | | |
| Controller | | | | | | | |
| action | Log | X | Alarm | X | Alarm light | Off | |
| Consequence | Cannot pass P | TI. | 1 | | | | |
| Elimination | Alarm may be | deleted after t | he test is c | omplete. | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Step ID | Airex motor | Pmem | CO ₂ | 02 | | |

| 833 | O ₂ senso | r | | | | Warning | |
|------------------|---|------------------------------------|--------------|-------------------|----------------|---------------------|--|
| Description | No reading or | value is out of | range. | | | | |
| Cause | Unexpecte | ed behaviour in | old softwar | e version. | | | |
| | Communic | cation to the O2 | sensor los | t. | | | |
| | Defective | Defective O2 sensor. | | | | | |
| | COMRH cable, RH-cable, and/or COMCA cable is defective. | | | | | | |
| | Controller | module defecti | ve. | | | | |
| Trouble shooting | Try to corr controller. | , | | | | | |
| | 2. If one or r | nore alarms are | e active, ch | eck wires, | plugs and con | nectors. | |
| | 3. Check volt | tage according | to wire diag | gram. | | | |
| | | 760 is active, to not, replace the | | | to the O2 ser | nsor and correct if | |
| Criteria | Reading out o | f range (norma | l 19-22 % | O ₂). | | | |
| Controller | | | | | | | |
| action | Log | X | Alarm | Х | Alarm light | Off | |
| Consequence | Cannot pass F | PTI. | | | | | |
| Elimination | Alarm may be | deleted after t | he test is c | omplete. | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Step ID | Airex motor | Pmem | CO ₂ | O ₂ | | |

| 836 | Pmem v | acuum | | | | Warning | |
|------------------|------------------|---|-----------------------------------|-----------------|----------------|---------------------------------------|--|
| Description | Unable to cr | eate a vacuu | m. | | | | |
| Cause | Unexpect | ted behaviou | r in old softw | are version. | | | |
| | • Leakage | Leakage or low performance vacuum pump. | | | | | |
| | Lack of contact | il in the vacu | ıum pump. | | | | |
| | Pump no | t running. | | | | | |
| | Leakage | involving me | mbrane, hos | e and/or coni | nections. | | |
| | Low perf | ormance fror | n the vacuum | n pump. | | | |
| Trouble shooting | | . Try to correct the error by uploading the latest software version to the controller. | | | | | |
| | | 2. Check if the pump is running. If not, see accompanied alarms for trouble shooting first. | | | | | |
| | 3. The vacu | um pump is | not running. | | | | |
| | | | etallic switch i epending on r | | according to t | he wire | |
| | check If it d | the controll | er output. | | | energizes. If not, other, replace the | |
| | 4. The vacu | um pump is | running. | | | | |
| | a. Perfo | rm "Vacuum | system test". | | | | |
| Criteria | Unable to re | ach 20 mBar | < Pmem < 7 | 79 mBar. | | | |
| Controller | | | | | | | |
| action | Log | Χ | Alarm | X | Alarm light | Off | |
| Consequence | Cannot pass | | | | | | |
| Elimination | | | er test comp | | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| | Step ID | Tpump | Pmem | CO ₂ | 0 ₂ | | |

| 837 | Pmem a | mbient | | | | Warning | |
|------------------|--------------|--|-----------------|-----------------|----------------|---------|--|
| Description | Not measuri | ng Pmem pre | essure 1000 r | nBar (±60 m | Bar). | | |
| Cause | Unexpec | ted behaviou | r in old softw | are version. | , | | |
| | Actual p | ressure meas | urement out | of range. | | | |
| | Pmem de | efective. | | | | | |
| Trouble shooting | | Try to correct the error by uploading the latest software version to the controller. | | | | | |
| | 2. See trou | ble shooting | for accompar | ied alarms. | | | |
| Criteria | Unable to re | ach Pmem. 9 | 950 mBar < P | mem < 1060 | mBar. | | |
| Controller | | | | | | | |
| action | Log | X | Alarm | Х | Alarm light | Off | |
| Consequence | Cannot pass | PTI. | | | | | |
| Elimination | Alarm may l | oe deleted aft | ter the test is | complete. | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Step ID | Tpump | Pmem | CO ₂ | O ₂ | | |

| 838 | Mpump | ON curre | ent | | | Warning | |
|------------------|---------------|--|----------------------------------|---------------|-----------------|---------------|--|
| Description | Current failu | Current failure. | | | | | |
| Cause | Unexpec | ted behaviou | r in old softw | are version. | | | |
| | Uses mo | re or less cur | rent than spe | ecified. | | | |
| | Bad pow | Bad power connection or supply (1 phase missing). | | | | | |
| | Jammed | Jammed contactor or damaged vacuum pump. | | | | | |
| | Low perf | ormance fron | n the vacuum | n pump due t | o lack of oil. | | |
| Trouble shooting | · ' | Try to correct the error by uploading the latest software version to the controller. | | | | | |
| | 2. Check th | e oil level. It | shall be at le | ast minimum | ı level. | | |
| | | | Illy and obser place the vacu | | f the current i | s outside the | |
| Criteria | Vacuum pur | np current is | outside its lir | nit 0.9 - 1.3 | Amp. | | |
| Controller | | | | | | | |
| action | Log | X | Alarm | X | Alarm light | Off | |
| Consequence | Cannot pass | PTI. | | | | | |
| Elimination | Alarm may l | oe deleted aft | ter the test is | complete. | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Step ID | Ilimit | I1 | I2 | 13 | | |

| 839 | Mpump | Mpump OFF current Warnin | | | | | |
|------------------|--------------|--|-----------------|----------------|-----------------|---------------|--|
| Description | Current in o | ff position is | too high. | | | | |
| Cause | Unexpec | ted behaviou | r in old softw | are version. | | | |
| | Mpump (| contactor K9 | defective. | | | | |
| | Defective | e controller m | nodule. | | | | |
| Trouble shooting | | Try to correct the error by uploading the latest software version to the controller. | | | | | |
| | 2. If no acc | ompanied ala | irms, check co | ontactor K9. 1 | If K9 is defect | ive, replace. | |
| Criteria | Less than 0. | 5 Amp. | | | | | |
| Controller | | | | | | | |
| action | Log | Х | Alarm | X | Alarm light | Off | |
| Consequence | Cannot pass | PTI. | | | | | |
| Elimination | Alarm may l | oe deleted aft | ter the test is | complete. | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Step ID | Ilimit | I1 | 12 | 13 | | |

| 840 | Valve lea | ıks | | | | Warning | |
|------------------|----------------|--|-----------------|------------|-------------|---------|--|
| Description | Valve leak fau | ılt. | | | | | |
| Cause | Unexpecte | ed behaviour | in old softwar | e version. | , | | |
| | One or mo | ore valves ha | ve leaks (defe | ective). | | | |
| Trouble shooting | · ' | Try to correct the error by uploading the latest software version to the controller. | | | | | |
| | 2. Check and | 2. Check and clear other valve alarms, AL 84X. | | | | | |
| Criteria | Temperature | Temperature indicates cooling. | | | | | |
| Controller | | | | | | | |
| action | Log | Χ | Alarm | X | Alarm light | Off | |
| Consequence | Test failed. | | | | | | |
| Elimination | Alarm may th | en be deleted | d after test co | mpleted. | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Step ID | T0 | Psuc | Pdis | Tamb | | |
| Info | See "Function | test". | | | | | |

| 841 | K1 conta | K1 contactor welded | | | | | | |
|------------------|--------------------------|-------------------------------------|-----------------|--------------|---------------|-------------------|--|--|
| Description | Contactor dan | naged (alwa | ys drawn) mal | king FC alwa | ys powered. | | | |
| Cause | Contactor | contacts we | lded. | | | | | |
| Trouble shooting | 1. Measure th contactor. | · · · · · · · · · · · · · · · · · · | | | | | | |
| Criteria | Turning K1 off | is not remo | ving power fro | m FC. | | | | |
| Controller | | | | | | | | |
| action | Log | Χ | Alarm | X | Alarm light | Off | | |
| Consequence | Test failed. | | | | | | | |
| Elimination | Alarm may the | en be delete | d after test co | mpleted. | | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | Step ID | FC Type | FC online | Mcpr | FC on/off sec | FC on/off seconds | | |

| 842 | Expansi | on valve | 2 | | | Warning | |
|------------------|--|--------------------------------------|--|---------------------------------------|---|---------------|--|
| Description | Expansion va | alve fault. | | | | | |
| Cause | Unexpect | ed behaviou | ur in old softw | are version. | | | |
| | Cable for | expansion | valve mounte | d on wrong v | alve. | | |
| | Cable for | Cable for expansion valve defective. | | | | | |
| | Expansio | n valve defe | ective. | | | | |
| | Driver cir | cuit for exp | ansion valve o | defective. | | | |
| Trouble shooting | 1. Try to concontroller | | or by uploadi | ng the latest | software versio | n to the | |
| | | | | | les for the valve on the correct v | | |
| | If the val Run FT a | ve is openin | ig and closing | , close servic | sing. If not, the e valve (pos. 14 pansion valve is | 4 P-I diagr.) | |
| | | | | | l poor splices. Ind splice the ca | | |
| | terminal plug and | 3-4 at X19. | It should be a noisture and c | above 4.5 Ω . | the expansion v If not dismount lace the connec | the connector | |
| | 6. Manually open the expansion valve in the Manual operation meu. Then measure the controller output voltage via terminal 3-4 at X19. The voltage should be approx. 2.5-6.5 VDC. | | | | | | |
| | 7. If there is controller | | , the main co | ntroller is de | fective. Replace | the main | |
| Criteria | Pdis is less to Tret more th | han 5 BarE: an or equal | Max change o Max change o to -15°C: Min Min change or | on Pdis: ±0.3 change on T | 80 Bar | | |
| Controller | | | | | | | |
| action | Log | Х | Alarm | Х | Alarm light | Off | |
| Consequence | Test failed. | | | | | | |
| Elimination | | · | ted after test | · · · · · · · · · · · · · · · · · · · | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| | Step ID | T0 | T0 diff. | Pdis | Pdis diff | | |

| 844 | Hot gas | valve | | | | Warning | |
|-------------------|---|---|--|-------------------------------|----------------|-----------------|--|
| Description | Hot gas valve | fault. | | | | | |
| Cause | Unexpect | ed behaviour | in old softwa | re version. | | | |
| | Cable for | hot gas valve | e mounted on | wrong valve | | | |
| | Cable for | hot gas valve | defective. | | | | |
| | Hot gas v | Hot gas valve defective. | | | | | |
| Trouble shooting | | Try to correct the error by uploading the latest software version to the controller. | | | | | |
| | | If there is more than one valve failure, the cables for the valves are presumably switched. Mount cables for valves on the correct valve. | | | | | |
| | 3. Listen if the hot gas valve is opening and closing, if not go to step 5. If t valve is opening and closing disconnect power to the solenoid coil, when valve is closed and there is hot temperature after the valve (pos. 32 in t P – I diagram), the hot gas valve has a leak and should be replaced. Into parts of the hot gas valve can be replaced separately. | | | | | | |
| | Inspect the solenoid coil cable for damages and poor splices. If there poorly done splice, cut out the damaged part and splice the cable pro Measure the resistance of the solenoid coil for the hot gas valve via to 5-6 at X19. It should be above 4.5 Ω. If not dismount the connector check for moisture and corrosion. Replace the connector plug (81876 necessary. | | | | | | |
| | | | | | | nector plug and | |
| | the contro | | the hot gas valve in the Manual operation meu. Then measure output voltage via terminal 5-6 at X19. The voltage should be 5 VDC. | | | | |
| | 7. If there is controller | | the main con | troller is defe | ctive. Replace | the main | |
| Criteria | Pdis more the Pdis is less the Tret is more to Tret is less the | nan 5 BarE: M than or equal | lax change or to -15°C: Mi | n Pdis: ±0.30 n. change on |) Bar | | |
| Controller action | Log | X | Alarm | x | Alarm light | Off | |
| Consequence | Test failed. | | | | | • | |
| Elimination | Alarm may th | nen be delete | d after test co | ompleted. | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Step ID | T0 | T0 diff. | Pdis | Pdis diff. | | |
| Info | See "Function | n test". | • | <u> </u> | | | |

| 846 | FC Check | | | | | Warning | |
|------------------|-------------------------------|---|-----------------|---------------|---------------|-------------|--|
| Description | Internal fault | Internal fault in FC. | | | | | |
| Cause | Unexpecte | d behaviour | in old softwa | re version. | | | |
| | Internal fa | ilure in the F | C. | | | | |
| Trouble shooting | Try to corr controller. | 1. Try to correct the error by uploading the latest software version to the controller. | | | | | |
| | 2. Check and | clear other a | alarms first. | | | | |
| | 3. Check tha | 3. Check that FC cover is mounted correctly with all screws. | | | | | |
| | 4. Check mot | 4. Check motor cable (Connection cable between FC and compressor). | | | | | |
| | 5. The FC ne | eds repair an | d should be | replaced. | | | |
| Criteria | FC temperatu test. | re not increas | sed by 15°C | within 5 min. | during step 8 | of Function | |
| Controller | | | | | | | |
| action | Log | Χ | Alarm | Χ | Alarm light | Off | |
| Consequence | Test failed. | | | | | | |
| Elimination | Alarm may th | en be deleted | l after test co | ompleted. | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Step ID | Tfc | Tfc diff | Umotor | Ifc | _ | |

| 847 | High pre | ss switc | h | | | Warning | |
|-------------------|---|---|---|---|----------------------------------|--|--|
| Description | High pressure | | | | | | |
| Cause | Discharge | pressure is | too high and | the high pres | sure switch of | f. | |
| | - Ambient - Condens - Condens - Manual | ser blocked. ser fan moto | : e is over spec r is not runnir ompressor clo | ng or wrong o | , | | |
| | High pres | sure switch o | or cable is def | ective. | | | |
| | X15 cable | is defective | | | | | |
| | K1 contact | tor defective | <u>)</u> . | | | | |
| | Wrong pro | essure transi | mitter configu | ration in rela | tion to transm | itter type. | |
| | Pressure | transmitter d | lefective. | | | | |
| Trouble shooting | operate a | t temperatur | es above spe | cification. | A and it is ver | | |
| | residues i or dust ar no failure the conde | s removed. Ind there is no are found a conservations. | It is critical the limitation for and extra cool | at the conder r air to go to ling is needed the unit has | and from the d, water can be | m fouling and/ condenser. If | |
| | | Check that the condenser fan is running in the right direction. See the arrows on the unit. | | | | | |
| | | | that there are Iso that the fa | | or the condens freely. | er fan motor, | |
| | the valve | after the cor | | charge side) i | ne compressor is not closed o | , check that r only partially | |
| | | | no damages to d check the re | | | essor. Repair if | |
| | | | or the high poges | | h on the main ntrol cabinet. | controller | |
| | on the co compress Schneider | nnector PCB. or/FC contac (green type | If the voltage tor coil Schne | e is below 0.5 eider (grey ty nce is 8-10 Ω, | 5 V DC, measupe) coil resista | pressure switch are resistance of 0.00 0 | |
| | | | sure the resis le and high pr | | cable). If the c | cable is | |
| | Configura | tion, line F08 | 3 and set cont | troller accordi | | e S05 tter type AKS/ right value in | |
| Criteria | Pdis is betwe | en 20-24 bai | r | | | | |
| Controller action | Log | Х | Alarm | Х | Alarm light | Off | |
| Consequence | Test failed. | | | | , | | |
| Elimination | | 1 | 1 | 1 | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Step ID | Т0 | Psuc | Pdis | Tamb | | |

| 848 | Temp | Temp press invalid Warning | | | | | | |
|------------------|------------|--|--------|--|-----------------|--|--|--|
| Description | Tempera | Temperature and pressure sensor malfunctioning. | | | | | | |
| Cause | l | | | | | | | |
| Trouble shooting | 1. See o | 1. See corresponding sensor alarm description for alarm 1xx or 2xx | | | | | | |
| Criteria | | | | | | | | |
| Controller | | | | | | | | |
| action | Log | X | Alarm | Χ | Alarm light Off | | | |
| Consequence | Test faile | Test failed. | | | | | | |
| Elimination | | | | | | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | Step ID | Invalid temperature sensors (bit field) Tret = 0x0001 Tsup1 = 0x0002 Tsup2 = 0x0004 Tevap = 0x0080 Tsuc = 0x0100 Tamb = 0x0200 Tpump = 0x400 | | Invalid pressure sensors (bit field) Pdis(TC) = 0x0001 Psuc(T0) = 0x0002 Pmem = 0x0004 | | | | |

| 849 | Valve | error | | | | Warning | | |
|------------------|-------------------------|--|--|---|--|------------------------------|--|--|
| Description | Check tha | at compresso | or can operate | valves failed. | | | | |
| Cause | Unexp | pected behav | iour in old so | ftware version. | | | | |
| | | Compressor nonoperational or expansion/hot gas valves not able to open/ close correctly. | | | | | | |
| | 1 | and the confidence of the conf | | | | | | |
| | | | | | | | | |
| | | | ot gas defecti | | | | | |
| Trouble shooting | 1. Try to | | error by uploa | ading the latest so | rtware versio | n to the | | |
| | | | | failure, the cables bles for valves on | | | | |
| | | | | for damages and _l damaged part and | | | | |
| | 1-2, 3 conne | 8-4, and 5-6 ector plugs a | at X19. Each | olenoid coils for ea should be above 4 noisture and corro | .5 Ω . If not d | ismount the | | |
| | If the Run F | 5. Listen if the expansion valve is opening and closing. If not, then go to 6. If the valve is opening and closing, close service valve (pos. 14 P-I diagr.). Run FT again. If the test now is a pass, the expansion valve is defective and should be replaced. | | | | | | |
| | valve valve P – I | is opening a is closed and diagram), th | nd closing dis d there is hot e hot gas valv | ening and closing, connect power to temperature after re has a leak and s re replaced separat | the solenoid of the valve (pos should be rep | coil, when the os. 32 in the | | |
| | measi | ure the cont | roller output v | ndividually in the Moltage via terminange of each should | l 1-2 (Veco), | 3-4 (Vexp), | | |
| | 8. If the contro | | age, the main | controller is defec | tive. Replace | the main | | |
| Criteria | Pdis is les | ss than 5 Ba ore than or e | rE: Max chang equal to -15°C | e on Pdis: ±0.75 B ge on Pdis: ±0.30 :: Min. change on ⁻ e on T0: +10°K | Bar | | | |
| Controller | | | | | | | | |
| action | Log | Х | Alarm | Х | Alarm light | Off | | |
| Consequence | Test failed | d | | | | | | |
| Elimination | | | | | | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | Step ID | Passed on reliability | Mass flow compressor | Mass flow expansion valve | T0 mean | | | |

| 850 | PTI test | PTI test failed Warning | | | | | |
|------------------|--------------|---|---------------|------------------|-------------|-----|--|
| Description | PTI Test Fau | lt. | | | | | |
| Cause | • Unexpec | ted behavio | ur in old sof | tware version. | , | | |
| | There is | one or more | alarms. | | | | |
| Trouble shooting | · ' | Try to correct the error by uploading the latest software version to the controller. | | | | | |
| | | 2. There are other AL 8XX alarms. Check and clear the other alarms first. Then a new PTI test can be run. | | | | | |
| Criteria | One or more | of the indiv | idual PTI te | st steps have fa | iled. | | |
| Controller | | | | | | | |
| action | Log | Χ | Alarm | Х | Alarm light | Off | |
| Consequence | Test failed. | | | | | | |
| Elimination | Alarm may t | hen be dele | ted after tes | st completed. | | | |
| l a a data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Step ID | | | Seconds | Alarm count | | |

| 851 | Alarm | is active | | | | Warning | |
|------------------|---------------------|-------------------------|-------------------------------|---------------|-----------------|----------|--|
| Description | Active alar | ms turning I | ΓΙ checkmark of | f. | | | |
| Cause | I | , | when ITI monitonly logged whe | | | | |
| Trouble shooting | 1. This was descrip | , | reflecting other | alarms, so lo | ook at these in | dividual | |
| Criteria | One or mo | re active alar | ms. | | | | |
| Controller | | | | | | | |
| action | Log | X | Alarm | X | Alarm light | Off | |
| Consequence | Test failed | | | | , | | |
| Elimination | Alarm may | then be dele | eted after test co | ompleted. | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Step ID | First active alarm code | Second active alarm code | Third | Fourth | | |

| 852 | FC self | test | | | | Warning | | |
|------------------|------------------|---|---------------------------|--------------------------|---------------|---------|--|--|
| Description | FC self tes | t not passed. | | | | | | |
| Cause | Unexp | ected behaviour in | old software | version. | | | | |
| | Other | FC warnings or ala | rms are activ | e. | | | | |
| | • Interna | al error in FC. | | | | | | |
| | Defect | ive FC. | | | | | | |
| Trouble shooting | 1. Try to contro | correct the error b | y uploading tl | ne latest sof | tware version | to the | | |
| | accord | 2. Check the active and inactive alarm(s)/warning(s) and trouble shoot accordingly. Always start at the bottom of the list as that was the first alarm/warning. | | | | | | |
| | | 3. Go to the Service menu, line S05 Configuration, and check that line F03 FC type is set to FC 2.0 | | | | | | |
| | 4. Check | that the FC is not | wired for eme | ergency oper | ation. | | | |
| | 5. Replac | e the defective FC. | | | | | | |
| Criteria | FC self tes | st has found a failu | re in the FC. | | | | | |
| Controller | | | | 1 | | | | |
| action | Log | X | Alarm | X | Alarm light | Off | | |
| Consequence | PTI test fa | | | | | | | |
| Elimination | 1 | then be deleted a | 1 | 1 | | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | Step ID | DenyReason: 0=N/A 1=Wrong FC 2=FC offline 3=Temp high 4=Cpr running 5=Trip lock 6=Motor heat 7=IT grid 8=FC internal 9=Test timeout | Fault code high 16 bit | Fault code low 16 bit | Tfc | | | |

| 855 | PTI Tset | 5 | | | | Warning | |
|------------------|------------------------------|--|----------------|----------------|---|-------------------------------------|--|
| Description | PTI 5°C set f | ault. | | | | | |
| Cause | Unexpect | ed behaviour | in old softwa | re version. | | | |
| | Indication | Indication of insufficient performance. | | | | | |
| | Doors are | Doors are open. | | | | | |
| | The heate | ers do not op | erate correctl | у. | | | |
| | There ma | y not be eno | ugh refrigera | nt in the unit | | | |
| | The cooling | ng capacity is | too limited. | | | | |
| Trouble shooting | | Try to correct the error by uploading the latest software version to the controller. | | | | | |
| | 2. Verify tha | t the doors a | re closed. | | | | |
| | | n manual mod | | | | ctive. Start the higher than 5 A | |
| | glass in t | he receiver (r | eceiver tank) | | e small red ball ne bottom whe he unit. | | |
| Criteria | Set-point +5 | °C was not re | eached within | the 3 hour li | imit. | | |
| Controller | | | | | | | |
| action | Log | Х | Alarm | Х | Alarm light | Off | |
| Consequence | Test failed. | | | | , | | |
| Elimination | Alarm may th | nen be delete | d after test c | ompleted. | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Step ID | Tset | Tact | Tevap | Tret | | |

| 860 | PTI Tset | 0 | | | | Warning | |
|------------------|---|--|-----------------|-----------------|-------------|----------------------------------|--|
| Description | PTI 0°C set fa | ult. | | | | | |
| Cause | Unexpecte | ed behaviour | in old softwa | re version. | | | |
| | Doors are | open. | | | | | |
| | The heate | rs do not ope | erate normally | y . | | | |
| | There may | not be enou | ıgh refrigerar | nt in the unit. | | | |
| | The coolin | g capacity is | too limited. | | | | |
| Trouble shooting | Try to corr controller. | Try to correct the error by uploading the latest software version to the controller. | | | | | |
| | 2. Verify that | 2. Verify that the doors are closed. | | | | | |
| | 3. If start temperature was below 0°C, the heaters may be defective. Start the heaters in manual mode and see if the current consumption is higher than 5 A each phase. | | | | | | |
| | in the rece | eiver (receive | | ot at the bott | | he sight glass unit is turned | |
| Criteria | Set-point 0°C | was not read | ched within th | ne 3 hour tim | e limit. | | |
| Controller | | | | | | | |
| action | Log | Х | Alarm | X | Alarm light | Off | |
| Consequence | Test failed. | | | | | | |
| Elimination | Alarm may th | en be deleted | d after test co | ompleted. | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Step ID | Tset | Tact | Tevap | Tret | | |

| 861 | Broken v | alve plat | es | | | Warning |
|------------------|---------------|--------------------------|----------------|---------------|-------------|---------|
| Description | Compressor m | nass flow indi | cates valve pl | ate has becor | ne defect. | |
| Cause | Broken va | ve plates. | | | , | |
| Trouble shooting | 1. Exchange | 1. Exchange valve plate. | | | | |
| Criteria | Compressor m | nass flow diffe | erence consta | nt. | | |
| Controller | | | | | | |
| action | Log | X | Alarm | X | Alarm light | Off |
| Consequence | Test failed. | | , | | , | |
| Elimination | Alarm may the | en be deleted | after test cor | mpleted. | , | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data | Step ID | | | | | |

| 862 | LowRefr | ig/ExvBl | ock | | | Warning | |
|-------------|--------------|-----------------|-------------------|----------------|----------------|----------|--|
| Description | Compressor i | mass flow too | low. | | | | |
| Cause | Severe la | ck of refrigera | nt or blocked | expansion va | alve. | | |
| Trouble | 1. Ensure ur | nit has been r | unning 10 to | 20 minutes. | | | |
| shooting | 2. Check ref | rigerant level | . If low, find le | eak point, rep | air and rechar | ge unit. | |
| Criteria | Compressor i | mass flow too | low. | | | | |
| Controller | | | | | | | |
| action | Log | X | Alarm | X | Alarm light | Off | |
| Consequence | Test failed. | | | | | | |
| Elimination | Alarm may th | nen be deleted | d after test co | mpleted. | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Step ID | | | | | | |

| 863 | Expansion | n valve l | leak | | | Warning | |
|------------------|----------------------------|---|-----------------|----------------|---|-----------------|--|
| Description | Valve fault | Valve fault | | | | | |
| Cause | • Expansion | valve leaks. | | | | | |
| Trouble shooting | 1. Try to corr controller. | | by uploading | the latest sof | tware version | to the | |
| | | | | | for the valves the correct va | | |
| | If the valv Run FT ag | sten if the expansion valve is opening and closing. If not, then go to 4. the valve is opening and closing, close service valve (pos. 14 P-I diagr.). In FT again. If the test now is a pass, the expansion valve is defective and hould be replaced. | | | | | |
| | 4. Check tha it is dama | | r the expansion | on valve is no | t defective. R | eplace cable if | |
| | output for | the expansio | | it should ope | here is voltag n. If there is controller. | | |
| Criteria | Compressor r | nass flow diffe | erence decrea | sed. | | | |
| Controller | | | | | | | |
| action | Log | Х | Alarm | Х | Alarm light | Off | |
| Consequence | Test failed. | | | | | | |
| Elimination | Alarm may th | en be deleted | after test co | mpleted. | | | |
| l on data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Step ID | | | | | | |

| 870 | PTI defi | ost | | | | Warning | |
|------------------|------------------------|---|-------------------------------------|-----------------|----------------------------------|---------------|--|
| Description | PTI defrost f | PTI defrost fault. | | | | | |
| Cause | Unexpec | ted behaviour | in old softwa | re version. | | | |
| | Defective | e Tevap tempe | erature senso | r. | | | |
| | Defective | e Psuc pressu | re transmitter | | | | |
| | Defective | e heaters. | | | | | |
| | Defective | e hot gas valv | e. | | | | |
| | Evaporat | or was filled v | with too much | ice. | | | |
| Trouble shooting | 1. Try to co controlle | | r by uploading | g the latest so | oftware version | to the | |
| | | 2. Defrosting is terminated when Tevap rises above +15°C (+59°F). Check Tevap and Psuc sensors according to trouble shooting in alarms AL 123 and AL 207. | | | | | |
| | the curre | ent consumpti | | han 5 A per p | in manual mod hase else the l | | |
| | | _ | ot working prog g for the hot o | ' ' | e heaters may larm AL 844. | be defective. | |
| | | • | is filled with ic aporators fans | ` . | ne inspection h | oles). | |
| Criteria | Defrost term | ninated on 45 | min. time-ou | t. | | | |
| Controller | | | | | | | |
| action | Log | X | Alarm | Х | Alarm light | Off | |
| Consequence | Test failed. | | | | | | |
| Elimination | Alarm may t | hen be delete | ed after test co | ompleted. | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log uata | Step ID | Tset | Tact | Tevap | Tret | | |

| 880 | PTI Tset | -18 | | | | Warning |
|------------------|---------------|---|----------------|----------------|----------------|------------------------------------|
| Description | PTI -18°C se | fault. | | | | |
| Cause | Unexpecte | ed behaviour | in old softwar | e version. | | |
| | Indication | of insufficien | t performanc | e. | | |
| | Doors are | open. | | | | |
| | There may | y not be enou | gh refrigeran | t in the unit. | | |
| | The coolir | g capacity is | too limited. | | | |
| | Hot gas value | alve leaking. | | | | |
| Trouble shooting | | 1. Try to correct the error by uploading the latest software version to the controller. | | | | |
| | 2. Verify tha | t the doors ar | e closed. | | | |
| | the receiv | | | | | e sight glass in it is turned off. |
| | | alve is leaking a temp. diff. | | des (before a | and after) the | valve - there |
| Criteria | Setpoint -18° | C was not rea | ached within t | he 3 hour tin | ne limit. | |
| Controller | | | | | | |
| action | Log | Х | Alarm | Х | Alarm light | Off |
| Consequence | Test failed. | | | | | |
| Elimination | Alarm may th | en be deleted | after test co | mpleted. | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data | Step ID | Tset | Tact | Tevap | Tret | |

| 884 | Psuc inv | alid | | | | Warning |
|-------------------|--|--|---------------------|--------------------------------------|-------------------|-----------------------------------|
| Description | Compressor su | ction pressur | re transmitter | invalid. | | , |
| Cause | Unexpecte | d behaviour i | n old softwar | e version. | | |
| | Indication circuitry. | of defective o | compressor su | uction pressure t | ransmitter or its | s measuring |
| | Connector | for suction p | ressure trans | mitter Psuc not o | correctly mounte | ed. |
| | Suction pro | essure transn | nitter Psuc de | fective. | | |
| | Cable for s | uction pressu | ure transmitte | er Psuc defective | | |
| | Check Sch | rader valve. | | | | |
| | X22 and ca | able is defecti | ive. | | | |
| | Main contr | oller defective | e. | | | |
| Trouble shooting | Compare pressure in display with service gauge. Disconnect the cable for Psuc main controller according to the wiring schematics inside the control cabinet ar the suction pressure transmitter. | | | | | |
| | 2. Try to corr | ect the error | by uploading | the latest softwa | are version to th | e controller. |
| | | AKS or NSK | | correctly accord The earth stud i | | |
| | Ground Supply voltage Ø0.95" Ø0.95" Output Figure for AKS Figure for NSK 4. Check the cable (measure the resistance in the cable). If the cable is defect | | | | | defective, |
| | | | | cabinet and on t | | Disconnect signal ain controller. |
| | cable is de NSK: If vo cable is de 6. Mount sigr AKS: If vol main contr | AKS: If voltage is below 0.5 V DC, transmitter or connection between transmitter and cable is defective. If voltage is between 0.5 V DC and 4.5 V DC, continue to 6. NSK: If voltage is below 0.37 V DC, transmitter or connection between transmitter and cable is defective. If voltage is between 0.37 V DC and 4.0 V DC, continue to 6. Mount signal wire. Measure voltage between SIGNAL and GND. AKS: If voltage is between 0.5 V DC and 4.5 V DC and this alarm is still active, replace main controller. NSK: If the voltage is between 0.37 V DC and 4.0 V DC and this alarm is still active, | | | | |
| Criteria | Value below al 30 sec. for ala | | | si) or above 11.8 | BarE (171 Psi) | . Value invalid for |
| Controller action | Log | x | Alarm | x | Alarm light | Off |
| Consequence | Test failed. | | | | | |
| Elimination | Alarm may the | n be deleted | after test cor | npleted. | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data | Step ID | Max deviation | Actual deviation | Failing sensor actual value | Average value | of OK sensors |

| 885 | Tsup1 in | valid | | | | Warning | |
|------------------|--|---|----------------------------|---|------------------|--------------------------------------|--|
| Description | Supply air ter | mperature s | ensor 1 inva | alid. | | | |
| Cause | Unexpecte | ed behaviou | r in old soft | ware version. | | | |
| | | Indication of defective supply air temperature sensor, its measuring circuitry or sensor not mounted correctly in unit. | | | | | |
| | Active ala | rms AL 103 | or AL 104 (| if CIM 5 softwa | re). | | |
| | | | reading is ou ve +100°C | ut of valid range (+212°F). | e: | | |
| | | | | up2 is larger th min. up to 10°0 | | more than 3 | |
| Trouble shooting | Try to cor controller. | | or by upload | ling the latest s | oftware versio | n to the | |
| | 2. If alarms | AL 103 or A | L 104 are a | ctive, check the | eir trouble shoo | oting first. | |
| | 3. Check that both sensors, Tsup1 and Tsup2 are mounted correct in the supply air pockets. | | | | | | |
| | | | | ensor Tsup1 fro schematics ins | | | |
| | range, see | e "Temperat | ure sensor | the two wires. - resistance tab Id be replaced. | | | |
| Criteria | | 1 and Tsup | 2 is more th | °F) or above + an 1°C (1,8°F) | | F) or difference alue invalid for | |
| Controller | | | | | | | |
| action | Log | Χ | Alarm | X | Alarm light | Off | |
| Consequence | Test failed. | | | _ | , | | |
| Elimination | Alarm may th | 1 | 1 | · · | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Step ID | Max deviation | Actual deviation | Failing sensor actual value | Average value | llue of OK sensors | |

| 886 | Tsup2 in | valid | | | | Warning | | |
|------------------|---|--|----------------------------|--|-----------------|---------------------------------------|--|--|
| Description | Supply air ter | mperature s | ensor 2 inv | alid. | | | | |
| Cause | Unexpecte | ed behaviou | ir in old soft | ware version. | | | | |
| | | | e supply aired correctly | | ensor or its me | asuring circuitry | | |
| | Active ala | Active alarms AL 106 or AL 107 (if CIM 5 software). | | | | | | |
| | | | reading is ou ve +100°C | ut of valid range (+212°F). | e: | | | |
| | Difference between Tsup1 and Tsup2 is larger than 1°C: 1°C difference for more than 30 min. or up to 10°C difference in more tha min. | | | | | | | |
| Trouble shooting | | Try to correct the error by uploading the latest software version to the controller. | | | | | | |
| | 2. If alarms | AL 106 or A | L 107 are a | ctive, check the | eir trouble sho | oting first. | | |
| | | 3. Check that both sensors, Tsup1 and Tsup2 are mounted correct in the supply air pockets. | | | | | | |
| | | | | ensor Tsup2 fro schematics ins | | or on the main crol cabinet. | | |
| | range, se | e "Temperat | ure sensor | the two wires resistance tab ld be replaced. | | | | |
| Criteria | | o1 and Tsup | 2 is morè th | nan 1°C for 30 ı | | °F) or difference .0°C difference. | | |
| Controller | | | | | | | | |
| action | Log | Χ | Alarm | X | Alarm light | Off | | |
| Consequence | Test failed. | | | | | , | | |
| Elimination | Alarm may th | | | · · · · · · · · · · · · · · · · · · · | | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | Step ID | Max deviation | Actual deviation | Failing sensor actual value | Average value | e of OK sensors | | |

| 887 | Tevap in | valid | | | | Warning | | |
|------------------|--|---|----------------------------|--|------------------|------------------|--|--|
| Description | Evaporator te | mperature | sensor inval | id. | | | | |
| Cause | Unexpect | ed behaviou | ir in old soft | ware version. | | | | |
| | Indication circuitry. | of defective | e evaporato | r temperature s | sensor or its m | neasuring | | |
| | Active ala | rms AL 121 | or AL 122 (| (if CIM 5 softwa | ire) | | | |
| | | | reading is ou ve +100°C | ut of valid range (+212°F). | e: | | | |
| Trouble shooting | 1. Try to cor controller | | or by upload | ling the latest s | software version | on to the | | |
| | 2. If alarms | 2. If alarms AL 121 or AL 122 are active, check their trouble shooting first. | | | | | | |
| | 3. Disconnect the sensor cable for sensor Tevap from the connector on the main controller, according to the wiring schematics inside in the control cabinet. | | | | | | | |
| | range, se | e "Temperat | ure sensor | the two wires resistance tab ld be replaced. | | | | |
| Criteria | Value below a invalid for 30 | | | | 00°C (+212°F) |). Value must be | | |
| Controller | | | | | | | | |
| action | Log | Χ | Alarm | X | Alarm light | Off | | |
| Consequence | Test failed. | | | | | | | |
| Elimination | Alarm may th | en be delet | ed after tes | t completed. | | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | Step ID | Max deviation | Actual deviation | Failing sensor actual value | Average value | e of OK sensors | | |

| 888 | Tsuc inva | lid | | | | Warning | | |
|------------------|---|---|------------------------------|---|-----------------|------------------|--|--|
| Description | Suction temperature sensor invalid. | | | | | | | |
| Cause | Unexpecte | d behaviour | in old softv | vare version. | | | | |
| | Indication | of defective | suction ten | nperature senso | or or its meas | uring circuitry. | | |
| | Active alar | ms AL 124 | or AL 125 (i | f CIM 5 softwar | e). | | | |
| | | | eading is out re +100°C (| t of valid range +212°F). | : | | | |
| Trouble shooting | Try to corr controller. | Try to correct the error by uploading the latest software version to the controller. | | | | | | |
| | 2. If alarms A | L 124 or Al | _ 125 are ac | tive, check thei | ir trouble shoo | oting first. | | |
| | | 3. Disconnect the sensor cable for sensor Tsuc from the connector on the main controller, according to the wiring schematics inside in the control cabinet. | | | | | | |
| | 4. Measure the resistance between the two wires. If the resistance is out of range, see "Temperature sensor - resistance table", the temperature sensor and cable are defective and should be replaced. | | | | | | | |
| | not damag | ed and that | | ne backside of t r is fully closed est. | | | | |
| Criteria | Value below a invalid for 30 | | | | 0°C (+212°F) | . Value must be | | |
| Controller | | | | | | | | |
| action | Log | X | Alarm | Х | Alarm light | Off | | |
| Consequence | Test failed. | | | | | | | |
| Elimination | Alarm may the | en be delete | ed after test | completed. | | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | Step ID | Max deviation | Actual deviation | Failing sensor actual value | Average valu | e of OK sensors | | |

| 889 | Tret inva | lid | | | | Warning | | |
|------------------|--|---|-----------------------------|------------------------------------|-----------------|-----------------|--|--|
| Description | Return air ten | nperature se | ensor invalid | d. | | | | |
| Cause | Unexpecte | ed behaviou | r in old soft | ware version. | | | | |
| | Indication circuitry. | of defective | e return air | temperature se | nsor or its me | asuring | | |
| | Active ala | rms AL 100 | or AL 101 (| if CIM 5 softwa | re). | | | |
| | | | eading is ou ve +100°C (| it of valid range (+212°F). | 2: | | | |
| Trouble shooting | Try to corr controller. | ect the erro | or by upload | ing the latest s | oftware versio | n to the | | |
| | 2. If alarms <i>i</i> | AL 100 or A | L 101 are a | ctive, check the | eir trouble sho | oting first. | | |
| | | 3. Disconnect the sensor cable for sensor Tret from the connector on the main controller, according to the wiring schematics inside in the control cabinet. | | | | | | |
| | 4. Measure the resistance between the two wires. | | | | | | | |
| | | The temper | | ge, see "Tempe or and cable are | | | | |
| | | | | ge, perform ma ontroller" befor | | | | |
| Criteria | | | | sensor reading Action System | | tituted by a | | |
| Controller | | | | | | | | |
| action | Log | Χ | Alarm | X | Alarm light | Off | | |
| Consequence | Test failed. | | | | | | | |
| Elimination | Alarm may th | en be delete | ed after test | completed. | | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | Step ID | Max deviation | Actual deviation | Failing sensor actual value | Average valu | e of OK sensors | | |

| 890 | PTI Tset | 13 | | | | Warning |
|------------------|---|--|---------------|---|-----------------|---------|
| Description | PTI 13°C (55° | °F) Set Faul | t. | | | |
| Cause | Unexpecte | ed behaviou | r in old soft | ware version. | | |
| | Doors are | open. | | | | |
| | There may | y not be end | ough refrige | rant in the unit | | |
| | The heate | rs do not op | erate corre | ctly. | | |
| Trouble shooting | · ' | Try to correct the error by uploading the latest software version to the controller. | | | | |
| | 2. Verify that | t the doors | are closed. | | | |
| | 3. If start temperature was below +5°C (41°F), the heaters may be defective. Start the heaters in Manual mode and see if the current consumption is higher than 5 A each phase. | | | | | |
| | glass in th | ne receiver (| receiver tar | nt. Check if the nk) are not at the n repair and ch | he bottom whe | |
| Criteria | Setpoint +13 | °C (55.4°F) | was not rea | ached within th | e 3 hour limit. | |
| Controller | | | | | | |
| action | Log | Х | Alarm | X | Alarm light | Off |
| Consequence | Test failed. | | | | | |
| Elimination | Alarm may th | en be delete | ed after test | completed. | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data | Step ID | Tset | Tact | Tevap | Tret | |

| 894 | RH senso | r | | | | Warning | |
|-------------------|-------------------------------|--|-------------------------------|----------------|----------------------------------|---|--|
| Description | RH sensor con | nmunication | missing. | | | | |
| Cause | Unexpecte | d behaviour | in old softwa | re version. | | | |
| | Indication | of defective I | RH sensor, o | r lack of or i | mproper conne | ection. | |
| | Communic | ation with RH | l sensor brok | ken. | | | |
| | Defective I | RH sensor. | | | | | |
| | X10 cable i | • X10 cable is defective. | | | | | |
| | Main contr | oller defectiv | e. | | | | |
| | CO2 senso | r defective (f | or some mod | dels). | | | |
| | O2 sensor | defective (fo | r some mode | els). | | | |
| Trouble shooting | 1. Try to correct controller. | Try to correct the error by uploading the latest software version to the controller. | | | | | |
| | 2. Verify that according t | | m is mounted gram inside t | | | aged) | |
| | 3. Verify that | plugs are pro | operly conne | cted. | | | |
| | 4. Verify that between 1 | there are co and 2 on X7 | | s 12 V DC be | etween 1 and 4 | 4 on X10 or | |
| | | | | | shooting for AL d Atmosphere" | 740 and or AL | |
| | X10, and b defective a | etween 2 an | d 3 on X75. 1 | If there is no | signal: The m | veen 2 and 3 on nain controller is sor is defective | |
| Criteria | Communicatio | n with RH se | nsor not pos | sible. | | | |
| Controller action | Log | l x | Alarm | X | Alarm light | Off | |
| Consequence | Humidity cont | ļ | | | J | | |
| Elimination | When sensor v | value become d. | es valid, it is | marked as ir | nactive in alarr | m list and may | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Step ID | | | | | | |

| 895 | CO, sens | CO ₂ sensor Warning | | | | | |
|-------------|---|--------------------------------|---------------------------|----------------|-----------------|----------------|--|
| Description | The CO ₂ sense | or communic | ation and CO | level are te | sted. | | |
| Cause | Communic | cation failed | and/or CO ₂ le | vel out of no | rmal range. | | |
| Trouble | 1. If one or r | nore alarms | are active, cl | neck wires, p | lugs, and conr | nectors. | |
| shooting | 2. Check vol | | L2V DC and c | ommunicatio | n - small AC v | oltage between | |
| | 3. If only AL 740 active, then check the CO2 sensor. Possibly test with another CO2 sensor. | | | | | | |
| | 4. If AL 740 is still active, replace the controller module | | | | | | |
| Criteria | No communic | ation for 2 m | nin. Reading o | out of range | (normal range | 0-1% CO2). | |
| Controller | | | | | | | |
| action | Log | Х | Alarm | Χ | Alarm light | Off | |
| Consequence | Not possible t | o run AV+. C | Cannot pass F | TI. | | | |
| Elimination | Alarm may be | deleted whe | en inactive ar | nd after the t | est is complete | ed. | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Step ID | | | | | | |

| 896 | O ₂ senso | r | | | | Warning | |
|------------------|--------------------------|---|----------------------------|----------------|----------------|----------|--|
| Description | The O ₂ senso | r communica | tion and O ₂ le | evel are teste | ed. | | |
| Cause | Communi | cation failed | and/or O ₂ lev | el out of nor | mal range. | | |
| Trouble shooting | Try to cor controller. | | r by uploadin | g the latest s | oftware versio | n to the | |
| | 2. If one or i | 2. If one or more alarms are active, check wires, plugs and connectors. | | | | | |
| | 3. Check vol | 3. Check voltage according to wire diagram. | | | | | |
| | | 4. If only AL 760 is active, then check connection to the O2 sensor and correct if faulty. If not, replace the CA module. | | | | | |
| Criteria | No communio | ation for 2 m | nin. Reading | out of range | (normal 19-22 | % O2). | |
| Controller | | | ' | | | | |
| action | Log | Χ | Alarm | Х | Alarm light | Off | |
| Consequence | Not possible t | o run CA. Ca | nnot pass PT | ī. | | | |
| Elimination | Alarm may be | e deleted who | en inactive or | when test is | completed. | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Step ID | Insession | O ₂ level | | | | |

| 897 | Hpump | broken | | | | Warning | |
|-------------|--|---|------------------------------|---------------|----------------|----------------|--|
| Description | Vacuum pur | np could not l | be heated. | | | | |
| Cause | | | is turned on, before timeout | | ump tempera | ature does not | |
| | Lack of oil in the vacuum pump. Defective temperature sensor (Tpump) in the vacuum pump. Heater contactor K10 is defective. | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | Defective | e heating eler | ment. | | | | |
| Trouble | 1. Check th | ne oil level in t | the vacuum pu | mp must be | in the require | ed level. | |
| shooting | 2. Measure the voltages to and from the K10 contactor when it is energized and the resistance in the contactor coil (A1-A2) and compare the value with the other contactors. | | | | | | |
| | that it is | 3. Check that the temperature sensor is fully inserted into the sensor pocket and that it is free from damages and is properly connected at the controller X27 according to the wiring diagram. | | | | | |
| | 4. Measure the resistance at the contactor K10. There should be approx. 0.9 k Ω . If not replace the heating element. | | | | | | |
| Criteria | Vacuum pur | np temperatu | re > 75°C (16 | 7°F) within 7 | 5 minutes of | heating. | |
| Controller | | | _ | | | | |
| action | Log | X | Alarm | Х | Alarm light | Off | |
| Consequence | Test failed. | | | | | | |
| Elimination | Alarm may | be deleted aft | er test comple | ted. | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Step ID | Tpump (start) | Tpump (end) | | | | |

| 899 | ITI failed | ITI failed Log | | | | | | |
|------------------|--------------------------------|---|-----------------|---------------|----------------|-------|--|--|
| Description | ITI test fault. | | | | | | | |
| Cause | Normal fur | nction will be | affected as t | here is one o | r more ITI ala | arms. | | |
| Trouble shooting | 1. Check ITI | Check ITI alarms generated and correct accordingly. | | | | | | |
| Criteria | One or more of | of the individu | ual ITI test st | eps have fail | ed. | | | |
| Controller | | | | | | | | |
| action | Log | X | Alarm | | Alarm light | Off | | |
| Consequence | Test failed. | | | | | | | |
| Elimination | Alarm may the | en be deleted | l after test co | mpleted. | | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | Step ID | | | | | | | |

5.11 Controller alarms (AL 9XX)

| 902 | Main battery | Main battery malfunction Alarm | | | | | |
|-------------|--|--------------------------------|--------------------|------------------------------|-----------------|------------------|--|
| Description | Main battery malfu | Main battery malfunctioning. | | | | | |
| Cause | The main batte | ry used for | logging is | defective. | | | |
| Trouble | 1. Check if alarm | 999 is activ | ve and if so | troubleshoo | t accordingly. | | |
| shooting | 2. Verify that the | battery is a | an original S | Star Cool red | hargeable bat | tery. | |
| | 3. Run the unit fo | r a minimu | m of 3 hou | rs in order to | charge the m | nain battery. | |
| | 4. If the voltage is | s not in the | range of 1 | 0-18 V, repla | ace the main b | oattery. | |
| Criteria | CIM 6.0 controller: Main battery voltage is below lower limit (10 V) or above upper limit (18 V). CIM 6.1 and 6.2 controller: If the voltage rise of the main battery is more than 0.7 V in 2 minutes while charging. | | | | | | |
| Controller | | | | | | | |
| action | Log | Х | Alarm | Х | Alarm light | Slow flash | |
| Consequence | Logging in the batt will fail. | ery mode r | not possible | . When dete | cted during PT | I test, the test | |
| Elimination | Alarm will be mark Alarm may then be | | ive in alarm | list when vo | oltage reoccurs | on battery. | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Reason: 0 = Low voltage 1 = High voltage 2 = Voltage change | Internal battery state | Battery voltage | Battery voltage change | | | |

| 904 | Datalog e | Datalog error Alarm | | | | | | |
|------------------|---|--|---------------|----------------|-------------|------------|--|--|
| Description | SCCU6 data lo | g fault. | | | | | | |
| Cause | • Unexpecte | d behaviour in o | ld software v | ersion. | | | | |
| | Datalog in | controller has be | ecome defect | tive. | | | | |
| Trouble shooting | 1. The unit wi unreliable. | , | | | | | | |
| | 2. Try to correct the error by uploading the latest software version to the controller.3. Replace main controller. | | | | | the the | | |
| | | | | | | | | |
| | update the | controller have software if poss on is set correct | sible and mal | | • | | | |
| Criteria | Controller data | a log corrupted. | | | | | | |
| Controller | | | | | | | | |
| action | Log | Х | Alarm | Х | Alarm light | Slow flash | | |
| Consequence | Data logging ι | inreliable. Tempe | erature contr | ol is function | ning. | | | |
| Elimination | | | | | | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | Parm 5 | | |
| Log data | | 1 or 2 | | | Error bits | | | |

| 905 | Database | Database corrupt Log | | | | | | |
|------------------|-------------------------------|---|--------------|--------|-------------------------------------|-----|--|--|
| Description | SCCU6 databa | se faulty. | | | | | | |
| Cause | Unexpecte | Unexpected behaviour in old software version. | | | | | | |
| | Failed valid | Failed validation of EEPROM backup. | | | | | | |
| | Main contr | oller defectiv | e. | | | | | |
| Trouble shooting | 1. Try to correct controller. | , | | | | | | |
| | 2. Replace ma | ain controller | : | | | | | |
| | update the | | oossible and | | ersion installed he container IC | | | |
| Criteria | Controller data | abase corrup | ted. | | | | | |
| Controller | Default value | oreset. | | | | | | |
| action | Log | Χ | Alarm | | Alarm light | Off | | |
| Consequence | Parameters ma | ay have char | nged. | | | | | |
| Elimination | | | | | | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| | | | | | | | | |

| 907 | Real-time | error | | | | Alarm |
|------------------|-----------------------------|----------------|----------------|-----------------|-----------------|----------------|
| Description | Real-time clock | k unreliable. | | | | |
| Cause | Unexpected | d behaviour i | n old softwa | re version. | | |
| | Main batter | ry or real-tim | ne clock batte | ery defective | | |
| Trouble shooting | Try to correct controller. | ect the error | by uploading | the latest s | oftware versio | n to the |
| | 2. Reset the G | GMT in the S | ervice menu | (S03). | | |
| | 3. Check if ala | arm 999 is a | ctive and if s | o troublesho | ot accordingly. | |
| | 4. Verify that | the battery i | s an original | Star Cool re | chargeable ba | ttery. |
| | 5. Turn on the | e unit and let | it run for m | inimum 3 ho | urs. | |
| | 6. Check the the main b | | voltage. If i | t is not in the | e range of 10V | -18V, replace |
| | 7. If the alarn controller. | n still active | after replacir | ng the main l | battery, replac | e the main |
| Criteria | Activated in ca | se of real-tir | ne clock read | d/write fault. | | |
| Controller | | | | | | |
| action | Log | Х | Alarm | Х | Alarm light | Slow flash |
| Consequence | Invalid date/tir | me setting in | datalog. | | | |
| Elimination | Check real-time deleted. | e clock batte | ry and main | battery. Rese | t the GMT. Alai | rm may then be |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data | | | | | | |

| 953 | Temp r | ef 1 LO | | | | Warning |
|---------------------------------------|----------------------------|-------------------------------------|--|---------------|------------------|-----------------|
| Description | Controller i | nternal voltage | e reference faul | t. | | |
| Cause | Unexpe | cted behaviou | r in old software | e version. | | |
| | Defective | ve power supp | ly for main cont | troller. | | |
| | Defective | ve sensor pulli | ng power suppl | y down. | | |
| | Defective | ve main contro | ller. | | | |
| Trouble shooting | 1. Try to c | | or by uploading | the latest s | oftware version | n to the |
| | | f there are other ouble shooting | er active (senso | or) alarms. (| Clear these alai | rms first using |
| | | | ² 24 V DC and 5 damages. If OK | | | |
| | 4. Replace | main controlle | er. | | | |
| | update | | have the latest possible and nurrectly. | | | |
| Criteria | Reference | voltage 1 belov | w 3.16 V DC. | | | |
| Controller | | | | | | |
| action | Log | Х | Alarm | Х | Alarm light | Off |
| Consequence | Temperatu | re measureme | nt too high. | | | |
| Elimination | | oe marked as i then be delete | nactive in alarn ed. | n list when s | supply voltage | is correct. |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data Minimum Maximum Actual value | | | | | | |
| Info | The measu measured. | red voltage is | internal on the | main contro | oller and canno | ot easily be |

| 954 | Temp r | ef 1 HI | | | | Warning |
|------------------|----------------------------|-------------------------------------|--|---------------|----------------|----------------|
| Description | Controller i | nternal voltage | reference fault | | | |
| Cause | Unexpe | cted behaviour | in old software | version. | | |
| | Defective | ve power supply | y for main contr | oller. | | |
| | Defective | ve main control | ler. | | | |
| Trouble shooting | 1. Try to c | | by uploading t | he latest so | ftware version | to the |
| | | f there are othe puble shooting. | er active (sensor | r) alarms. Cl | ear these alar | ms first using |
| | | n circuit or othe | 24 V DC and 5 or damages. If v | | | |
| | 4. Replace | main controlle | r. | | | |
| | update | | nave the latest some possible and marrectly. | | | |
| Criteria | Reference | voltage 1 above | 3.29 V DC. | | | |
| Controller | | | | | | |
| action | Log | Х | Alarm | Х | Alarm light | Off |
| Consequence | Temperatu | re measuremen | t too low. | | | |
| Elimination | I | oe marked as ir then be delete | nactive in alarm d. | list when s | upply voltage | is correct. |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data | | Minimum Maximum Actual value value | | | | |
| Info | The measu measured. | red voltage is i | nternal on the r | main control | ler and canno | t easily be |

| 955 | Temp r | ef 2 LO | | | | Warning | |
|------------------|------------------------------------|---|--|---------------|------------------|-----------------|--|
| Description | Controller i | nternal voltage | e reference faul | t. | | | |
| Cause | Unexpe | cted behaviou | r in old software | e version. | | | |
| | Defective | Defective power supply for main controller. | | | | | |
| | Defective | ve sensor pulli | ng power suppl | y down. | | | |
| | Defective | ve main contro | ller. | | | | |
| Trouble shooting | 1. Try to c | | or by uploading | the latest s | oftware version | n to the | |
| | | f there are othe ouble shooting | er active (senso | or) alarms. (| Clear these alai | rms first using | |
| | | | ² 24 V DC and 5 damages. If OK | | | | |
| | 4. Replace | main controlle | er. | | | | |
| | update | | have the latest possible and nurrectly. | | | | |
| Criteria | Reference | voltage 1 belov | w 3.16 V DC. | | | | |
| Controller | | | | | | | |
| action | Log | Х | Alarm | Х | Alarm light | Off | |
| Consequence | Temperatu | re measureme | nt too high. | | | | |
| Elimination | | be marked as i then be delete | nactive in alarn ed. | n list when s | supply voltage | is correct. | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Minimum Maximum Actual value value | | | | | | |
| Info | The measu measured. | red voltage is | internal on the | main contro | oller and canno | ot easily be | |

| 956 | Temp r | ef 2 HI | | | | Warning | |
|------------------|------------------------------------|--|-------------------|--------------|----------------|-----------------|--|
| Description | Controller | internal voltage | reference fault | | | | |
| Cause | Unexpe | cted behaviour | in old software | version. | | | |
| | Defective | ve power supply | y for main contr | oller. | | | |
| | Defective | ve main control | ler. | | | | |
| Trouble shooting | 1. Try to c | correct the error | by uploading t | he latest so | ftware version | n to the | |
| | | f there are othe ouble shooting. | er active (sensor | r) alarms. C | lear these ala | rms first using | |
| | an opei | 3. Check voltage level of 24 V DC and 5 V signals to see if power supply has an open circuit or other damages. If voltages are OK, the main controller is defective. | | | | | |
| | 4. Replace | e main controlle | r. | | | | |
| | update | the controller h the software if ration is set cor | possible and m | | | | |
| Criteria | Reference | voltage 1 above | 3.29 V DC. | | | | |
| Controller | | | | | | | |
| action | Log | Х | Alarm | Х | Alarm light | Off | |
| Consequence | Temperatu | re measuremen | t too low. | | | | |
| Elimination | | be marked as ir then be delete | | list when s | upply voltage | is correct. | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | Minimum Maximum Actual value value | | | | | | |
| Info | The measumeasured. | red voltage is i | nternal on the r | main contro | ller and canno | ot easily be | |

| 961 | Pdis se | ns sup LO | | | | Log | |
|------------------|-------------|--------------------------------------|------------------|---------------|---------------------------------------|----------------|--|
| Description | Controller | internal voltage | reference fau | lt. | | | |
| Cause | Unexpe | ected behaviour | in old softwar | e version. | | | |
| | Defecti | ve power suppl | y for main cor | troller. | | | |
| | Defecti | ve Pdis pressur | e transmitter. | | | | |
| | Defecti | ve main control | main controller. | | | | |
| Trouble shooting | 1. Try to c | | r by uploading | the latest s | oftware version | to the | |
| | | f there are othe ouble shooting. | | or) alarms. (| Clear these alarr | ms first using | |
| | until yo | | "U Pdis" in th | e display. Th | nore than 3 sec. ne value of "U Po | | |
| | 4. While o | lisplaying "U Pd | is", remove th | e connector | at Pdis. | | |
| | | U Pdis" is now inve. Replace the | | • | e Pdis pressure t | transmitter is | |
| | - If " | U Pdis" is still o | utside the abo | ve range, pr | roceed to next s | tep. | |
| | | lisplaying "U Pd schematics insid | | | he terminals acc | cording to | |
| | | U Pdis" is now i lace cable for P | | e range, the | e cable for Pdis i | is defective. | |
| | – If tl | ne correct volta | ge is measure | d at X22 the | en circuit is defe | ctive. | |
| | 6. Replace | e the main cont | roller. | | | | |
| | update | | possible and i | | ersion installed, ne container ID | | |
| Criteria | Reference | voltage Pdis be | low 5.50 V DC | • | | | |
| Controller | | | | | | | |
| action | Log | X | Alarm | | Alarm light | Off | |
| Consequence | | ate readings fro | | | | | |
| Elimination | | then be delete | | | supply voltage is | s correct. | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | | Minimum value | Maximum value | Actual | | | |

| 962 | Pdis sens sup HI Log |
|------------------|---|
| Description | Controller internal voltage reference fault. |
| Cause | Defective power supply for main controller. |
| | Defective main controller. |
| Trouble shooting | Try to correct the error by uploading the latest software version to the controller. |
| | 2. Check if there are other active (sensor) alarms. Clear these alarms first using their trouble shooting. |
| | 3. Access the "special menu" by pressing of for more than 3 sec. Scroll down until you see the label "U Pdis" in the display. The value of "U Pdis" should be in the range between 4.50 V and 5.5 V DC. |
| | 4. While displaying "U Pdis", remove the connector at Pdis. |
| | If "U Pdis" is now inside the above range, the Pdis pressure transmitter is defective. Replace the Pdis pressure transmitter. |
| | If "U Pdis" is still outside the above range, proceed to next step. |
| | 5. While displaying "U Pdis", disconnect Pdis from the terminals according to wiring schematics inside in the control cabinet. |
| | If "U Pdis" is now inside the above range, the cable for Pdis is defective. Replace cable for Pdis. |
| | If the correct voltage is measured at X22 then circuit is defective. |
| | 6. Replace the main controller. |
| | 7. Ensure the controller have the latest software version installed, otherwise update the software if possible and make sure the container ID and configuration is set correctly. |
| Criteria | Reference voltage Pdis above 5.50 V DC. |
| Controller | |
| action | Log X Alarm Alarm light Off |
| Consequence | Less accurate readings from measurement. |
| Elimination | Alarm will be marked as inactive in alarm list when supply voltage is correct. Alarm may then be deleted. |
| | Parm 1 Parm 2 Parm 3 Parm 4 Parm 5 |
| Log data | Minimum Maximum Actual value value |

| 963 | Psuc se | ens sup LO | | | | Log |
|-------------------|-------------|--|-------------------|--------------|----------------|----------------|
| Description | Controller | internal voltage r | eference fault. | | | |
| Cause | • Unexpe | ected behaviour i | n old software ve | ersion. | | |
| | • Defecti | ve power supply | for main control | ler. | | |
| | • Defecti | ve Psuc pressure | transmitter. | | | |
| | • Defecti | ve main controlle | er. | | | |
| Trouble shooting | 1. Try to c | correct the error ler. | by uploading the | latest soft | ware version | to the |
| | | f there are other ouble shooting. | active (sensor) | alarms. Clea | ar these alarn | ns first using |
| | until yo | the "special menousee the label " range between 4. | U Psuc" in the di | splay. The v | | |
| | 4. While d | lisplaying "U Psu | c", remove the c | onnector at | Psuc. | |
| | Psuc | If "U Psuc" is now inside the correct above range $(4.50 \text{ V} - 5.5 \text{ V DC})$, the Psuc pressure transmitter is defective. Replace the Psuc pressure transmitter. | | | | |
| | – If "U | J Psuc" is still out | side the above r | ange, proce | eed to next st | ep. |
| | | lisplaying "U Psud schematics inside | | | terminals ac | cording to |
| | | J Psuc" is now ins nt connector corr | | | | |
| | – If th | e correct voltage | is measured at | X22 then ci | rcuit is defec | tive. |
| | 6. Replace | e the main contro | oller. | | | |
| | update | the controller ha the software if p ration is set corr | ossible and mak | | | |
| Criteria | Reference | voltage Psuc belo | ow 4.50 V DC. | | | |
| Controller action | Log | X | Alarm | | Alarm light | Off |
| Consequence | | ate readings fron | n measurement. | | | |
| Elimination | | be marked as ina then be deleted | | st when sup | ply voltage is | s correct. |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data | | Minimum value | Maximum value | Actual | | |

| 964 | Psuc se | ns sup HI | | | | Log |
|------------------|---------------------|---|-------------------|--------------|-----------------|---------------|
| Description | Controller i | nternal voltage r | eference fault. | | | |
| Cause | Unexpe | cted behaviour ir | old software ve | ersion. | | |
| | Defective | e power supply | for main controll | ler. | | |
| | Defective | e main controlle | r. | | | |
| Trouble shooting | 1. Try to controlle | orrect the error ber. | by uploading the | latest softv | vare version t | to the |
| | | there are other buble shooting. | active (sensor) a | alarms. Clea | r these alarm | s first using |
| | until yo | the "special men u see the label "l e range between | J Psuc" in the di | splay. The v | | |
| | 4. While di | splaying "U Psuc | ", remove the c | onnector at | Psuc. | |
| | Psuc | Psuc" is now inspressure transmitter. | | | | |
| | – If "U | Psuc" is still out | side the above r | ange, proce | ed to next st | ep. |
| | | splaying "U Psuc chematics inside | | | terminals acc | cording to |
| | | Psuc" is now ins | | • | | |
| | – If the | e correct voltage | is measured at | X22 then ci | rcuit is defect | ive. |
| | 6. Replace | the main contro | ller. | | | |
| | update | the controller had the software if poration is set corre | ossible and mak | | | |
| Criteria | Reference v | oltage Psuc abov | ve 5.50 V DC. | | | |
| Controller | | | | | | |
| action | Log | X | Alarm | | Alarm light | Off |
| Consequence | | te readings from | | | | |
| Elimination | | e marked as ina then be deleted. | | st when sup | ply voltage is | correct. |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data | | Minimum value | Maximum value | Actual | | |

| 965 | Control | Controller sup LO Log | | | | | |
|------------------|------------------------------|-------------------------------------|--|--------------|----------------|----------------|--|
| Description | Controller in | nternal voltage r | eference fault. | | | | |
| Cause | Unexped | ted behaviour ir | old software ve | rsion. | | | |
| | Defectiv | e power supply 1 | for main controll | er. | | | |
| | Defectiv | e main controlle | r. | | | | |
| Trouble shooting | 1. Try to co | | by uploading the | latest softw | are version | to the | |
| | | there are other uble shooting. | active (sensor) a | alarms. Clea | r these alarn | ns first using | |
| | 3. The mai | n controller is de | efective. | | | | |
| | 4. Replace | the main contro | ller. | | | | |
| | update t | | ve the latest soft ossible and make ectly. | | | | |
| Criteria | Reference v | oltage below 4.5 | 50 V DC. | | | | |
| Controller | | | | | | | |
| action | Log | Χ | Alarm | | Alarm light | Off | |
| Consequence | Less accura | te readings from | measurement f | rom sensors | X22 and X2 | .3. | |
| Elimination | | e marked as ina then be deleted. | ctive in alarm lis | t when supp | oly voltage is | correct. | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | | Minimum value | Maximum value | Actual | | | |

| 966 | Control | ler sup HI | | | | Log |
|------------------|------------------------------------|--|------------------|--------------|----------------|----------------|
| Description | Controller i | nternal voltage r | eference fault. | | | |
| Cause | Unexpe | Unexpected behaviour in old software version. | | | | |
| | Defective | ve power supply | for main control | ler. | | |
| | Defective | ve main controlle | er. | | | |
| Trouble shooting | 1. Try to c controll | orrect the error er. | by uploading the | latest softv | vare version | to the |
| | | f there are other ouble shooting. | active (sensor) | alarms. Clea | ar these alarr | ns first using |
| | I | voltage level of 2 rcuit or other dawe. | | _ | | ''' |
| | 4. Replace | main controller. | | | | |
| | update | the controller ha the software if p ration is set corr | ossible and mak | | | |
| Criteria | Reference | voltage above 5. | 50 V DC. | | | |
| Controller | | | | | | |
| action | Log | Х | Alarm | | Alarm light | Off |
| Consequence | Less accura | ate readings fron | n measurement i | from sensor | s X22 and X2 | 23. |
| Elimination | | oe marked as ina then be deleted | | st when sup | ply voltage is | s correct. |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data | Minimum Maximum Actual value value | | | | | |
| Info | The measu measured. | red voltage is in | ternal on the ma | in controlle | r and cannot | easily be |

| 967 | AirExM | ot sup LO | | | | Log | | |
|-------------------|----------------------------|--|-------------------------------------|--------------------------|-----------------|----------------|--|--|
| Description | Controller i | internal voltage r | eference fault. | | | | | |
| Cause | Unexpe | cted behaviour i | n old software ve | ersion. | | | | |
| | Defective | ve power supply | for main control | ler. | | | | |
| | Defective | ve sensor pulling | e sensor pulling power supply down. | | | | | |
| | Defective | ve main controlle | er. | | | | | |
| Trouble shooting | 1. Try to c | correct the error er. | by uploading the | latest soft | ware version | to the | | |
| | | f there are other ouble shooting. | active (sensor) | alarms. Cle | ar these alarr | ns first using | | |
| | until yo | the "special men u see the label "l be in the range b | J Motor pos" in t | he display. ⁻ | The value of " | | | |
| | 4. While d | isplaying "U Moto | or pos", remove | the connect | or at AirEx po | otentiometer. | | |
| | | If "U Motor pos" is now inside the correct above range (4.50 – 5.50 V DC), the motor potentiometer is defective. Replace the "AirMotor". | | | | | | |
| | – If "l | J Motor pos" is s | till outside the a | bove range | , proceed to r | next step. | | |
| | | 'hile displaying "U Motor pos", disconnect "AirMotor" from the terminals coording to wiring schematics inside in the control cabinet. | | | | | | |
| | defe | J AirEx" is now ir ective. Mount con Motor". | | | | | | |
| | – If th | ne correct voltage | e is measured at | X23 then o | circuit is defe | ctive. | | |
| | 6. Replace | e the main contro | oller. | | | | | |
| | update | the controller ha the software if p ration is set corr | ossible and mak | | | | | |
| Criteria | Reference | voltage air excha | inge motor belov | v 4.50 V DC | 2. | | | |
| Controller action | | Lv | | <u> </u> | | 0.00 | | |
| | Log | X | Alarm | | Alarm light | Off | | |
| Consequence | | ate readings fron | | at when a | nly voltage : | correct | | |
| Elimination | | be marked as ina then be deleted | | st when sup | ppiy voitage is | s correct. | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | | Minimum value | Maximum value | Actual | | | | |

| 968 | AirExM | ot sup HI | | | | Log | |
|------------------|----------------------------|---|--|--------------|---------------------------------------|----------------|--|
| Description | Controller i | nternal voltage i | reference fault. | | | | |
| Cause | Unexpe | cted behaviour i | n old software ve | ersion. | | | |
| | Defective | ve power supply | for main control | ler. | | | |
| | Defective | ve main controlle | er. | | | | |
| Trouble shooting | 1. Try to c controll | | by uploading the | latest softv | vare version | to the | |
| | | f there are other ouble shooting. | active (sensor) | alarms. Clea | ar these alarr | ns first using | |
| | open cii | 3. Check voltage level of 24 V DC and 5 V signals to see if power supply has an open circuit or other damages. If the correct voltage is measured at X23 then circuit is defective. | | | | | |
| | 4. Replace | main controller. | | | | | |
| | update | | eve the latest sof cossible and mak ectly. | | | | |
| Criteria | Reference | voltage air excha | inge motor abov | e 5.50 V DC | · · · · · · · · · · · · · · · · · · · | | |
| Controller | | | | | | | |
| action | Log | Х | Alarm | | Alarm light | Off | |
| Consequence | Less accura | ate readings fron | n measurement. | | | | |
| Elimination | | oe marked as ina then be deleted | active in alarm lis | st when sup | ply voltage is | correct. | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | | Minimum value | Maximum value | Actual | | | |

| 969 | AirEx s | ens sup LC |) | | Log | | |
|-------------------|--|---|---------------------------------------|--------------|---|--|--|
| Description | Controller | internal voltage | reference fault. | | | | |
| Cause | Unexpe | ected behaviour i | n old software v | ersion. | | | |
| | Defective power supply for main controller. | | | | | | |
| | Defecti | ve sensor pulling | power supply d | own. | | | |
| | Defecti | ve main controlle | er. | | | | |
| Trouble shooting | 1. Try to c | | by uploading the | latest soft | ware version to the | | |
| | 2. Check if there are other active (sensor) alarms. Clear these alarms first their trouble shooting. | | | | | | |
| | until yo | the "special mer ou see the label " ne range betwee | $^{\circ}$ U AirEx" in the $^{\circ}$ | lisplay. The | e than 3 sec. Scroll down value of "U AirEx" should | | |
| | 4. While o | displaying "U AirE | x", remove the | connector a | t AirEx potentiometer. | | |
| | | | | | ge (4.50 – 5.50 V DC), le AirEx potentiometer | | |
| | - If " | U AirEx" is still o | utside the above | range, pro | ceed to next step. | | |
| | 5. While displaying "U AirEx", disconnect "AirEx" from the terminals according to wiring schematics inside in the control cabinet. | | | | | | |
| | defe | | | | cable for "AirEx" is connector cable for | | |
| | | he correct voltag ective. | e is measured at | X22 and a | t X23 then circuit is | | |
| | 6. Replace | e main controller | | | | | |
| | update | | ossible and mak | | ion installed, otherwise container ID and | | |
| Criteria | Reference | voltage air excha | ange below 4.50 | V DC. | | | |
| Controller action | Log | X | Alarm | | Alarm light Off | | |
| Consequence | | ate readings fror | , | | - | | |
| Elimination | | be marked as independent then be deleted | | st when sup | oply voltage is correct. | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | | Minimum value | Maximum value | Actual | | | |

| 970 | AirEx s | ens sup HI | | | | Log | | |
|------------------|-------------|--|-------------------|--------------|----------------|----------------|--|--|
| Description | Controller | internal voltage i | reference fault. | | | | | |
| Cause | Unexpe | cted behaviour i | n old software ve | ersion. | | | | |
| | Defective | ve power supply | for main control | ler. | | | | |
| | Defective | ve main controlle | er. | | | | | |
| Trouble shooting | 1. Try to c | correct the error er. | by uploading the | latest softv | vare version | to the | | |
| | | f there are other ouble shooting. | active (sensor) | alarms. Clea | ar these alarr | ns first using | | |
| | open ci | 3. Check voltage level of 24 V DC and 5 V signals to see if power supply has an open circuit or other damages. If the correct voltage is measured at X22 and at X23 then circuit is defective. | | | | | | |
| | 4. Replace | e main controller. | | | | | | |
| | update | the controller ha the software if p ration is set corr | ossible and mak | | | | | |
| Criteria | Reference | voltage air excha | ange above 5.50 | V DC. | | | | |
| Controller | | | | | | | | |
| action | Log | X | Alarm | | Alarm light | Off | | |
| Consequence | Less accura | ate readings fron | n measurement. | | | | | |
| Elimination | | Alarm will be marked as inactive in alarm list when supply voltage is correct. Alarm may then be deleted. | | | | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | | Minimum value | Maximum value | Actual | | | | |

| 971 | Sensor | bus sup L | 0 | | Log | | | |
|------------------|-------------|------------------------------------|--|---------------|---|--|--|--|
| Description | Supply vol | tage sensor bus | low. | | | | | |
| Cause | Unexpe | ected behaviour i | in old software v | ersion. | | | | |
| | Defecti | ve 12 V power s | upply on main co | ontroller. | | | | |
| | Defecti | Defective main controller. | | | | | | |
| | Short of | Short circuit on sensor. | | | | | | |
| Trouble shooting | 1. Try to c | | by uploading the | e latest soft | ware version to the | | | |
| | | if there are other ouble shooting. | active (sensor) | alarms. Cle | ar these alarms first using | | | |
| | until yo | ou see the label ' | | the display | e than 3 sec. Scroll down y. The value of "U sensor OC. | | | |
| | | | sor bus", removed or CO_2 sensor) | | ector on the RH cable at the | | | |
| | the | | ensor is defectiv | | re range (10 - 14 V DC), the sensor(s) connected | | | |
| | – If " | U sensor bus" is | still outside the | above rang | e, proceed to next step. | | | |
| | | | sor bus", disconi ematics inside in | | from the terminals I cabinet. | | | |
| | or (| CO ₂ sensor(s) is | | connector | the cable for the RH and correctly or replace | | | |
| | – If t | he correct voltag | e is measured at | t X10 then | circuit is defective. | | | |
| | 6. Replace | e main controller | | | | | | |
| | update | | oossible and mak | | ion installed, otherwise container ID and | | | |
| Criteria | Reference | voltage U sensoi | bus below 10 V | DC. | | | | |
| Controller | | | • | | | | | |
| action | Log | X | Alarm | | Alarm light Off | | | |
| Consequence | | | | | | | | |
| Elimination | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | Palill I | Minimum value | Maximum value | Actual | railli 3 | | | |

| 972 | Sensor | bus sup H | I | | | Log | | |
|------------------|---|---|--|--------------|----------------|----------------|--|--|
| Description | Controller i | nternal voltage ı | reference fault. | | | | | |
| Cause | Unexpe | Unexpected behaviour in old software version. | | | | | | |
| | Defective | ve 12 V power su | upply on main co | ntroller. | | | | |
| | Defective | ve main controlle | er. | | | | | |
| | Short ci | ircuit between 24 | 4 V DC and 12 V | DC. | | | | |
| Trouble shooting | 1. Try to c controll | | by uploading the | latest softv | ware version | to the | | |
| | | f there are other ouble shooting. | active (sensor) | alarms. Clea | ar these alarr | ns first using | | |
| | 3. Check voltage level of 24 V DC and 12 V signals to see if power supply has an short circuit or other damages. If the correct voltage is measured at X10 then circuit is defective. | | | | | | | |
| | 4. Replace | main controller. | | | | | | |
| | update | | ave the latest sof possible and mak ectly. | | | | | |
| Criteria | Reference | voltage sensor b | us above 14 V D | C. | | | | |
| Controller | | | | | | | | |
| action | Log | Х | Alarm | | Alarm light | Off | | |
| Consequence | Less accura | ate readings fron | n measurement a | and damage | e to sensors. | | | |
| Elimination | | oe marked as ina then be deleted | active in alarm lis | st when sup | ply voltage is | correct. | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | | Minimum value | Maximum value | Actual | | | | |

| 973 | SUP6 | SPM6 sup | LO | | | Log | |
|------------------|------------------|---|--|---------------|-------------------------------|---------------|--|
| Description | Supply vo | ltage SUP6 SPM | 6 low. | | | | |
| Cause | • Unexp | ected behaviour | in old software v | version. | | | |
| | • Defect | tive 12 V power | supply to SUP6 o | r SMP6. | | | |
| | • Short | ort circuit on SUP6 SPM6. | | | | | |
| | • Defect | tive main contro | ller. | | | | |
| Trouble shooting | 1. Try to contro | | r by uploading th | e latest sof | tware version | to the | |
| | | | er active (sensor) g their trouble sh | | $_{-}$ 971 and or $_{\prime}$ | AL 972) Clear | |
| | | | hange X23 and R ve it can interrup | | | | |
| | until y | ou see the label | enu" by pressing "SUP6 SPM6" in e range between | the display. | The value of | | |
| | 5. While | displaying "U SU | JP6 SPM6", remo | ve the conn | ector at X9. | | |
| | the | If "U SUP6 SPM6" is now inside the correct above range (11 - 14 V DC), the display and or power module is defective. Test with another display and or power module. | | | | | |
| | – If | "U SUP6 SPM6" | is still outside the | e above rang | ge, proceed to | o next step. | |
| | | the terminals acc | JP6 SPM6", disco cording to wiring | | | | |
| | an | d or power modu | is now inside the ule is defective. N r display and or p | ount conne | ector correctly | | |
| | - If | the correct volta | ge is measured a | nt X11 then | circuit is defe | ctive. | |
| | 7. Replac | ce main controlle | er. | | | | |
| | update | | nas the latest sof possible and ma rrectly. | | | | |
| Criteria | Reference | voltage U senso | or bus below 10 \ | / DC. | | | |
| Controller | | _ | | | | | |
| action | Log | X | Alarm | | Alarm light | Off | |
| Consequence | | | | | | | |
| Elimination | Darm 1 | Dann 2 | Dann 2 | Da 400 4 | Darm F | | |
| Log data | Parm 1 | Parm 2 Minimum value | Parm 3 Maximum value | Parm 4 Actual | Parm 5 | | |

| 974 | Sensor | bus sup H | I | | | Log | | |
|------------------|----------------------------|---|--|--------------|----------------|----------------|--|--|
| Description | Controller i | Controller internal voltage reference fault. | | | | | | |
| Cause | Unexpe | Unexpected behaviour in old software version. | | | | | | |
| | Defective | ve 12 V power su | apply to sensor b | us. | | | | |
| | Defective | ve main controlle | er. | | | | | |
| | Short ci | ircuit between 24 | 4 V DC and 12 V | DC. | | | | |
| Trouble shooting | 1. Try to c controll | | by uploading the | latest softv | vare version | to the | | |
| | | f there are other ouble shooting. | active (sensor) | alarms. Clea | or these alarr | ns first using | | |
| | short ci | 3. Check voltage level of 24 V DC and 12 V signals to see if power supply has an short circuit or other damages. If the correct voltage is measured at X11 then circuit is defective. | | | | | | |
| | 4. Replace | main controller. | | | | | | |
| | update | | ive the latest sof lossible and mak ectly. | | | | | |
| Criteria | Reference | voltage sensor b | us above 14 V D | C. | | | | |
| Controller | | | | | | | | |
| action | Log | Х | Alarm | | Alarm light | Off | | |
| Consequence | Less accura | ate readings fron | n measurement a | and damage | to sensors. | | | |
| Elimination | | be marked as ina then be deleted | active in alarm lis | st when sup | ply voltage is | s correct. | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | | Minimum value | Maximum value | Actual | | | | |

| 975 | Interna | al sup LO | | | | Log | |
|------------------|----------------------------|---|--|--------------|---------------|------------|--|
| Description | 12 V supply | y voltage low on | SMC6. | | | | |
| Cause | Unexpe | Unexpected behaviour in old software version. | | | | | |
| | Defective | Defective 12 V power supply on SMC6. | | | | | |
| | Defective | ve main controlle | er. | | | | |
| | Short c | ircuit on SUP6 ar | nd SPM6 or RH s | ensor and C | O sensor. | | |
| Trouble shooting | | Try to correct the error by uploading the latest software version to the controller. | | | | | |
| | | 2. Check if there are other active (sensor) alarms (AL 971 and or AL 972) Clear these alarms first using their trouble shooting. | | | | | |
| | 3. (Future | possibility) | | | | | |
| | until yo | Access the "special menu" by pressing of for more than 3 sec. Scroll down until you see the label "SUP6 SPM6" in the display. The value of "U SUP6 SPM6" should be in the range between 10 and 14 V DC. | | | | | |
| | 4. While d | 4. While displaying "U SUP6 SPM6", remove the connector at X10. | | | | | |
| | disp | | inside the corre r module is defe | | | | |
| | – If "l | J SUP6 SPM6" is | still outside the | above range | e, proceed to | next step. | |
| | If not ir | n-range, SMC6 m | 6 SPM6", disconing be defective t X80 and SPM6 | or have insu | | | |
| Criteria | Internal po | wer supply below | w 10 V DC. | | | | |
| Controller | | | | | | | |
| action | Log | Х | Alarm | | Alarm light | Off | |
| Consequence | Less accura | ate readings fron | n measurements | • | | | |
| Elimination | | | | | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | |
| Log data | | Minimum value | Maximum value | Actual | | | |

| 976 | Interna | al sup HI | | | | Log | | |
|------------------|----------------------|---|--|--------------|---------------|----------------|--|--|
| Description | 12 V supply | y voltage high or | n SMC6. | | | | | |
| Cause | Defective | Defective 12 V power supply. | | | | | | |
| | Defective | ve main controlle | er. | | | | | |
| | Short ci | ircuit between 24 | 4 V DC and 12 V | DC. | | | | |
| Trouble shooting | 1. Try to c controll | | by uploading the | latest softv | vare version | to the | | |
| | | f there are other ouble shooting. | active (sensor) | alarms. Clea | r these alarn | ns first using | | |
| | short ci | 3. Check voltage level of 24 V DC and 12 V signals to see if power supply has an short circuit or other damages. If the correct voltage is measured at X11 then circuit is defective. | | | | | | |
| | 4. Replace | e main controller. | | | | | | |
| | update | | es the latest softwoesible and make ectly. | | | | | |
| Criteria | Internal po | wer supply abov | e 14 V DC. | | | | | |
| Controller | | | | | | | | |
| action | Log | Х | Alarm | | Alarm light | Off | | |
| Consequence | Less accura | ate readings fron | n measurements | and risk for | damage to | sensors. | | |
| Elimination | | Alarm will be marked as inactive in alarm list when supply voltage is correct. Alarm may then be deleted. | | | | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | | Minimum value | Maximum value | Actual | | | | |

| 977 | Pmem | sens sup L | .OW | | | Log |
|------------------|-------------|------------------------------------|--------------------|--------------|----------------|------------|
| Description | Controller | internal voltage | reference fault. | | | |
| Cause | Unexpe | ected behaviour | in old software v | ersion. | | |
| | • Contro | ller defective. | | | | |
| Trouble shooting | 1. Try to c | | by uploading th | e latest sof | tware version | to the |
| | 2. See tro | uble shooting fo | or accompanying | alarms. | | |
| Criteria | Voltage < | 4.50 V DC. | | | | |
| Controller | | | | | | |
| action | Log | Χ | Alarm | | Alarm light | Off |
| Consequence | Less accur | ate readings fro | m measurement | | | |
| Elimination | I | be marked as in arm may then be | active in the alar | rm list whei | n the supply v | voltage is |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | |
| Log data | | Minimum value | Maximum value | Actual | | |

| 978 | Pmem | sens sup F | HIGH | | | Log | | |
|------------------|------------|--|--------------------|--------------|----------------|------------|--|--|
| Description | Controller | internal voltage | reference fault. | | | | | |
| Cause | Unexpe | Unexpected behaviour in old software version. | | | | | | |
| | • Defecti | ve power supply | for main contro | ller. | | | | |
| | • Defecti | ve Pmem pressu | ıre transmitter. | | | | | |
| | • Defecti | ve main controll | er. | | | | | |
| Trouble shooting | · ' | Try to correct the error by uploading the latest software version to the controller. | | | | | | |
| | 2. See tro | 2. See trouble shooting for accompanying alarms. | | | | | | |
| Criteria | Voltage > | 5.50 V DC. | | | | | | |
| Controller | | | | | | | | |
| action | Log | Χ | Alarm | | Alarm light | Off | | |
| Consequence | Less accur | ate readings froi | m measurement | | | | | |
| Elimination | I | be marked as in arm may then be | active in the alar | rm list whei | n the supply v | voltage is | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | | Minimum value | Maximum value | Actual | | | | |

| 990 | Firmware update fail Alarm | | | | | | | |
|------------------|--|-----------------|----------------|--------------|-------------|----------|--|--|
| Description | Failed to activate firmware. | | | | | | | |
| Cause | Unexpected behaviour in old software version. | | | | | | | |
| | Operating s | software is not | t compatible w | ith hardware | (SUP6, SMC6 | , SPM6). | | |
| Trouble shooting | Try to correct controller. | , , , , , , | | | | | | |
| | 2. Test the software with unit of the same type as the failing one. If software is running then see 3. | | | | | | | |
| | 3. There is still a fault on either SUP6, SMC6, SPM6. | | | | | | | |
| Criteria | | | | | | | | |
| Controller | | | | | | | | |
| action | Log X Alarm X Alarm light Slow flas | | | | | | | |
| Consequence | | | | | | | | |
| Elimination | | | | | | | | |
| I a sa data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | | SMC6 | SUP6 | SPM6 | SCC6 | | | |

| 991 | Config model code Alarm | | | | | | | |
|------------------|--|---------------|--------|--------|--------|--|--|--|
| Description | Model code missing. | | | | | | | |
| Cause | Unexpected behaviour in old software version. | | | | | | | |
| | New software | New software. | | | | | | |
| | New contro | ller. | | | | | | |
| Trouble shooting | Try to correct controller. | , | | | | | | |
| | 2. Go to service menu. Select configuration S05 and F10. Select model code according to Data Decal (placed on the unit). | | | | | | | |
| Criteria | | | | | | | | |
| Controller | | | | | | | | |
| action | Log X Alarm X Alarm light Slow flas | | | | | | | |
| Consequence | | | | | | | | |
| Elimination | | | | | | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | | | | | | | | |

| 994 | Req min S | Alarm | | | | | | | |
|-------------|----------------|--|--------|--------|-------------|------------|--|--|--|
| Description | | The software which has been uploaded to the controller is not compatible with the current hardware version, please use software 0352 rev. 11 or newer. | | | | | | | |
| Cause | Software n | Software not compatible. | | | | | | | |
| Criteria | | | | | | | | | |
| Controller | Update failed. | | | | | | | | |
| action | Log | Χ | Alarm | Х | Alarm light | Slow flash | | | |
| Consequence | Update failed | | | | | | | | |
| Elimination | | | | | | | | | |
| l d-t- | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | | |
| Log data | | | | | | | | | |

| 995 | Control in | | Alarm | | | | | |
|------------------|---|--|--------|--------|--------|--|--|--|
| Description | Controller module must be replaced. | | | | | | | |
| Cause | Unexpected behaviour in old software version. | | | | | | | |
| | Internal me | mory error. | | | | | | |
| Trouble shooting | Try to corre controller. | Try to correct the error by uploading the latest software version to the | | | | | | |
| | 2. Replace con | 2. Replace controller module. | | | | | | |
| | 3. Ensure the controller have the latest software version installed, otherwise update the software if possible and make sure the container ID and configuration is set correctly. | | | | | | | |
| Criteria | Type 0 (parameter 1 in the event log): Wrong dataflash page size. | | | | | | | |
| Controller | | | | | | | | |
| action | Log X Alarm X Alarm light Slow flash | | | | | | | |
| Consequence | Power cycle could lead to non operating controller. Possible corruption of datalog. | | | | | | | |
| Elimination | Replace main controller module. | | | | | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | |
| Log data | | | FPSize | | | | | |

| 998 | Could not detect CA Alarm | | | | | | | | |
|------------------|--|---|--------------------|--------------------|------------|------------|--|--|--|
| Description | Uanble to detect CA. | | | | | | | | |
| Cause | • Unexp | Unexpected behaviour in old software version. | | | | | | | |
| | Broke | Broken communication. | | | | | | | |
| | COMCA cable defective (for some models). | | | | | | | | |
| | Heatir | ng element | defective. | | | | | | |
| | Conta | ctors defe | ctive K10. | | | | | | |
| | Contr | oler modul | e defective. | | | | | | |
| Trouble shooting | Try to correct the error by uploading the latest software version to the controller. | | | | | | | | |
| | 2. Check | connectio | ns according to th | e wiring schematio | | | | | |
| | 3. Resta | 3. Restart the unit. | | | | | | | |
| | 4. See ti | 4. See trouble shooting for AL 653. | | | | | | | |
| Criteria | Could not detect CA module in time (up until 10 min. from start up). | | | | | | | | |
| Controller | Cannot ru | ın CA mod | e. | | | | | | |
| action | Log | Log X Alarm X Alarm light Slow flash | | | | | | | |
| Consequence | Cannot pass CA PTI. | | | | | | | | |
| Elimination | Alarm may be deleted after the test is complete. | | | | | | | | |
| | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | | |
| Log data | | CA mode | CA communication | Idle current sum | Hpump on c | urrent sum | | | |

| 999 | Keypad f | Warning | | | | | | | |
|------------------|--|--|---------------|----------------|----------------|-----|--|--|--|
| Description | Indication of defective keypad or connection. | | | | | | | | |
| Cause | Unexpected behaviour in old software version. | | | | | | | | |
| | Corrosion in the keypad ribbon connector CN8. | | | | | | | | |
| | Defective keypad. | | | | | | | | |
| Trouble shooting | 1. Try to correct the error by uploading the latest software version to the controller. | | | | | | | | |
| | 2. If any acc | ompanied ala | rms are activ | e, handle thes | se first. | | | | |
| | 3. Disconnec | t X80 from th | ne user panel | and unscrew | the 4 fastener | S. | | | |
| | 4. Locate the | side locking | ramp tabs of | the ribbon co | nnector CN8. | | | | |
| | 5. Gently pul | 5. Gently pull the locking ramp tabs away from CN8, keeping both sides parallel. | | | | | | | |
| | 6. Gently remove the ribbon. Using multi-purpose precision lubricant CRC 2-26 (item number 818651A) or similar electro cleaner and lubricator, clean the contact end of the ribbon and the inside surfaces of the CN8 connector. | | | | | | | | |
| | 7. Feed the ribbon back into the CN8 connector until it stops. | | | | | | | | |
| | 8. Push both sides of the locking ramp tabs toward CN8 until locked. | | | | | | | | |
| | 9. Refit the b | 9. Refit the back cover, reconnect X80 and test the user panel keypad operation. | | | | | | | |
| | 10. If alarm is still active, replace the user panel. | | | | | | | | |
| Criteria | A key has been pressed at least 20 times during 1 hour. Corrosion in the keypad ribbon connector CN8. | | | | | | | | |
| Controller | | | | | | | | | |
| action | Log | Х | Alarm | X | Alarm light | Off | | | |
| Consequence | Menus can change automatically. The controller can be power up in battery mode automatically. | | | | | | | | |
| Elimination | Clean the CN8 connection. | | | | | | | | |
| Log data | Parm 1 | Parm 2 | Parm 3 | Parm 4 | Parm 5 | | | | |
| Log data | | | | | | | | | |

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