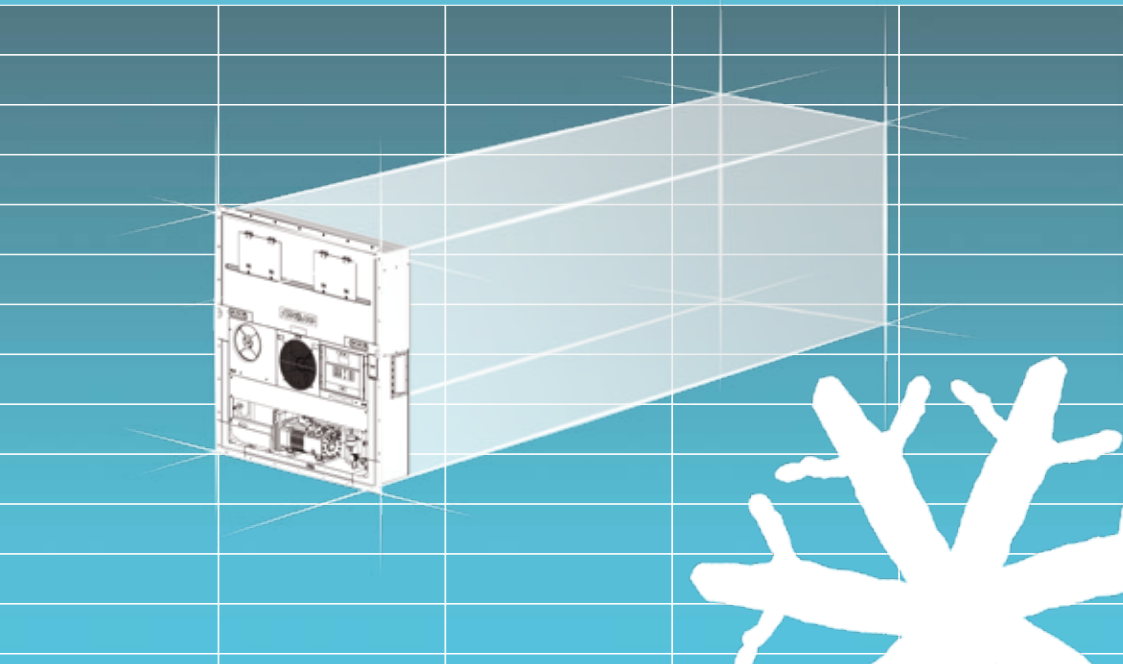
SHORT FORM SERVICE MANUAL - CIM 5 CONTROLLER



Operating temperature

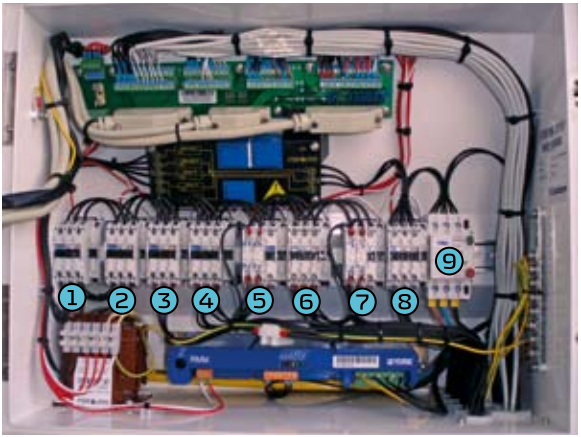
① -30˚C to +30˚C
-22 F to +86 F

Ambient temperature

② -30˚C to +50˚C
-22 F to +122 F

Model: SC-MCI40-WC, SC-MCI40, SCI-40 and SCU-40
Refrigerant: R-134a
Charged with 4.5 kg / 9.9 lb

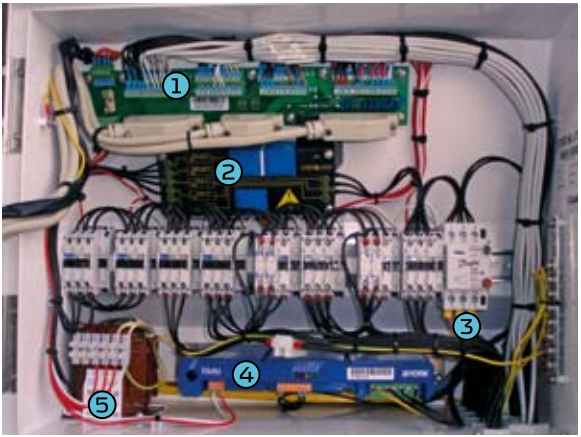
Controller box view



1. Phase direction
2. Phase direction
3. Heat element
4. Cond. fan low
5. Cond. fan high
6. Evap. fan low
7. Evap. fan high
8. FC/Compressor
9. Main circuit breaker

Controller box view

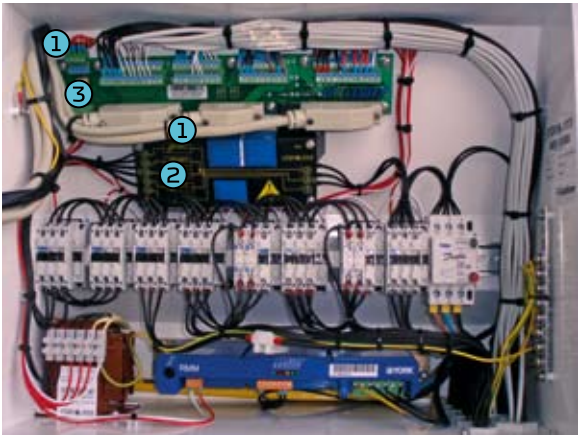
1. Terminal block PCB
2. Power meas
3. Power in
4. Modem (if installed)
5. Transformer



Controller box view

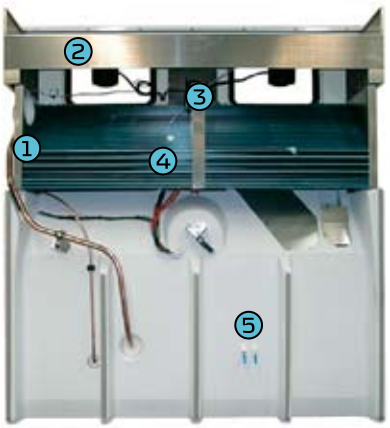
1. Controller connections
2. Fuses: 2x 0.4/0.63 Amp.
   3x 10 Amp.
3. Fuse: 6.3 Amp.

Recommended to raise
F1 and F2 to 0.63 Amp.



Unit rear side view

1. Tsuc sensor
2. Return air sensor
3. Humidity sensor
4. Evaporator sensor
5. Supply air sensors

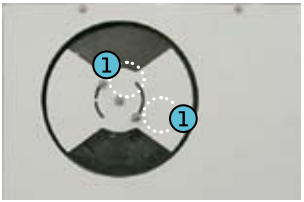


Replacement of Tsuc sensor

1. Remove PVC Cover to access Tsuc sensor
2. Cut cable tie (one pcs). Sensor can then be removed
3. When installing the new sensor, make sure to insert properly in tube

Replacement of air exchange sensor

1. Remove the two finger screws on the butter fly and remove cover plate
2. Remove the fourteen screws to loosen the black cover where the air ex-sensor is mounted
3. Replace the sensor and install all the dismantled parts again

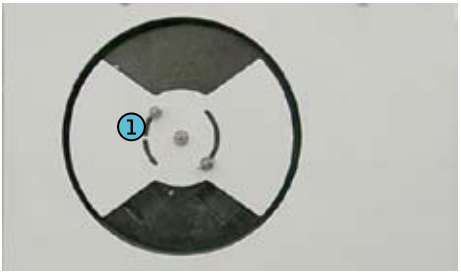


Air exchange sensor calibration

1. Close fresh air butterfly

2. In the service menu SO5; Configuration menu FO6; Press "Enter" twice

   Calibration is completed

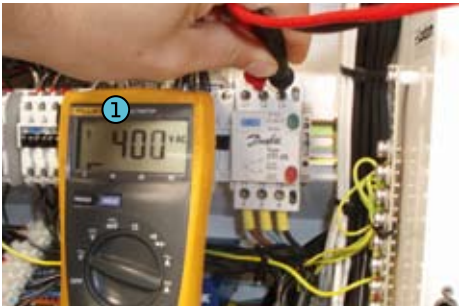


Supply voltage measurements

1. Measure voltage output from the main circuit breaker

2. Measure voltage supplied to the power meas PCB

   Range -50 Hz: 335 – 460 VAC
   Range -60 Hz: 390 – 525 VAC



Supply voltage measurements

1. Measure the voltage output from the power meas PCB to the main circuit

   Range -50 Hz: 335 – 460 VAC
   Range -60 Hz: 390 – 525 VAC

Supply voltage measurements

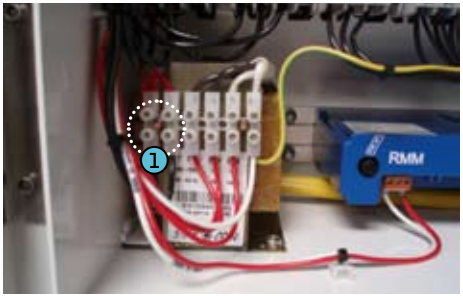
1. Measure the voltage output from the power meas PCB to the transformer

   Range -50 Hz: 335 – 460 VAC
   Range -60 Hz: 390 – 525 VAC

Supply voltage measurements

1. Measure the voltage supplied to the transformer

   Range -50 Hz: 335 – 460 VAC
   Range -60 Hz: 390 – 525 VAC

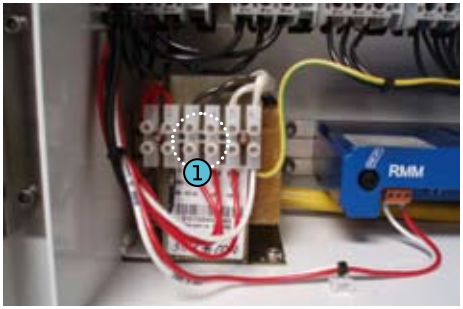


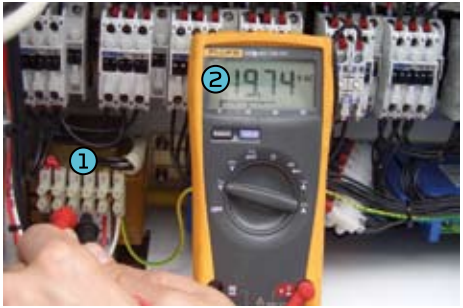
Supply voltage measurements

1. Measure the voltage output of the transformer 20 VAC

2. The output voltage depends on the supply voltage

   Range: 15.3 – 24.3 VAC



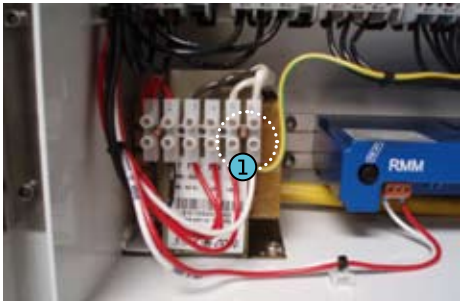


Supply voltage measurements

1. Measure the voltage output from the transformer 24 VAC

2. The output voltage depends on the supply voltage

   Range: 18.9 – 30.0 VAC



Check of 6,3 Amp fuse

Measure voltage from GND to top of fuse

① Fuse is ok
Range 18.9 - 30 VAC

② Fuse is not ok

Check power to ON/OFF PCB

1. Measuring from ground to terminal 4 (see picture) shows that the controller is turned OFF

2. After turning ON, the voltage can be measured

   Range 18.9 – 30.0 VAC

Check power to ON/OFF PCB

1. After turning ON you can read the voltage supplied through the ”ON/OFF” PCB on terminal
1 and 2

   Range 15.3 – 24.3 VAC

Check Frequency Converter

1. Frequency converter MUST always have the black foil mounted for protection of print, components and your safety

WARNING - HIGH VOLTAGE

Check Frequency Converter

1. If deviation between phases is more than 15 VAC:

   Alarm ”523 FC phase loss” or
   Alarm ”516 FC Trip phase loss”
   will be given

   Range -50 Hz: 335 – 460 VAC
   Range -60 Hz: 390 – 525 VAC

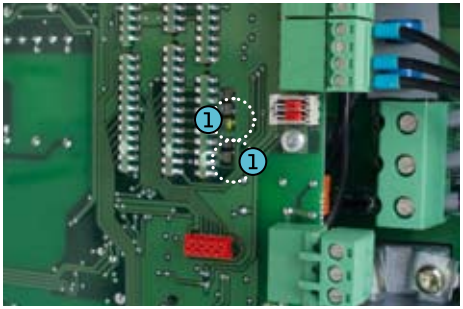
   E.g. due to unstable power supply from the genset

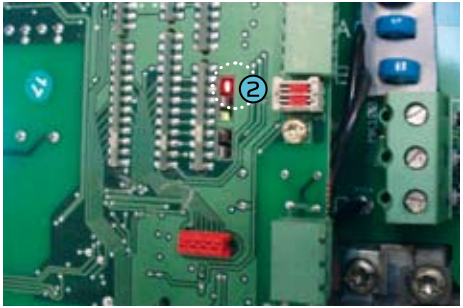
Check Frequency Converter

① A green light indicates FC is ok

A flashing green light indicates FC communicates with the controller

② A red light indicates a problem

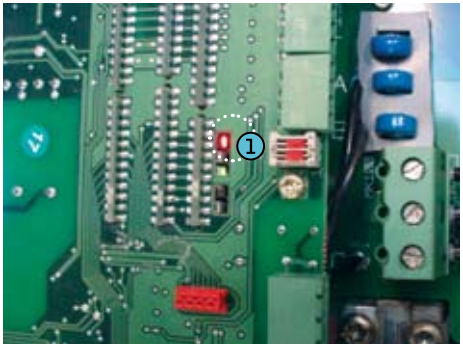




Check Frequency Converter

1. If a red light is ON and alarm 500 ”FC missing” is displayed, the FC has an internal problem and must be replaced

   The ”Warrenty repair report” must be filled out and submitted to Star Cool. The defect part must be properly tagged



Emergency operation

1. Dismount the frequency converter and connect the FC power 1 cable directly to the compressor supply terminals (W, V, U)

   The 3 remaining terminals (Y, X, Z) have to be fitted with a wire-jumper.

Emergency operation

1. Go to Service menu and select “Configuration” (S05)

   In “Configuration” menu scroll down to “FC type” (F03)

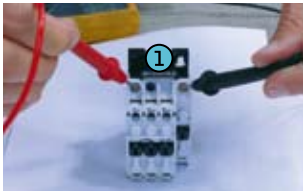
   Then press return and select “NONE”

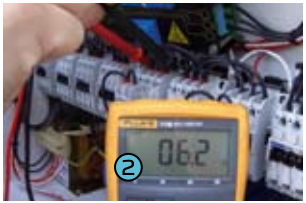
   Note: remember to switch back to “Danfoss” in the “FC type” setting when a new FC is mounted

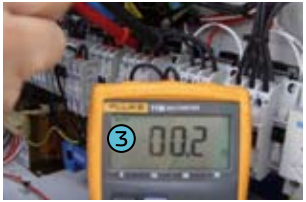
Contactor check

1. Measure Ω between terminal A1 and A2
2. Contactor is ok
3. Contactor is not ok

Deviation in resistance due to change in temperature







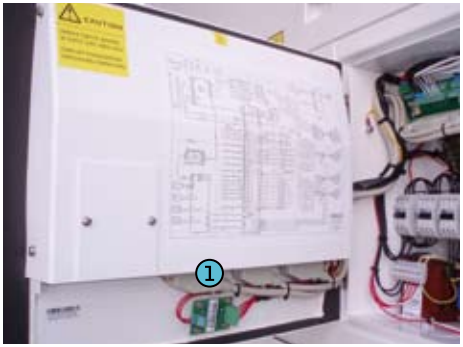
Temperature sensor check

1. Disconnect X1 on the controller door

   All temperature readings must drop to -70°C within approximately 5-10 minutes

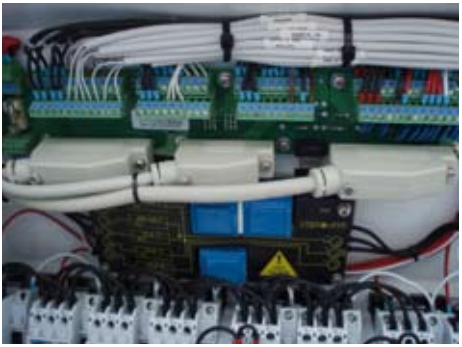
   If one or more temperatures do not drop to -70°C, the controller must be replaced

   The "Warrenty repair report" must be filled out and submitted to Star Cool. The defect part must be properly tagged



Temperature sensor check

Dismount the current defect sensor(s) according to the wiring diagram inside the controller door



Temperature sensor check

1. Measure the voltage between the two terminals on the PCB

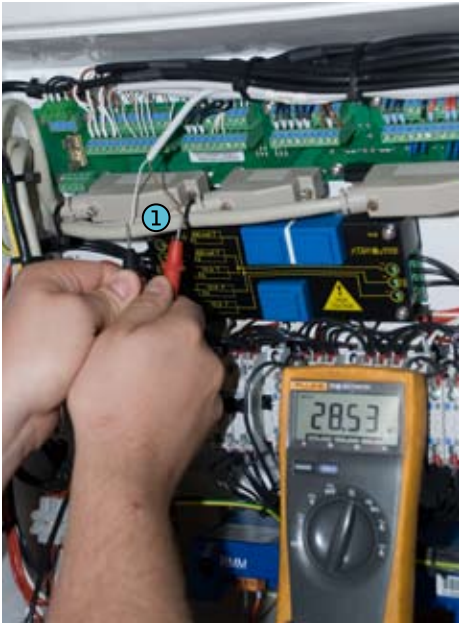
   Correct range: 4.80 > 5.05 VDC

Temperature sensor check

1. Measure the resistance of the disconnected sensor

   Value must be according to the resistance table in the ”Operation and Service manual”

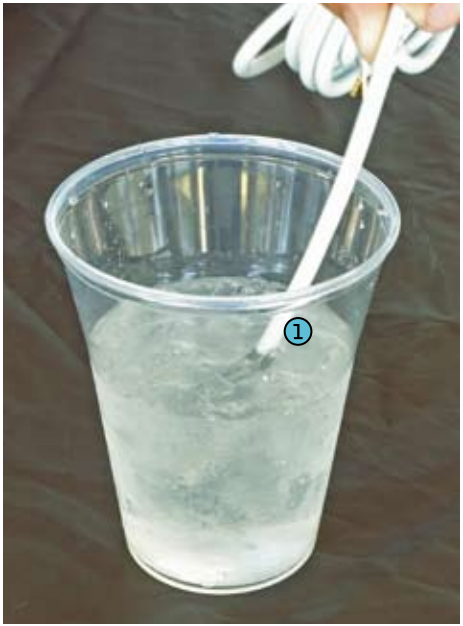
   E.g. 32.65 kΩ = 0˚C /32 F



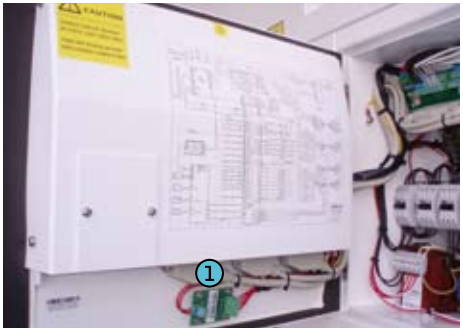
Temperature sensor check

1. Place the bulb in ice-water and stir the sensor in the ice-water

   The displayed temperature in the controller should be: 0˚C +/- 0.5˚C (32 F +/- 1.25 F) otherwise replace the sensor



Pressure transmitter check



1. Disconnect X1 on the controller door

   Psuc (and Peco) value must go to 14.7 or 12.0 Bar

   Pdis value must go to 45.0 or 32.0 Bar

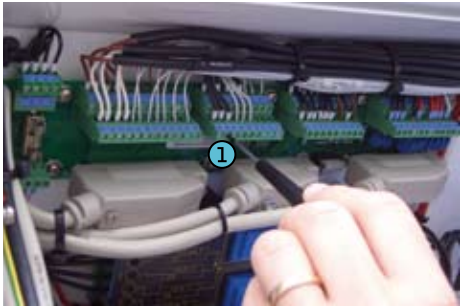
   Values depends on transmitter type configured in configuration menu menu (FO7 and FO8) (NSK, AKS)

   If the above mentioned values are not reached within 5-10 minutes, the controller module must be replaced

   The ”Warrenty repair report” must be filled out and submitted to Star Cool. The defect part must be properly tagged

Pressure transmitter check

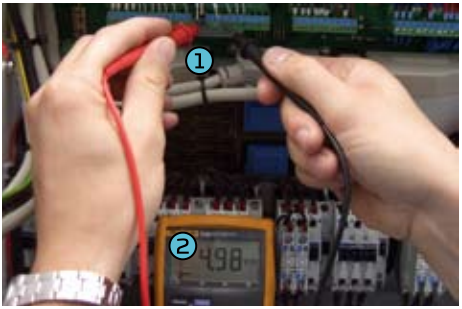
1. Dismount the current defect transmitter according to the wiring diagram inside the controller door

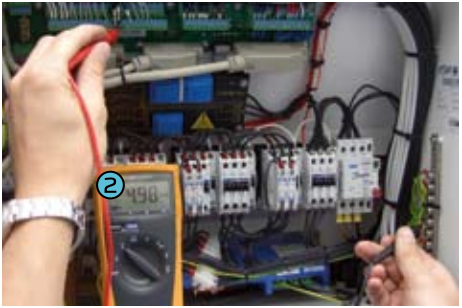


Pressure transmitter check

1. Measure voltage between GND and 5 VDC for the transmitter. (According to the electrical wiring diagram)

2. Correct range: 4.80 > 5.05 VDC



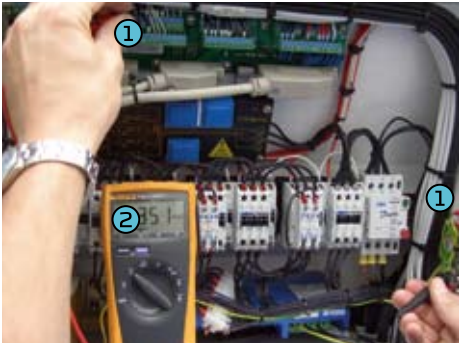


Pressure transmitter check

① Reconnect GND and 5 VDC wires for the transmitter

Measure voltage between signal wire and GND

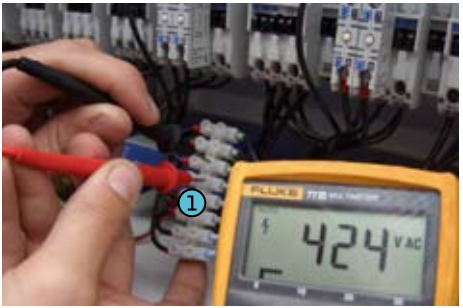
② Check signal output from transmitter. Compare it to gauge reading/value found in relevant table in the "Operational and Service manual".

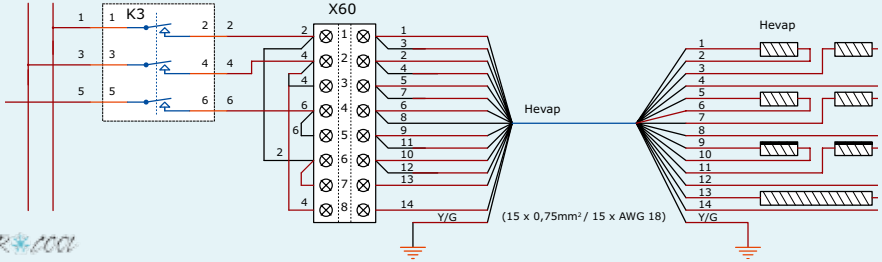


Check of heat elements

1. Measure the voltage
(across each heater pair)

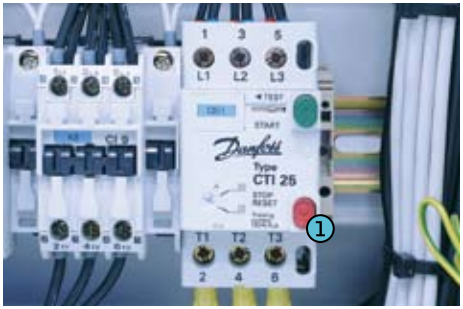
2. Measure the resistance
value of each disconnected heater:
210 Ω (105 Ω as a pair)
Value for tray heater: 400 Ω
Range: +/- 10 Ω





Change of parts

1. Always make sure to turn OFF the main circuit breaker and disconnect the power cable



Notes

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