

Structural Concepts®

DELIVERING FRESH. ALWAYS.®

Trouble Shooting Guide for R290 MI Freezers

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Return pages 1 & 2 to techservice@structuralconcepts.com or complete and submit a copy digitally using the link from the landing page using QR code on the Serial Number label	1-2
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Checklist to be Completed by Service.

For Digital completion and submission – Use QR code on this Serial Number label to access link.
OR use this form and Email completed pages 1 and 2 to techservice@structuralconcepts.com.

Date		Time	
Service Company		Technician Name	
Technician Phone		Or Technician Email	
Store Name: StoreID (if known): Location and Address:		Serial Number (mandatory): Model (mandatory):	
What is the product in the case?	☐ Seafood ☐ Produce ☐ Meat ☐ Other: (Specify here) ☐ Pastries		
Filter condition? Circle One	     1=Clean 2=Mostly clean 3=Due for cleaning 4= Will affect performance 5=Expect failures		
Product Level at Load Line	☐ Above Load Line ☐ Below Load Line	Condenser Coil Condition	☐ Clean or Minimal Dust/Debris ☐ Dust or Debris at a level that restricts air flow
Filter Cutout aligned with the Coil?	☐ Yes ☐ No	Larger Louvers on exhaust side (opposite the coil)?	☐ Yes ☐ No
Intake/ Exhaust Air Path	☐ Intake Restricted ☐ Exhaust Restricted ☐ All Clear	Air Screen Infiltration?	☐ Yes, Store HVAC ☐ Yes, Other Units infiltrating. ☐ Yes, Exterior Door is within 15 feet of the unit ☐ No Infiltration
Describe the Issue(s) / Symptoms			

Checklist to be Completed by Service.

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Are issues corrected? If so, what was the correction? If not corrected, provide further details	☐ Yes, describe below ☐ No Describe Correction:
Unit currently operational?	☐ Yes ☐ No
What mode is the case set to? <i>Note: The Switch position indicates mode.</i>	☐ Produce ☐ Meat & Dairy ☐ Frozen 
Confirm Controller Settings using the App and the Controller <u>To locate Carel Label –</u> For MI48RF, it is on sheet metal flange by the controller. All others on the left hand side by the box.	Do all case settings match? ☐ Yes ☐ No If No, list mismatches below: Defaults shown in () ☐ ccf (2) : ☐ St1 (18) : ☐ St2 (15) : ☐ St3 (-35) : ☐ rd (15) : ☐ c2 (5) : ☐ c3 (5) : ☐ di (6) : ☐ dt1 (41) : ☐ dP1 (60) : ☐ dd (2) : ☐ dHG (10) : ☐ d0 (1) :
Check Power Supply	Is the unit on its own circuit breaker? ☐ Yes ☐ No What is the required circuit overcurrent protection listed on the Unit's serial number label? Amps _____ Does the breaker meet this requirement? ☐ Yes ☐ No What is the Source Wire Gauge (AWG)? _____ Does it meet circuit breaker requirements? ☐ Yes ☐ No Verify that Winding is 3.8 ohms Nominal at 77 ° F: ☐ T1 ☐ T2 ☐ T3

MI R290 Freezer - Technical Field Troubleshooting Guide

Store Leadership Checklist:

Problem:	If unit is not cooling or that product is not staying frozen, check the following:
Requirements:	<i>Product must be:</i> ☐ Pre-chilled (or frozen if applicable) before placing into the case. ☐ Below Load Line <i>Environment:</i> ☐ No Air Blowing into the case from HVAC vents, doors, windows, or other cases. ☐ Verify case placement adheres to 5-10-15 Rule as outlined in our User Manual. Manual can be found by using the QR code on the Serial Number Label or in the user manual that is available on our website: https://structuralconcepts.com/resources ☐ Filters visible outside the kick are clean and clear of dust or debris. ☐ Confirm there are no obstructions to the airflow intakes and exhaust. There should be no external items including product or packaging obstructing airflow. Refrigeration Department / Service Provider: ☐ Confirm cutouts on the panel are in line with the condenser coils. ☐ Check that coils are not obstructed with dust or any other debris. ☐ Verify Switch setting to confirm the product matches the setting. Controller: Controller Panel should show Temperature value. <i>Note: Temp displayed is not Product Temp.</i> If Controller Error codes are shown (see below), Contact Service: Possible Error Codes: ☐ E1/E2 – Probes are Faulty or Disconnected ☐ LP – High or Low Pressure Fault ☐ H1 - High Temperature Alarm ☐ No Code & No Temp Showing



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Service Department/Provider to complete:

Troubleshooting																									
Use App and Controller	Confirm the controller configuration matches Figure 1. ▪ St 1: Produce ▪ St 2: Meat & Dairy ▪ St 3: Frozen Figure 1: Configuration Comparison <table border="1"> <thead> <tr> <th>Parameter</th> <th>Current Set Points (Critical)</th> <th>Default Values (disregard)</th> </tr> </thead> <tbody> <tr> <td>dd</td> <td>2 min</td> <td>0 min</td> </tr> <tr> <td>r1</td> <td>-40.0 °F</td> <td>-58.0 °F</td> </tr> <tr> <td>r2</td> <td>22.0 °F</td> <td>122.0 °F</td> </tr> <tr> <td>St</td> <td>-35.0 °F</td> <td>20.0 °F</td> </tr> <tr> <td>St1</td> <td>18.0 °F</td> <td>25.0 °F</td> </tr> <tr> <td>St2</td> <td>15.0 °F</td> <td>20.0 °F</td> </tr> <tr> <td>St3</td> <td>-35.0 °F</td> <td>-25.0 °F</td> </tr> </tbody> </table> Left (grey) are set points, Right (blue) are default values. Current Set Points (Critical) Check These Default Values (disregard) <i>St1, St2, and St3 values must match the product switch settings shown.</i> Does the Controller Configuration in the App match Figure 1 above and the Carel label in the case? ☐ YES ☐ NO <i>To locate Carel Label – For MI48RF, it is on sheet metal flange by the controller. All others on the left hand side by the box.</i>	Parameter	Current Set Points (Critical)	Default Values (disregard)	dd	2 min	0 min	r1	-40.0 °F	-58.0 °F	r2	22.0 °F	122.0 °F	St	-35.0 °F	20.0 °F	St1	18.0 °F	25.0 °F	St2	15.0 °F	20.0 °F	St3	-35.0 °F	-25.0 °F
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	Confirm Display on the Controller Panel Controller Panel should show Temperature value. Possible Codes: ☐ E1/E2 – Probes are Faulty or Disconnected ☐ LP – High- or Low-Pressure Fault ☐ H1 – High Temperature Alarm ☐ No Code & No Temp Showing																								

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Error Code Explanation

- LP: Configuration error
- E1/E2: Air(E1) or Defrost(E2) Probes – damaged wire, or a non-functioning probe/ connection
- H1: High temperature, indicates system is too hot

Trouble-Shooting

Sight Glass –

OK:

- ☐ Bubbling and Shows Signs of Refrigerant Present.
- ☐ Confirm Indicator is Green in Color
- ☐ **Not OK:** No visual signs of refrigerant in sight glass.

WARNING - Piercing the system is **to only be used as a last resort**. Exhaust all other troubleshooting in this guide before considering this as a step.

Inverter Issues

Inverter Flashing Lights

LED Status	Period	Color	Description
1 Flash	30 seconds	Green	Normal operation
2 Flashes	5 seconds	Green	Communication problem
3 Flashes	5 seconds	Red	Inverter problem
4 Flashes	5 seconds	Orange	Compressor problem
No Flash	-	-	No input power / Damaged inverter

- 4 Flashing lights – Replace CDU
- 3 Flashing Lights – Check connection between inverter and cdu. If a good connection, then Replace Inverter
- No Flashes:
 - Check that there is power to the Inverter
 - If power to the inverter and **no** light/**no** compressor function, replace CDU
- 2 Flashes: Connection Problem
- 1 Flash - Good

Inverter/Compressor (CDU Replacement)

- **Charge Amount** - When replacing the CDU, **charge with the amount of refrigerant listed on the serial number label**, not to the level of a full sight glass.

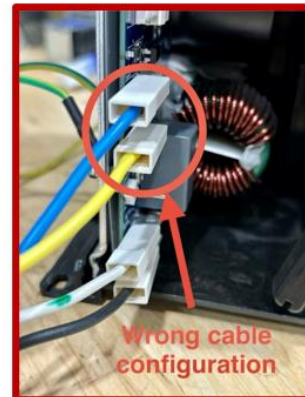
Wiring - If the compressor does not turn on after the Inverter or CDU replacement, check Blue/Yellow wires on the inverter – They could be configured incorrectly.

Yellow wire should be above Blue wire. See below.

Correct – Green/Left Side



Wrong - Red/Right Side



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Coil Icing

Check the following:

- ☐ Product Level below Load Limit Line?
- ☐ No Air Infiltration
- ☐ Controller Defrost (df) setting is at 1
- ☐ Solenoid Functioning

Defrost Bypass should be hot to the touch when in defrost mode.

Confirm Defrost Bypass (the non-insulated line from Solenoid) is at ambient temperature during normal run conditions. If it is hot to touch, the valve is open and is causing warm refrigerant to get to the evaporator coil.

WARNING - Piercing the System

Piercing the system is to only be used as a last resort. Exhaust all other troubleshooting in this guide before considering this as a step.

Not Cooling?

- Is the Compressor Running? If NO, see Inverter/Compressor Section.
- Is the Evaporator Coil Iced Over or Not clean after Defrost?
If YES, see Coil Icing Up Section.
If NO, Go to Inverter/Compressor Issues Section.
- Hot Gas bypass Solenoid
Confirm that Defrost Bypass (Non-insulated line from Solenoid) is at ambient temperature during normal run conditions. If it is hot to touch, the valve is open and is causing warm refrigerant to get to the evaporator coil.

Still having issues? - Other Items to Check

- Controller Error Codes
- Filter Condition should be Level 1 or Level 2 as shown below.



1=Clean



2=Mostly clean



3=Due for
cleaning



4= Will affect
performance



5=Expect failures

- Condenser coil condition
- Product Above Load Limit line
- Air infiltration (HVAC, other cases)
- Are Evaporator & Condenser Fans Functioning? Evaporator Fan Speed can be verified with a tachometer.

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- Check Frost Pattern on:
 - TXV
 - Evaporator Coil
 - Accumulator
 - **OK** – No Frost – Should be cold to touch.
 - **OK if no flood back** - Limited Frost (see photo below)



- **Not OK** - Heavy Frost – No Good, Close TXV

Product is Freezing or Getting too Cold

- What type of product is getting too cold?
- What are the discharge air temperatures in question?
- What are the ambient conditions of the case?
 - Is there High traffic?
 - Are there High air velocities?
- Confirm set Points (ST1, ST2, & ST3) as outlined on page 5.
- Check the Carel App to confirm the DF and DA Probes are reading within range.