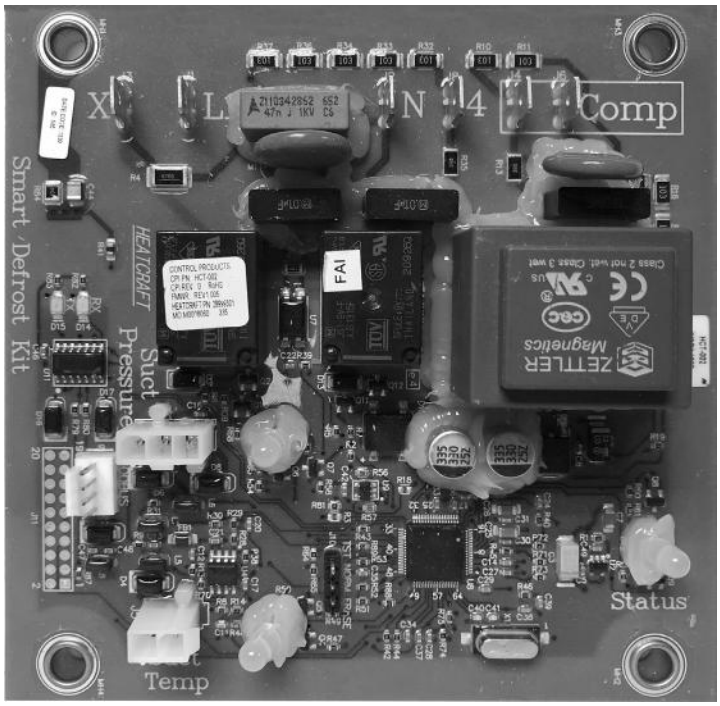
HEATCRAFT™ Worldwide Refrigeration

Smart Defrost Kit

H-IM-SDK | March 2019 | Part No. 25004001

Installation and Operation Manual



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Warranty and Safety Information

General Safety Information

1. Installation and maintenance to be performed only by qualified personnel who are familiar with this type of equipment.
2. Some units are pressurized with dry air or inert gas. All units must be evacuated before charging the system with refrigerant.
3. Make sure that all field wiring conforms to the requirements of the equipment and all applicable national and local codes.
4. Avoid contact with sharp edges and coil surfaces. They are a potential injury hazard.
5. Make sure all power sources are disconnected before any service work is done on units.

WARNING: Refrigerant can be harmful if it is inhaled. Refrigerant must be used and recovered responsibly.
Failure to follow this warning may result in personal injury or death.

Inspection

Responsibility should be assigned to a dependable individual at the job site to receive material. Each shipment should be carefully checked against the bill of lading. The shipping receipt should not be signed until all items listed on the bill of lading have been accounted. Check carefully for concealed damage. Any shortage or damages should be reported to the delivering carrier. Damaged material becomes the delivering carrier's responsibility, and should not be returned to the manufacturer unless prior approval is given to do so. When uncrating, care should be taken to prevent damage. Heavy equipment should be left on its shipping base until it has been moved to the final location. Check the serial tag information with invoice. Report any discrepancies to your Heatcraft Refrigeration Products Sales Representative.

Warranty Statement

Seller warrants to its direct purchasers that products, including Service Parts, manufactured by SELLER shall be of a merchantable quality, free of defects in material or workmanship, under normal use and service for a period of one (1) year from date of original installation, or eighteen (18) months from date of shipment by SELLER, whichever first occurs. Any product covered by this order found to Seller's satisfaction to be defective upon examination at Seller's factory will at SELLER's option, be repaired or replaced and returned to Buyer via lowest common carrier, or SELLER may at its option grant Buyer a credit for the purchase price of the defective article. Upon return of a defective product to SELLER's plant, freight prepaid, by Buyer, correction of such defect by repair or replacement, and return freight via lowest common carrier, shall constitute full performance by SELLER of its obligations hereunder.

SELLER shall have no liability for expenses incurred for repairs made by Buyer except by prior, written authorization. Every claim on account of breach of warranty shall be made to SELLER in writing within the warranty period specified above – otherwise such claim shall be deemed waived. Seller shall have no warranty obligation whatsoever if its products have been subjected to alteration, misuse, negligence, free chemicals in system, corrosive atmosphere, accident, or if operation is contrary to SELLER's or manufacturer's recommendations, or if the serial number has been altered, defaced, or removed.

Seller makes no express warranties except as noted above. All implied warranties are limited to the duration of the Express Warranty. Liability for incidental and consequential damages is excluded.

The forgoing is in lieu of all other warranties, express or implied, notwithstanding the provisions of the uniform commercial code, the Magnuson-Moss Warranty - Federal Trade Commission Improvement Act, or any other statutory or common law, federal or state.

SELLER makes no warranty, express or implied, of fitness for any particular purpose, or of any nature whatsoever, with respect to products manufactures or sold by seller hereunder, except as specifically set forth above and on the face hereof. It is expressly understood and agreed that SELLER shall not be liable to buyer, or any customer of buyer, for direct or indirect, special, incidental, consequential or penal damages, or for any expenses incurred by reason of the use or misuse by buyer or third parties of said products. To the extent said products may be considered "consumer products," As defined in Sec. 101 of the Magnuson-Moss Warranty - Federal Trade Commission Improvement Act, SELLER makes no warranty of any kind, express or implied, to "consumers," except as specifically set forth above and on the face hereof.

The following conditions should be adhered to when installing this unit to maintain the manufacturers warranty:

(a) System piping must be in accordance with good refrigeration practices.

(b) Inert gas must be charged into the piping during brazing.

(c) The power supply to the unit must meet the following conditions:
   A. Three phase voltages must be +/- 10% of nameplate ratings. Single phase must be within +10% or -5% of nameplate ratings.
   B. Phase imbalance cannot exceed 2%.

(d) All control and safety switch circuits must be properly connected according to the wiring diagram.

(e) The factory installed wiring and piping must not be changed without written factory approval.

(f) All equipment is installed in accordance with Heatcraft Refrigeration Products specified minimum clearances.

System Requirements

Smart Defrost Kit (SDK) Summary

The condensing unit control panel contains the relays, contactors, time delay and a terminal block which is appropriately marked to match the low voltage wiring connections. A sensor for outdoor air temperature measurement is installed on the condensing unit.

IMPORTANT NOTE: On multiple evaporators, since a transformer is in each evaporator, the voltage tap must be set on each evaporator.

System Requirements

- Refrigeration Systems with electric defrost heaters
- Defrost Control Voltage must be 230VAC, 50Hz or 60Hz
- System must have electro-mechanical time clock that contains a contact closure reset input for defrost termination

Technical Information

- Dimensions
- Operational Temperature Range: -40F to +130F
- Humidity: 0-95% relative humidity non-condensing over operational range
- Operational Voltage Range: 187-260 VAC
- Frequency: 50/60Hz
- UL Recognized

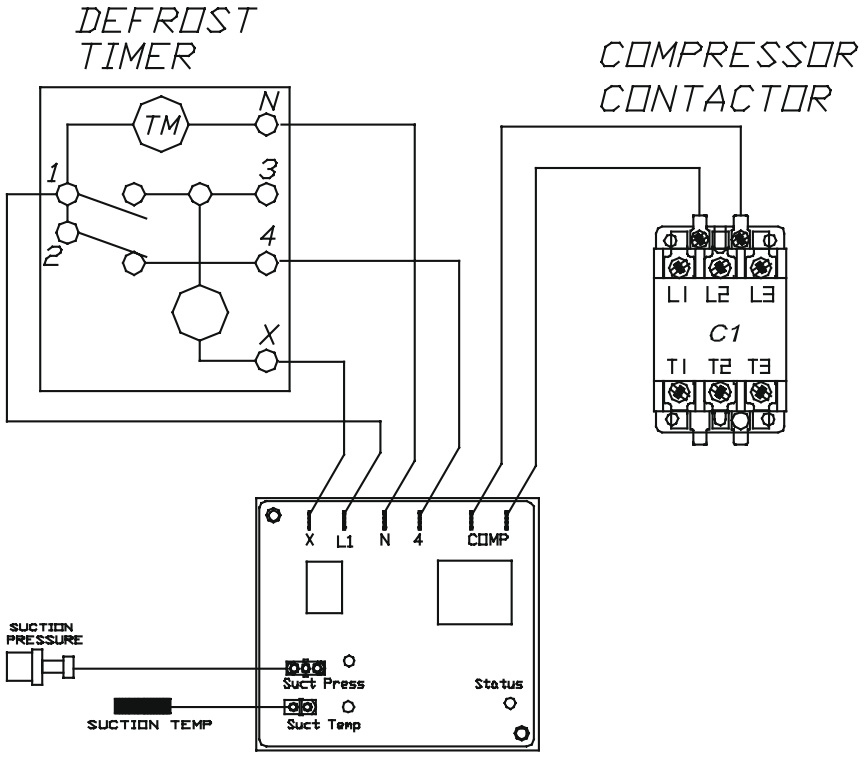
Field Installation (If not factory installed)

1. Turn off power to the refrigeration system
2. Mount the SDK control module to the condensing unit electrical panel
3. Connect four wires to the defrost timer and two wires to the compressor contactor (6 wires in total)
4. Install the pressure transducer
5. Install the temperature sensor onto the side of the suction line and insulate
6. Verify wiring: Turn on power to the unit without the temperature or pressure sensors connected
   a. Examine the STATUS LED indicator: if the STATUS LED color matches the system mode correctly, the wiring is correct.
      i. Blinking Red: System is in Defrost Mode
      ii. Blinking Green: System is in Cooling Mode
      iii. Blinking Yellow: System is Off
7. Activate the SDK: Turn off power, connect the suction pressure and suction temperature sensors to the module, turn power on. STATUS LED will blink Green-Yellow

Wiring Diagram

SDK Terminals are as follows:

-X: Termination
-L1: 230V Power
-N: 230V Power
-4: Evap Fan
-COMP: Compressor Contactor Coil



System Operation

1. Following power-up, the STATUS LED will alternate colors between Green and Yellow at a 0.5 second rate to indicate the SDK is synchronizing itself with the refrigeration system. This pattern is maintained until a termination of defrost is observed. The LED color then changes to yellow.
2. At this time, the control enters 'Learning Mode'. Learning mode lasts for 10 defrost cycles after the initial power-up.
3. After Learning mode has completed, 'Normal Mode' begins and persists until the module loses power or an error has occurred. During Normal Mode operation, the Status LED will be Green if the last decision was to skip defrost and the Status LED will be Yellow if the last decision was not to skip defrost.
4. Following a loss of power after Normal Mode has been achieved, the module returns to Learning Mode until it detects the defrost cycle timing sequence and is able to resynchronize.

System Troubleshooting

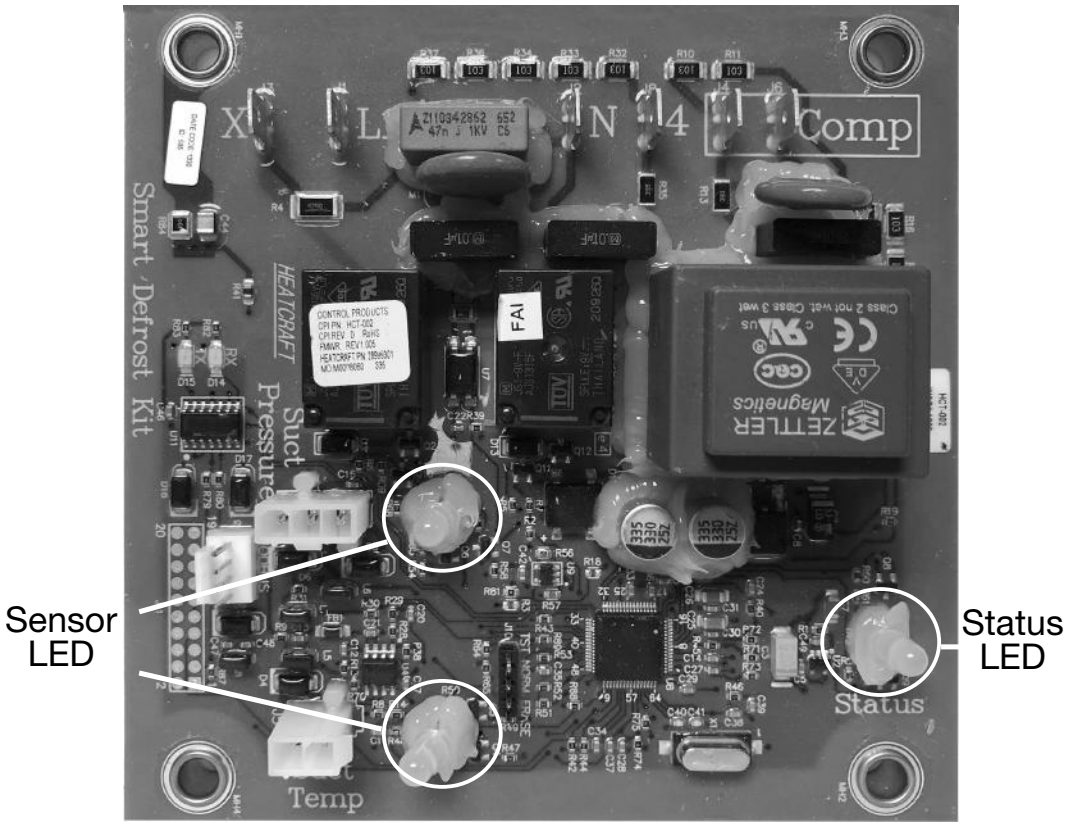
- The SENSOR LEDs will be GREEN if the sensor is functioning properly and RED if the sensors are not functioning properly.
  - If the sensor LED color is RED, check the connection to make sure that it is seated properly on the control module. Also check the wire harness connection at the pressure transducer.
  - If the connections are in place, the sensor needs to be replaced.
- STATUS LED Indicator Light:

  GREEN = No defrost was necessary, defrost was skipped

  YELLOW = Defrost was necessary, defrost occurred

  RED = Control Module Failure. You need to replace the module.
  When the STATUS LED is RED, the skip defrost output will not activate.

NOTE: The SDK Module will continue to operate without one of the sensors attached, but the results will be less than optimal.



Service Parts List

Smart Defrost Replacement Kit	59819901
Smart Defrost Controller	28999301
SDK Mount	33699701
Pressure Transducer	28911202
Pressure Transducer Harness	22515102
Temperature Sensor	28900311

Notes:

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Customer Service and Technical Support

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