HUSSMANN®

Kit P/N 3014447_B

February 2018

OPTIONAL

ANTI-CONDENSATE HEATER

CONTROLLER

FOR REACH-IN GLASS DOORS

MANUAL- KIT INSTALLATION CONDENSATE HEATER

Spanish 3014926
French 3014927

Table of Contents

REVISION HISTORY

REVISION B
1. new installation drawings and troubleshooting guide.

REVISION A
1. Original Issue

⚠ CAUTION

Excessive ambient conditions may cause condensation and therefore sweating of doors. Facility operators should monitor doors and floor conditions to ensure safety of persons.

IMPORTANT
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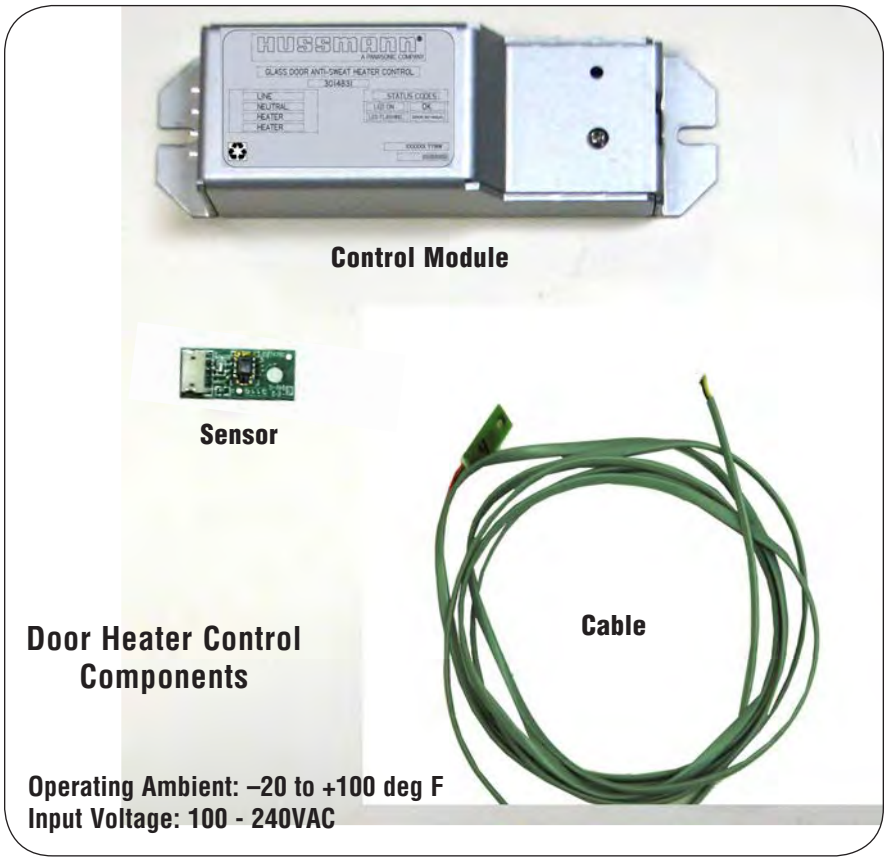
GENERAL INFORMATION

This control is designed for conservation of energy by reducing power consumption of glass door frame assemblies. This is achieved by controlling the average power applied to the door glass anti-condensate heaters. Power to the heaters is cycled in proportion to the sensed dew point relative to the surface temperature of the door glass. Required heat load is anticipated thus ensuring no condensation forms on the door.

The control consists of three components: a control module located in the raceway, a combination temperature and percent relative humidity sensor mounted in the door mullion and an interconnecting cable. For retrofit installations, sensor placement and a required hole to be drilled in the mullion will be critical to success. For OEM installations, all three components are factory installed so that the required hole in the mullion and sensor placement are not a concern of the installer. As this device is integral to the frame assembly, there is no esthetic impact to the shopper.



The glass anti-condensate heaters are under the control of a microprocessor in the control module. The processor continuously monitors the environment surrounding the glass surface and adjusts the % of 'ON' time to the heaters accordingly. This eliminates the need for operator adjustment and guarantees maximum energy savings at all possible room ambient conditions. The control algorithm detects product loading as well as peak shopping and adjusts applied heat to optimize clearing time.

The control switches a maximum load of 5 amps. This allows the control to be applied to one to five door frame assemblies. Each frame assembly will be equipped with its own control/sensor.

1. Initial power up (BOOT sequence)

a. Initialization of Controller Inputs & Outputs

b. Illumination of green LED indicator (ON)

c. Output remains ON for 10 seconds during BOOT sequence.

d. Regular SSR operation will pulse width modulate (PWM) according to the value specified in the pre-calibrated RH & temperature table (10 second interval modulation).

2. Upon completion of BOOT sequence

a. The LED indicator will remain ON unless an error occurs in the system

b. The Controller will initialize the I2C communication Protocol with the sensor unit

c. Read the present RH & Temperature value from the sensor unit and store in memory

d. Set the solid state relay (SSR) output based on the most recent values stored in memory.

3. Normal Operation

a. Read the present RH & Temperature value from the sensor unit and store in memory

b. Evaluate last 4 readings for potential error modes

c. Set the Solid State Relay (SSR) output per the look up table

d. If an error occurs, activate the LED indication per the chart below

e. Repeat normal operation every 10 seconds

f. If readings are OK – the LED indicator will remain ON

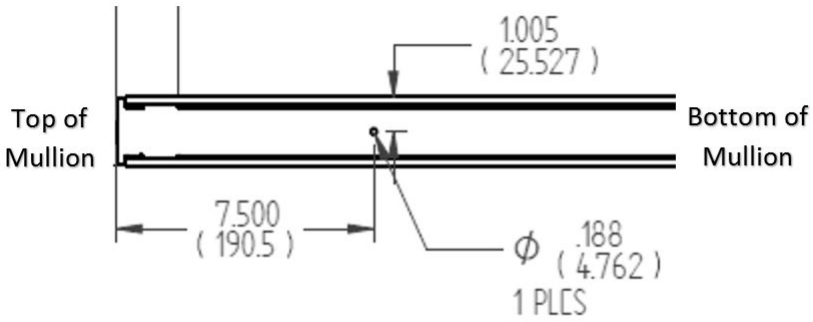
4. Error mode description

Sr No	Type of Error	Error Description	LED Flash Sequence / Indication
1	Erratic Error	A sudden 20% deviation from last sensor reading for 8 minutes	3 times (OFF & ON) for a duration of **½ Second** (Fast blink). Wait for 2 minutes, 3 times (OFF & ON) Continues.
2	Static Error	Unchanged values for temperature and humidity for 20 consecutive cycles	2 times (OFF & ON) for a duration of **½ Second** (Fast blink). Wait for 2 Seconds, 2 Times (OFF & ON) Continues.
3	Communication Error	If RH and Temperature readings are out of range for each 10 second execution cycle	1 Time (OFF & ON) for a duration of **½ Second** (Fast blink). Wait for 2 Seconds, 1 Time OFF and ON Continues.

NOTE:
A flashing LED could indicate such conditions as a door stuck open or a sensor disconnect, etc. A flashing LED does not necessarily signify that there is a problem with the operation of the controller or sensor.

RETROFIT INSTALLATION

1. Remove the mullion cover between the pair of doors where the sensor is to be located. If OEM, a pre-drilled hole should be visible. If not or if this is retrofit, drill a 3/16" hole, centered from side to side, and 7.5" from the top of the mullion.



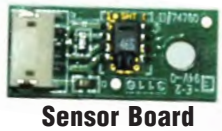
Mullion Cover Hole Size & Placement

Harness

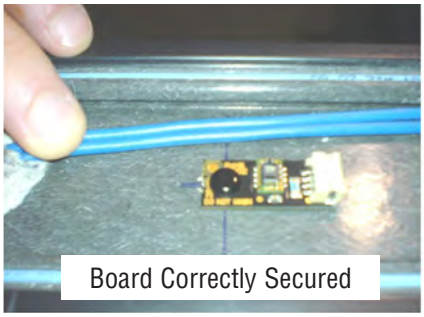
3. The harness has connectors at each end. Push one end of the harness onto the sensor board.

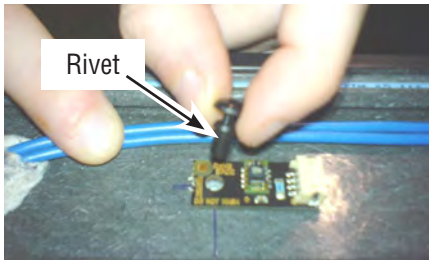
Sensor Board

2. The sensor board has a hole in one end. A plastic rivet holds the sensor board securely. The sensor is located 7" from the top of the wireway, on the mullion to the left of the right door, and should line up with the hole in the wireway cover. Drill a .140" to .145" hole for the plastic rivet

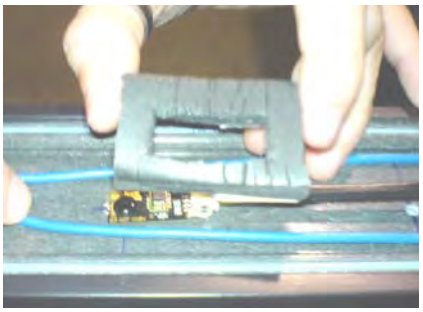


Sensor Board



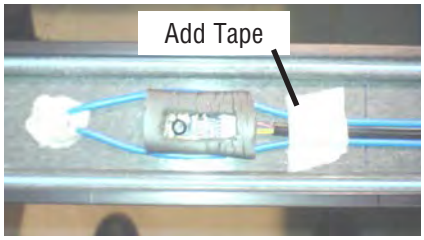


4. Position the sensor board gasket around the board and over the harness as shown. Route lamp wiring around the gasket.

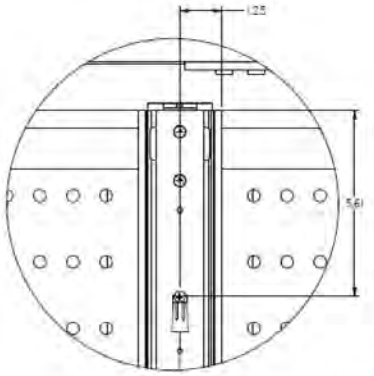


Place Gasket

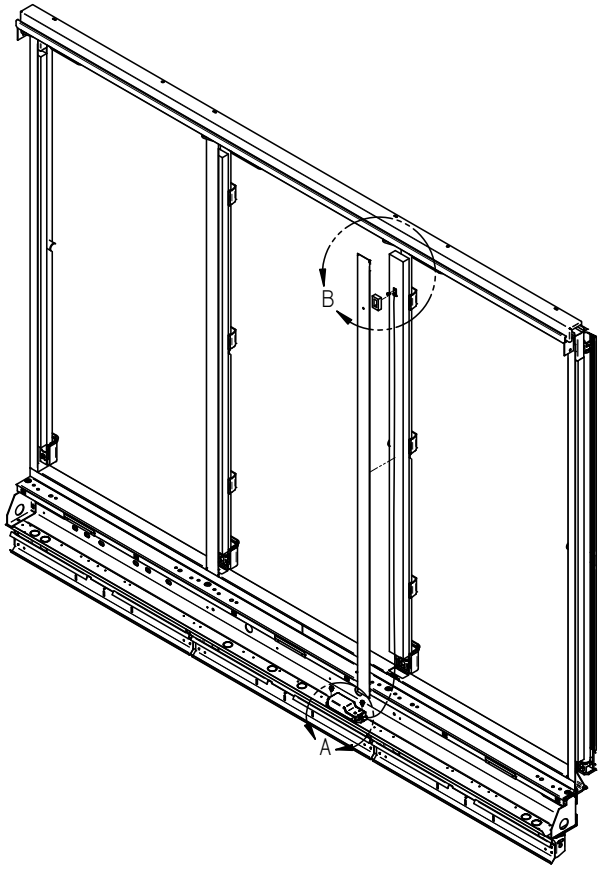
5. Important: Verify the sensor board perimeter is completely sealed. Use electrical tape to hold wiring in position at the center of the mullion. This will avoid damage when replacing the cover.

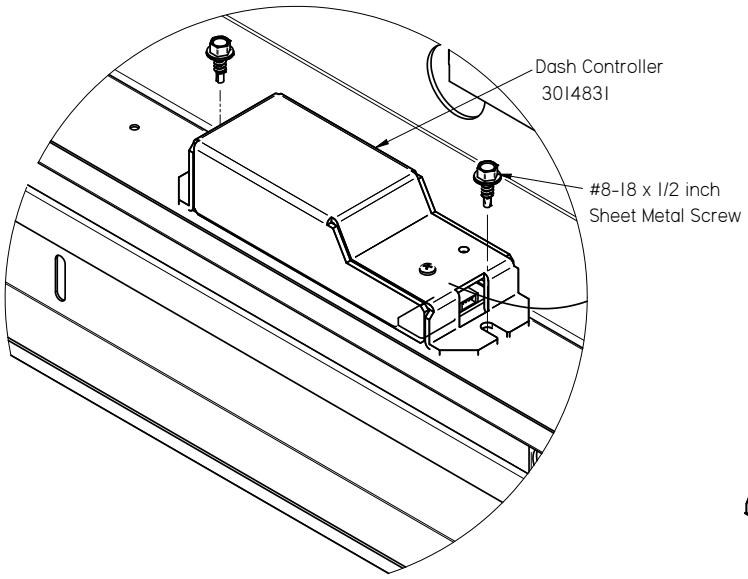


SENSOR LOCATION DRAWINGS SHOWN ON NEXT 3 PAGE.

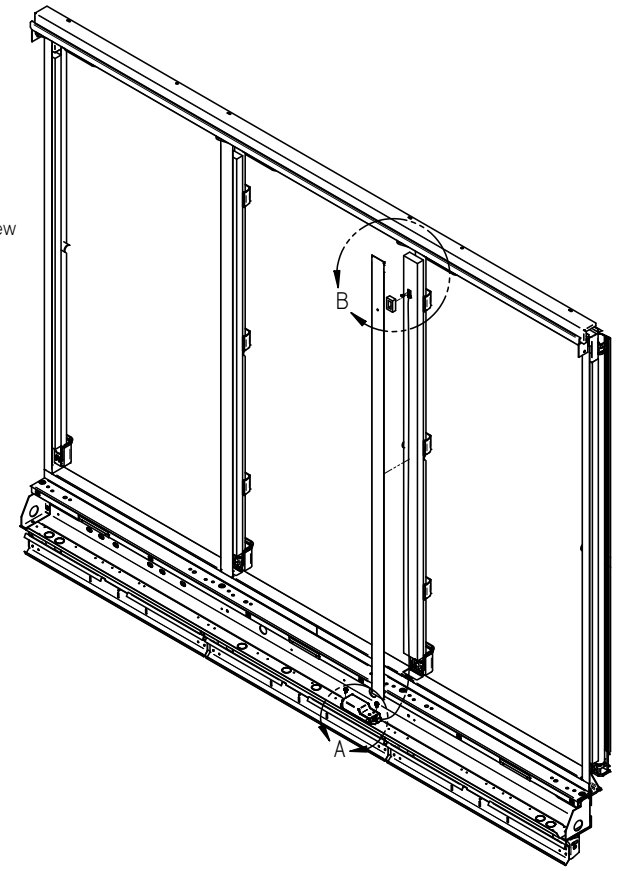


Sensor Location





DETAIL A



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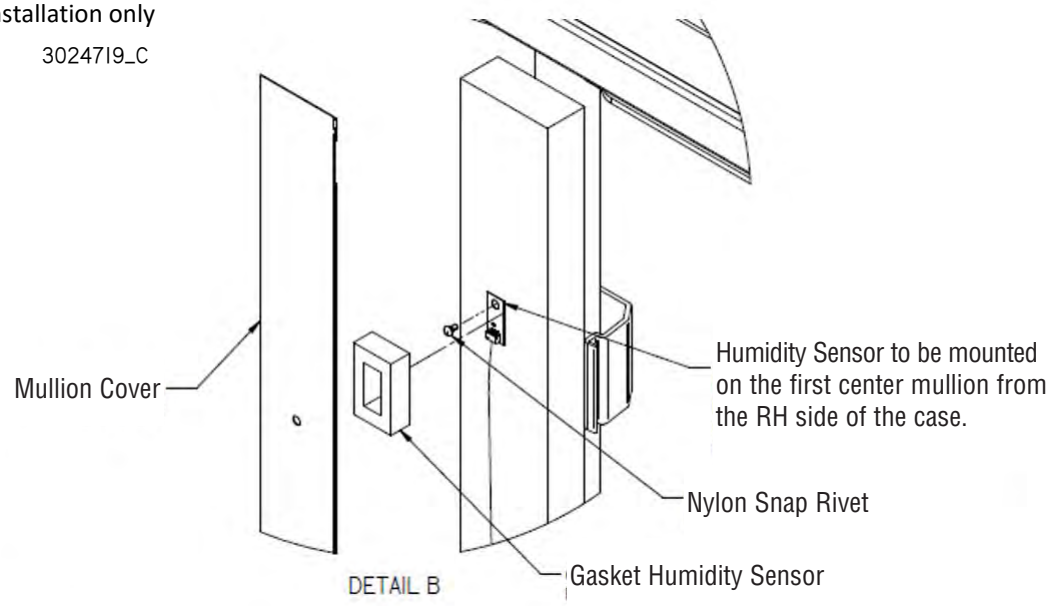
MULLION COVERS		
CASE	**COLOR**	**P/N**
RL/RLN/RLNS	BLACK	0306012
	GRAY	0306013
	PEARL GRAY	3024875
RLTM	BLACK	0306014
	GRAY	0306015

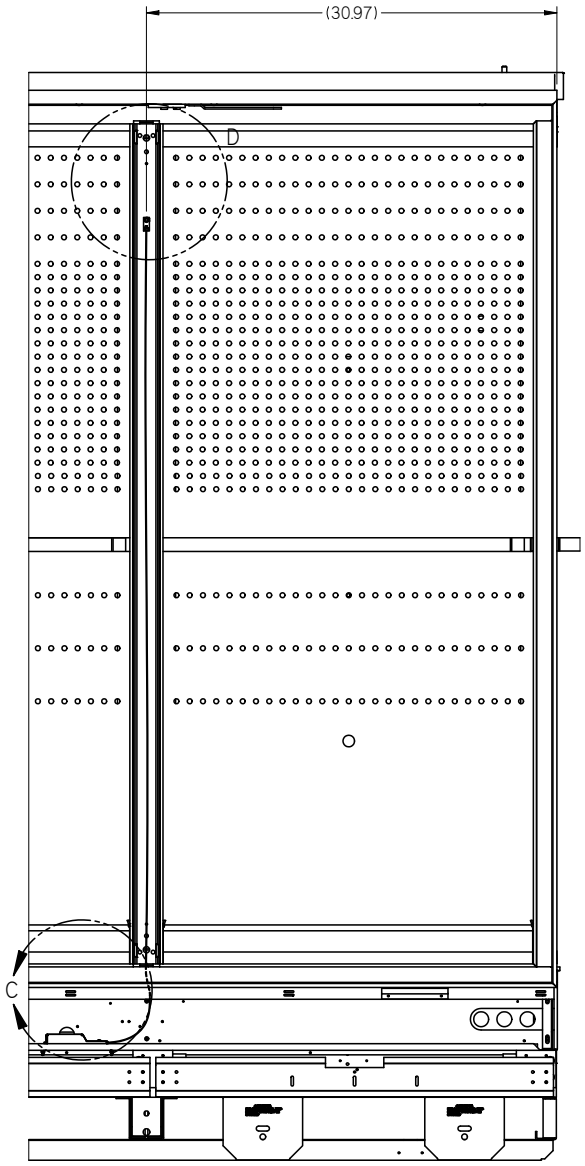
Mullion Covers for OEM Installation only

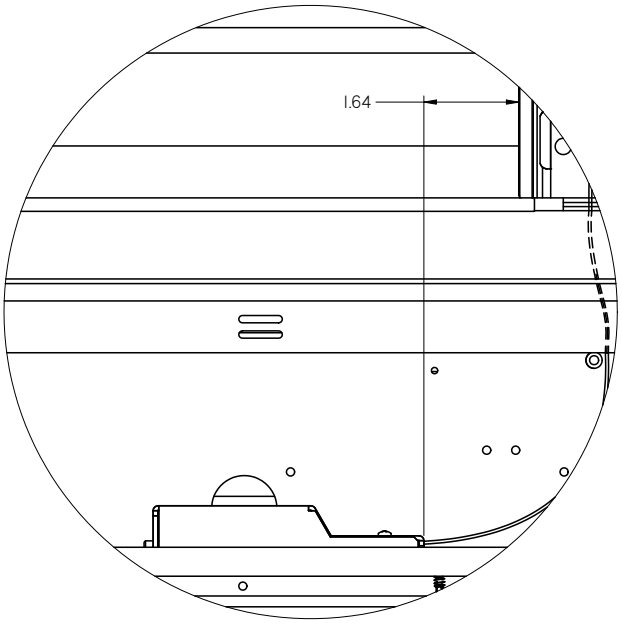
3024719_C



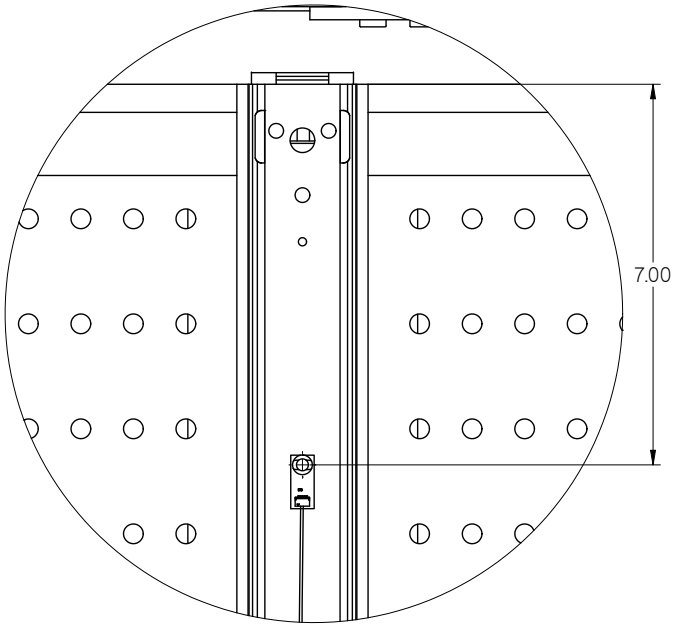
DETAIL B

RL / RLN





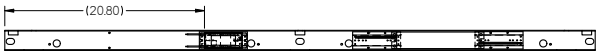
DETAIL C
RL/RLN CONTROLLER MOUNTED
IN RACEWAY UNDER THE DOOR FRAME



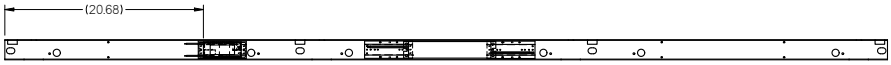
DETAIL D
SENSOR POSITION RLN/RLN CASES

RLNS / RLTM

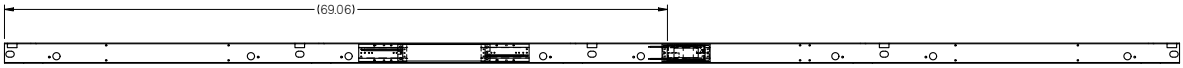
MOUNT RLNS/RLTM CONTROLLERS IN
RACEWAY TRAY ON TOP OF THE DOOR FRAME



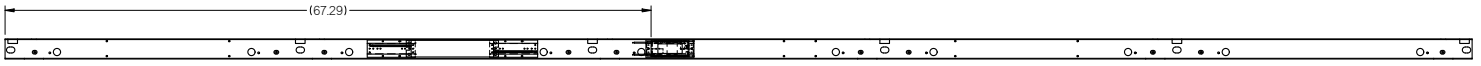
2 DOOR RACEWAY (TOP VIEW)



3 DOOR RACEWAY (TOP VIEW)

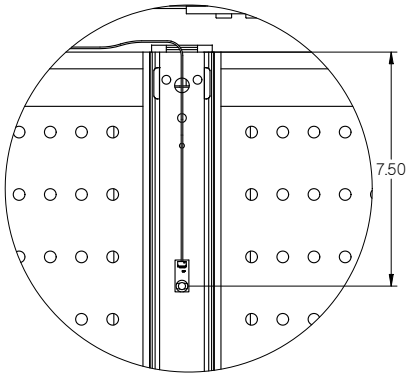


4 DOOR RACEWAY (TOP VIEW)



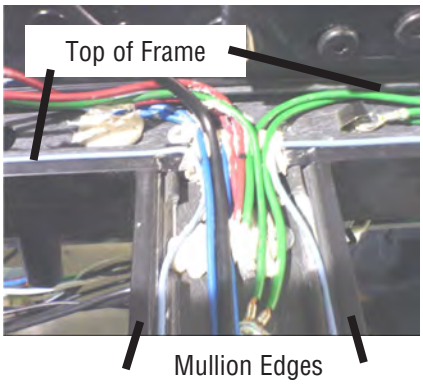
5 DOOR RACEWAY (TOP VIEW)

© SENSOR POSITION RLTM/RLNS
(FRONT VIEW)

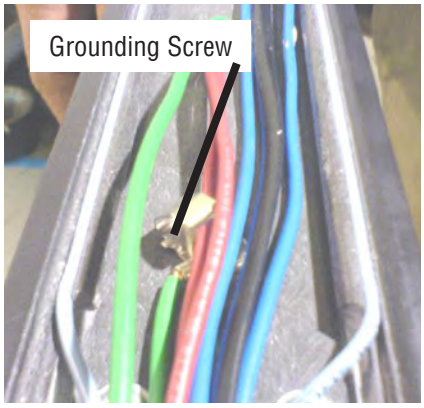


RLTM and RLNS and walk-in cooler doors route wire to top of raceway. For RL and RLN route wire to bottom of raceway.

6. Route harness wiring up in the mullion to top of frame and then within the top of frame to the wireway.



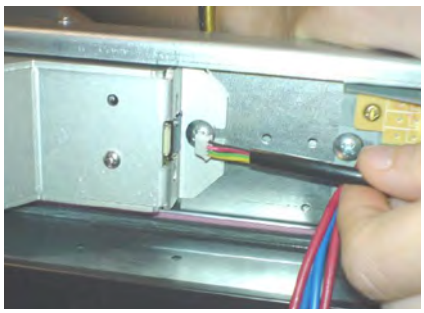
Important: Arrange all wiring carefully to prevent damage when replacing the cover. Avoid the grounding screw. Use electrical tape or tie-wraps as necessary to control wiring. Do not force wiring.



Control Board

7. The control box is mounted to thewireway with #8 x 3/8 sheet metal screws.

8. Connect the sensor harness to the control box as shown.



Door Heater Harness

9. Connect the insulated male connectors of the door heater harness to the sensor control box. Pins are marked on the outside of the control box.

Power Connection

10. Connect the insulated male connectors for line power and neutral to the sensor control box. Pins are marked on the outside of the control box.

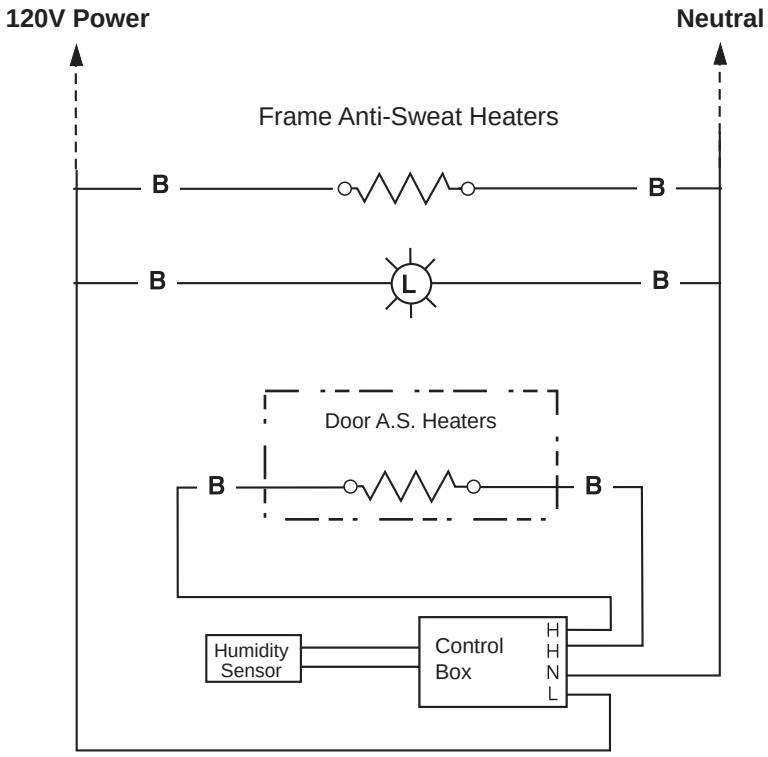
Finish

11. Check that all wiring is secure within the mullion and frame, then replace cover.

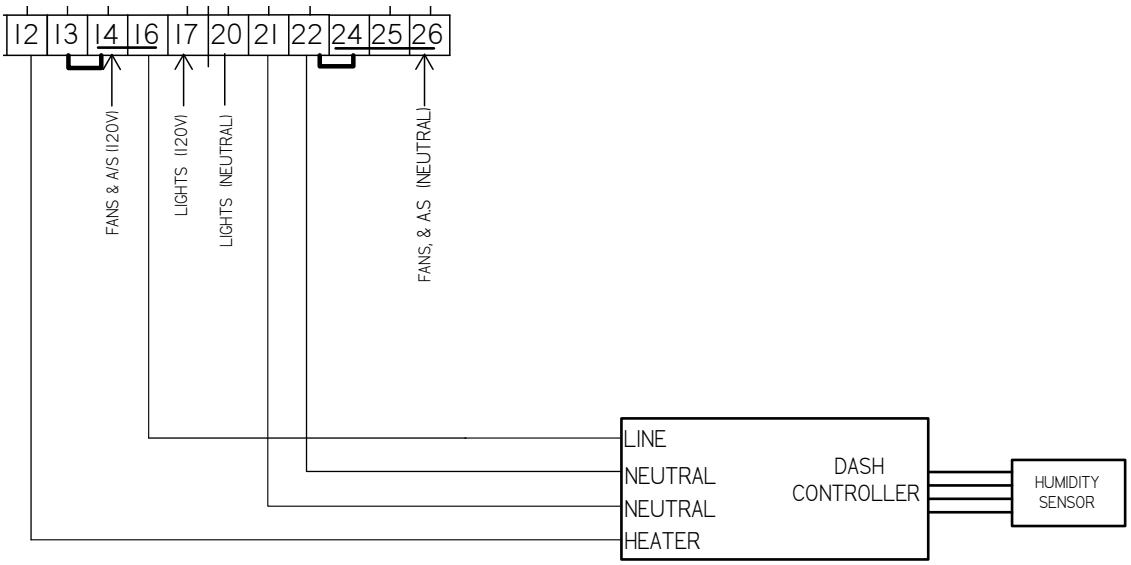
12. Restore power.

13. Verify controller is cycling the anti-sweat door heaters.

Controller will update the PWM output to the doors every 10 seconds. Each update is based on present ambient conditions.

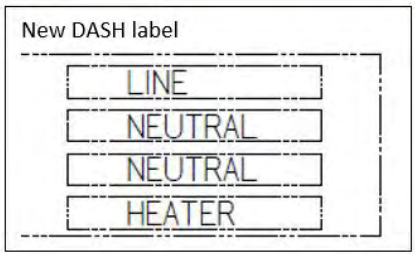


Wiring Diagram for Controller



Terminal Strip Layout

Controller Layout Overview



- Line – 120 Volts from System to the controller
- Neutral – Neutral from System to the controller. Also connects to the heater neutral internally.
- Heater Neutral– Neutral wire from the door heater harness. Connects to the system neutral internally.
- Heater – Main harness wire for the door heater.

- Sensor has a plug that goes to the opposite side of the controller. If you unplug it, the heaters will go to 100%. When the sensor is connected (plugged in), then the controller utilizes a mathematical formula to pulse the heaters ON & OFF to ensure no condensation.

- LED – This is a light that helps with troubleshooting if green, then all good. Page 2 shows other potential issues for troubleshooting.
If not ON at all, then definitely an issue (wires crossed, controller dead, etc).

Sequence of Operation:

The DASH Controller cycles the door heat based on the ambient temperature and relative humidity, and the case operating temperature. At normal store conditions, the doors will cycle between 40% and 70%. The percent on time will be greater at higher relative humidity and lower case temperature, and will be less at lower humidity and higher case temperature.

DASH Controller Troubleshooting steps for condensation appearing on doors:

1. The DASH controller will prevent condensation on Innovator I Doors under most store conditions. If relative humidity is outside the limits of the Innovator I Doors (normally around 70% RH), condensation may occur even with the doors fully energized. Before troubleshooting the DASH controller, wiring, and Innovator Doors, ensure that the store temperature and relative humidity are not beyond the design limits of the doors and other surfaces (Type 1 & Type 2 conditions).

2. On OEM installations, a 3/16" hole will be in the mullion cover to the left of the right-most door, 7.5" from the top (figure 1). On retrofit installations, this hole must be drilled in the same location. Check to ensure hole is in the mullion cover to allow sensor to work properly.

3. Remove raceway cover, install an amp clamp on the door input wire between terminal 12 and the door plugs. Terminal 12 goes to the main heater plug and is shown on electrical schematics. Verify that all connections are secure, including the sensor connection into the right side of the DASH controller.

4. If the controller is operating correctly, the door circuit amps will turn ON and OFF on 10 second cycles. For example, at 75° and 55% RH, with the case running at frozen food temperature, the doors will be on for approximately 5 seconds and off for approximately 5 seconds. The LED indicator will remain on.

5. Unplug the sensor at the controller – the output should be full on when measured. Each door should draw approximately 0.76 amps for 67" doors (RL/RLN), and .7 amps for 75" doors (RLTM), with no cycling.

6. If the amperage is 0 for all the doors, verify that the wiring matches the wiring diagram. A constant 120V must be supplied to the DASH 120V input, and the Door neutral line must be connected to neutral.

Note: Because of wiring variations on cases supplied with different options, the wiring connections could be located on other terminal block numbers than described here (i.e. terminal 12). Verify that the "Door Output" connection on the DASH controller is connected to the door plugs, shown on the picture below.

The Door control circuit must be supplied from a constant 120V circuit, and must not be connected through a central controller.

For proper DASH controller operation and optimum energy savings, the frame heaters must be on a constant 120V circuit, and must not be cycled through a central controller or through the DASH controller.

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To obtain warranty information or other support, contact your Hussmann representative. Please include the model and serial number of the product.

Hussmann Corporation, Corporate Headquarters: Bridgeton, Missouri, U.S.A. 63044-2483 01 October 2012