

Refrigeration Controller Installation Instructions

Regulatory Compliance

Safety

This device has been tested and found to be in compliance with the requirements set forth in UL 873, Energy Management Equipment, and is listed by Underwriters Laboratories, Inc., for installations in the United States.

This device has been tested and found to be in compliance with the requirements set forth in C22.2, No. 205-M1983, Signal Equipment, and is Certified by Underwriters Laboratories, Inc., for installations in Canada.

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Description

The Refrigeration Controller (RC) processes input/output activity of Novar Controls' Spectrum[®] Refrigeration Control System modules and provides important operating information. Its 8-line by 40-character display offer access to easy-to-read menus for monitoring system performance, and its 16-key keypad can be used to adjust control settings.

This document provides instructions for mounting and wiring the Refrigeration Controller.

Specifications

Agency Approvals

Recognized component: CUL/UL E134292
Standards used: UL 873 & CSA C22.2, No. 24, Temperature-Indicating and Temperature-Regulating Equipment

Power Requirements

Voltage: 24 VAC (Class 2)
Consumption: 40 VA
Relay Output Rating: 24 V Class 2, 1 Amp Maximum

Operating Environment

Temperature: 32° to 140°F (0° to 60°C)
Humidity: 0 to 95% Relative, noncondensing

Physical Dimensions

Width: 13.3 inches
Height: 15.75 inches
Depth: 2.5 inches
Weight: 12 lb (All aluminum enclosure)

Precautions

Take the following precautions during installation:

- Observe all national and local electrical codes.
 - Connect 24-VAC power wiring *only* to those terminals marked 24 VAC.
 - Make sure this module has a dedicated transformer. Do *not* ground the transformer on the secondary.
 - Do *not* use this module as a final safety device.
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Mounting the Refrigeration Controller

The Refrigeration Controller can be mounted directly on the refrigeration rack or a suitable adjacent surface.

Use the following procedure and refer to Figure 1, as necessary, to mount the controller.

Step	Procedure
1	Turn off all power before installation.
2	Select a suitable mounting surface.
3	Position the baseplate against the mounting surface and mark the surface to show the location of the four slotted holes.
4	Drill a hole at each location marked in Step 3 and install hollow-wall anchors, if necessary.
5	Insert the mounting screws into the holes and turn them until their heads extend approximately 1/4-inch from the mounting surface.
6	Position the baseplate over the screws and slide it down until the screws slide into the slots.
7	Tighten the screws to secure the baseplate.

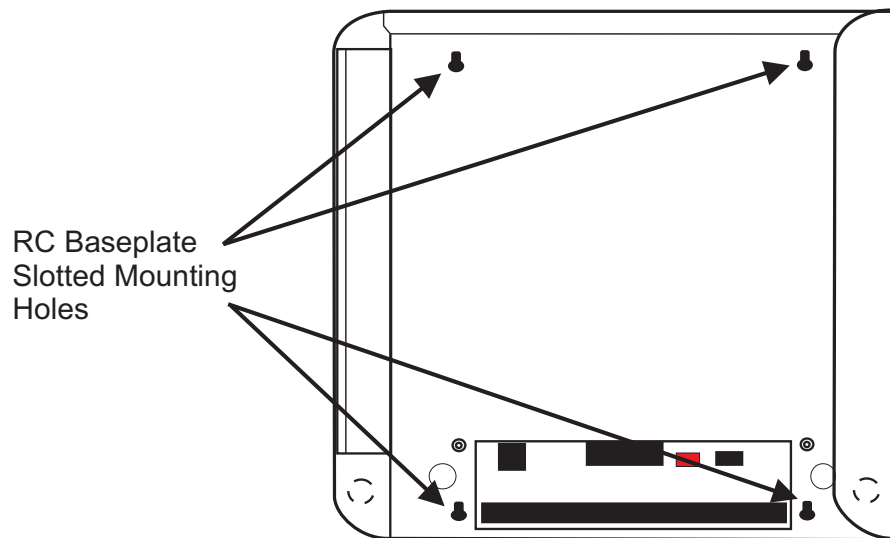


Figure 1. Refrigeration Controller Baseplate mounting holes

Wiring the Refrigeration Controller

Figure 2 shows the location of the terminals on the Refrigeration Controller terminal strip. A two-conductor shielded cable (Belden #8761, Novar Controls WIR-1010, or equivalent) should be used to make the wiring connections.

Power Connections

Use the following procedure to connect power to the RC.

Step	Procedure
1	Install a 24 VAC, Class 2 transformer not more than 50 feet from the Refrigeration Controller.
2	Connect the secondary side of the transformer to Terminals 23 and 24, labeled 24 VAC CLASS 2, on the transition circuit board. <ul style="list-style-type: none"> ■ Do <i>not</i> ground the transformer on the secondary side.

Module Communication Port Connections

The RC has three module communication ports:

- MOD A COM
- MOD B COM
- MOD C COM

These ports carry identical signals and are interchangeable. The MOD C COM port also contains both communication connections and 24-VDC terminals to provide power to the Case Input Modules.

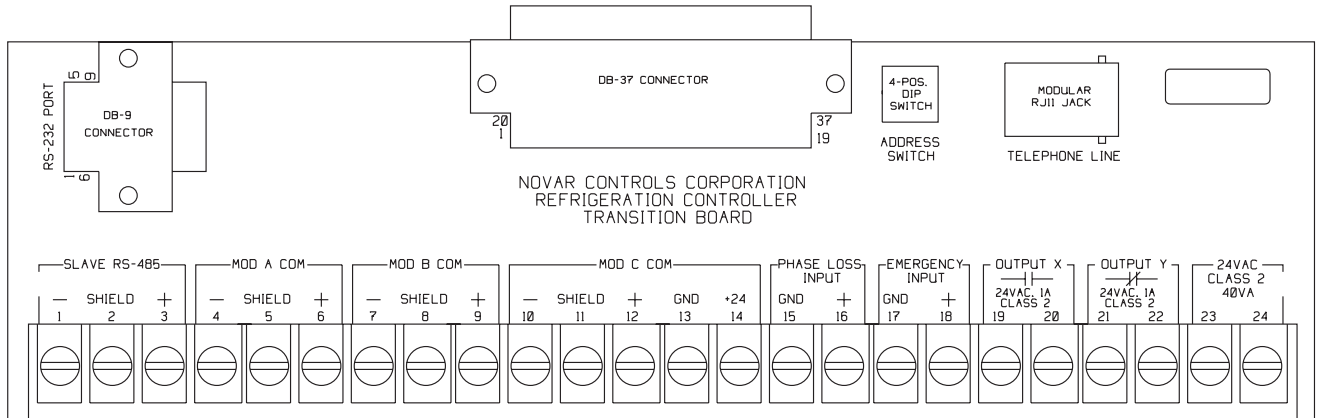


Figure 2. Refrigeration Controller Terminal Strip (Transition Board)

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Use the following procedure to make the communication port connections.

Step	Procedure
1	Connect modules to the following ports for maximum reliability: <ul style="list-style-type: none">■ MOD B COM port: Condenser Control Modules■ MOD C COM port: Case Input Modules■ MOD A COM port: All remaining modules <hr/> <p>NOTE: The maximum number of modules connected to any communication port must not exceed 32.</p> <hr/>
2	Connect the black wire to the negative (–) terminal.
3	Connect the shield/drain wire to the Shield terminal.
4	Connect the white wire to the positive (+) terminal.

Phase Loss Input Connections

Connect the normally open dry contact output of an electrical phase loss monitor to the terminals labeled Phase Loss Input.

Emergency Input Connections

Connect the normally open dry contact output of an emergency monitoring system to the terminals labeled Emergency Input.

Output X and Output Y Connections

The Output X and Output Y terminals are used for local activation of an annunciator device. The contact ratings are 24 V at, 1 amp. The two outputs function independently of each other.

- OUTPUT X is normally open and closes during an alarm condition.
 - OUTPUT Y is normally closed and opens during an alarm condition.
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Slave RS-485 Connections

Connect the slave cable from a multiple Refrigeration Controller (or EP/2) communication network to the terminals labeled Slave RS-485.

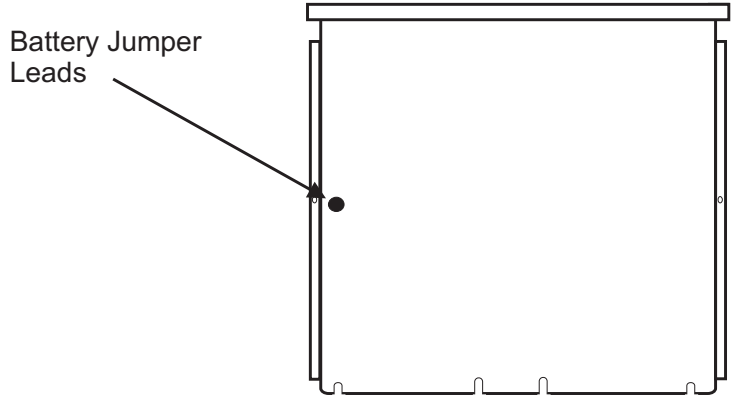
Step	Procedure
1	Connect the black wire to the negative (-) terminal.
2	Connect the shield/drain wire to the SHIELD terminal.
3	Connect the white wire to the positive (+) terminal.

RS-232 Port

Connect the communication cable from a personal computer to the RS-232 port.

Installing the RC Electronics Assembly

Use the following procedure to install the Refrigeration Controller's electronics assembly.

Step	Procedure
1	<p>Place the electronics assembly face down on a clean sturdy area, position the jumper block over the battery backup jumper leads (see Figure 3), and carefully push it into place.</p> <div data-bbox="737 1178 1463 1570"></div> <p>Figure 3. Refrigeration Controller Electronics Assembly - Rear View</p>
2	<p>Slide the electronics assembly over the lip at the top of the baseplate and down over the mounting posts.</p> <ul style="list-style-type: none">■ Guide the DB37 connector on the RC assembly into the connector on the transition circuit board as the assembly is lowered. <p style="text-align: right;"><i>continued</i></p>

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Step	Procedure
3	Tighten the two retaining screws on the RC electronics assembly to secure it to the baseplate. <ul style="list-style-type: none"> Use the hex wrench provided with the RC.
4	Position the transition board cover over the baseplate.
7	Insert the two knurled screws included in the hardware kit into the holes at the bottom of the baseplate and tighten them to fasten the cover to the baseplate.

Setting the Address

A maximum of 16 Refrigeration Controllers (or a combination of Refrigeration Controllers and EP/2s) can be connected on a communication network. Each module must be assigned a unique address from 00 to 15.

The address switches are located on the transition board to the right of the DB37 port (see Figure 2). Refer to Figure 4 when setting the addresses.

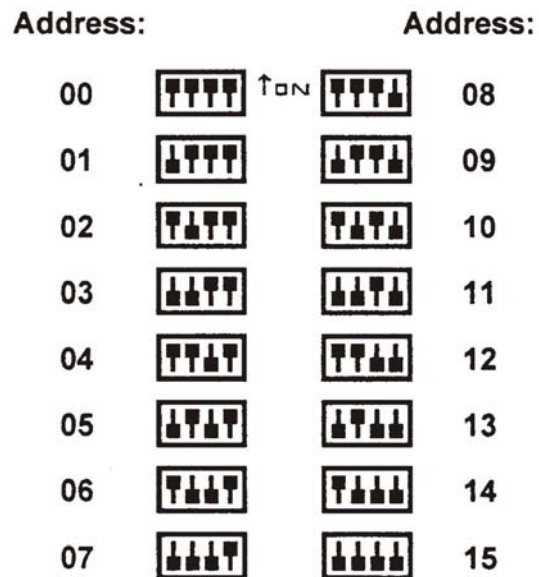


Figure 4. Setting the Refrigeration Controller address

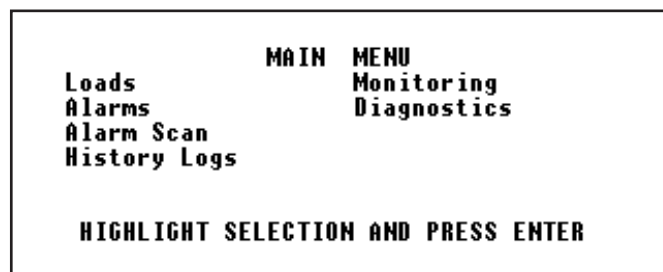
Checking Operation

When the Refrigeration Controller has been mounted, the wiring completed, and the electronics assembly installed, the following items should be checked to ensure proper operation.

- Double check all wiring before turning on the power.
- Turn on the RC.

If the RC has not been downloaded, the display should show the message SYSTEM CHECK in reverse video indicating that the RC has not been configured through ESS software.

- Download a version to the RC or go to Step 4 if the SYSTEM CHECK message does not display.
- Enter a four-digit password and press the **Enter** key to display the RC's Main Menu:



Contact Novar Controls if this screen does not display.

For information about using the Refrigeration Controller's keypad and display, refer to Novar Controls' *Refrigeration Controller Keypad & Display Instructions* (Doc. No. 560109000),

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Model and Part Numbers

Use the part numbers provided in Table 1 to order the necessary parts.

Table 1. Novar Controls Part Numbers		
PRODUCT	MODEL NO.	PART NO.
Refrigeration Controller Baseplate	—	733021000
Refrigeration Controller (basic model)	—	733023100
Refrigeration Controller with disk drive	—	733023200
Refrigeration Controller with standard modem	—	733020100
Refrigeration Controller with disk drive and standard modem	—	733020200
Refrigeration Controller with full-duplex modem	—	733022100
Refrigeration Controller with disk drive and full-duplex modem	—	733022200
Two-conductor shielded cable (Belden 8761 equivalent)	WIR-1010	709001000
