

Rack Output Module 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.

Electromagnetic Compatibility (EMC)

Federal Communications Commission (FCC)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

NOTE! This device has been tested and found to comply with the limits established for Class A digital devices. It is intended to be used in a commercial environment. Operation of this equipment in residential environments may cause harmful interference, in which case the user may be required to correct the interference at his own expense.

CAUTION! Any changes or modifications not expressly approved by Novar Controls Corporation could void your authority to operate this equipment.

Industry Canada

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the interference-causing equipment standard entitled *Digital Apparatus*, ICES-003, of Industry Canada.

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe A prescrites dans la norme sur le matériel brouiller: *Appareils Numériques*, NMB-003, édictée par l'Industrie Canada.

Disclaimer

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Description

The Rack Output Module is one of the components of Novar Controls' Spectrum[®] Refrigeration Control System. It controls programmable outputs that are cycled on and off according to programmable settings and system information that is processed through the Refrigeration Controller and communicated to the Rack Output Module.

The Rack Output Module can control up to sixteen outputs, but the wiring schemes must correspond to the software configuration.

A maximum of eight Rack Output Modules can be connected to each 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:	20 VA
Relay Output Rating:	250 VAC, 3 Amps Maximum; Form C
Fuse Rating:	2 amps

NOTE! The Rack Output Module does not require a dedicated transformer. The transformer can be shared with other Novar Controls Refrigeration Control Modules.

Operating Environment

Temperature:	32° to 158°F (0° to 70°C)
Humidity:	0 to 95% Relative, noncondensing

Physical Dimensions

Width:	14 inches
Height:	4 inches
Depth:	1.5 inches
Weight:	1 lb 2 oz

Precautions

Take the following precautions during installation:

- Observe national and local electrical codes.
 - Do *not* mix the line voltage (Class 1) with low voltage (Class 2) wiring.
 - Do *not* ground the transformer on the secondary side.
 - Turn off the power before installing this module.
 - Do *not* use the module as a final safety device.
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Rack Output Module Installation Instructions

Mounting the Module

Use the following procedure to mount the module.

Step	Procedure
1	Turn off all power before mounting the Rack Output Module.
2	Position the snap track against the mounting surface, mark the surface to show the location of the two mounting holes, and drill holes at the locations marked.
3	Position the module against the mounting surface and insert and tighten screws to secure the module.

Wiring Connections

Make all line voltage connections *before* wiring the low voltage connections. Refer to Figure 1, as necessary, when wiring the Rack Output Module.

Control Outputs

Each output can be wired to the normally open or normally closed terminal, depending on system requirements.

NOTE! Because the outputs are software-definable, the wiring schemes must match the software configuration.

The Output status light-emitting diodes (LEDs) are located to the left of the relays on the Rack Output Module. The status of an LED depends on the status of its relay coil.

- If the relay coil is energized, the LED is on.
- If the relay coil is not energized, the LED is off.

The corresponding load status depends on how the connection is wired.

Module Communication Network

A two-conductor shielded cable (Belden #8761, Novar Controls WIR-1010, or equivalent) should be used to make the communication connection between the Rack Output Module and the Refrigeration Controller.

The module communication connection is located in the upper left corner of the circuit board, next to the power connection. There is a communication LED located below the module communication connection that should blink on intermittently when the power is turned on and proper communication is occurring. If the LED does not blink on, there is a loss of communication.

On the Refrigeration Controller, the connection should be made to the Module A Communication (MOD A COM) port.

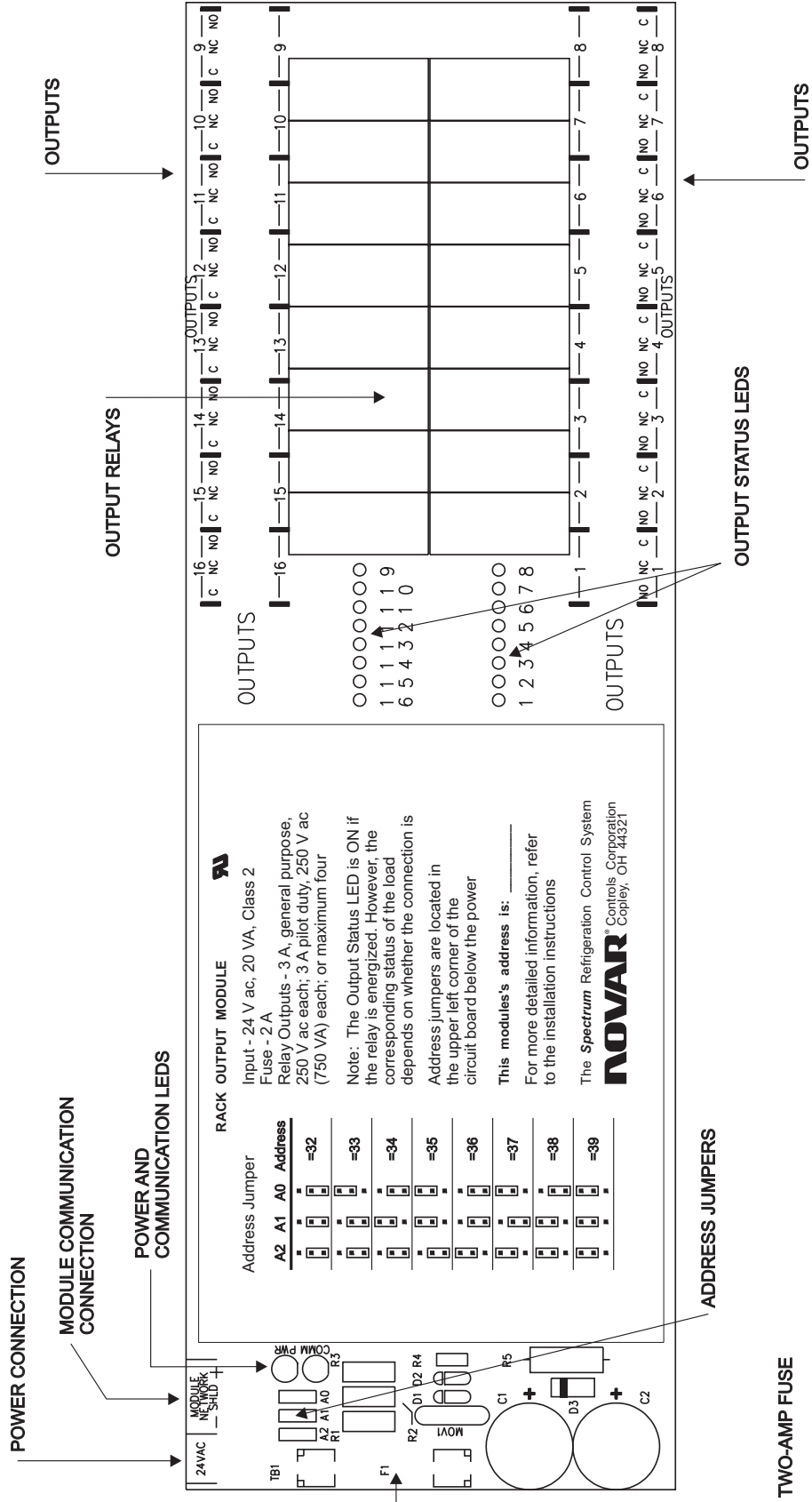


Figure 1. Rack Output Module

Rack Output Module Installation Instructions

Setting the Module Address

Up to eight Rack Output Modules can be connected to one Refrigeration Controller. Each module must have a unique address so the Refrigeration Controller can identify it.

The address jumpers are located below the power and communication connections on the circuit board. The A2, A1 and A0 jumpers have three pins and can be set as shown if Figure 2.

























A2	A1	A0	Address
			= 32
			= 33
			= 34
			= 35
			= 36
			= 37
			= 38
			= 39

Figure 2. Setting the address

Power Connection

The 24-VAC power connection is located in the upper left corner of the circuit board, next to the module communication connection. The power LED located below the power connection should be on once the system power is turned on.

A two-amp fuse is provided on the Rack Output Module circuit board to protect the module electronics. The fuse can be removed to turn off the power to the module.

Checking Operation

After the module has been mounted and the wiring connections have been completed, the following items should be checked to ensure proper operation.

- Double check all wiring before turning on the power. Make sure the correct wiring connections have been made and that they are secure.
- Connect the Refrigeration Controller and turn on the system power. Make sure the communication LED is blinking intermittently, indicating proper communication is taking place.
- Check the Refrigeration Controller for alarm messages. If any faults or malfunctions still exist, they will be picked up and announced by alarm messages.
- Use the Refrigeration Controller keypad and display to change the control settings and monitor the system for proper equipment response.

Model and Part Numbers

Use the model numbers provided in Table 1 to order the necessary Novar Controls parts.

PRODUCT	MODEL NO.	PART NO.
Rack Output Module	—	733012000
Two-conductor shielded cable (Belden #8761 equivalent)	WIR-1010	709001000

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