

NSD/M1 Installation Instructions

Regulatory Compliance

Safety

This device has been tested and found to be in compliance with the requirements set forth in UL 916, 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 brouilleur: *Appareils Numériques*, NMB-003, édictée par l'Industrie Canada.

Disclaimer

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Novar Controls Corporation
6060 Rockside Woods Blvd., Cleveland, OH 44131
Tel.: 800.348.1235 www.novarcontrols.com

Description

The NSD/M1 is a digital control module that is part of Novar Controls' Energy Infosystem. It is connected to the module communications line of a Novar Controls executive module. It is used to turn the Square D motorized breakers on and off in groups according to time-of-day schedules and other programmable parameters (see list below).

Each NSD/M1 can be programmed for up to eight control groups (loads). Any of the circuit breakers can be programmed to respond to any of the groups.

Through the Novar Controls ESS32 software, each control group of the NSD/M1 can be programmed to respond to:

- Schedules
- Outdoor light level
- Demand (kW)
- Phase loss
- Site emergency
- Schedule timed override
- Sequence to another output

In addition, each load can be programmed for:

- The time delay (in ¼-second increments) that occurs between switching of the circuit breakers.
- The circuit breakers (up to 42) to be switched.
- A presence alarm that is reported as a confirmation fault if the circuit breaker is not physically there.
- A programmable time delay that puts the circuit breakers back into automatic operation after they have been manually forced on.

NOTE! If a breaker is manually overridden to the off position or tripped by a circuit fault, it can only be returned to automatic operation manually.

- A confirmation fault alarm that occurs if the circuit breaker does not properly switch when it is commanded to do so.
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Specifications

Agency Approvals

Listed device:	CUL/UL E90949
Standards used:	UL 916, Energy Management Equipment CSA C22.2, No. 205-M1983, Signal Equipment

Power Requirements

Voltage:	Input: 28-VAC, 0.4 A, Class 2 Output: All field wiring terminals are Class 2
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Novar Controls Module Communications Network

RS-485:	Two-wire shielded cable (Belden 8761, Novar Controls WIR-1010, or equivalent)
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Lighting Panel Interface Connections

This is a communications network that is used to communicate with the Square D POWERLINK™ panels for breaker operation.

Operating Environment

Temperature:	−40° to 158°F (−40° to 70°C)
Humidity:	0–95% relative humidity, noncondensing

Inputs/Outputs (Override option only)

Timed overrides:	Momentary push buttons
Schedule Status:	Light-emitting diodes (LEDs)

Physical Dimensions

Height:	3.5 inches
Width:	9.25 inches
Depth:	1.125 inches
Weight:	0.5 lb

Precautions

The following precautions should be taken during installation:

NOTE! Remove the NSD/M1 from the panel until all circuits have been tested and verified.

- Observe all national and local electrical codes.
 - Do not route the low voltage control wires through a line voltage section of the circuit breaker panel. If the wires *must* be run through a line voltage section of the panel, use suitable wire with the proper insulation ratings.
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Mounting the NSD/M1

The NSD/M1 should be mounted in a Class 2, low voltage section of the panel.

NOTE! Novar Controls recommends mounting the module via the two mounting slots near the corners of the top edge of the module and the two mounting slots near the corners of the bottom edge of the module. The locations of these slots are indicated in Figure 1.

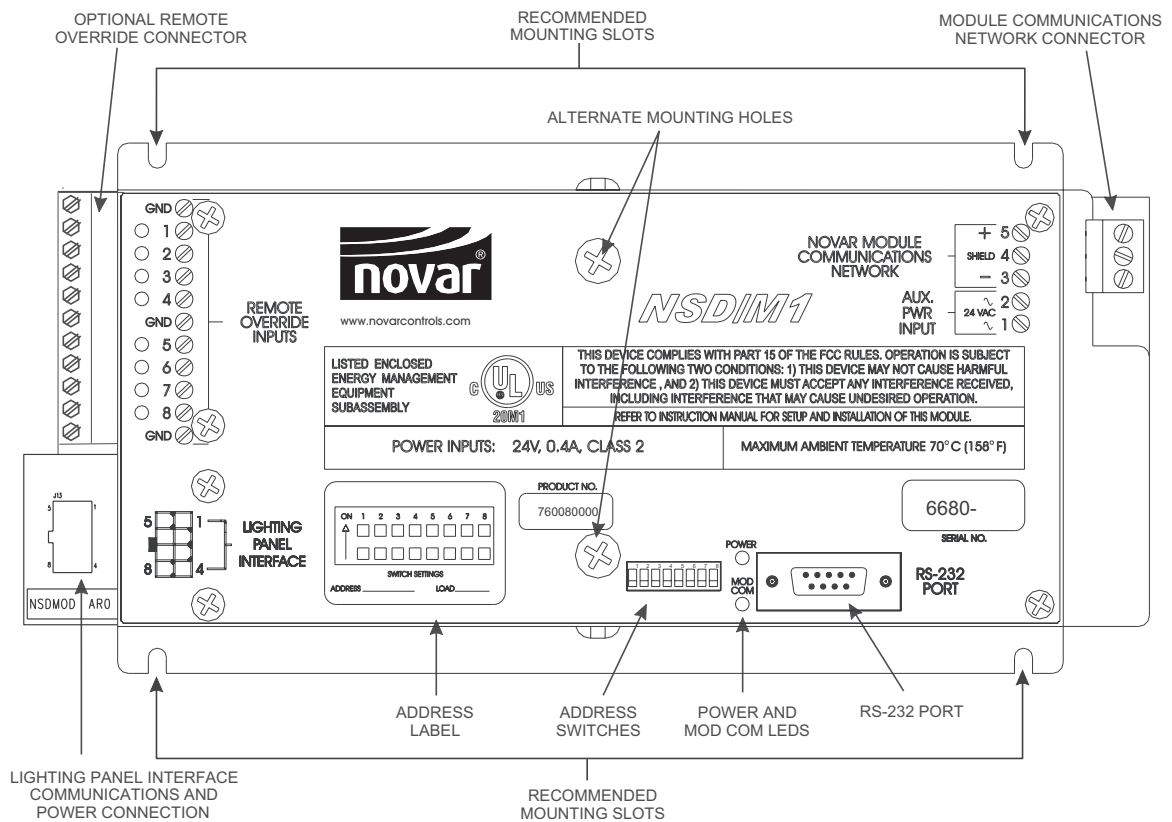


Figure 1. NSD/M1 module

Recommended Mounting Method

Four #6 sheet metal screws (not provided) will be needed to mount the module. The following procedure should be used.

Step	Procedure
1	Make sure that no power is connected to the NSD/M1 module.
2	Position the module against the mounting surface and mark the surface to show the locations of the recommended mounting slots (see Figure 1).
3	Drill holes in the locations marked on the mounting surface.
4	Position the module over the drilled holes and insert and tighten the screws to secure the module.

Alternate Mounting Method

If necessary, the alternate mounting holes indicated in Figure 1 can be used to mount the module. It must be mounted on standoffs positioned directly under the mounting holes. Any 3/8-inch high stand-off with a #10 screw can be used. The following types are recommended:

- SOA-832-16 (Aluminum)
- SO-832-16 (Steel)
- SOS-832-16 (Stainless)

Use the following procedure to mount the NSD/M1 in its enclosure.

Step	Procedure
1	Make sure that no power is connected to the NSD/M1 module.
2	Position the NSD/M1 so that its mounting holes are directly over the standoffs.
3	Insert a mounting screw (supplied) in each mounting hole and tighten to secure the module to the panel.

Optional Remote Timed Override Circuit Board

The NSD/M1 can be ordered with an optional remote timed override circuit board. This board contains a terminal strip to which momentary push-button switches and LEDs can be wired. These push buttons are used to initiate timed override periods as they are defined in the Novar Controls software. The LEDs indicate schedule status. If the LEDs are on, the load is scheduled on.

There is a one-to-one relationship between the buttons and the control groups (override button #1 is for control group #1, etc.). Between panels, if circuit breakers of several panels are linked via the software, they follow the same timed override commands.

Wiring the NSD/M1

Power is provided externally from the POWERLINK power supply. When wiring the NSD/M1, make sure that the module is disconnected from the power source.

CAUTION! When wiring the NSD/M1, be sure to take the precautions specified in these instructions.

Lighting Panel Interface Connections

The Lighting Panel Interface Connection is located in the lower left corner of the board (see Figure 1). This connection supplies power and a communications link between the POWERLINK panel and the NSD/M1.

To make the connections, the column-width controller cable or harness from the POWERLINK panel must be plugged into the connector on the NSD/M1.

Module Communications Network Connections

The Module Communications Network connections are located at:

- Terminal 5 (+)
- Terminal 4 (shield)
- Terminal 3 (-).

The removable terminal strip can be temporarily pulled out to assist in making the wiring connections. The Aux Power connections (Terminals 1 and 2) are not used.

Remote Timed Override Connections

The remote timed override option consists of a circuit board and a terminal strip that can be removed during installation, if desired.

Use the following procedure to wire the remote timed override option.

Step	Procedure
1	Make sure that power to the NSD/M1 is turned off.
2	Assemble the remote override switch assemblies (consisting of a momentary contact switch and a red LED). <ul style="list-style-type: none">■ The LED is used to provide schedule status and override feedback.■ The LED is in parallel with the switch.
3	Use a two-conductor wire to make the following connections: <ul style="list-style-type: none">■ Connect a wire from each of the terminal connections 1–8 on the back of the 8-Button Override Panel to its corresponding terminal connection on the NSD/M1 Remote Override Inputs.■ Connect a wire from Terminal 9 on the 8-Button Override Panel to any of the GND terminals on the NSD/M1.
4	<i>(Optional)</i> Common the ground connections from several switches (remotely, if desired) with one wire returning to the terminal strip.
5	Restore the power to the NSD/M1.

NOTE! When the LED is on, the schedule status is on and the remote override cannot be activated. Pressing the remote override switch causes the LED to flash once but has no effect on the override condition. If the LED is off, the schedule status is off and the remote override can be activated. The LED flashes continuously during remote timed override.

NOTE! Remote switches must be momentary dry contact only, not a held contact. A spring-return keylock switch is acceptable. The contact resistance must be less than 20 ohms.

Setting the Module Address

Every Novar Controls module must have a unique address for the Novar Controls executive module to identify it. Addresses are assigned in the software during system programming. Use the system printout to find the address of the NSD/M1 being installed.

Set the switches with the correct address from 00 to 63 (see Figure 2). Address settings 64 through 127 duplicate the sequence of settings shown in Figure 2 (address setting 64 is the same as address setting 00, etc.).

NOTE! Switches 1–6 are used to set the address. Switches 7 and 8 are reserved; they should remain in the on position. If the address is set with the power on, the power must be turned off for 5 seconds and then turned back on for the new address to be acknowledged.

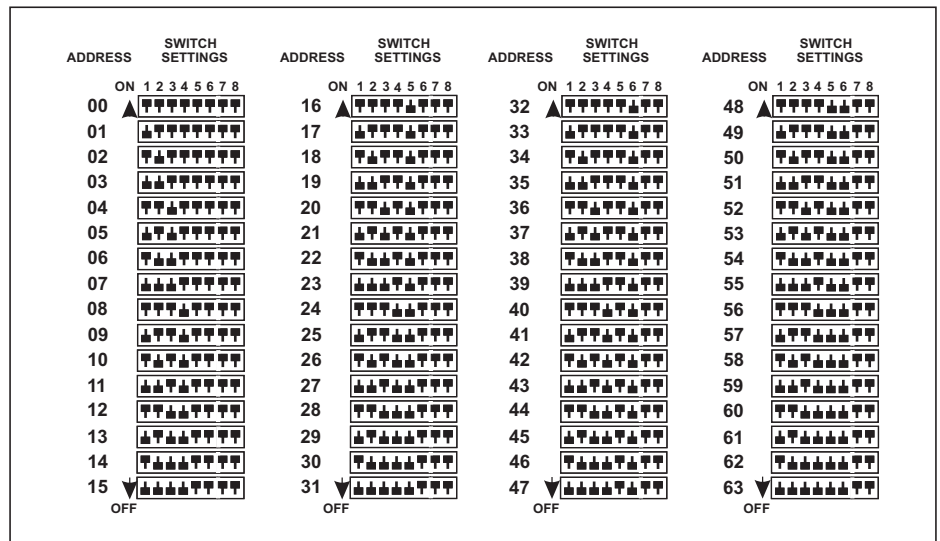


Figure 2. NSD/M1 address settings

Once the address has been set, it should be recorded on the address label on the NSD/M1 shield.

Model and Part Numbers

Use the part numbers provided in Table 1 to order the appropriate Novar Controls parts.

Table 1. Novar Controls Part Numbers		
PRODUCT	MODEL NO.	PART NO.
NSD/M1 Lighting Controller	NSD/M1 LC	760080000
NSD/M1 with remote override	NSD/M1 OVR	760090000

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