

# **NBI 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.

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### 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.

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**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.

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

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#### 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.

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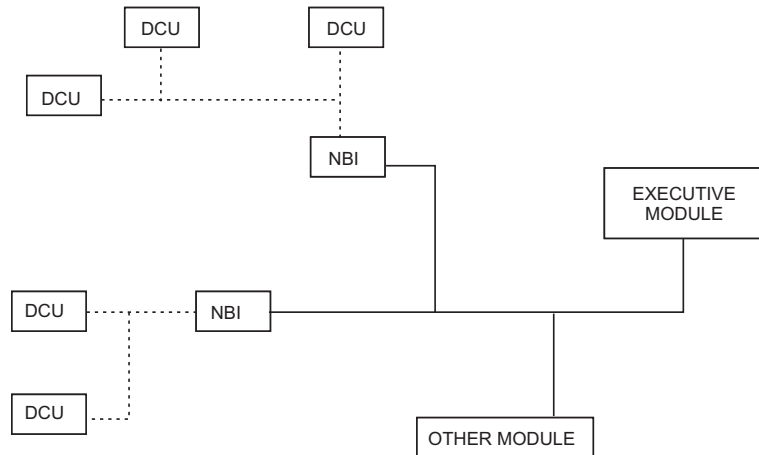
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**Description**

Novar Controls' Novar-BEA Interface (NBI) provides an interface for Door Control Units (DCUs) manufactured by BEA, Inc. It communicates with the DCUs using the MODBUS<sup>®</sup> protocol and serves as the master for up to eight slave DCUs. The NBI is strictly read-only. (It will only request state/operating information from the DCUs; it will not issue commands that will change state/operating information within the DCU.) The NBI looks for certain conditions in the DCU (such as a fault in the DCU itself or any of its up to seven sensors) that can potentially cause alarm conditions.

Novar Controls' Executive Processor/2 (EP/2), Savvy<sup>®</sup>, Lingo<sup>®</sup>, and Presto<sup>™</sup> executive modules have been updated to support the NBI. Support for the NBI device has been added to both ESS/32 and iScope<sup>®</sup>.

Figure 1 shows the typical NBI setup.



**Figure 1.** Typical NBI setup

## Specifications

### Agency Approvals

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

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### Power Requirements

Voltage: 24 VAC, 24 VDC  
Consumption: 8VA, 28 mA

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### Operating Environment

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

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### Physical Dimensions

Height: 2.75 inches  
Width: 17.25 inches  
Depth: 1.0 inches  
Weight: 1.5 lb

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### Communication Ports

RS-485 Novar Controls Protocol, 9600 baud: To Novar Controls executive module  
RS-485 MODBUS Protocol, 9600 baud: To Door Control Unit (DCU)

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## Precautions

Observe all national and local electrical codes during installation.

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## Mounting the NBI

The NBI's metal enclosure can be mounted on a wall or in a control panel. Use the following procedure to mount the enclosure.

Step	Procedure
1	Select a dry location for the module.
2	Position the metal case against the mounting surface and mark the surface to show the location of the two mounting holes.
3	Drill holes in the locations marked.
4	Place the module against the mounting surface and insert and tighten the appropriate type of screws to secure the module.

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## Wiring the Module

### *Power Input:*

- Connect a 24-VAC transformer to Terminals 7 and 5 of the NBI
  - or
  - Connect 24-VDC, positive to Terminal 7 (24-V) and negative to Terminal 8.
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### *Novar Communications*

Connect the communications cable that originates from Novar Controls' executive module to:

- Terminal 4 (+)
  - Terminal 5 (Shield)
  - Terminal 6 (-)
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### *DCU Communications*

Connect the DCU communications to the NBI as indicated in the following table.

<b>DCU COMMUNICATIONS</b>	<b>NBI CONNECTION</b>
Positive (+) wire	Terminal 3
Shield wire	Terminal 2
Negative (-) wire	Terminal 1

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## Setting the Addresses

### *Addressing NBI*

The NBI must have a unique address for the executive module to identify it. Addresses are assigned in the software during system programming. The NBI's address must match the address assigned to it in ESS32.

The address switches are located near the lower left corner of the NBI. It can be assigned an address from 0 to 127. Address settings 64 through 127 can only be used with a Lingo executive module. They duplicate the sequence of the settings shown in Figure 2 (address setting 64 is the same as address setting 00, etc.).

- The address is set using the first 7 positions of the address dip switch.
- Switch 8 should be left in the on position.

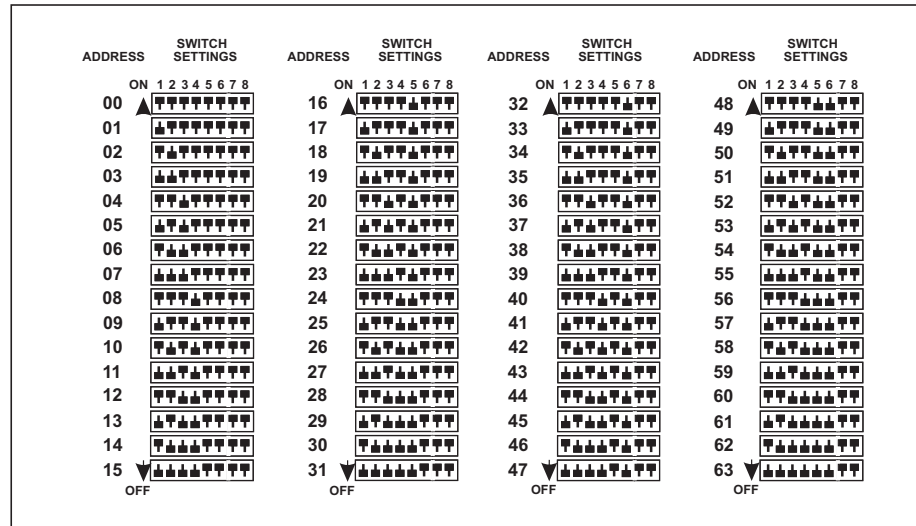


Figure 2. Setting the NBI address

## Addressing the DCU

BEA, Inc., provides separate instructions that outline DCU address requirements.

## Checking the Installation

The following items should be checked to ensure proper operation:

- Status Light-Emitting Diode (LED)

The NBI's status LED is used for two purposes:

- During power-up, it should turn on and remain on for 1 or 2 seconds as the NBI initializes and performs some diagnostic checks. Following initialization, the status LED should turn off and begin normal operation.
- During normal operation, the status LED should be off and momentarily flash on when the NBI is transmitting to the executive module. If the LED does not flash for extended periods of time, there may be a communication problem with the executive module.

- DCU LEDs

The DCU LEDs (located on the NBI) serve several purposes.

- Normal Operation

During normal operation, each of the eight LEDs represents one of the eight possible DCUs that can be attached to the NBI. The LED number corresponds to the address of the DCU with which it is communicating (i.e., the first LED corresponds to the DCU at Address 1, the last LED corresponds to the DCU at Address 8). Each DCU LED should turn on during communication with that particular DCU.

A quick flash of the LED indicates successful communication.

If the LED remains on for a longer period (about 1 to 2 seconds), that particular DCU has a communications problem.

**NOTE!** The LEDs are not necessarily polled in any specific order. It depends on which DCUs are defined for the system and the refresh rates that are assigned to them. Refer to the section on setup in ESS32 for more information.

— Critical Error

A fixed pattern displayed on the DCU LEDs can indicate a critical problem with the NBI that has shut down its operation. Currently, only a single critical failure is possible due to a ROM Checksum failure (meaning the NBI ROM has been corrupted), and this is indicated by the following pattern being displayed on the LEDs:

Off On Off On On Off On Off

— DCU Connection Diagnostics

From the time the NBI powers up until it begins a download from the executive module, the NBI provides a constant sequential polling of all DCUs connected to it.

A quick flash of a DCU LED indicates successful communication with the DCU at the corresponding address.

If the LED turns on for a longer period (about 1 to 2 seconds), there is a communication problem with that particular DCU.

At the end of each polling cycle, all eight LEDs will flash on and off at the same time to indicate that the NBI is operating in the connection diagnostic mode (as opposed to normal operation). During the NBI installation, this can be used to check communication with the DCUs but does not require any prior setup in ESS32.

When a download from the executive module begins, all polling of the DCUs stops and all eight slave LEDs begin flashing on and off in unison until the completion of the download, at which point normal operation resumes.

**Model and Part Numbers**

The part numbers shown in Table 1 should be used to order the appropriate Novar Controls parts.

<b>Table 1. Novar Controls Part Numbers</b>		
<b>PRODUCT</b>	<b>MODEL NO.</b>	<b>PART NO.</b>
NBI	NBI	733040000

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