Echoflex Solutions Installation Guide
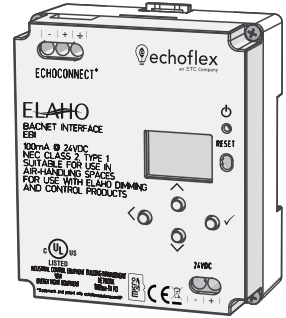## Elaho BACnet Interface

Overview

The Elaho BACnet Interface provides integration between the Elaho control system and a BACnet master controller.

The BACnet Interface provides simple command structure support for intuitive integration of Elaho control systems over BACnet.

The BACnet Interface supports control and status over BACnet IP of the following Elaho control system features:

- Presets
- Zones
- Space Occupancy (status only)
- Space Lockout
- Space TimeClock Hold
- Space Demand Response

Features

The BACnet Interface features an onboard Ethernet port (RJ45 style receptacle) for connection to the Building Management Network. The BACnet Interface allows for BACnet subscription COVs for all BACnet points.

The four-button user interface and display allow onboard IP address, port, and device ID configuration and connection status, as well as menu navigation for application firmware version and update and restore default settings.

The BACnet Interface is designed for installation on DIN rail.

Accessory Kits

Echoflex Solutions offers a Low Voltage DIN rail Cover Kit (part number 7186A1218) that allows installation of the BACnet Interface to any standard 4 in (10.16 cm) junction box (provided by others). Contact Echoflex Solutions for ordering details.

Echoflex Solutions Installation Guide
BACnet Interface

Specification

> ℹ️ **Note:** *Installation must follow all national and local codes for electrical equipment.*

For use with Echoflex Solutions dimming and relay products.

Ambient Environment

For indoor, commercial controls use only. Supports plenum rating.

- Operating temperature 0°C–50°C, 5–95% non-condensing humidity.

Compliance

- UL/cUL Listed; additionally rated for plenum spaces under UL 2043
- RoHS compliant

Electrical Requirements

The BACnet Interface requires external power provided to the unit by an external 24 VDC (Class 2) power supply to the provided input connector or Power over Ethernet (PoE 802.3af) to the RJ45 receptacle on the unit. When both 24 VDC auxiliary power and PoE are present, auxiliary power will be the preferred input.

> ℹ️ **Note:** *NEC Class 2 products are to be wired in accordance with NEC Article 725 and local jurisdiction requirements. All power and control wiring should be installed and terminated by a qualified installer and should follow standard wiring installation practices.*

24 VDC

This connection is provided on a two-position terminal, labeled 24 VDC, and accepts 1.5 mm^2 (16 AWG) wires (typically black and red wire pair).

Power over Ethernet

This RJ45 connection is provided on the bottom left edge of the device.

EchoConnect and BACnet IP Wiring Requirements

The BACnet Interface requires EchoConnect, Belden 8471 (or equivalent) plus one ESD ground wire, supporting data and control to the attached EchoConnect station bus. See *Electrical Requirements* for more information about powering the BACnet Interface.
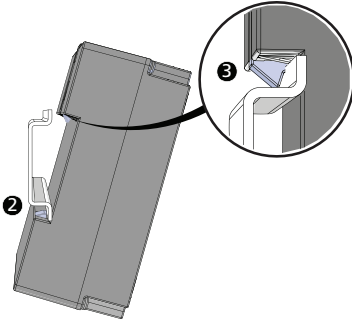
The BACnet Interface is designed for communication to a Building Management System over Ethernet using BACnet/IP. Ethernet connects to the provided RJ45 receptacle and complies with the EIA/TIA standard.

Echoflex Solutions Installation Guide
BACnet Interface

Installation

Install to DIN rail

1. Ensure that the section of DIN rail to be used is mounted securely according to the manufacturer's requirements. (DIN rail is provided by others.)
2. Hook the bottom of the device under the lower DIN rail edge as shown.
3. Pivot the device up and depress until the top clip seats completely onto the DIN rail.

Connect Wiring

EchoConnect

EchoConnect terminations require Belden 8471 (or equivalent 24–12 AWG wire), plus one 14 AWG (2.5 mm^2) ESD ground wire between the segment of EchoConnect station bus and the BACnet Interface


1. Ensure the Elaho station power supply on the connected segment is powered off.
2. Strip 8 mm (5/16 in) of insulation from the end of the Belden 8471 (or equivalent) wires and one ESD ground wire.
3. Loosen the three screw terminals on the EchoConnect segment.
4. Insert the black wire (typical) into the negative (-) terminal and tighten the screw firmly onto the wire.
5. Insert the white wire (typical) into the positive (+) terminal and tighten the screw firmly onto the wire.
6. Insert the ESD ground wire into the last terminal (identified with a ground symbol) and tighten the screw firmly onto the wire.

Echoflex Solutions Installation Guide
BACnet Interface

24 VDC

24 VDC is required to power the interface. Two terminals are provided and accept 16 AWG (1.5 mm^2) wires.
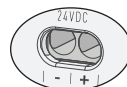
1. Strip 8 mm (5/16 in) of insulation from the bare end of each wire.
2. Loosen the two screw terminals on the 24 VDC terminals.
3. Insert the negative (or common) wire (black wire typical) into the negative (-) terminal and tighten the screw firmly onto the wire.
4. Insert the positive (+) wire (red wire typical) into the positive (+) terminal and tighten the screw firmly onto the wire.

Ethernet

An RJ45 receptacle provided for Ethernet connection is located on the bottom of the interface. This connection complies with the EIA/TIA standard. Connect to the Building Management Network.

> **Note:** *The BACnet Building Management System network will likely differ from any Echoflex Solutions lighting network.*

Power Up

Once the BACnet Interface is connected to the EchoConnect station bus and power is applied, the power LED will indicate steady blue and the display will power on.

User Interface
Display and Buttons

On initial power up, the display will show BACnet Lighting Interface (which is the device name) and its default IP address (10.101.19.151).

The display automatically sleeps after two minutes of inactivity and wakes again with any button press.

Navigation Buttons

Buttons are provided to navigate the BACnet Interface menu and edit selected fields.

- ∧ (up) and ∨ (down) navigate the menu, or when a parameter selection is made, press (or press and hold) to increase / decrease the value
- < (back) navigates to the previous menu selection
- ✓ (enter) commits a selection or edit

Echoflex Solutions Installation Guide
BACnet Interface

Reset Power

Using a ballpoint pen, press the **[Reset]** button to reset the BACnet Interface.

Menu

When the BACnet Interface is connected to the bus, its connection status displays as "E:✓" on the bottom of the display when in the main menu.

About

The "About" menu provides read-only information regarding the currently installed software on the BACnet Interface. Pressing the ✓ (enter) button navigates to the next screen, and then returns to the main menu.

Setup

IP Settings

Configure the network interface for the BACnet Interface from the IP Settings menu.

Automatic Mode

When Automatic IP mode is selected, all other IP address fields are disabled. In "Automatic" IP mode, the BACnet Interface will receive an IP Address when its Ethernet interface is connected to a network with a DHCP Server. A reboot is required after changing the IP address mode.

Manual Mode

When Manual IP mode is selected, the following settings are configurable:

- **IP Address:** By default, the address is 10.101.19.151
- **Subnet:** By default, the subnet mask is 255.255.0.0. The subnet mask must be configured appropriately for the BACnet/IP network where the interface is installed.
- **Gateway:** By default, this is blank. A gateway address is only required when the BACnet Interface is used on a routed network. In this case, this address should match the IP Address of the router or gateway. When not used on a routed network, leave this setting at its default.

Use the ✓ button to select an option, and the ∧ and ∨ navigation buttons to set each octet of the selection. A reboot is required after changing the IP address.

Echoflex Solutions Installation Guide
BACnet Interface

BACnet Settings

Device Number

The device number uniquely identifies the BACnet Interface within the Building Management System. This number is configurable to any value between 0 and 65535. By default, this value is set to 00109.

Use the ✓ button to select a numeral, and then use the ∧ and ∨ navigation buttons to change the value of the selection. Press the ✓ button to select the next numeral. A reboot is required after changing the BACnet Device Number.

BACnet Port

The UDP Port number is used by BACnet communications over IP to network messages. This number is configurable to any value between 1 and 65535. The default value is 47808 (0xBAC0).

Use the ✓ button to select a digit, and then use the ∧ and ∨ navigation buttons to change the value of the selection. Press the ✓ button to select the next numeral. A reboot is required after changing the BACnet Port.

Logging Options

Send event messages to a logging server by enabling Syslog and identifying the Syslog server IP address.

Syslog Enabled / Disabled

Select Syslog Enabled to send messages to the configured Syslog server. Navigate to the Logging Options menu, and locate the menu item Syslog Enabled/Disabled.

Press the ✓ button to toggle the setting between Enabled and Disabled until your desired setting is displayed. Press ∨ to navigate to Syslog Address or press the < button to exit the menu.

Syslog Address

Configure the IP address to receive Syslog event messages. This defaults to 10.101.50.60. Change the default address to match a logging server on the BACnet network. Navigate to Syslog Address found in the Logging Options menu. The first octet of the IP address is selected for edit.

Use the ∧ and ∨ buttons to change the value, and press ✓ to set the selection. Press the < button to exit the menu. A reboot is required after changing the Syslog IP Address.

Echoflex Solutions Installation Guide
BACnet Interface

File Operations

The File Operations menu provides access to restore the BACnet Interface to its factory defaults and update the device firmware.

Restore Defaults

To restore the BACnet Interface to its factory defaults (return the unit to Automatic IP addressing mode, the BACnet device number 109, and the UDP port to 47808 [0xBAC0]), use the navigation buttons to navigate and select "Restore Defaults" from the menu. A message will prompt confirmation of the Restore Defaults action. Select "Ok". The unit will reboot.
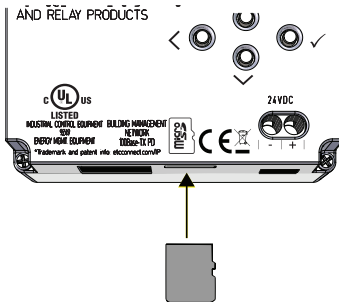
Update Firmware

1. To update the BACnet Interface firmware, you must first prepare a compatible microSD card with the firmware update file. The firmware update file, labeled eeb_fw.efw, must reside on the root of the media.

Note: *Compatible cards include SDHC microSD media up to 32GB, formatted to FAT32. SDXC is not compatible.*

2. Insert the compatible microSD media into the card slot receptacle on the bottom of the BACnet Interface.

Note: *The microSD card must be installed into the card slot with notched edge directed right.*

3. Use the navigation buttons to navigate and select "Update Firmware" from the menu. A message will prompt, "Insert Media and do not remove until complete. Reboot Now."
4. Press the ✓ (enter) button to begin the firmware update process. The unit will update and reboot when the process is complete.

5. Use the navigation buttons to navigate to the "About" menu to confirm the new installed firmware version.

Configuration

Use the ElahoAccess App communicating over an EchoConnect bus connected ElahoAccess Interface station (Bluetooth) or an Elaho bus connected Elaho Expansion Bridge to configure the BACnet Interface. See the app integrated help system for details about configurable device parameters and actions available.

The ElahoAccess App also allows users to configure which of the available object types are exposed as BACnet points.

Remove Device from DIN rail

If for any reason you need to remove the device from the DIN rail, follow these instructions.

1. Shut power off from the unit and station power supplies on connected EchoConnect segments.
2. Label and then disconnect all wiring and cap off as necessary.
3. Insert a flatblade screwdriver into the clip on top of the enclosure, slide it straight up, and then pivot the top of the unit off of the DIN rail.