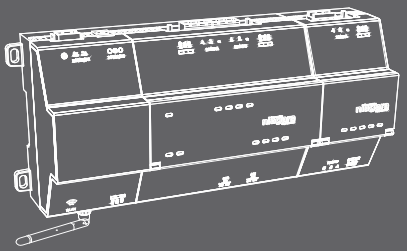


EC-BOS-8 with one option module

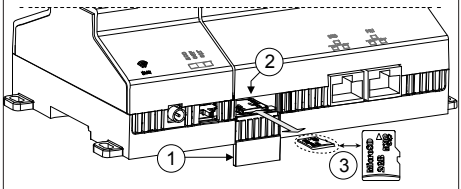
October 9, 2017

QUICK START GUIDE

EC-BOS-8

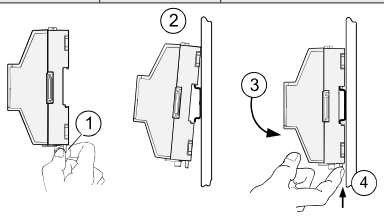
Quick Start Guide

1 Insert Card



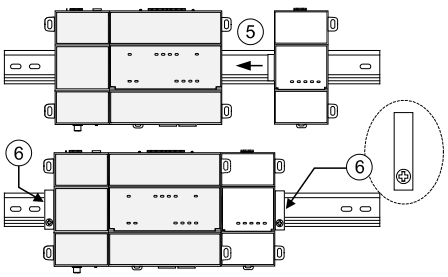
1	Access Shutter
2	Card Carrier
3	MicroSD Card

2 DIN Mount (1)



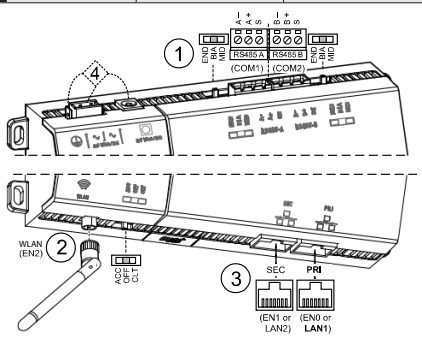
1	Pull down clip
2	Tilt and hook
3	Push down & in
4	Push up clip

3 DIN Mount (2)



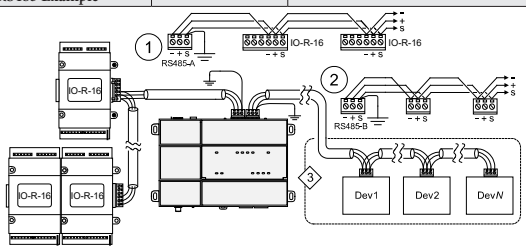
5.	Install module
6.	Install end-clips

4 Communications



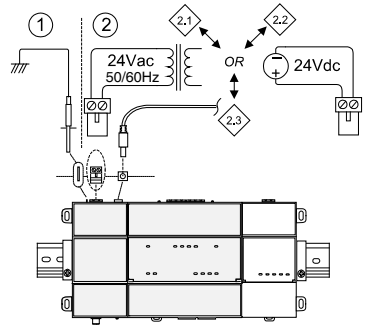
1	RS485
2	WLAN
3	Ethernet
4	Ground & power

5 RS485 Example



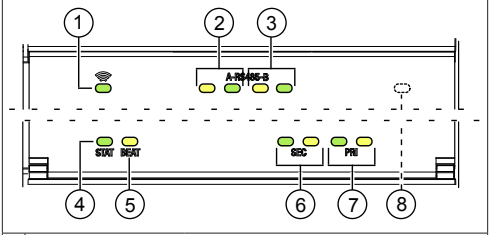
1	Port A (COM1)
2	Port B (COM2)
3	See note

6 Ground & Power



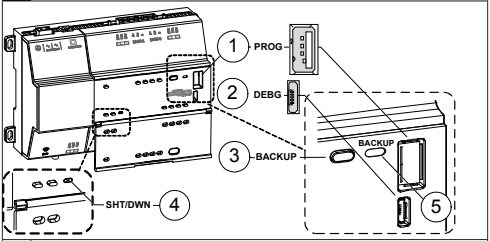
1	Ground
2	Power
2.1	AC and transformer
2.2	DC
2.3	AC adapter

7 LED



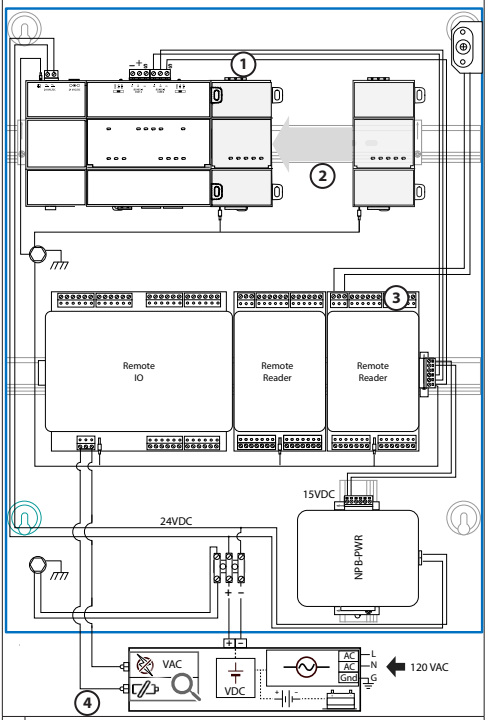
1	WLAN (Green)
2	RS485 “A” (COM1)
3	RS485 “B” (COM2)
4	STAT (Green)
5	BEAT (Yellow)
6	Ethernet (LAN2)
7	Ethernet (LAN1)
8	Backup (Green)

8 Ports & Switches



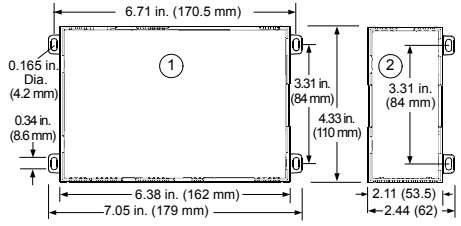
1	USB 2.0
2	Micro-A USB
3	USB backup/recovery
4	Shutdown
5	“Job in progress” LED

i EC-Net Access Enclosure Example



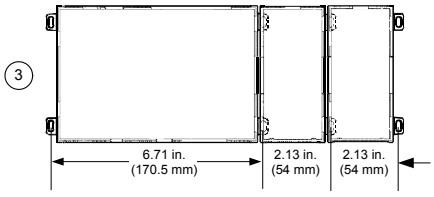
1	Enclosure
2	Install <=4 modules
3	Enclosure Door Alarm
4	AC/Battery Monitor

i Option (1)



1	Controller
2	Module

i Option (2)



NOTE: A maximum of four (4) total option modules are supported. Separate limits may exist in the controller's license, which can further limit options.

Description

EC-BOS-8

DIN-mount, 24Vac/dc (50/60Hz) powered, area controller. See the product data sheet for complete specifications. See the controller's Mounting and Wiring Guide for complete hardware installation details.

WPM-8000

Wall-mount, Class 2 universal AC power adapter supplying 24Vdc.

NOTE: Intended for office demo use. Excluded from agency testing.

Included in this package

This package includes the following items:

- EC-BOS-8
- MicroSD card in plastic case. See "Preparation".
- Coax-mount, dual 2.4/5.8GHz antenna for a wireless local area network (WLAN). Antenna impedance = 50 ohms. Antenna Max Gain = 2.4GHz Band: 2.5dBi, 5GHz Band : 4.6dBi
- Two 3-position RS485 connector plugs, one 2-position power connector, and a grounding wire.
- This *EC-BOS-8 Quick Start Guide*.

Material & Tools Required

- One of the following:
  - UL listed, Class 2, 24Vac transformer, rated at minimum of 24Va. A dedicated transformer is required (cannot power additional equipment), or
  - User supplied UL Listed Class 2 or LPS AC power adapter: 24Vdc, capable of supplying at least 1A (24W). Optional barrel connector plug (9.5mm L x 5.5mm OD x 2.1mm ID)  or
  - WPM-8000 wall-mount AC power adapter with barrel connector plug.
- DIN rail, type NS35/7.5 (35mm x 7.5mm) and DIN rail end-clips (stop clips), recommended for any installation that includes option modules. Controller is also panel-mountable.
- Large Enclosure. Required for UL 294 for access control installations.
- Suitable tools and fasteners for mounting the unit and any accessories.

Preparation

Before mounting a new controller, you must insert the included microSD flash memory card. The card has the unique Niagara identity (host ID) for the unit, set at the factory.

Install MicroSD Card, see image 1

⚠ Disconnect all power to the controller before removing or inserting the microSD card. Otherwise, equipment damage is likely to occur.

(1) Access shutter for microSD card (slide to open or close).

(2) Card carrier inside controller.

(3) MicroSD card to insert or remove from card carrier. Insert card label-side up, until spring catch latches. If properly inserted, the card is behind the shutter track. To remove card, push and release card.

NOTE: Data on the microSD card is encrypted by a special "system password" stored in the controller base. If your swap in a card from a previously configured unit, you must re-enter this same password, using a serial connection to the unit's Debug port.

Warnings:

⚠ Disconnect power before installation or servicing to prevent electrical shock or equipment damage.

⚠ To reduce the risk of fire or electrical shock, install in a controlled environment relatively free of contaminants.

⚠ To comply with FCC and Industry Canada RF exposure limits for general population / uncontrolled exposure, the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

Cautions:

⚠ Remove all power to controller before attaching (plug in) or detaching (unplug) any option module, to prevent possible equipment damage.

⚠ Removal of the controller's cover is not required. No configurable or user-serviceable items (such as jumpers or a battery) require cover removal.

Mounting

Mount the controller in a location that allows clearance for wiring, servicing, and module removal.

Environmental Requirements

NOTE: This product is for indoor use only, altitude to 2,000m (6,562 ft.).

Ambient conditions must be within the range of:

- Operating Temperature: -20°C to 60°C (-4°F to 140°F). Storage Temperature:
- -40°C to 85°C (-40°F to 185°F).
- Relative humidity: 5% to 95% non- condensing. Pollution Degree 3
- Supply (mains) voltage requirements are:
  - Allowable voltage fluctuation to +/-10%.

NOTE: Horizontal mounting is strongly recommended, to achieve maximum heat dissipation and meet the operating temperature upper limit. Any other mounting orientation reduces this upper limit.

Mounting On DIN Rail, see images 2 , 3

1. Pull the controller's locking clip down.
2. Tilt the controller to hook over the DIN rail.
3. Push down and in on the unit to fasten to the rail.
4. Push the locking clip up to secure.
5. Mount any option module onto the DIN rail in the same way. Slide the module firmly into the controller's connector to seat.
6. Repeat for other modules as needed (4 maximum).
7. Carefully secure both ends of the final assembly with DIN rail end-clips provided by the DIN rail vendor.

Wiring

Communications Wiring, see image 4

Field communications ports are as follows:

1. RS485 ports and bias switches.
2. WLAN adapter, settings switch, and antenna.
3. Ethernet ports, 10/100-Mbit, RJ-45.
4. Earth ground and 24V power input.

WLAN

NOTE: WLAN is not supported for EC-Net^{AX}.

An integral WLAN adapter provides wireless connectivity using the IEEE 802.11a/b/g/n standard, and provides an RP-SMA coax antenna connector.

The WLAN configuration switch sets operation as follows:

- OFF - (Default, middle) WLAN adapter is disabled.
- ACC - Controller provides operation as a WLAN access point for up to 16 clients.
- CLT - Controller operates as a client to an existing 802.11a/b/g/n router or access point.

Refer to the document *EC-BOS-8 WiFi Guide* for details on WLAN configuration and factory-default IP settings.

RS485 Wiring, see image 5

On the controller's top side, two RS485 ports operate as COM1 and COM2. Each port is capable of up to 115,200 baud, and uses a 3-position, screw terminal connector.

NOTE: IO modules and access modules all need to be on an RS-485 network.

Use shielded, twisted-pair, 18-22 AWG cabling to wire in a continuous multidrop fashion to other RS485 devices: "minus to minus", "plus to plus," and "shield to shield."

Connect the shield wire to earth ground at one end only. Image 5 shows example wiring.

1. RS485 port A (COM1) is often used to support a trunk of IO-R modules. NOTE: Do not mix IO-R modules with other types of RS485 devices on the same RS485 trunk.
2. RS485 port B (COM2) supports a network of field devices using RS485 communication. Additional RS485 COM ports (COM3+) may be added, with port numbering dependent on devices added to each unique system. For example, an EC-Net Access network includes the following:
   - Access network (COM2 default)
   - NRIO network
3. NOTE: RS485 devices on the same network should use the same protocol and baud rate. Number of devices supported depends on device specifications.

RS485 bias switches

Each RS485 port has an adjacent 3-position biasing switch. Settings of each RS485 bias switch are:

- BIA - (middle, as-shipped setting) RS485 biasing. 2.7K bias resistors with no termination resistor.
- END - RS485 biasing and a termination: 562 Ohm bias resistors and 150 Ohm termination resistor.
- MID - RS485 biasing or termination: 47.5K bias resistors with no termination resistor.

Often, adding RS-485 biasing can improve communications by eliminating indeterminate idle states.

See *EC-BOS-8 Mounting and Wiring Guide* for more details on RS485 biasing. Each RS485 port has two LEDs. See the "Status LEDs" section for more information.

Ethernet Wiring, see image 4

Two RJ-45 10/100-Mbit Ethernet connectors are labeled PRI (LAN1) for primary, and SEC (LAN2) for secondary. Use a standard Ethernet patch cable to an Ethernet switch.

The factory-default IP address for PRI is 192.168.1.140. The default subnet mask is 255.255.255.0. By default, the SEC (LAN2) port is disabled.

Refer to the *EC-BOS-8 Install and Startup Guide* for details on the software configuration of the Ethernet ports.

Earth Ground & Power

Earth grounding provides protection from electrostatic discharge or other forms of EMI.

NOTE: Depending on power source used (image 6).

2.1 (AC): Dedicated 24V transformer required, with neither side of the transformer secondary tied to ground.

2.2 (DC): Polarity is unimportant (uses onboard diode bridge), with neither leg tied to ground.

2.3 (Wall-mount AC adapter, WPM- 8000) instead of wiring 24V to 2-position connector.

Wiring Earth Ground & Power, see image 6

⚠Warning: Before making power terminations, de-energize the 24V power source. Do not restore power until completing all other mounting and wiring. See "Power up and initial checkout".

Prerequiste: A nearby earth grounding point.

1. Install the included earth ground wire to the controller's earth ground spade lug, and terminate the other end to a nearby earth ground.
2. Unplug the controller's 2-position power connector plug and terminate the 24V supply source (AC or DC) to the connector. Leave connector unplugged for now.

Power Up and Initial Checkout

Apply power by doing one of the following:

- Insert the 2-position 24V power connector plug, or
- Insert the barrel plug of the wall- mount AC adapter (WPM-8000).

Check the STAT (Status) and BEAT (Heart- beat) LEDs.

When power is applied, the green "STAT" LED will light. This indicates the system is OK, with power applied. During bootup, the "BEAT" LED may blink at 1 Hz with a 90%/10% on/off duty cycle. When bootup completes, the platform daemon is started, and the normal 1 Hz flash at 50%/50% on/ off duty cycle of the "BEAT" LED returns.

Status LEDs , see image 7

The controller provides a number of status LEDs, with all but one visible with the front access door closed.

1. WLAN (Green) - Illuminates whenever WLAN config switch is not Off.
2. RS485 "A" (COM1): Transmit (TX, Yellow) and Receive (RX, Green).
3. RS485 "B" (COM2): Transmit (TX, Yellow) and Receive (RX, Green).
4. STAT (Green) - Remains illuminated while controller is powered.
5. BEAT (Yellow) - "Heartbeat", normally 1Hz, 50% duty cycle.
6. Secondary Ethernet, SEC (LAN2) "Link" (Green) and "Activity" (Yellow).
7. Primary Ethernet SEC (LAN1) "Link" (Green) and "Activity" (Yellow).
8. (Behind Door) BACKUP - Green, typically Off.

If the "BEAT" LED stays illuminated constantly, does not light, or blinks very fast, contact System Engineering for technical support.

⚠The 1Hz, 90%/10% on/off "BEAT" flash at bootup also occurs during other critical operations, such as a firmware upgrade to the controller and/or any attached modules. To be safe, do not remove power from the controller while its "BEAT" LED flashes with a 90%/10% on/off duty cycle. Wait for the normal (50%/50%) flash to return before removing power.

For details on the controller's various LEDs and push-button switches, see the *EC-BOS-8 Mounting and Wiring Guide*.

USB Ports & Switches, see image 8

Behind the front access door are two USB ports, two pushbutton controls, and an associated LED.

1. PROG - USB 2.0 for usage with USB flash (thumb) drive.
2. DEBUG - Micro-A USB for serial debug communications.
3. BACKUP - Pushbutton switch to start a USB backup, or if held in during power up/boot up, a factory recovery image.
4. SHT/DWN - Recessed switch for controlled shut-down.
5. BACKUP - LED to indicate USB media present, or a backup, restore, or factory recovery image in progress.

The DEBUG port is a standard Micro-A type USB port for serial debug communications to the controller. Use a serial terminal program (for example: PuTTY) to access the controller "system shell" menu. This provides access to some basic platform settings.

Default DEBUG port settings are: 115200, 8, N, 1 (baud rate, data bits, parity, stop bits). For details on using a serial connection to the DEBUG port, see the *EC-BOS-8 Install and Startup Guide*.

NOTE: Login requires admin-level platform credentials.

Tab Mounting option, see images i

DIN rail mounting is recommended. Where tab mounting is required, use dimensions in the illustration to mount the controller and up to 4 option modules.

⚠ Caution: Do not mount hardware on both a DIN Rail and with tab mounts to another surface. This causes physical stress on equipment and prevents good connections between controller and modules.

1. EC-BOS-8 with no option modules added. Allow at least 1.5" (38mm) clearance around all sides and a minimum 3" (67mm) at bottom for WLAN antenna.
2. Option expansion module. Up to 4 may be used.
3. Note distances between center of tabs from one unit to another unit.

More Information

For more information see *EC-BOS-8 Mounting and Wiring Guide*. For EC-Net Access usage, refer to the *EC-Net Access Guide*.