

EasyIO Neo Series EC-1208 Installation Guide

EC-1208

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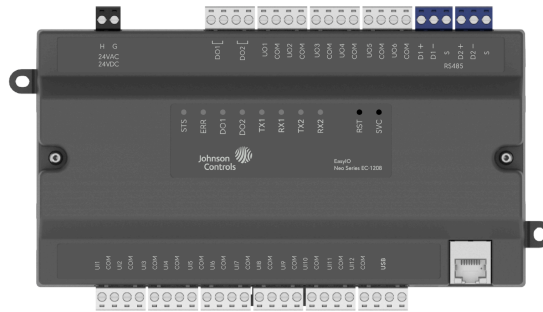
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Introduction

Figure 1: EC-1208 Network Controller

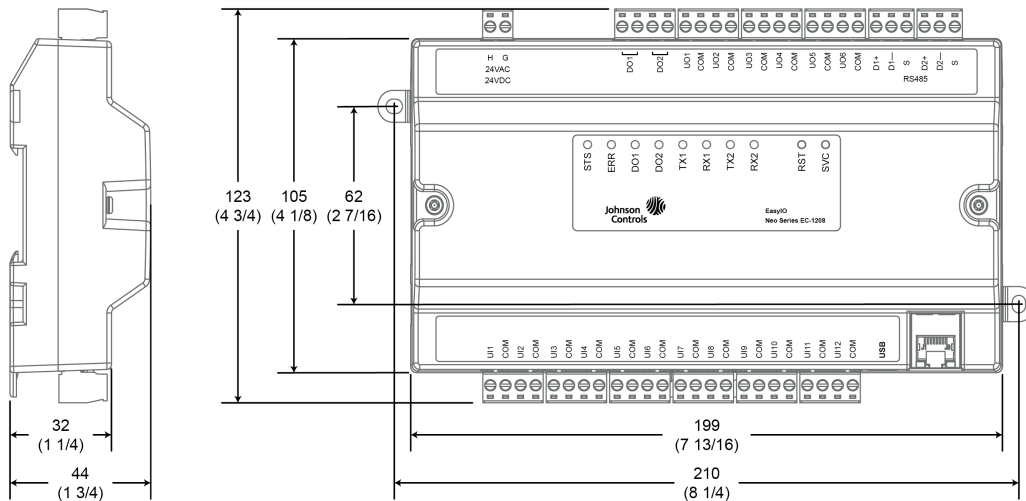


The EasyIO Neo Series EC-1208 network controller is a dual-processor controller that supports BACnet IP and MS/TP protocols, and Modbus RTU and TCP protocols.

Refer to the *EasyIO Neo Series EC User Guide (LIT-12014481)* for important product application information.

Dimensions

Figure 2: EC-1208 dimensions, mm (in.)



Mounting the controller

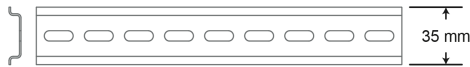
The EC-1208 mounts on a standard 35 mm (1 3/8 in.) DIN rail. You can also use optional mounting brackets.

► **Important:** Do not mount the EC-1208 in an area where:

- Excessive moisture, corrosive fumes, or explosive vapors are present
- Excessive vibration or shock are likely to occur
- Excessive electrical interference such as magnetic interference or variable speed drives are present

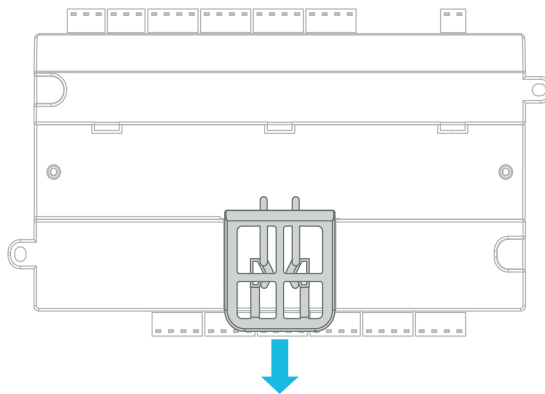
1. Mount a section of DIN rail horizontally on the enclosure base plate.

Figure 3: 35 mm DIN rail



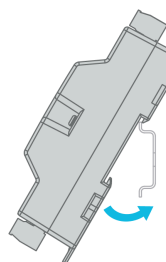
2. On the back of the controller, pull down the rear mounting clip.

Figure 4: EC-1208 rear mounting clip



3. Position the EC-1208 on the top edge of the DIN rail and press it into place.

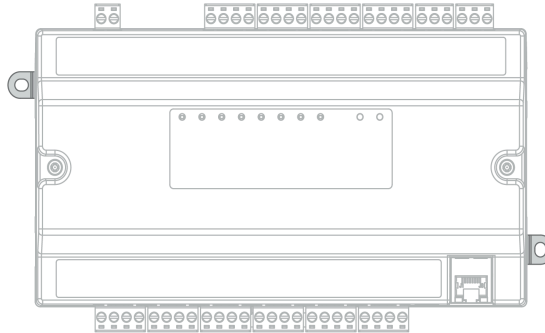
Figure 5: Mounting the EC-1208 on a DIN rail



4. To secure the controller to the DIN rail, push the mounting clip up.

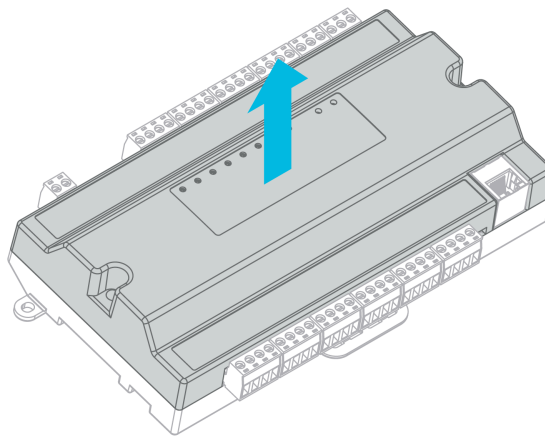
5. Optional:

- Use a DIN rail end clip to secure the EC-1208 in place.
- If you cannot mount the EC-1208 on a DIN rail, use the two external mounting brackets to secure the EC-1208 in place with screws.

Figure 6: EC-1208 external mounting brackets

Removing the controller cover

1. Use a Phillips screwdriver to unscrew and remove the top cover screws.
2. Remove the top cover from the body of the EC-1208. If the cover is stuck, separate the cover from the base with a flathead screwdriver.

Figure 7: Removing the top cover

Inserting or removing an optional microSD card

The EC-1208 controller includes a microSD card socket. The controller does not ship with a microSD card included and does not require a microSD card to work.

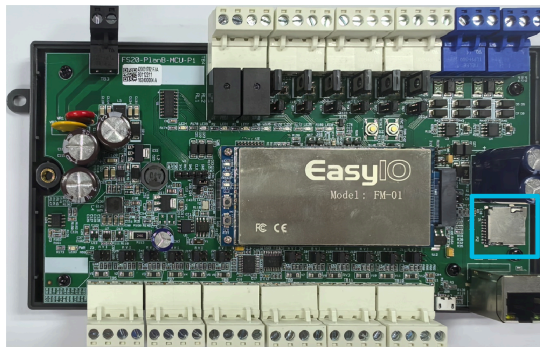
The following table lists compatible microSD cards.

Table 1: Compatible microSD cards

Specification	Description
Brand	Transend, Kingston
Capacity	2 GB, 4 GB, 8 GB, 16 GB
Class	Class 4, Class 10

1. Remove the controller cover.
2. Make either of the following changes:
 - To insert the microSD card, slide the card into the card socket, label side up, until the spring catch engages.
 - To remove the microSD card, push the card in until the spring release pushes the card partially out of the card socket. Grasp the card and pull it completely out of the unit. Store the microSD card in a static free protective case.

Figure 8: EC-1208 microSD card socket



Wiring

WARNING

Risk of Electric Shock

Disconnect the power supply before you make electrical connections. Contact with components carrying hazardous voltage can cause electric shock and may result in severe personal injury or death.

NOTICE

Risk of Property Damage

Do not apply power to the controller before checking all wiring connections. Short circuited or improperly connected wires may result in permanent damage to the equipment.

Important

Do not exceed controller electrical ratings. This can result in permanent damage to the controller and void warranties.

Important

Only use copper conductors. Wire the controller in accordance with local, national, and regional regulations

Important

Use the correct electrostatic discharge precautions throughout installation, setup, and service to avoid damage to the controller and controller components.

Universal input wiring

EC controllers have non-isolated universal inputs. Each channel comes with programmable gain amplifiers (PGAs) which improve accuracy at lower range. Universal input ports support resistance, voltage, and current modes through hardware jumpers and internal register settings.

Table 2: Universal input wiring specifications

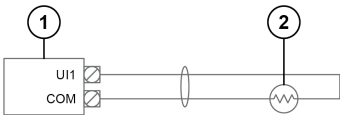
Specification	Description
Voltage	0 VDC to 10 VDC, ±3%
Current	0 mA to 20 mA, ±3%
Resistance	500 Ω to 500k Ω, ±3%
Thermistor	10k Ω 10k Ω Shunt 1k Ω Platinum resistance temperature detector (RTD)
UI as digital input	Voltage-free contact

Resistance input

Resistance input mode has a working range of 500 Ω to 500k Ω. You can use a 10k Ω resistor, a 10k Ω shunt resistor, or a 1k Ω platinum RTD.

► **Important:** Electrical noise may interfere with narrow band sensors. Use a 470 µF 30 V capacitor to suppress electrical noise and prevent inaccurate or erratic sensor readings.

Figure 9: Resistance input wiring

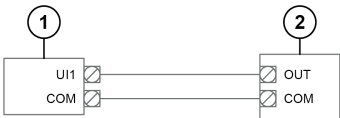


Callout	Description
1	Controller
2	Thermistor, RTD, or potentiometer

Voltage input

Voltage input mode has a working range of 0 V to 10 V. The minimum input impedance is 100k Ω.

Figure 10: Voltage input wiring

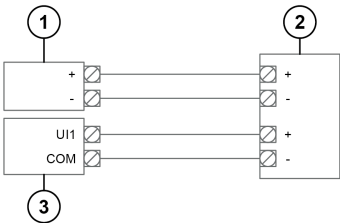


Callout	Description
1	Controller
2	Field device

Current input

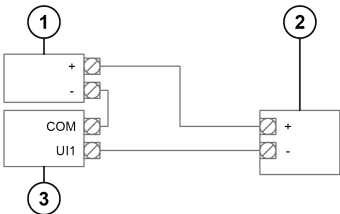
Current input mode has a working range of 0 mA to 20 mA. The current input impedance is 160 Ω.

Figure 11: Current input with external source wiring



Callout	Description
1	Power supply
2	Field device
3	Controller

Figure 12: Current input with internal source wiring



Callout	Description
1	Power supply
2	Field device
3	Controller

Pulse input

All universal input configurations can receive high-speed pulses. The minimum on-off time for pulse input is 25 ms.

Figure 13: Pulse input minimum on-off time

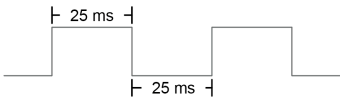


Figure 14: Pulse input wiring



Callout	Description
1	Controller
2	Field device

Universal output wiring

EC Series controllers have universal outputs. Universal output ports support current, voltage, and digital modes through hardware jumpers and internal register settings.

Table 3: Universal output wiring specifications

Specification	Description
Current	0 mA to 20 mA, $\pm 3\%$, maximum load impedance of 400 Ω
Voltage	0 VDC to 10 VDC, minimum load impedance of 2k Ω
Digital mode	Maximum sinking current rating of 0.2 A for each channel

Current output

Current output mode has a working range of 0 mA to 20 mA and 4 mA to 20 mA.

Figure 15: Current output wiring



Callout	Description
1	Controller
2	Field device

Voltage output

Voltage output mode has a working range of 0 V to 10 V.

⚠ CAUTION: To avoid damaging the output port, do not drive a relay directly from universal voltage output.

Figure 16: Voltage output wiring



Callout	Description
1	Controller
2	Field device

Universal output as digital output

Use a digital output block to use a universal output port for digital output. See the following table for a cross-reference of physical universal output ports to digital output.

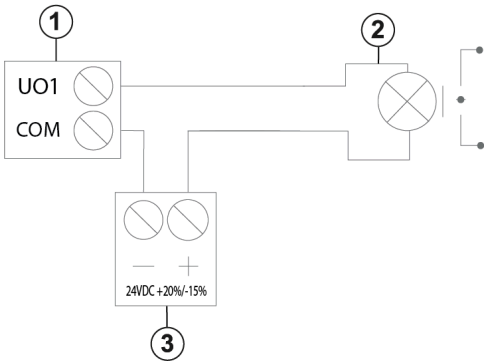
Table 4: Universal output to digital output cross-reference

Physical universal output port	Digital output block channel
UO1	DO3
UO2	DO4
UO3	DO5
UO4	DO6
UO5	DO7
UO6	DO8

Use a power source of 24 VDC in digital output mode.

⚠ CAUTION: To avoid damaging the output port, do not use an AC power source.

Figure 17: Universal output as digital output wiring



Callout	Description
1	Controller
2	Field device
3	24 VDC power supply

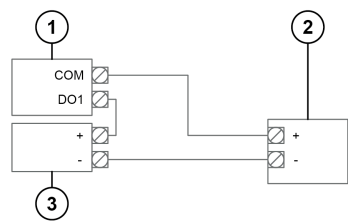
Digital output wiring

Use EC Series controllers digital output for general-purpose isolated digital output connections. This configuration is a dry relay contact that does not output voltage or current.

Table 5: Digital output wiring specifications

Specification	Description
Relay contacts	Single pole single throw, normally open (SPST NO), 48 VA at 24 VAC

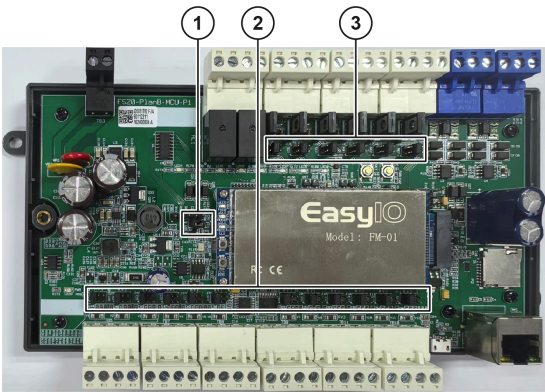
Figure 18: Digital output wiring



Callout	Description
1	Controller
2	Field device
3	Power supply

Jumper configuration

Figure 19: EC-1208 jumpers



Callout	Description
1	Watchdog jumper
2	Universal input jumpers
3	Universal output jumpers

Watchdog jumper configurations

The watchdog jumper failsafe in the EC-1208 restarts the controller in the event of a hardware or software watchdog circuit crash. To enable the watchdog circuit, position the jumper on the two watchdog pins.

Figure 20: Watchdog jumper disabled



Figure 21: Watchdog jumper enabled



Universal input jumper configurations

The EC-1208 supports resistance, voltage, and current universal input modes. For resistance mode, position the jumper on the two left pins. For voltage mode, position the jumper on the two middle pins. For current mode, position the jumper on the two right pins.

Figure 22: Resistance mode

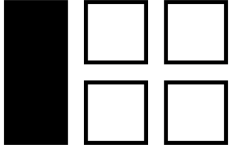


Figure 23: Voltage mode

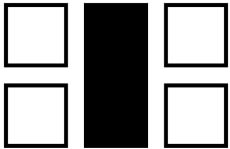
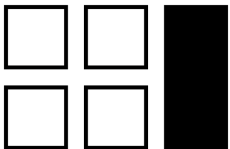


Figure 24: Current mode



Universal output jumper configurations

The EC-1208 supports current, voltage, and digital universal output modes. For current mode, position the jumper on the two left pins. For voltage mode, position the jumper on the two middle pins. For digital mode, position the jumper on the two right pins.

Figure 25: Current mode

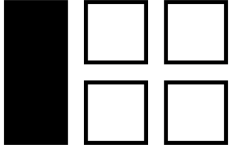


Figure 26: Voltage mode

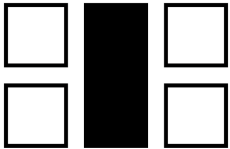
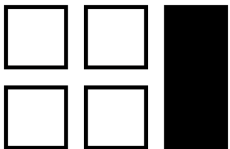


Figure 27: Digital mode



Technical specifications

Table 6: EC-1208 technical specifications

Specification		Description
Electrical	Power supply	24 VAC, $\pm 5\%$ 24 VDC, +20%/-15%
	Power consumption	750 mA at 24 VAC/VDC
Processor and memory	Processors	Primary: 1.2GHz Quad Core ARM A7 Secondary: ARM Cortex M0
	Flash memory	8 GB
	RAM	1 GB
I/O	Ports	Universal input: 12 Universal output: 6 Digital output: 2 Ethernet: 1 EIA-485: 2
	Supported protocols	BACnet IP Client/Server BACnet MS/TP Client/Server Modbus TCP Master/Subordinate Modbus RTU Master/Subordinate web service HTML5 SOX
Operating and storage conditions	Operating temperature	0°C to 65°C (32°F to 150°F)
	Storage temperature	-20°C to 85°C (-4°F to 185°F)
	Operating humidity	10% to 90% RH, non-condensing
Physical	Dimensions	199 mm x 123 mm x 44 mm (7 13/16 in. x 4 3/4 in. x 1 3/4 in.)
	Material	Plastic, compliant with UL
	Weight	436 g (15.4 oz)

Table 6: EC-1208 technical specifications

Specification		Description
Compliance	North America	UL 916 Energy Management Equipment; FCC Class B, Part 15, Subpart B 15.247 FCC This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: 1. This device may not cause interference. 2. This device must accept any interference, including interference that may cause undesired operation of the device. L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : 1. L'appareil ne doit pas produire de brouillage. 2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.
	Europe	CE Compliant
		UKCA Directive Electromagnetic Compatibility Regulations 2016: BS EN 55032:2015+A11:2020, BS EN IEC 61000-3-2:2019+A1:2021, BS EN IEC 61000-3-2:2019+A1:2021, BS EN 55035:2017+A11:2020
	BACnet International	BACnet Testing Laboratories™ (BTL) 135-2020 Listed BACnet Building Controller (B-BC)

Repair information

If the product fails to operate within its specifications, replace the unit. For a replacement, contact the nearest Johnson Controls representative.

Product warranty

This product is covered by a limited warranty, details of which can be found at <http://www.johnsoncontrols.com/buildingswarranty>.

Software terms

Use of the software that is in (or constitutes) this product, or access to the cloud, or hosted services applicable to this product, if any, is subject to applicable end-user license, open-source software information, and other terms set forth at <https://www.johnsoncontrols.com/techterms>. Your use of this product constitutes an agreement to such terms.

Patents

Patents: <https://jciapat.com>

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Contact Johnson Controls: www.johnsoncontrols.com/contact-us

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