

EasyIO Neo Series Communication and Signal Module User Guide

CM-485, SM-16UI, SM-16DI, SM-8AO, SM-8DO

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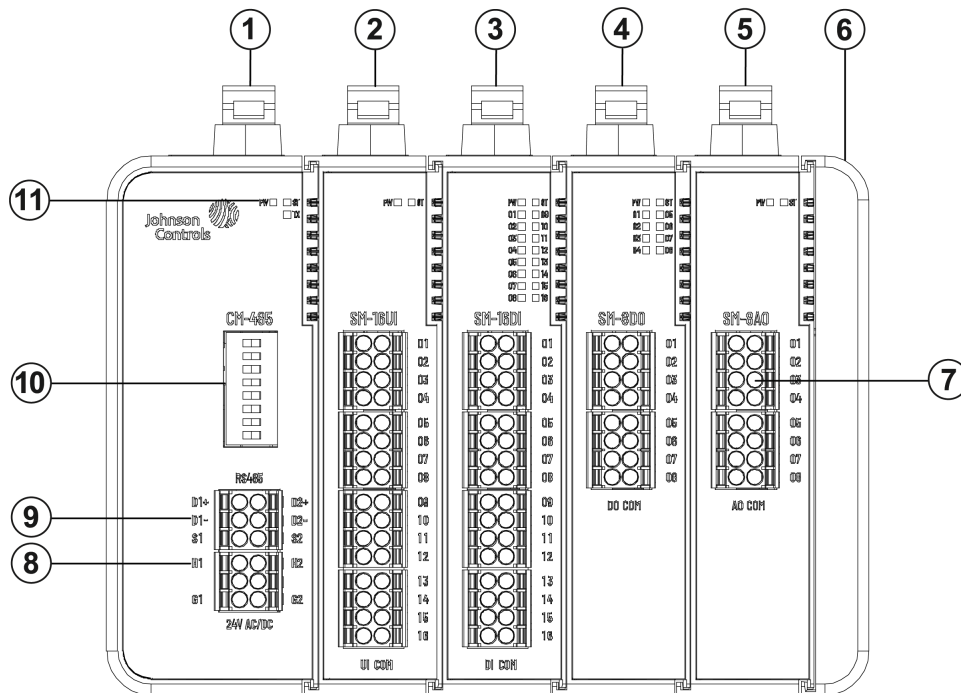
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Introduction

EasyIO Neo Series Communication and Signal Module is a configurable input / output module. You can use the module to add an extra 80 fixed points to your building management system. One Communication Module (CM) can connect to a maximum of 10 8-IO modules or 5 16-IO modules and transmits data to upper-level controllers. The CM provides power and communication capabilities to the IO modules and connects with other field devices through a RS485 interface. A DIP switch sets the function and address.

The CM features a real-time clock that can keep time for 7 days while disconnected from a power source.

Figure 1: Communication and Signal Module overview



Callout	Description
1	CM-485 module
2	SM-16UI module
3	SM-16DI module
4	SM-8DO module
5	SM-8AO module
6	Cover plate
7	Point wiring ports
8	24V AC/DC ports
9	RS-485 ports
10	DIP switch
11	LED's

Hardware configurations

Power supply connection

EasyIO Neo Series Communication and Signal Module can operate with both AC and DC power. Refer to the electrical specification in the following table for the working range. To prevent damage to the CMs input / output devices and RS485 connection, use a separate power supply for each CM module. If you use a single power supply, ensure that the power supplies for the controllers connect with the same polarity.

Table 1: Electrical specification

Description	Specification
Power Supply	24V AC, plus 20% or minus Power supply 15%, 50 / 60 Hz or 24V DC, plus 20% or minus 15%
Consumption	< 5A for max IO module assembly
Operating temperature	0°C to 50°C (32°F to 122°F)
Storage temperature	-40°C to 70°C (-40°F to 158°F)
Operating humidity	10% to 90% relative humidity, non-condensing
Storage humidity	5% to 95% relative humidity, non-condensing

Figure 2: Power supply connection

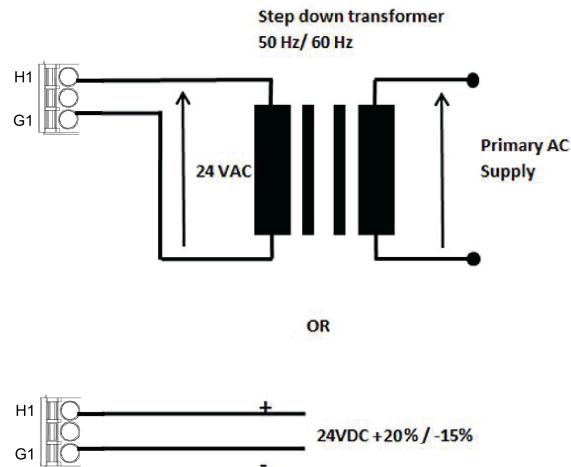
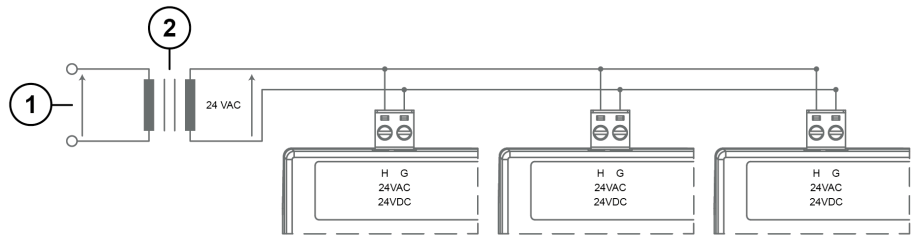


Figure 3: Multiple controllers with single transformer connection

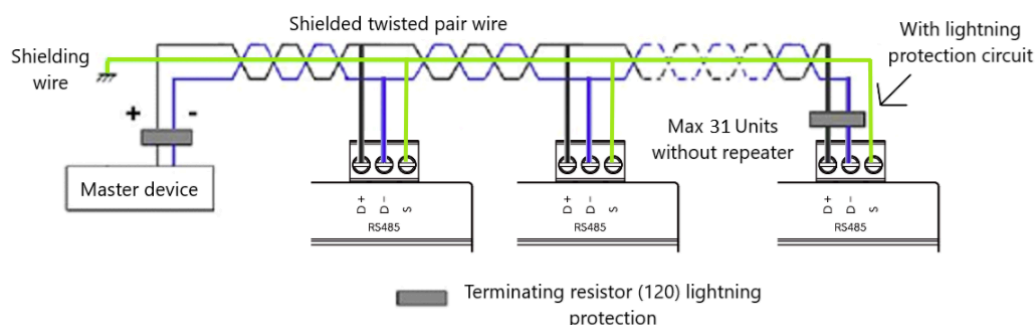


Callout	Description
1	Primary AC supply
2	Stepdown transformer 50/60 Hz

RS-485 connection

You must terminate the RS-485 connection at both ends with a termination resistor, typically of 120 Ω . It is best practice to use shielded twisted pair wire (STP) for the wiring. For optimal performance, install a lightning protection circuit at one end of the wiring. If you can avoid wire branch, keep it as short as possible, and never connect more than one device to the wire branch. Wire the controller in daisy chain network topology as shown in the following figure:

Figure 4: RS-485 wiring



BACnet or Modbus selection and ID setting

Use the dual in-line package (DIP) switch to select the Modbus / BACnet or IO Manager configuration protocol. To select the IO Manager configuration mode, toggle switch 8 upwards to the **On** position. To select the Modbus / BACnet protocol, toggle switch 8 to the **Off** position.

Use the switches 1 to 7 to set the Modbus/BACnet address. Each of the switches 1 to 7 stand for a binary bit. Toggle the switches upwards to the **On** position to make that address digit 1 or leave it in the **Off** position to make that address digit 0. In [Table 2](#), the DIP switch configuration gives a device address of 0011101. If you convert this to a decimal representation, the device address is 29.

Table 2: Selecting DIP switch positions to assign device address

DIP switch number	Position
1	On (1)
2	Off (0)
3	On (1)
4	On (1)
5	On (1)
6	Off (0)
7	Off (0)

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 module before checking all wiring connections. Short circuited or improperly connected wires may result in permanent damage to the equipment.

Important

Do not exceed module electrical ratings, this can result in permanent damage to the module and void warranties.

Important

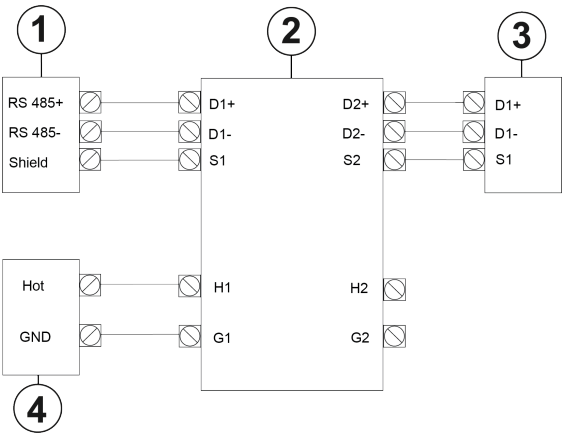
Only use copper conductors. Wire the module in accordance with local, national, and regional regulations.

Important

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

CM-485 wiring

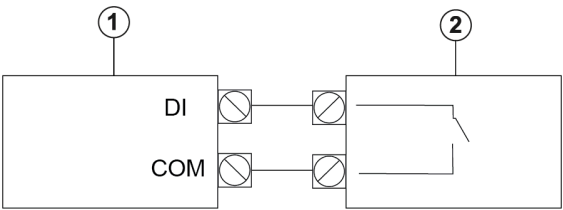
Figure 5: CM-485 wiring overview



Callout	Description
1	Controller
2	CM-485
3	Other RS-485 device
4	Power supply

SM-16DI wiring

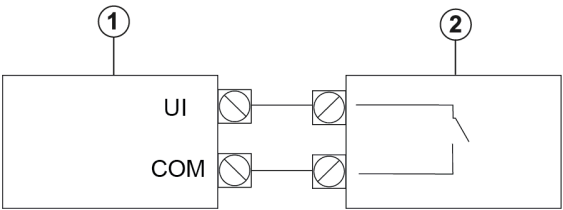
Figure 6: SM-16DI dry contact / pulse input wiring



Callout	Description
1	SM-16DI
2	Field device

SM-16UI wiring

Figure 7: SM-16UI dry contact / pulse input wiring



Callout	Description
1	SM-16UI
2	Field device

Figure 8: Pulse input minimum on-off time

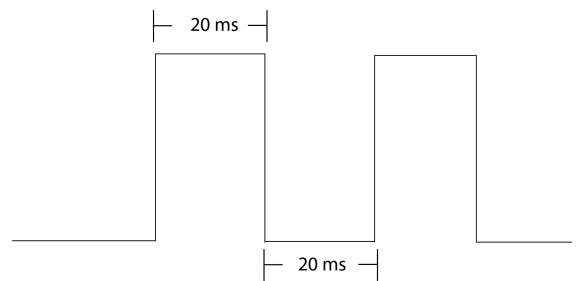
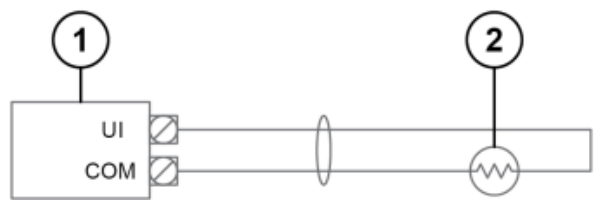
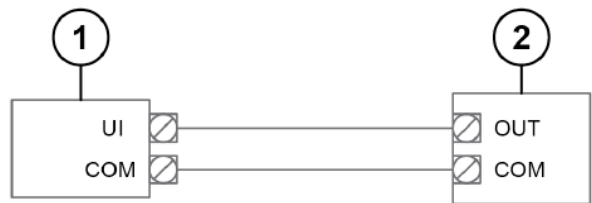


Figure 9: SM-16UI resistance input wiring



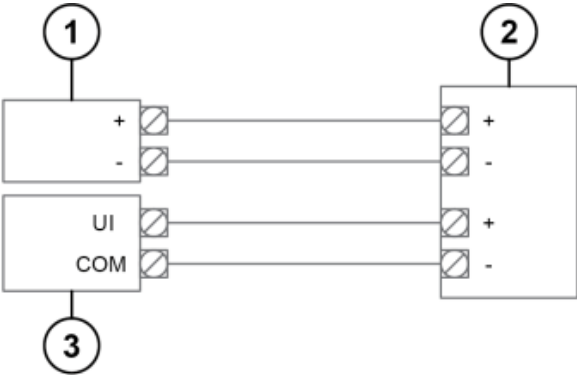
Callout	Description
1	SM-16UI
2	Thermistor, RTD or potentiometer

Figure 10: Voltage input wiring



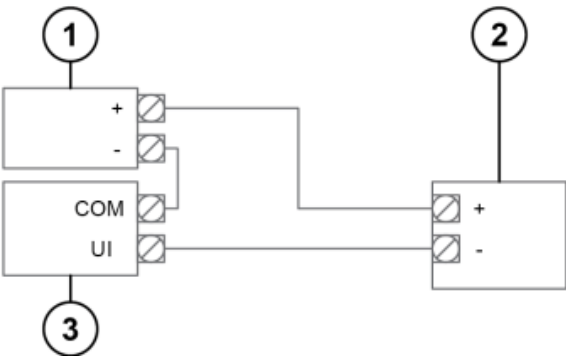
Callout	Description
1	SM-16UI
2	Field device

Figure 11: Current input with internal source wiring



Callout	Description
1	Power supply
2	Field device
3	SM-16UI

Figure 12: SM-16UI current input with external source wiring



Callout	Description
1	Power supply
2	Field device
3	Controller

SM-8AO wiring

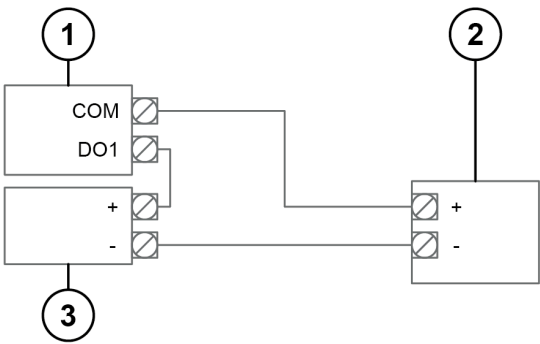
Figure 13: SM-8AO current or voltage output wiring



Callout	Description
1	SM-8AO
2	Field device

SM-8DO wiring

Figure 14: SM-8DO output wiring



Callout	Description
1	SM-8DO
2	Field device
3	Power supply

Supported signal types

Table 3: IO Module supported signal types

IO Module	Signal type	Description
SM16-UI	Resistance	0 to 600 K
	Voltage	1 to 5 V
		0 to 10 V
		2 to 10 V
	Current	0 to 20 mA
		4 to 20 mA
	Sensor	NTC 10K Type 2
		NTC 10K Type 2 Shunt 11 K
		NTC 10K Type 3
		NTC 10K Type 3 Shunt 11K
		NTC 3K
		NTC 20K
		1K Platinum
		1K Nickel
	Pulse count	Max 25 Hz
	Direct	Normal open
	Reverse	Normal close

Table 3: IO Module supported signal types

IO Module	Signal type	Description
SM16-DI	Direct	Normal open
	Reverse	Normal close
	Pulse count	Max 25 Hz
SM8-AO	Voltage	0 to 10 V
		2 to 10 V
	Current	0 to 20 mA
		4 to 20 mA
SM8-DO	Direct	Normal open
	Reverse	Normal close

Communication and Signal Module LED states

The following table displays the Communication and Signal Module LED states:

Table 4: Communication and Signal Module LED states

LED label	LED color	Device	State	Description
ST	Green	CM-485	Slow blink at 1 Hz	Normal condition
		Signal modules	Slow blink at 1 Hz	Normal condition
			Rapid blink at 5 Hz	Bootloader mode
	Red	CM-485	Steady state	Internal error
			Slow blink at 1 Hz	Product test mode enabled
			Blink at 2 Hz	Occurs when you press the reset button and hold for 5 seconds. This indicates that configuration reset has occurred.
		Signal modules	Steady state	Internal error
			Slow blink at 1 Hz	Product test mode enabled
			Rapid blink at 5 Hz	Indicates error in bootloader mode
	Blue	CM-485	Slow blink at 1 Hz	Configuration mode
			Rapid blink at 5 Hz	Configuration does not match that of connected devices
		Signal modules	Rapid blink at 5 Hz	Firmware is upgrading
TX	Green	CM-485	Blink	Active communications
PW	Green	CM-485	Steady state	Power connected
		Signal modules		

Restoring factory settings

1. Ensure that the CM module is in configuration mode. A blue LED blinks at 2 Hz next to the **ST** LED label to show that configuration mode is active.
2. Press and hold down the reset button in the pinhole on top of the CM module for 5 seconds. The LED turns from blue to red, and blinks at 5 Hz to show that the factory reset is complete.

Note: To reset the CM, without restoring factory settings, quickly press the reset button one time.

Patents

Patents: <https://icpat.com>

Product warranty

This product is covered by a limited warranty, details of which can be found at 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 www.johnsoncontrols.com/techterms. Your use of this product constitutes an agreement to such terms.

Contact information

Contact your local Johnson Controls representative: www.johnsoncontrols.com/locations

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

Single point of contact

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All specifications and other information shown were current as of document revision and are subject to change without notice.