Installation Instructions

Original Instructions

Encoder Output Emulator Module

Catalog Number 2198-ABQE

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About the Module

The Allen-Bradley® encoder output emulator is a DIN-rail mounted EtherNet/IP network-based standalone module capable of outputting encoder pulses to a customer-supplied peripheral device (cameras, for example, used in line-scan vision systems). The encoder output emulator supports real and virtual axes for systems using the integrated motion on EtherNet/IP network.

See the Encoder Output Emulator User Manual, publication 2198-UM003, for detailed information on wiring, applying power, troubleshooting, and integration with your drive system and Logix5000™ controller.

Before You Begin

Remove all packing material, wedges, and braces from within and around the components. After unpacking, check the item nameplate catalog number against the purchase order.

The encoder output emulator ships with the following items:

- 24V wiring plug for control power input (installed)
- Label for recording the IP address and attaching to the encoder output emulator (applied)
- These installation instructions, publication 2198-IN013

Also Required for Installation

These items are ordered separately:

- 2198-K57CK-D15M connector kit, for terminating output cable conductors (1 for each output connector)
- 2198-KITCON-ABQE spare connector and end-anchor set that includes the following:
  - 24V wiring plug for control power input (replacement)
  - Label for recording the IP address and attaching to the encoder output emulator (replacement)
  - DIN-rail end-anchors for holding the module in position (2 per module)

Install the Module

This procedure assumes that you have prepared your panel and understand how to bond your system. For installation instructions regarding equipment and accessories not included here, refer to the instructions that came with those products.

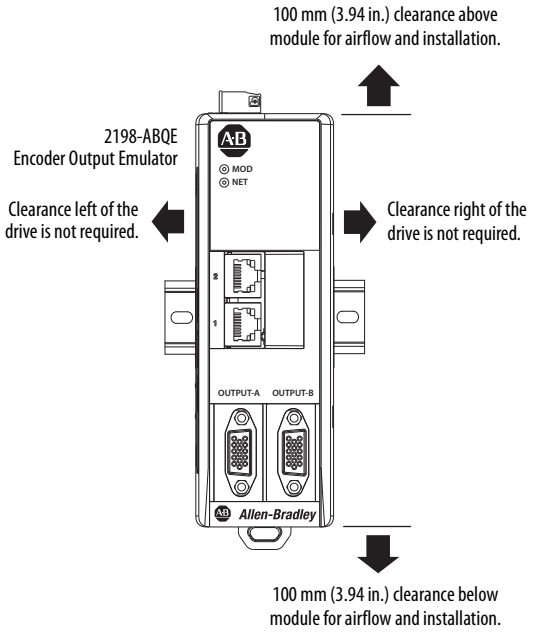
SHOCK HAZARD: To avoid hazard of electrical shock, perform all mounting and wiring of the module prior to applying power. Once power is applied, connector terminals can have voltage present even when not in use.

ATTENTION: Plan the installation of your system so that you can perform all cutting, drilling, tapping, and welding with the system removed from the enclosure. Because the system is of the open type construction, be careful to keep any metal debris from falling into it. Metal debris or other foreign matter can become lodged in the circuitry and result in damage to components.

Clearance Requirements

Observe these clearance requirements when mounting your module to the panel:

- Additional clearance is required for cables and wires connected to the top of the module.
- Additional clearance is required if other devices are installed above and/or below the module and have clearance requirements of their own (see Product Dimensions on page 4, for mounting dimension details).



IMPORTANT Mount the module in an upright position as shown. Do not mount the module on its side.

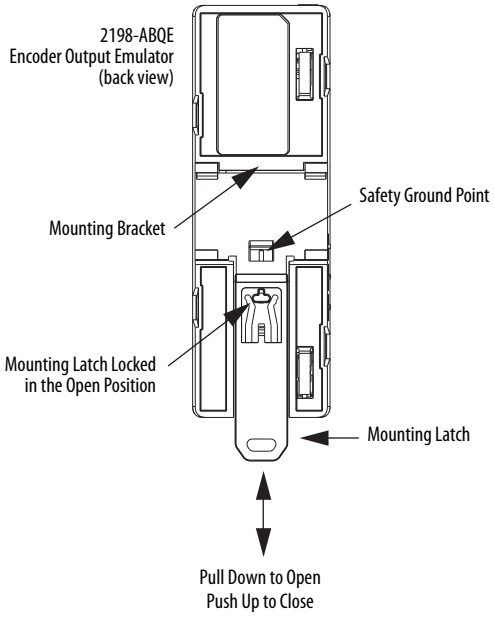
Mount the Module

Follow these steps to mount the encoder output emulator.

1. Attach your DIN rail to the panel.

   Follow the appropriate bonding techniques to make sure the DIN rail maintains a high-frequency bond to the panel. For more information on system bonding, see the System Design for Control of Electrical Noise Reference Manual, publication GMC-RM001.

2. Pull the mounting latch downward until it locks in the open position beneath the ground point.

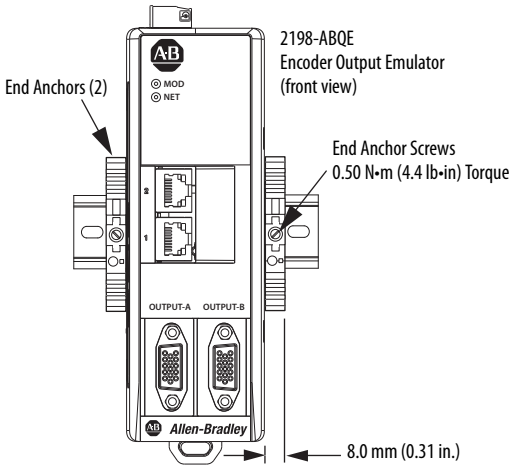


3. Determine the approximate position for mounting the module and hang the mounting bracket on the DIN rail.
4. Pivot the module downward until it rests flat against the DIN rail.
5. Push the mounting latch upward until the latch locks into place.

IMPORTANT The mounting latch must lock firmly in the closed position for the DIN rail to make contact with safety ground.

6. Adjust the module left or right on the DIN rail, if needed, and install end anchors (one on each side of the module) to hold the module firmly in position on the DIN rail.

   The 2198-KITCON-ABQE spare connector and end-anchor set includes two DIN-rail end anchors.

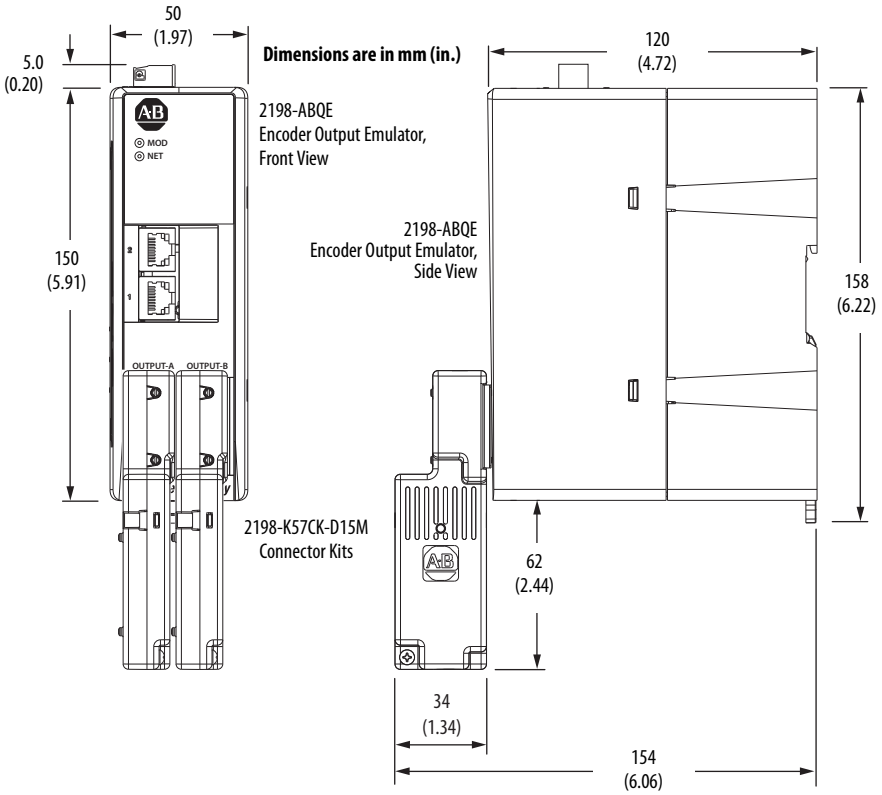


IMPORTANT The encoder output module must have adjacent modules or end anchors installed on either side to prevent the module from sliding left or right on the DIN rail.

Product Dimensions

Included in this figure are 2198-K57CK-D15M connector kits attached to the output connectors. End anchors, used to secure the module on the DIN rail, add 8 mm (0.31 in.) on either side of the module.

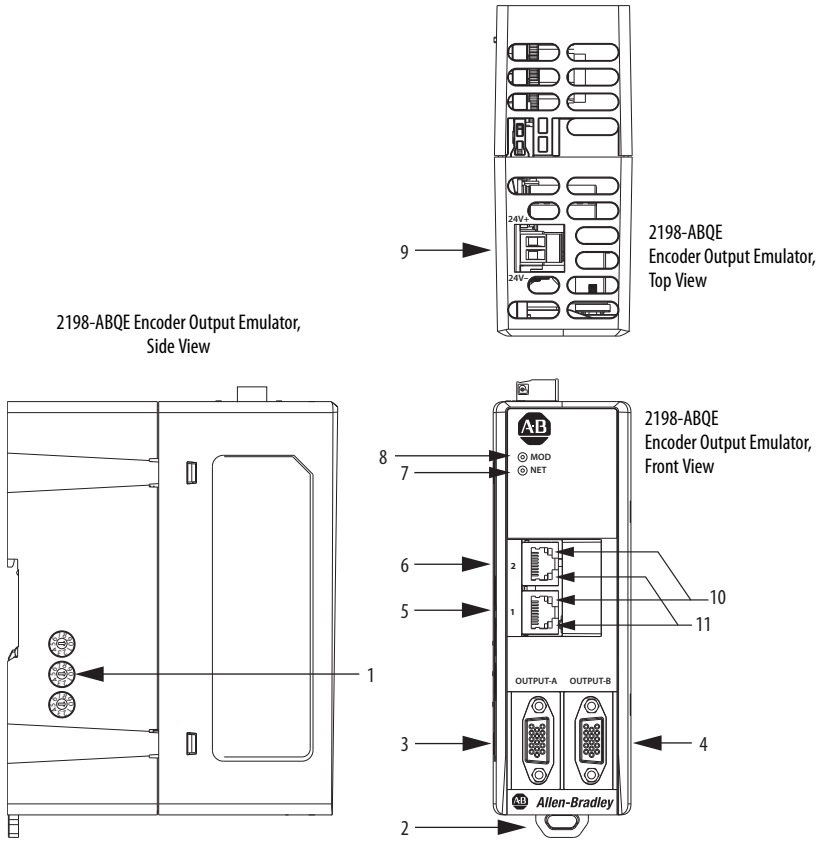
Encoder Output Emulator with 2198-K57CK-D15M Connector Kits



Connector Data

Use this illustration to identify the encoder output emulator features and indicators.

Module Features and Indicators



Item	Description
1	IP address switches
2	Mounting latch
3	15-pin output connector - A
4	15-pin output connector - B
5	Ethernet (PORT1) RJ45 connector
6	Ethernet (PORT2) RJ45 connector
7	Network status indicator
8	Module status indicator
9	24V control input power (CP) connector
10	Link speed status indicators
11	Link/Activity status indicators

Encoder Output Emulator Connectors

Designator	Description	Connector
CP	24V control input power	2-position plug, terminal screws
PO1	Encoder output to peripheral device	Dual-stacked 15-pin shielded D-shell, female
PO2		
PORT1, PORT2	Ethernet communication ports	RJ45 Ethernet

Control Input Power (CP) Connector Pinout

CP Pin	Description	Signal
1	24V power supply, customer-supplied	24V+
2	24V common	24V-

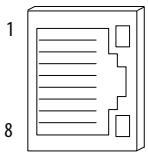
24V Connector Wiring Requirements

Connects to Terminals		Wire Size	Strip Length	Torque Value
Pin	Signal	mm^2 (AWG)	mm (in.)	N•m (lb•in)
CP-1 CP-2	24V+ 24V-	2.5…0.5 (14…20)	7.0 (0.28)	0.22…0.25 (1.9…2.2)

Ethernet Communication PORT1 and PORT2 Pinout

Port Pin	Description	Signal
1	Transmit port (+) data terminal	TD+
2	Transmit port (-) data terminal	TD-
3	Receive port (+) data terminal	RD+
4	–	–
5	–	–
6	Receive port (-) data terminal	RD-
7	–	–
8	–	–

Standard RJ45

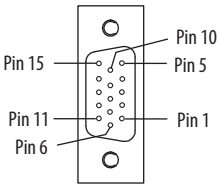


Output Connector Pinout

Pin	Description	Signal
1	Differential A phase signal – positive (RS422) / differential STEP signal - positive	A+ / Step+
2	Differential A phase signal – negative (RS422) / Differential Step signal – negative (RS422)	A– / Step–
3	Differential B phase signal - positive (RS422) / Differential Direction signal – positive (RS422)	B+ / Direction+
4	Differential B phase signal - negative (RS422) / Differential Direction signal – negative (RS422)	B– / Direction–
5	Differential Z phase signal - positive (RS422)	Z+
6	Reference/Common for output signals	COM
7	Reserved	–
8	Single-ended Z phase signal	Z

Pin	Description	Signal
9	Reserved	–
10	Differential Z phase signal - negative (RS422)	Z–
11	Reserved	–
12	Single-ended A phase signal / Single-ended Step signal	A / Step
13	Single-ended B phase signal / Single-ended Direction signal	B / Direction
14	Power supply (customer-supplied) for single-ended output signals	PWR
15	Reserved	–

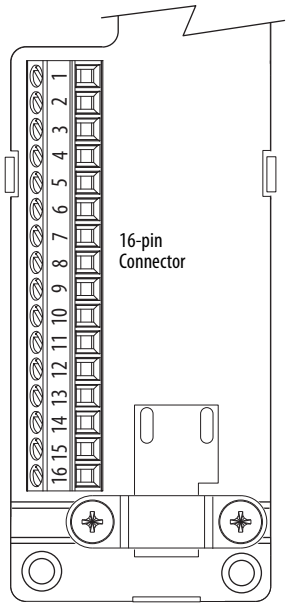
Pin Orientation for 15-pin Output Connector



Wire the Module

Use 2198-K57CK-D15M connector kits to terminate wires from your peripheral device to the 15-pin output connectors.

2198-K57CK-D15M Connector Kit Wiring Requirements



Terminal	Signal	Strip Length mm (in.)	Torque Value N•m (lb•in)
1	A+ / Step+	5.0 (0.2)	0.22…0.25 (1.9…2.2)
2	A– / Step–		
3	B+ / Direction+		
4	B– / Direction–		
5	Z+		
6	COM		
7	–		
8	Z		
9	–		
10	Z–		
11	–		
12	A / Step		
13	B / Direction		
14	PWR		
15	–		
16	Drain		

See the Universal Feedback Connector Kit Installation Instructions, publication 2198-IN010, for kit specifications, cable preparation, and shield ground information.

Ground Your Module to the Subpanel

The module safety ground connection to earth ground is made when the module is mounted properly to the DIN rail. See Mount the Module (step 5) on page 3 for an illustration.

IMPORTANT The mounting latch must lock firmly in the closed position for the DIN rail to make contact with safety ground.

Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.

Additional Resources

Resource	Description
Encoder Output Emulator Module User Manual, publication 2198-UM003	Provides troubleshooting information for your encoder output emulator module. Also includes information on how to access and install the Add On Profile (AOP) and Add On Instructions (AOI) for your drive system that includes an encoder output emulator.
Kinetix Servo Drives Specifications Technical Data, publication GMC-TD003	Provides product specifications for the Kinetix® Integrated Motion over EtherNet/IP network, Integrated Motion over sercos interface, EtherNet/IP networking, and component servo drive families.
Kinetix 5700 Servo Drives User Manual, publication 2198-UM002	Information on installing, configuring, starting, and troubleshooting your Kinetix servo drive system.
Kinetix 5500 Servo Drives User Manual, publication 2198-UM001	
Kinetix 6500 Servo Drives User Manual, publication 2094-UM002	
Kinetix 350 Servo Drives User Manual, publication 2097-UM002	

Additional Resources (continued)

Resource	Description
PowerFlex 750-Series AC Drives Installation Instructions, publication 750-IN001	Provides you with the basic information needed to install, start-up, and troubleshoot PowerFlex® 755 and PowerFlex 527 AC drives.
PowerFlex 527 Adjustable Frequency AC Drive User Manual, publication 520-UM002	
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines for installing a Rockwell Automation® industrial system.
Product Certifications website, http://www.ab.com	Provides declarations of conformity, certificates, and other certification details.

You can view or download publications at http://www.rockwellautomation.com/global/literature-library/overview.page. To order paper copies of technical documentation, contact your local Allen-Bradley distributor or Rockwell Automation sales representative.

Rockwell Automation Support

Use the following resources to access support information.

Technical Support Center	Knowledgebase Articles, How-to Videos, FAQs, Chat, User Forums, and Product Notification Updates.	https://rockwellautomation.custhelp.com/
Local Technical Support Phone Numbers	Locate the phone number for your country.	http://www.rockwellautomation.com/global/support/get-support-now.page
Direct Dial Codes	Find the Direct Dial Code for your product. Use the code to route your call directly to a technical support engineer.	http://www.rockwellautomation.com/global/support/direct-dial.page
Literature Library	Installation Instructions, Manuals, Brochures, and Technical Data.	http://www.rockwellautomation.com/global/literature-library/overview.page
Product Compatibility and Download Center (PCDC)	Get help determining how products interact, check features and capabilities, and find associated firmware.	http://www.rockwellautomation.com/global/support/pcdc.page

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PN-350204

Publication 2198-IN013A-EN-P - July 2016

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