

Installation Instructions

Original Instructions



Allen-Bradley

by ROCKWELL AUTOMATION

FLEX 5000 Analog 8-channel Current/Voltage Input Modules

Catalog Numbers 5094-IF8, 5094-IF8XT

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Summary of Changes

This publication contains the following new or updated information. This list includes substantive updates only and is not intended to reflect all changes.

Topic	Page
Updated back cover	Back Cover

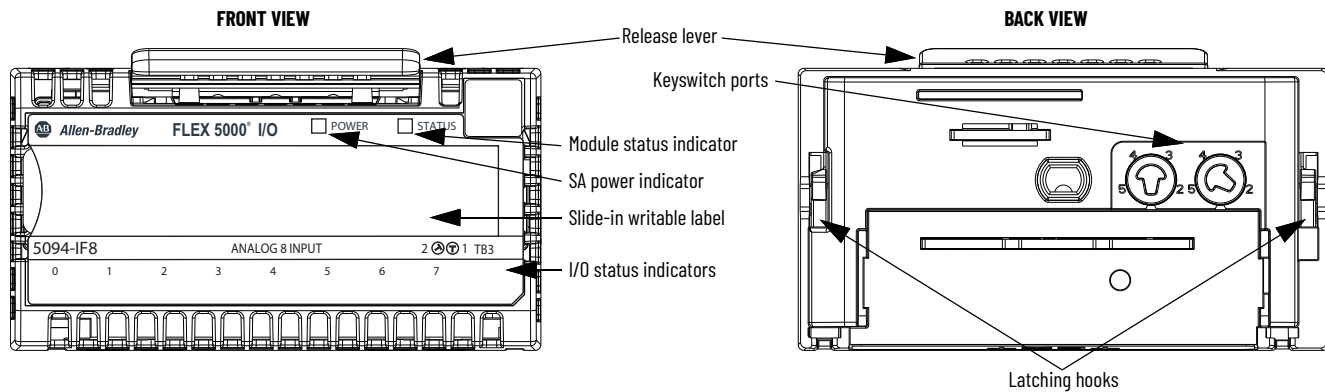
Product Overview

The 5094-IF8 and 5094-IF8XT analog 8-channel current/voltage input modules offer single-ended, non-isolated input channels that can connect to current or voltage input devices. The modules support multiple ranges for each input type.

FLEX 5000® I/O modules use the Producer/Consumer communication model. The Producer/Consumer communication model is an intelligent data exchange between modules and other system devices in which each module produces data without first being polled.

FLEX 5000 I/O modules are used with some Logix 5000® controllers and configured with the Studio 5000 Logix Designer® application. For more information on how which Logix 5000 controllers and Logix Designer application versions are compatible with FLEX 5000 I/O modules, see the publications listed in [Additional Resources on page 12](#).

About the Module



Install a FLEX 5000 I/O System

Before you install the module, you must install a FLEX 5000 I/O system. At minimum, the system must include a FLEX 5000 EtherNet/IP™ adapter and backplane end cap. For more information on how to install a FLEX 5000 I/O system, see the FLEX 5000 EtherNet/IP Adapters with RJ45 Ports Installation Instructions, publication [5094-IN001](#), and the FLEX 5000 Terminal Base Assembly Modules Installation Instructions, publication [5094-IN010](#).

You can install the module next to any FLEX 5000 I/O module.

IMPORTANT See the FLEX 5000 Analog I/O Modules User Manual, publication [5094-UM002](#), for firmware and software requirements.

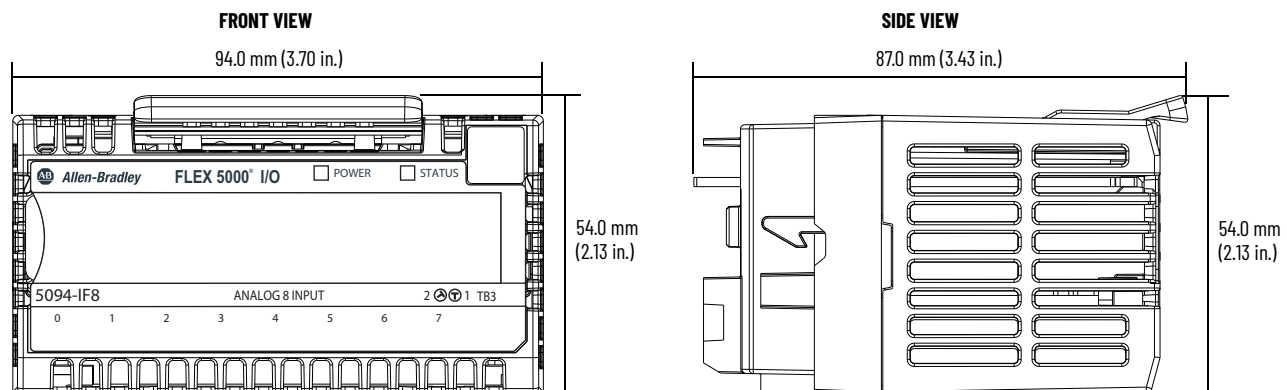
Required Components

To install the module, you need the physical components that are listed in the following table.

Components Needed for FLEX 5000 I/O Module Installation

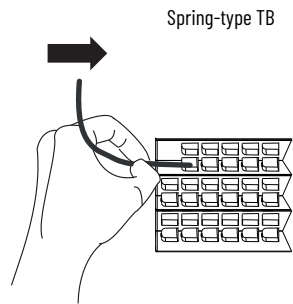
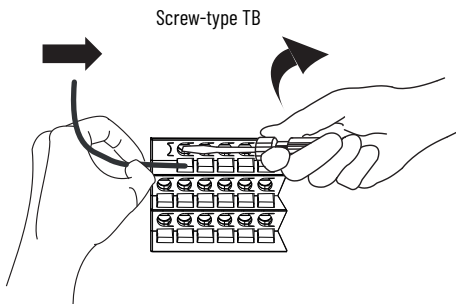
Component	Description
Terminal base	IMPORTANT: Mounting bases (MBs) and removable terminal bases (RTBs) do not ship with the FLEX 5000 I/O modules. You must purchase a MB and a RTB individually for each I/O module. 5094-MB plus 5094-RTB3 (referred to in documentation as a non-orderable 5094-TB3) 5094-MB plus 5094-RTB3S (referred to in documentation as a non-orderable 5094-TB3S) 5094-MBXT plus 5094-RTB3XT (referred to in documentation as a non-orderable 5094-TB3XT) 5094-MBXT plus 5094-RTB3SXT (referred to in documentation as a non-orderable 5094-TB3SXT)
Shield bar	You can order the shield bar separately: 5094-STB-QTY5 (pack of 5).
DIN rail	Compatible zinc-plated chromate-passivated steel DIN rail. You can use a steel DIN rail such as the Allen-Bradley® 199-DR1; 46277-3; EN60715 – 35 x 7.5 mm (1.38 x 0.30 in.).
End cap	A backplane end cap ships with a FLEX 5000 EtherNet/IP adapter. You can order backplane end caps separately: 5094-ECR-QTY5 – End cap, pack of 5.
Tools	The following tools are needed: • Screwdriver • Wire stripper • Wires For more information on available wire sizes and wire insulation stripping length, see Module Specifications on page 12 .

Dimensions



3. Connect the wires to the terminal base.

TB Type	Action
Screw	1. Insert the wire into the terminal. 2. Turn the screwdriver to close the terminal on the wire. Torque the screw to 0.4 N•m (3.5 lb•in).
Spring	Push the wire into the terminal. If the wire is too thin, crimp a wire ferrule on the wire and insert it.



4. Connect individual input device wiring to terminals 0...15 as indicated in [Wiring Connections for 5094-IF8 and 5094-IF8XT on page 11](#).
5. Connect the associated +V DC power lead of the input device to the corresponding Voltage terminal for each input. Voltage terminals are internally connected together.
6. Connect the associated input common to the corresponding Common terminal for each input. Common terminals are internally connected together.
7. Connect cable shield ground to the shield bar accessory.
8. Connect +V DC power to terminal SA+ on the left side of the terminal base.
9. Connect V DC common to terminal SA- on the left side of the terminal base.
10. If daisy chaining +V DC power to the next terminal base, connect a jumper from terminal SA+ on the right side of this terminal base to terminal SA+ on the left side of the next terminal base.
11. If continuing V DC common to the next terminal base, connect a jumper from terminal SA- on the right side of this terminal base to terminal SA- on the left side of the next terminal base.

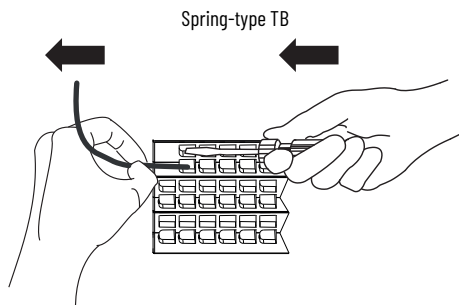
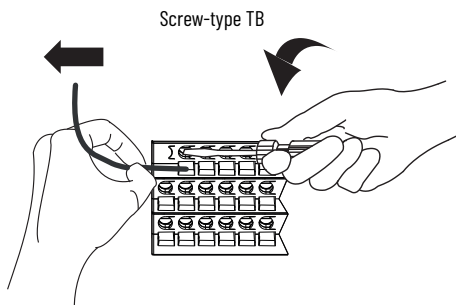
Disconnect Wires from the Terminal Base



WARNING: If you connect or disconnect wiring while the field-side power is on, an electric arc can occur. This could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.

Disconnect wires from the terminal base.

TB Type	Action
Screw	1. Turn the screwdriver counter-clockwise to open the terminal. 2. Remove the wire.
Spring	1. Insert and hold a screwdriver in the slot above the terminal. 2. Remove the wire. 3. Pull out the screwdriver.

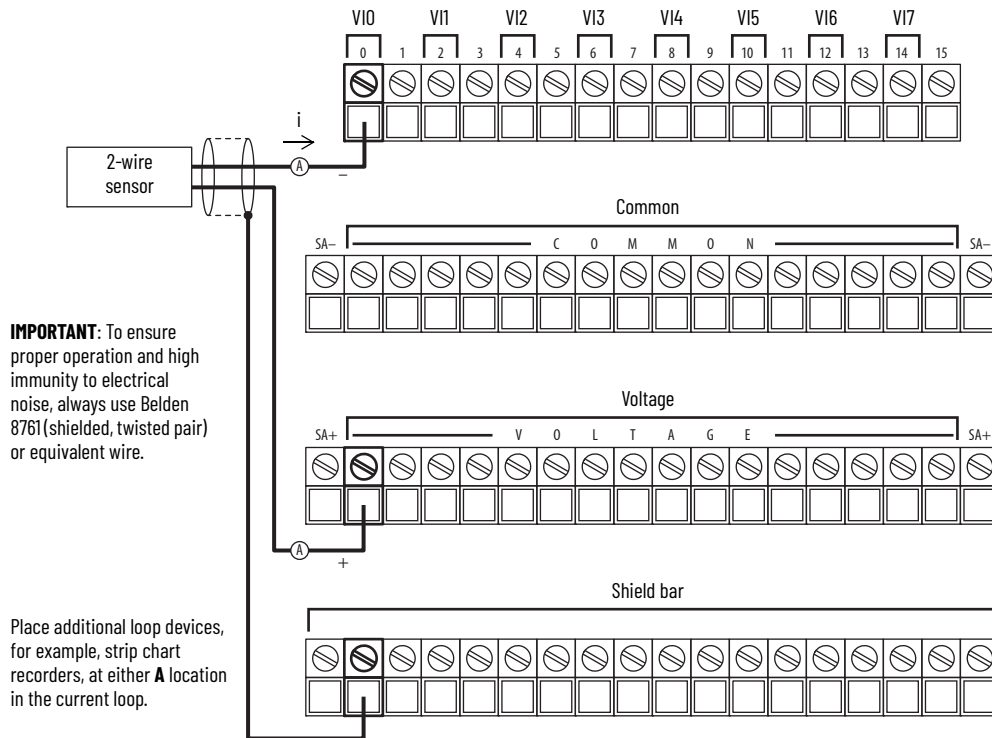


Wiring Diagram

The following are example wiring diagrams. You must connect a 24V DC power source to the left SA+/- terminals to provide field-side power.

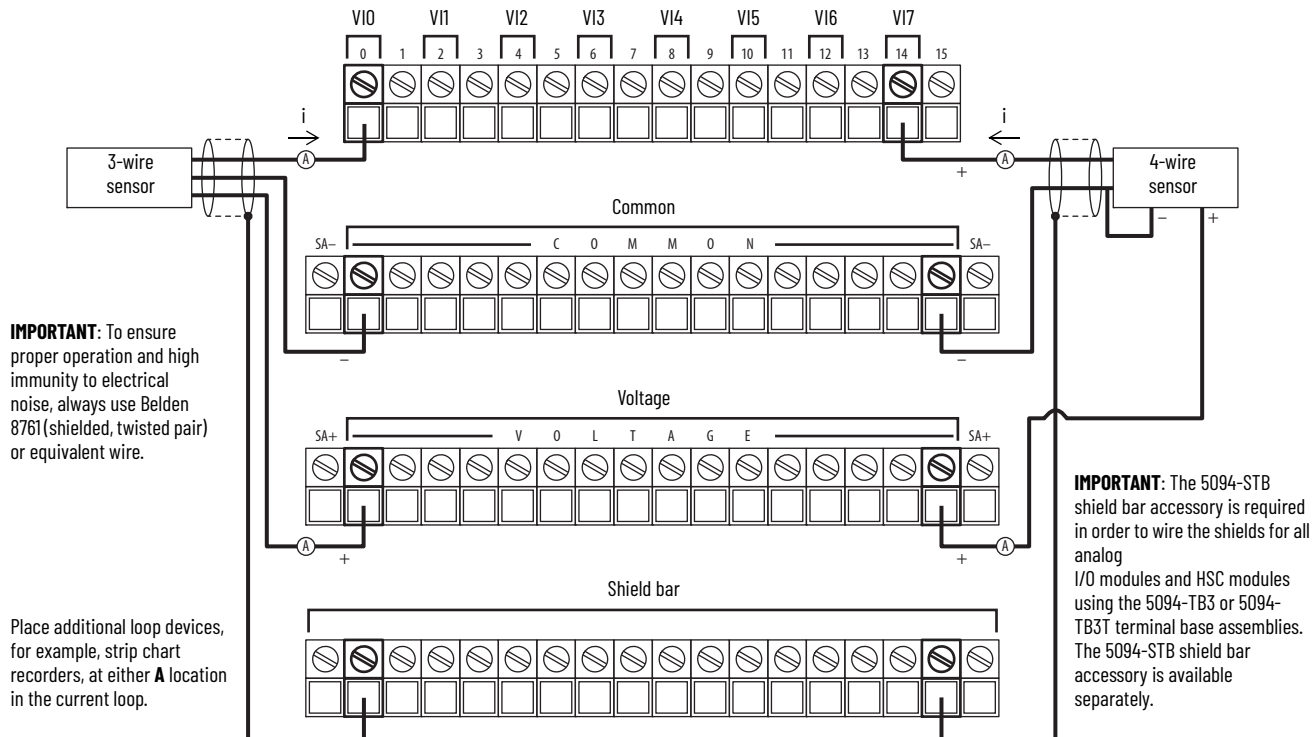
These examples apply to the 5094-IF8 and 5094-IF8XT analog input modules when used in current mode.

5094-IF8 and 5094-IF8XT Wiring Diagram – 2-wire Current Mode



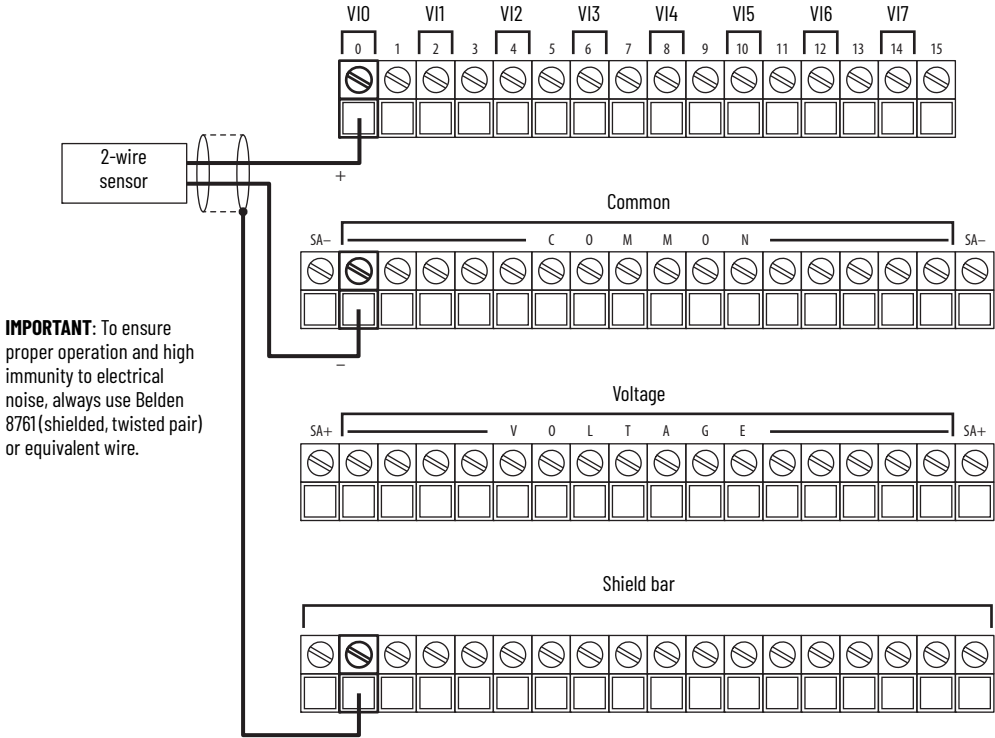
IMPORTANT: The 5094-STB shield bar accessory is required in order to wire the shields for all analog I/O modules and HSC modules using the 5094-TB3 or 5094-TB3T terminal base assemblies. The 5094-STB shield bar accessory is available separately.

5094-IF8 and 5094-IF8XT Wiring Diagram – 3-wire and 4-wire Current Mode



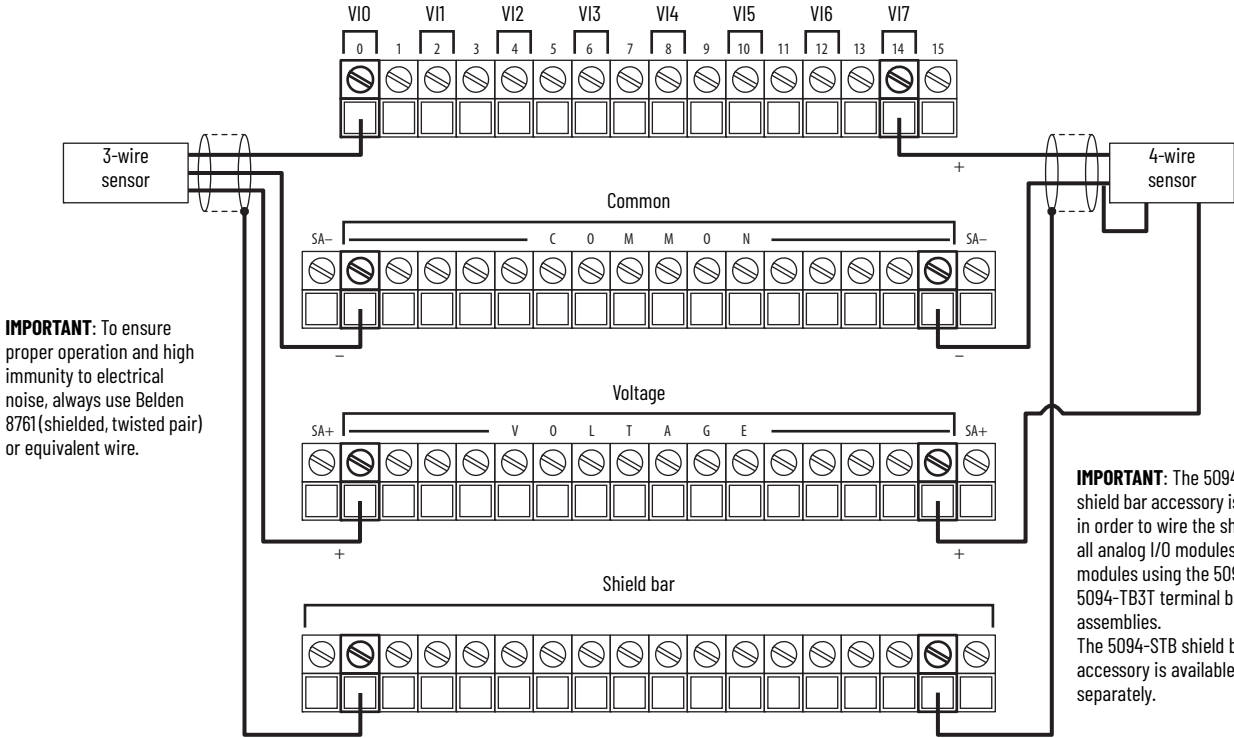
These examples apply to the 5094-IF8 and 5094-IF8XT analog input modules when used in voltage mode.

5094-IF8 and 5094-IF8XT Wiring Diagram – 2-wire Voltage Mode



IMPORTANT: The 5094-STB shield bar accessory is required in order to wire the shields for all analog I/O modules and HSC modules using the 5094-TB3 or 5094-TB3T terminal base assemblies. The 5094-STB shield bar accessory is available separately.

5094-IF8 and 5094-IF8XT Wiring Diagram – 3-wire and 4-wire Voltage Mode



IMPORTANT: The 5094-STB shield bar accessory is required in order to wire the shields for all analog I/O modules and HSC modules using the 5094-TB3 or 5094-TB3T terminal base assemblies. The 5094-STB shield bar accessory is available separately.

Wiring Connections for 5094-IF8 and 5094-IF8XT

Channel	Input Terminal	Common Terminal	Voltage Terminal
Input 0	0	Common terminals are internally connected together.	Voltage terminals are internally connected together.
Input 1	2		
Input 2	4		
Input 3	6		
Input 4	8		
Input 5	10		
Input 6	12		
Input 7	14		
V DC common	SA-		
+V DC power	SA+		
Shield bar (ground)	The shield bar accessory is available separately.		

Power the System

After you install all FLEX 5000 I/O modules, you can turn on power to the FLEX 5000 EtherNet/IP adapter and, if used, field-side power to the terminal bases. For more information, see [Power Considerations on page 6](#).

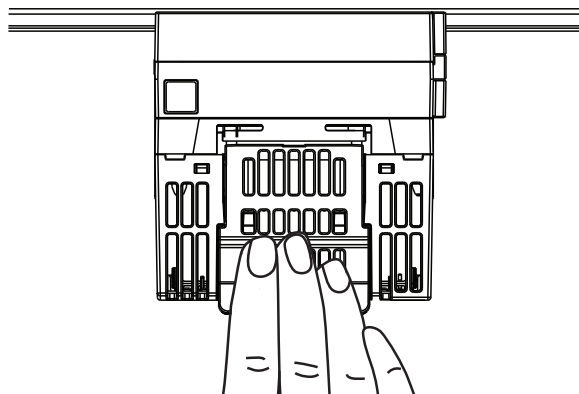
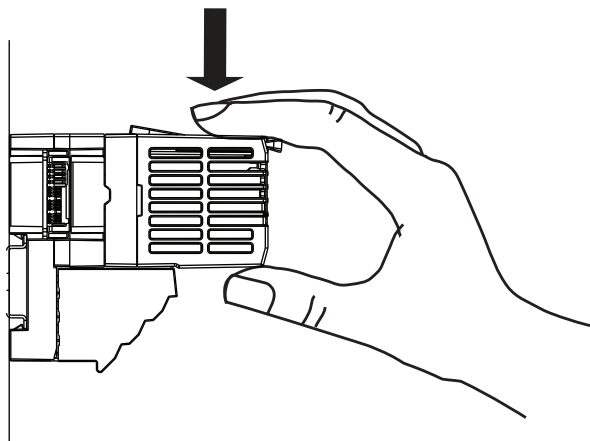
Remove the Module



WARNING: When you insert or remove the module while backplane power or SA power (field-side) is on, an electric arc can occur. This could cause an explosion in hazardous location installations.

Be sure that power is removed or the area is nonhazardous before proceeding. Repeated electric arcing causes excessive wear to contacts on both the module and its mating connector. Worn contacts may create electrical resistance that can affect module operation.

1. Press and hold the release lever on the top of the module. Be sure to press the entire lever evenly.



2. Pull the module off the terminal base.

Replace the Module

To replace the module, follow the steps that are described beginning at [Install the Module on page 6](#).

Module Specifications

The following table lists a subset of the module specifications. For a complete list of specifications, see the FLEX 5000 Module Specifications Technical Data, publication [5094-TD001](#).

5094-IF8 and 5094-IF8XT Analog 8-channel Current/Voltage Input Module Specifications

Attribute	Value
Temperature, operating IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-2 (Test Bd, Operating Dry Heat), IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	$-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$ ($-40^{\circ}\text{F} \leq T_a \leq +158^{\circ}\text{F}$)
Temperature, surrounding air, max	70 °C (158 °F)
Enclosure type rating	None (open-style)
Input range, voltage	±10V 0...10V 0...5V
Input range, current	0...20 mA 4...20 mA
Backplane Power (BP) voltage	15V DC
Backplane Power (BP) current, max	70 mA
Sensor Actuator Power (SA) voltage range	18...32V DC
Sensor Actuator Power (SA) current, max	120 mA
Isolation voltage	250V (continuous), Basic Insulation Type, System to Field No isolation between SA Power and input ports No isolation between individual input ports
TB keying	2  1
Wire size	0.34...2.5 mm ² (22...14 AWG) solid or stranded copper wire rated at 105 °C (221 °F), or greater, 1.2 mm (3/64 in.) insulation max. Ferrule according to DIN 46 228/1.
Insulation stripping length	Screw-type TB: • 0.34...2.5 mm ² (22...14 AWG) = 12 mm ± 1 mm (0.47 in. ± 0.04 in.) Spring-type TB: • 0.34...1.5 mm ² (22...16 AWG) = 10 mm ± 1 mm (0.39 in. ± 0.04 in.) • 2.5 mm ² (14 AWG) = 15 mm ± 1 mm (0.59 in. ± 0.04 in.)
TB torque specifications	Screw-type TB: 0.4 N•m (3.5 lb•in) Spring-type TB: Not applicable
North American temp code	T4
UKEX/ATEX temp code	T4
IECEX temp code	T4
Corrosion resistance classification	5094-IF8 – ISA S71.04 G2 5094-IF8XT – ISA S71.04 G3

Additional Resources

For more information on the products that are described in this publication, use these resources. You can view or download publications at rok.auto/literature.

Resource	Description
FLEX 5000 Module Specifications Technical Data, publication 5094-TD001	Provides specifications for FLEX 5000 EtherNet/IP adapters and FLEX 5000 modules.
FLEX 5000 I/O Modules Product Information, publication 5094-PC004	Provides basic certification information for FLEX 5000 I/O modules.
FLEX 5000 Terminal Base Assembly Modules Installation Instructions, publication 5094-IN010	Describes how to install the FLEX 5000 terminal base assemblies.
FLEX 5000 Analog I/O Modules User Manual, publication 5094-UM002	Describes how to install, configure, and operate the FLEX 5000 analog I/O modules.
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines for installing a Rockwell Automation industrial system.
Product Certifications website, rok.auto/certifications	Provides declarations of conformity, certificates, and other certification details.