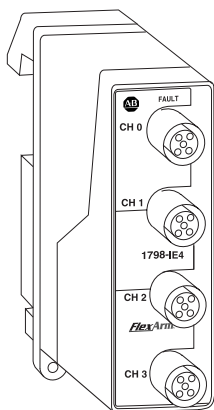




Installation Instructions

FlexArmor Analog Input Module

Catalog Number 1798-IE4



42999

The FlexArmor I/O module (Cat. No. 1798-IE4) mounts in a FlexArmor Baseplate. Use compatible sealed cordsets to connect all field side wiring. All cordsets must be shielded to achieve proper noise immunity.

The 1798-IE4 module provides connections for up to 4 single ended non-isolated inputs. This module has four 12 mm connectors configured for analog input. A diagnostic feature for this module includes sensor power short-circuit detection. The inputs can be either voltage or current.

Package Contents

Your package contains one FlexArmor 1798-IE4 module and these installation instructions. (Note: Baseplates and other components are ordered and shipped separately.)

Important User Information

Because of the variety of uses for the products described in this publication, those responsible for the application and use of these products must satisfy themselves that all necessary steps have been taken to assure that each application and use meets all performance and safety requirements, including any applicable laws, regulations, codes and standards. In no event will Allen-Bradley be responsible or liable for indirect or consequential damage resulting from the use or application of these products.

Any illustrations, charts, sample programs, and layout examples shown in this publication are intended solely for purposes of example. Since there are many variables and requirements associated with any particular installation, Allen-Bradley does not assume responsibility or liability (to include intellectual property liability) for actual use based upon the examples shown in this publication.

Allen-Bradley publication SGI-1.1, *Safety Guidelines for the Application, Installation and Maintenance of Solid-State Control* (available from your local Allen-Bradley office), describes some important differences between solid-state equipment and electromechanical devices that should be taken into consideration when applying products such as those described in this publication.

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Throughout this publication, notes may be used to make you aware of safety considerations. The following annotations and their accompanying statements help you to identify a potential hazard, avoid a potential hazard, and recognize the consequences of a potential hazard:

ATTENTION



Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss.

IMPORTANT

Identifies information that is critical for successful application and understanding of the product.

Environment and Enclosure

This equipment is intended for use in a Pollution Degree 2 industrial environment, in overvoltage Category II applications (as defined in IEC publication 60664-1), at altitudes up to 2000 meters without derating.

This equipment is considered Group 1, Class A industrial equipment according to IEC/CISPR Publication 11. Without appropriate precautions, there may be potential difficulties ensuring electromagnetic compatibility in other environments due to conducted as well as radiated disturbance.

ATTENTION

This equipment is supplied as "enclosed" equipment. It should not require additional system enclosure when used in locations consistent with the enclosure type ratings stated in the Specifications section of this publication. Subsequent sections of this publication may contain additional information regarding specific enclosure type ratings, beyond what this product provides, that are required to comply with certain product safety certifications.

See NEMA Standards publication 250 and IEC publication 60529, as applicable, for explanations of the degrees of protection provided by different types of enclosure. Also, see the appropriate sections in this publication, as well as the Allen-Bradley publication 1770-4.1 ("Industrial Automation Wiring and Grounding Guidelines"), for additional installation requirements pertaining to this equipment.

Related Publications

- For DeviceNet software configuration information, refer to the 1798-ADN User Manual, publication 1798-UM001.
- For PROFIBUS configuration information, refer to the 1798-APB User Manual, publication 1798-UM002.

Install the Module into the Baseplate

For instructions on how to mount the FlexArmor Baseplate, refer to publication no. 1798-IN003.

Preventing Electrostatic Discharge

This equipment is sensitive to electrostatic discharge, which can cause internal damage and affect normal operation. Follow these guidelines when you handle this equipment:

ATTENTION



- Touch a grounded object to discharge potential static.
- Wear an approved grounding wriststrap.
- Do not touch connectors or pins on component boards.
- Do not touch circuit components inside the equipment.
- If available, use a static-safe workstation.
- When not in use, store the equipment in appropriate static-safe packaging.

To install the module into the FlexArmor Baseplate:

1. Hold the module at an angle and engage the top of the module in the indentation on the rear of the Baseplate.
2. Press the module down flush with the panel until the locking lever locks.
3. Repeat these steps for each I/O module and each remaining Baseplate I/O slot.

IMPORTANT

I/O modules can be installed in any slot location to the right of the adapter module. The adapter is capable of addressing up to eight I/O modules.

- Screw down the module retaining screws to ensure IP67 compliance.

IMPORTANT

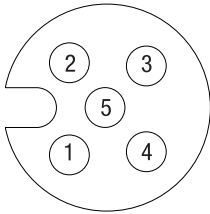
- Torque the screws to 0.5-0.7 Nm. (4.43 - 6.2 inch pounds).
- Dust caps must have 4 inch pounds of torque to maintain IP67 compliance.

Connect the Cordset to the FlexArmor Module

The module uses 5 pin micro (12mm) style PCB mounted connectors.

Four micro caps cover the I/O connectors on the module. Remove the caps and connect your cables to the appropriate ports. Keep the caps in place on any unused connector to maintain the IP67 rating.

A pinout diagram for the connectors is shown below.



42652

Female Input Micro-Connector

(View into Socket)

- Pin 1 Sensor Power
- Pin 2 Current Input
- Pin 3 Sensor Common
- Pin 4 Voltage Input
- Pin 5 Not Used

ATTENTION

- Make sure all connectors and caps are securely tightened to properly seal the connections against leaks and maintain IP67 requirements.
- For maximum noise immunity, input and output cable return wires must be properly terminated. When inputs and outputs are connected in loopback, return wires should be connected together.
- I/O cable length should be less than 30 meters.

Troubleshooting with the Indicators

The following table describes the status indicator on the analog input modules.

I/O Status Indicators		
Function	Indicator	Status
Fault LED	Red Off	Sensor Power Short Normal

Specifications

Specifications - 1798-IE4 Analog Input Module	
Module Type	Analog Input
Number of Channels	4 single-ended, non-isolated
Resolution/Bits Voltage/Cnt Current/Cnt	12 - Unipolar, 11+ sign - Bipolar 2.56 mV - Unipolar; 5.13 mV - Bipolar 5.13 uA
Data Format	16 bit; 2's complement; left-justified
Conversion Type	Successive approximation
Conversion Rate	256 us - All channels
Current Terminal	4-20 mA; 0-20 mA (user configurable)
Voltage Terminal	±10V; 0-10V (user configurable)
Normal Mode Rejection Voltage Terminal Current Terminal	-3 db @ 17 Hz; -20 db/decade; -10 db @ 50 Hz; 11.4 db @ 60 Hz -3 db @ 9 Hz; -20 db/decade; -15.3 db @ 50 Hz; -16.8 db @ 60 Hz
Step Response to 63% Voltage Terminal Current Terminal	9.4 ms 18.2 ms
Impedance: Voltage Terminal Current Terminal	100 kΩ; 200 kΩ @ DC 238Ω
Absolute Accuracy Voltage Terminal Current Terminal	0.20% FS @ 25°C 0.20% FS @ 25°C
Accuracy Drift: Voltage Terminal Current Terminal	0.00428% FS per°C 0.00407% FS per°C
Calibration	None Required
Maximum Overload Voltage Terminal Current Terminal	Single channel; continuous 30V 32 mA
Isolation Voltage	850V dc channel-to-system for 1s
FlexBus Current	10 mA maximum
Sensor Source Current (per connector)	50 mA
Power dissipation	2.5W @ 28.8V dc

Specifications - 1798-IE4 Analog Input Module (continued)

Thermal Dissipation	8.5 BTU/hr @ 28.8V dc
Indicator	1 fault LED Indicator - red
External DC Power Voltage (24V dc nom.) Current	10-28.8V dc; 5% AC ripple 50 mA @ 24V dc
Dimensions (H x D x W)	118 mm x 57 mm x 40 mm 4.63 in. x 2.25 in. x 1.58 in.
Operational Temperature	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): -20 to 60°C (-4 to 140°F)
Storage Temperature	IEC 60068-2-1 (Test Ab, Un-packaged Non-operating Cold), IEC 60068-2-2 (Test Bb, Un-packaged Non-operating Dry Heat), IEC 60068-2-14 (Test Na, Un-packaged Non-operating Thermal Shock): -40 to 85°C (-40 to 185°F)
Shock	IEC60068-2-27 (Test Ea, Unpackaged shock): Operating 30g Non-operating 50g
Emissions	CISPR 11: Group 1, Class A
ESD Immunity	IEC 61000-4-2: 6kV contact discharges 8kV air discharges
Radiated RF Immunity	IEC 61000-4-3: 10V/m with 1kHz sine-wave 80%AM from 30MHz to 2000MHz 10V/m with 200Hz 50% Pulse 100%AM at 900MHz
EFT/B Immunity	IEC 61000-4-4: ±2kV at 5kHz on power ports ±2kV at 5kHz on signal ports
Surge Transient Immunity	IEC 61000-4-5: ±1kV line-line(DM) and ±2kV line-earth(CM) on power ports ±1kV line-line(DM) and ±2kV line-earth(CM) on signal ports
Conducted RF Immunity	IEC 61000-4-6: 10Vrms with 1kHz sine-wave 80%AM from 150kHz to 80MHz
Vibration	IEC60068-2-6 (Test Fc, Operating): 5g @ 10-500Hz
Enclosure	Meets IP67

Specifications - 1798-IE4 Analog Input Module (continued)

Agency Certification (When product is marked)	c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada
	UL	UL Listed Industrial Control Equipment
	CE ¹	European Union 89/336/EEC EMC Directive, compliant with: EN 50081-2; Industrial Emissions EN 50082-2; Industrial Immunity EN 61326; Meas./Control/Lab., Industrial Requirements EN 61000-6-2; Industrial Immunity
	C-Tick ¹	Australian Radiocommunications Act, compliant with: AS/NZS 2064; Industrial Emissions

1. See the Product Certification link at www.ab.com for Declarations of Conformity, Certificates, and other certification details.
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