1794 FLEX I/O Diagnostic Digital Modules Overview

Introduction

In this chapter, you will learn about the diagnostic input module, cat. no. 1794-IB16D, and the diagnostic output module, cat. no. 1794-OB16D.

General Description

This chapter contains an overview of the FLEX™ I/O diagnostic digital modules, the 1794-IB16D input module and 1794-OB16D output module. You can use the FLEX I/O diagnostic modules to help diagnose problems with input and output field devices, I/O wiring and the user power supply. Additionally, these modules can reduce installation startup time and help minimize time to find and fix failures.

This chapter explains how to use the FLEX I/O diagnostic modules to help detect the following types of faults:

- Open input or output field devices
- Open input or output wiring
- Shorted output field devices
- Shorted input or output wiring
- Reversed polarity of user supply wiring
- Open user supply wiring or failed user supply (using one diagnostic input channel)

Network Compatibility

You can use the diagnostic modules with ControlNet, DeviceNet, EtherNet/IP, or remote I/O networks.

Network	Usage Limitations	
	1794-IB16D	**1794-OB16D**
Remote I/O	Compatible with 1794-ASB series E (or higher) and 1794-ASB2 series D (or higher) remote I/O adapters.	Compatible with 1794-ASB series D (or higher) and 1794-ASB2 series C (or higher) remote I/O adapters.
DeviceNet	No limitations or constraints.	
ControlNet	Direct connection only.	Direct or rack connections.
EtherNet/IP	Direct connection only.	Direct or rack connections.

1794-IB16D Diagnostic Input Module Compatibility

The 1794-IB16D diagnostic input module interfaces to sensing devices and detects whether they are on or off. The diagnostic input module converts DC signals from user devices to the appropriate logic level for use in the FLEX I/O system. Typical input devices include these types of switches.

- Proximity switches
- Limit switches
- Photoelectric switches
- Selector switches
- Float switches
- Push button switches

When designing a system using a FLEX I/O diagnostic input module, you must consider:

- the voltage necessary for your application.
- current leakage through the input devices.
- the amount of current consumed by the input devices.
- whether the application requires sinking or sourcing devices.

Capabilities of the 1794-IB16D include:

- 61131-2 Type 3 compatible sinking inputs.
- interface with PNP sourcing sensors.
- 10...31.2V DC operating range.
- provides up to 50 mA to power an attached sensor.
- detects for an open wire condition down to 50 µA.

You need a dummy resistor to mask the channel diagnostic function for each unused sensor port. Used sensor ports must have a 50 µA minimum current draw with the input field device in both the on- and off-state.

1794-OB16D Diagnostic Output Module Compatibility

You can use FLEX I/O diagnostic output modules to drive various output devices. Typical output devices include the following.

- Relays
- Solenoids
- Contactors
- Indicators
- Small motor starters

When you design a system using FLEX I/O diagnostic output modules, you must consider:

- The output must supply the necessary surge and continuous current for the output device being used.
- When sizing output loads, check the documentation that is supplied with the output device for the surge and continuous current needed to operate the device.

Capabilities of the 1794-OB16D diagnostic output module include:

- sourcing style outputs for loads that are connected to common.
- 10...31.2V DC operating range.
- provides continuous current of 0.5 A maximum (8 A per module), 2.0 mA minimum per output.
- capable of 2 A surge for 50 ms, repeatable every 2 s.
- protection from short circuit and overload.

You need a dummy resistor to mask the channel diagnostic function for each unused output channel.