



Installation Instructions

SLC 500™ 32-Channel Digital I/O Modules

(Catalog Numbers 1746-IB32, -IV32, -OB32, -OB32E and -OV32)

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Hazardous Location Considerations

This equipment is suitable for use in Class I, Division 2, Groups A, B, C, D or non-hazardous locations only. The following WARNING statement applies to use in hazardous locations.

WARNING**EXPLOSION HAZARD**

- Substitution of components may impair suitability for Class I, Division 2.
 - Do not replace components or disconnect equipment unless power has been switched off or the area is known to be non-hazardous.
 - Do not connect or disconnect components unless power has been switched off or the area is known to be non-hazardous.
 - All wiring must comply with N.E.C. article 501-4(b).
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Environnements dangereux

Cet équipement est conçu pour être utilisé dans des environnements de Classe I, Division 2, Groupes A, B, C, D ou non dangereux. La mise en garde suivante s'applique à une utilisation dans des environnements dangereux.

AVERTISSEMENT**DANGER D'EXPLOSION**

- La substitution de composants peut rendre cet équipement impropre à une utilisation en environnement de Classe I, Division 2.
 - Ne pas remplacer de composants ou déconnecter l'équipement sans s'être assuré que l'alimentation est coupée.
 - Ne pas connecter ou déconnecter des composants sans s'être assuré que l'alimentation est coupée.
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Overview

In addition to providing the module's electrical specifications, this document tells you how to:

- install the module into the chassis
- install the Octal Filter Label
- wire the module

We assume you have already installed your chassis and power supply. If not, please refer to the installation instructions for these products before proceeding.

Installation of Your I/O Module

ATTENTION



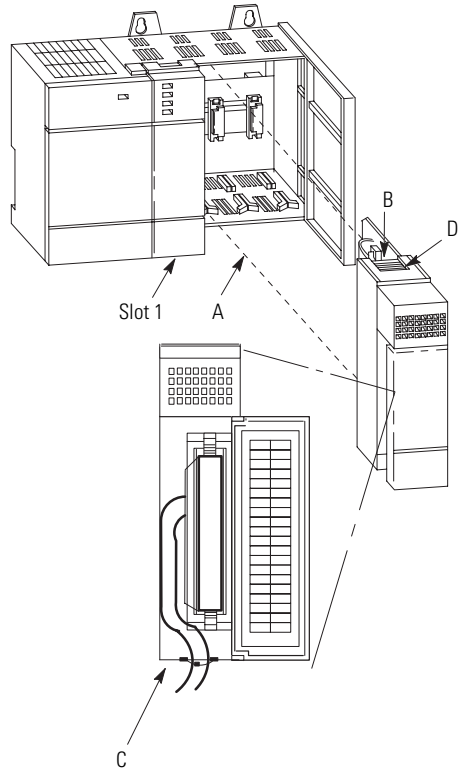
Never install, remove, or wire modules with power applied to the chassis.

IMPORTANT

The first slot of the chassis is reserved for the processor or Remote I/O module Catalog Number 1747-ASB for a remote chassis.

1. Disconnect Power
2. Align the circuit board of the module with the chassis card guide. (A)
3. Slide the module into the chassis until the tip and bottom tabs lock into place. (B)
4. Refer to pages 16 through 19 for 32-point wiring instructions.
5. Route the wires down and away from the module, securing them with the wire tie. (C)
6. To keep the chassis free from debris, cover all unused slots with Card Slot Filler, Catalog Number 1746-N2.

To remove the module, disconnect wiring or pre-wired connector, press and hold the module release located on each self-locking tab (D), and slide the module out of the chassis slot.



Specifications

Input Module Specifications

Description:		Specification: 1746-⁽¹⁾	
		IB32	IV32
Voltage Category		24	
Number of Inputs		32	
Points per Common		8	
Operating Voltage		15 to 30V dc at 50° C 15 to 26.4V dc at 60° C Sink	15 to 30V dc at 50° C 15 to 26.4V dc at 60° C Source
Backplane Current Consumption	5V	0.050A	
	24V	0A	
Isolation from Backplane		1500V ac for 1 min.	
Signal Delay (max.)		on = 3 ms off = 3 ms	
On State Voltage (min.)		15.0V dc	
Off State Voltage (max.)		5.0V dc	
Off State Current (max.)		1.5 mA	
Nominal Input Current at 24V dc		5.1 mA at 24V dc	
Heat Dissipation Watts per point		0.20	
Heat Dissipation Watts (min.)		0.25	
Heat Dissipation Total Watts		6.65	

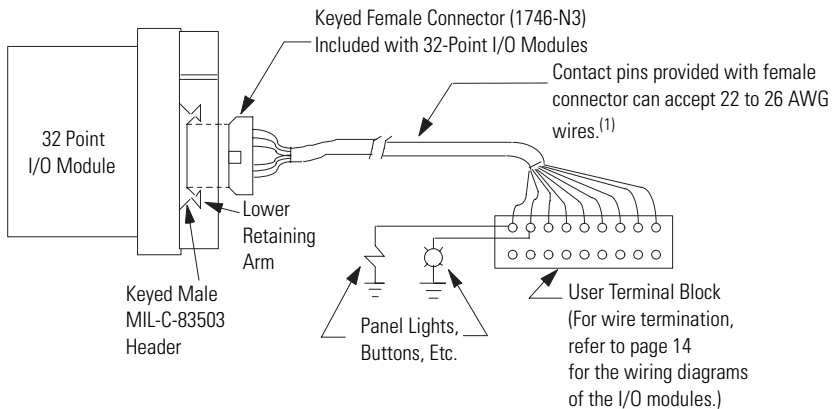
(1) Series A, B and C 32-point input modules are fused to protect external wiring, one fuse per common. The fuses are non-replaceable and are rated at 2.5A. Series D 32-point input modules are not fused.

Wiring Options for the I/O Module

Included with your 32-point I/O module is a keyed 40-pin female connector and crimp type pins. These components allow you to wire I/O devices to the module using a 40-conductor cable or individual wires. The wiring diagrams on pages 16 through 19 show the I/O terminations of the connector for your specific module. Refer to page 15 for connector/pin assembly instructions. When assembled, align the female connector over the module's male header using the keying slot as a guide. Firmly lock them together with the upper and lower retaining arms. 1492 pre-wired cables and interface modules can be used for connecting external I/O.

There are two options for wiring the 32-point I/O module.

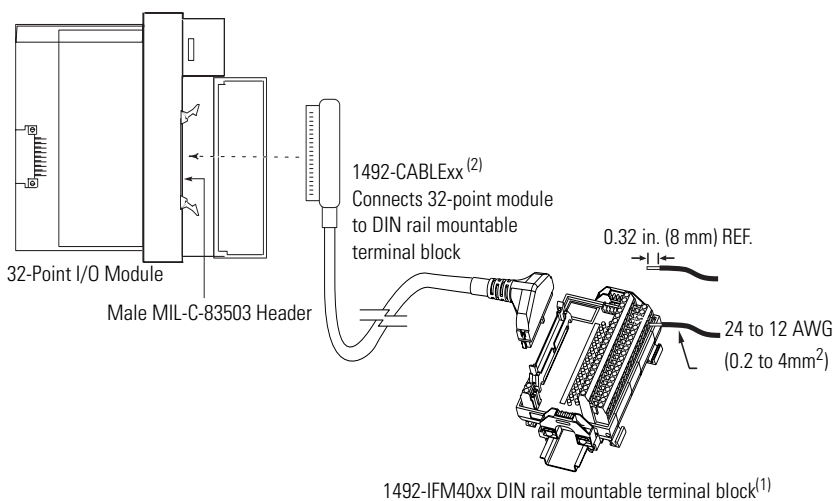
Option 1 - Wiring the 1746-N3 Connector



(1) Maximum user cable length is dependent on how much voltage drop (current x (ohms/ft.) x (feet)) the user's system can tolerate. The user's system should take into account the minimum turn-on voltage required by external loads connected to the 32-point output modules and all of the voltage drops associated with wiring to and from the load, terminal blocks, power sources and the module itself.

Option 2 - Using Allen-Bradley 1492 Wiring Systems

Allen-Bradley 1492 wiring systems are available for connecting 32 point I/O modules to external I/O. These wiring systems include a pre-wired cable available in four lengths: 0.5m (1.6 feet), 1.0m (3.3 feet), 2.5m (8.2 feet), 5.0m (16.4 feet). An Interface Module for connecting external devices is also available. Cables are equipped with keyed connectors at both ends for proper connections. Interface modules are DIN rail mountable and are available with or without field side status indicating LEDs. Stick-on labels are provided with the Interface modules to identify I/O wiring termination points.



(1) To maintain group isolation provided by 32-point I/O modules, use a 1492 terminal block that provides group isolation. Consult 1492 documentation or your Allen-Bradley Sales Office for additional information.

(2) Maximum user cable length is dependent on how much voltage drop (current x (ohms/ft.) x (feet)) the user's system can tolerate. The user's system should take into account the minimum turn-on voltage required by external loads connected to the 32-point output modules and all of the voltage drops associated with wiring to and from the load, terminal blocks, power sources and the module itself. See the table on page 13 for voltage drop values for the 1492 cables shown above.

Terminal Block Labels											
Bottom Terminal Block						Top Terminal Block					
1746-OB32 1746-OV32		1746-IV32		1746-IB32		1746-OB32 1746-OV32		1746-IV32		1746-IB32	
SLC	PLC	SLC	PLC	SLC	PLC	SLC	PLC	SLC	PLC	SLC	PLC
+V1	+V1	+V1	+V1	CM1	CM1	+V2	+V2	+V3	+V3	CM3	CM3
+V1	+V1	+V1	+V1	CM1	CM1	+V2	+V2	+V3	+V3	CM3	CM3
0	0	0	0	0	0	16	0	16	0	16	0
1	1	1	1	1	1	17	1	17	1	17	1
2	2	2	2	2	2	18	2	18	2	18	2
3	3	3	3	3	3	19	3	19	3	19	3
4	4	4	4	4	4	20	4	20	4	20	4
5	5	5	5	5	5	21	5	21	5	21	5
6	6	6	6	6	6	22	6	22	6	22	6
7	7	7	7	7	7	23	7	23	7	23	7
8	10	8	10	8	10	24	10	24	10	24	10
9	11	9	11	9	11	25	11	25	11	25	11
10	12	10	12	10	12	26	12	26	12	26	12
11	13	11	13	11	13	27	13	27	13	27	13
12	14	12	14	12	14	28	14	28	14	28	14
13	15	13	15	13	15	29	15	29	15	29	15
14	16	14	16	14	16	30	16	30	16	30	16
15	17	15	17	15	17	31	17	31	17	31	17
CM1	CM1	+V2	+V2	CM2	CM2	CM2	CM2	+V4	+V4	CM4	CM4
CM1	CM1	+V2	+V2	CM2	CM2	CM2	CM2	+V4	+V4	CM4	CM4

The stick-on labels of the 1492 Interface Module are abbreviated as follows: +V1 = V dc 1, +V2 = V dc 2, CM1 = Com 1, etc.

Refer to page 11 for information on wiring 32-point I/O modules and how control devices interface with 32-point I/O modules.

TIP

If you decide to build your cable using another 1746-N3 to terminate the cable at the 1492 Interface Module end, wire it in the following manner: Pin 1 to Pin 1, Pin 2 to Pin 2, Pin 3 to Pin 3, etc.

Assembling the Wire Contacts

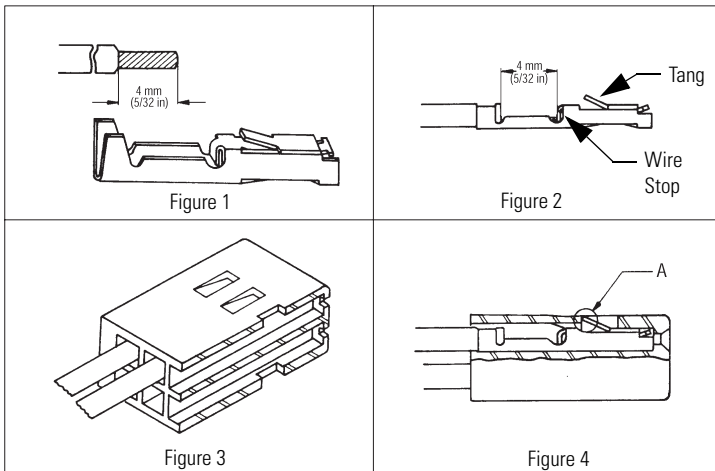
1. Strip the wire insulation as shown in Figure 1. Crimp pins can accept 22 to 26 AWG wire.
2. Insert the wire up to the wire stop as shown in Figure 2.
3. Crimp with DDK crimp tool 357J-5538. Equivalent Amp part numbers are: pin - #87666-2, connector - #102387-9, and crimp tool - #90418-1.

TIP

Pins and connectors from different manufacturers cannot be assembled together. For example, Amp pins cannot be used with a DDK connector.

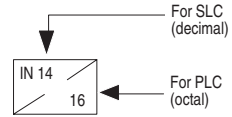
If a crimp tool is not available, use the following crimping procedure:

- a. Crimp the wire barrel around the wire using small needle nose pliers.
 - b. Crimp the insulation barrel around the wire insulation using small needle nose pliers.
 - c. Solder wire and wire barrel together using rosin core (60% tin/ 40% lead) solder and soldering pencil.
4. Insert the wire contact into the socket as shown in Figure 3 and 4. Check to make sure that the tang, shown as “A” in Figure 4, is properly latched by lightly pulling on the wire.

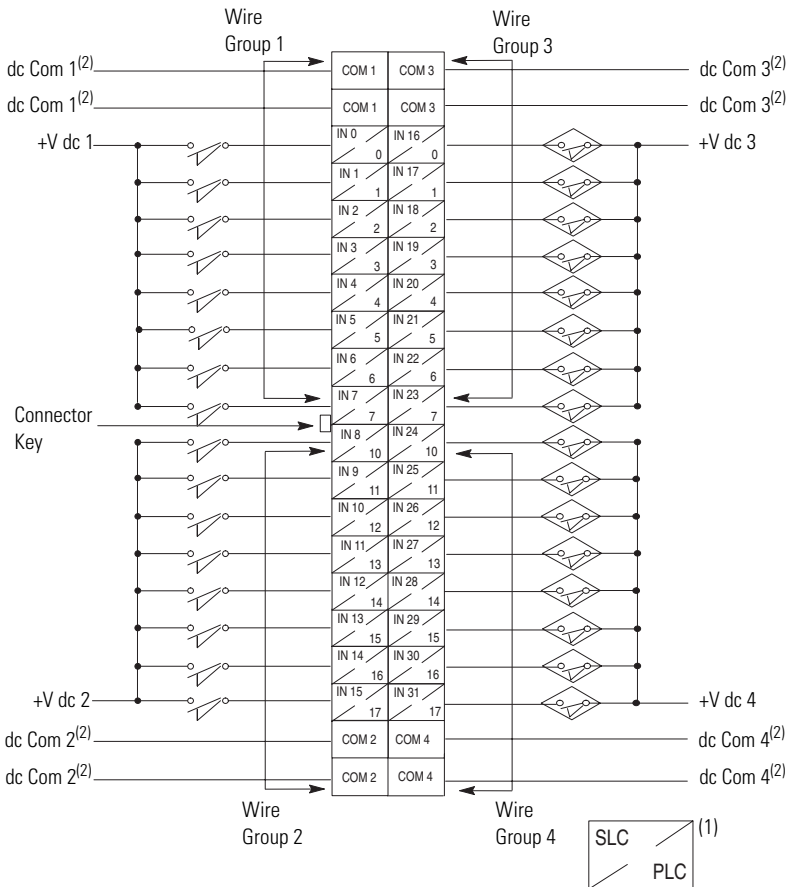


Wiring Diagrams

In this document, the wiring diagrams include both decimal and octal numbers. To wire your module when used in an SLC system, use the decimal numbers. To wire your module when used in a PLC system, use the octal numbers.



Input Module 1746-IB32 (24V dc Sinking)



(1) See decimal and octal coding information at the top of the page.

(2) The dc Com pins on the 1746-IB32 input module are isolated between the four groups and the two com pins in each group are connected internally. To maintain group isolation provided by 32-point I/O modules, use a 1492 terminal block that provides group isolation. Consult 1492 documentation or your Allen-Bradley Sales Office for additional information.