Analog Wiring Systems

Analog Wiring Systems

Digital Wiring Systems with Field-Removable Terminal Blocks

Digital Wiring Systems with Fixed Terminal Blocks

Bulletin 1492 Programmable Controller Wiring Systems

- Increases machine building productivity
- Simplifies design and engineering time
- Reduces wiring time and wiring errors
- Benefits from quality-looking panels

Standards Compliance and Certifications

- Agency Certifications for Modules and Cables
  cULus: Hazardous Locations: Class I Div 2 (all except modules with relays); Groups A, B, D, and D.
  Temperature Code: T3C @ 60 °C.
  UL File No. E10314, Guide No. NRAG
  cULus: Ordinary Locations; Module with relays; UL File No. E11372 Guide No. NRAQ
- Agency Certification Modules
  Factory Mutual (FM): Hazardous Locations; Class I Div 2 (all except modules with relays): Gouprs A, B, C, and D. Temperature Rating: T3C @ 60 °C. FM file J.I.3000590
- CE Certifications
  Compliant for all applicable directives

Table of Contents

Standards Compliance and Certifications, Continued

- UL 508
- UL 1604
- CSA C22.2 No. 14
- CSA C22.2 No. 213
- EN/IEC 61131-2

Bulletin	1746	1756	1762	1764	1769	1794	1771	Bulletin 700H and 700S
Description	SLC 500	ControlLogix	MircoLogix 1200	MicroLogix 1500	CompactLogix	Flex	PLC-5	PowerFlex Drive
Product Selection	Web *	**12-142**	**12-153**	**12-153**	**12-148**	**12-154**	Web *	**12-157**

* Information for this product is available on the Industrial Controls Catalog website: www.ab.com/catalogs

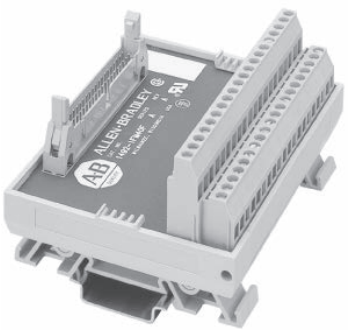
12

Digital Interface Modules (IFMs)
General Information

Digital IFMs are available with either a 20- or 40-pin cable connector. This is determined by the number of connections required for the I/O module.

Important: The following catalog number breakdown is for explanatory purposes only. It is not a product configurator. Not all combinations of fields are valid catalog numbers. Use this breakdown for verification and explanation only.

The cables used for Relay Master/Expander XIMs are the same as those used for Digital I/O Modules with the exception of the Cat. No. 1746-OA16 output module, which uses the 1492-CABLE*CR cable.



40-pin Connection Interface Module

1492 – IFM 20 F120 – 2
a b c d

a

Modules	
Code	Description
IFM	Digital Interface Modules with Fixed Terminal Block
RIFM	Digital Interface Modules with Removable Terminal Block
TIFM	Digital Interface Module for SIL2 (Safety Integrity Level 2)

b

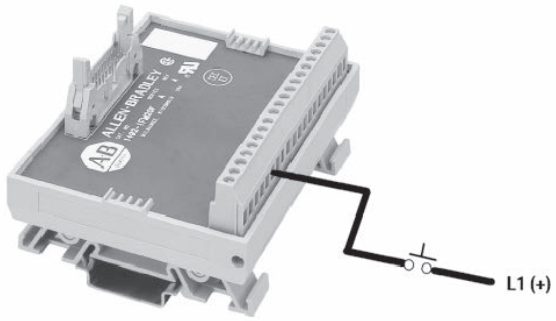
Digital Cable Connector Size	
Code	Description
20	20 pins
40	40 pins

c

Module Type (all types do not configure a catalog number)	
Code	Description
A	Input Module
F	Feedthrough
F24	Fused 24 Volt
F120	Fused 120 Volt
FS	Fused Isolated
D	LEDs
N	Narrow
24	24 Volt
120	120 Volt
240	240 Volt

d

Number of Field Side Wiring Terminals	
Code	Description
Blank	One per I/O connection (Standard Terminals)
2	Two per I/O connection (Extra Terminals)
3	Three per I/O connection (Sensor Terminals)
4	Four per I/O connection (Special Terminal)



Standard Terminal Interface Module

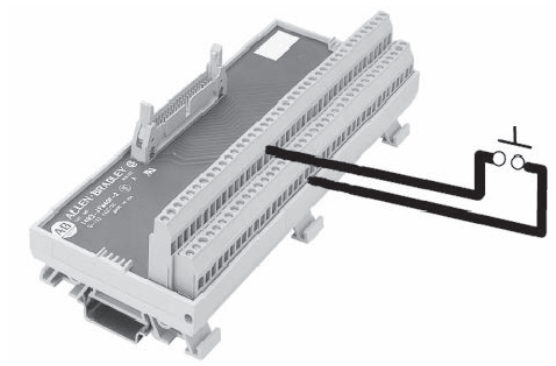
Extra terminal IFMs provide **two or four field-side** terminals per input or output point. Non-isolated IFMs have two terminals per input or output point. Isolated IFMs have two or four terminals per input or output.

The number of terminals varies with the type of IFM — from one to four terminals per I/O point.

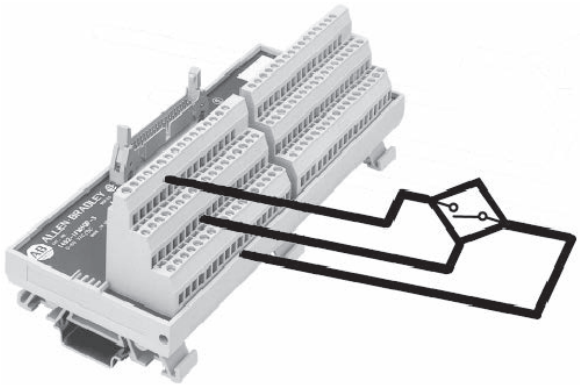
Standard terminal IFMs provide **one field-side** wiring terminal per programmable controller input or output point, as well as enough terminals for the I/O module power connections. The standard terminals are ideal for applications where the I/O device commons are terminated in the field or remotely from the I/O panel.

Isolated IFMs have terminals isolated into 8 or 16 groups, which allows each group of I/O devices to reference a different power source. The extra terminal IFMs are beneficial in applications where the I/O devices are terminated within the same panel as the I/O modules — eliminating the need for many additional terminal blocks.

Sensor IFMs provide three field-side terminals per input point. The middle and lower rows of the terminals are commoned together in groups of 18, and serve as power busses for 3-wire sensor types of devices — eliminating additional terminals, blocks, and jumpering systems.



Extra Terminal Interface Module

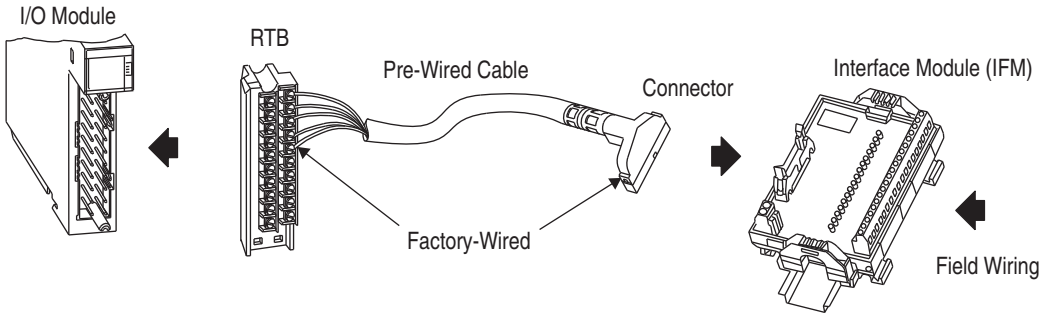


Three-Level Sensor Terminal Interface Module

12

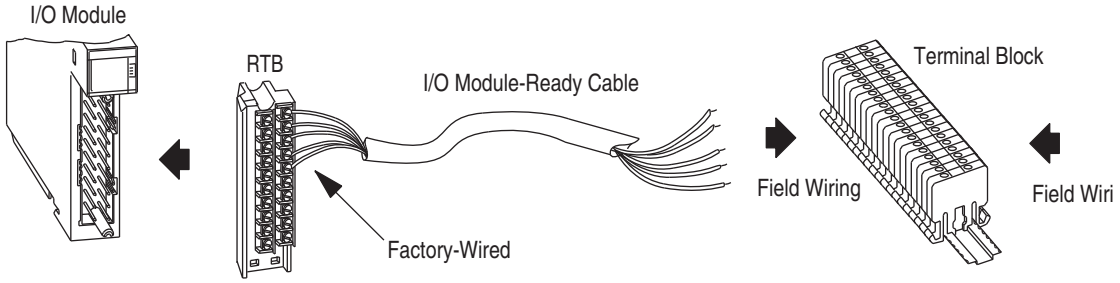
Digital Cables
Pre-Wired

Bulletin 1492 pre-wired cables are designed to minimize control wiring in a panel. Pre-wired cables, when used with an IFM, replace the point-to-point wiring between Allen-Bradley programmable controller I/O modules and individual terminal blocks. The pre-wired cables have a removable terminal block or wiring arm at the PLC end of the cable and a cable connector on the other end to connect to the IFM. All of the pre-wired cables use a #22 AWG wire and are 100% tested for continuity to make a perfect connection every time. The digital pre-wired cables are offered in four standard lengths of 0.5, 1.0, 2.5, and 5.0 m to fit a variety of applications. Other length cables are also available as build to order products. Pre-wired cables are available for many of the 1746 SLC I/O, 1756 ControlLogix I/O, 1794 Flex I/O, 1769 Compact I/O, MicroLogix 1500 base I/O, MicroLogix 1200 (1762-L40xx) embedded I/O, and 1771 PLC-5 I/O.



Digital Cables
I/O-Ready

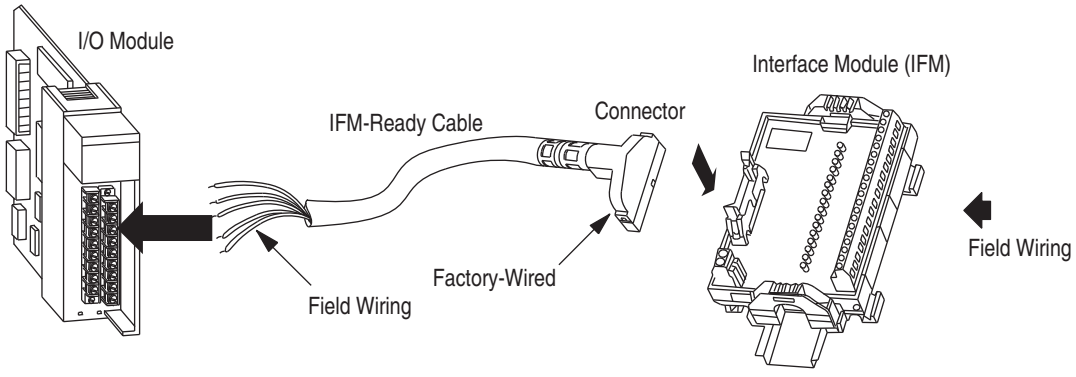
I/O-ready cables have an I/O removable terminal block or wiring arm factory-wired to one end to of the cable and free connectors on the other end for wiring into standard terminal blocks or other type of connectors. I/O-ready cables have individual color-coded conductors for quick wire-to-terminal coordination. The I/O-ready cables use #18 AWG conductors for higher current applications or longer cable runs. The I/O-ready cables are offered in standard lengths of 1.0, 2.5, and 5.0 m to fit a variety of applications. Other cable lengths are also available as build-to-order products. Pre-wired cables are available for the Bulletin 1746 SLC I/O, Bulletin 1756 ControlLogix I/O, Bulletin 1769 Compact I/O, 1794 Flex I/O, MicroLogix 1500 base I/O, MicroLogix 1200 (1762-L40xx) embedded I/O, and Bulletin1771 PLC-5 I/O.



I/O-Ready Cable and Standard Terminal Blocks

Digital Cables
IFM-Ready

IFM-ready cables have a cable connector that attached to the IFM factory wired to one end and free connectors ready to wire to I/O modules or other components on the other end. IFM-ready cables use #22 AWG wire and have individual color-coded conductors for quick wire-to-terminal coordination. The digital IFM-ready cables are offered in standard lengths of 1.0, 2.5, and 5.0 m to fit a variety of applications. Other cable lengths are also available as build-to-order products.



IFM-Ready Cable and Interface Module

12

Catalog Number Explanation
Digital Cables for Bulletin 1762, 1764, 1769 and 1794

Important: Use the following tables as a product confiurator for pre-wired, and I/O module-ready cables for **Bulletins 1746, 1762, 1764, 1769, and 1794 -** 40 I/O controller digital I/O cables. All combination of these fields make valid product catalog numbers. Refer to selection tables for IFM compatibility, additional cables, and ordering.

1492 – CAB 010 – A62
a b c

a

Digital Interface Cable

b

Standard or Build-to-Order Length Cables		
Code	Length	Description
005	0.5 m (1.64 ft)	Standard Length
010	1.0 m (3.28 ft)	
025	2.5 m (8.20 ft)	
050	5.0 m (16.40 ft)	
001-020	0.1...2.0 m (0.328...6.56 ft) 0.1 m (0.328 ft increments)	Build-to-Order Length
020-100	2.0...10.0 m (6.56...32.8 ft) 0.5 m (1.64 ft increments)	
100-300	10.0...30.0 m (32.8...98.42 ft) 1.0 m (3.28 ft increments)	

c

Code	Description
For use with Bulletin 1762 MicroLogix 1200 Modules	
A62, B62	Pre-wired cables for Bulletin 1762 I/O controllers
X62	I/O-ready cable for 1762-L40AWA, and -L40BWA
T62	I/O-ready cable for 1762-L40AWA, -L40BXB, and -L40BWA outputs
For use with Bulletin 1764 MicroLogix 1500 Modules	
A64, B64, C64, F64	Pre-wired cables for Bulletin 1764 I/O base units
W64	I/O-ready cable for 1762-24AWA, and -24BWA base unit inputs
T64	I/O-ready cable for 1762-24AWA, -24BWA base units outputs
U64	I/O-ready cable for 1764-28BXB base unit outputs
For use with Bulletin 1746, and 1769 Digital Modules	
A69, B69, C69, D69, E69, F69, G69, H69, J69, K69, L69, M69	Pre-wired cables for 8-, 16-, and 32-channel Bulletin 1769 digital I/O modules
RTN18	I/O-ready cable with Cat. No. 1746-RTBN18 terminal block
RTN10	I/O-ready cable with Cat. No. 1746-RTBN10 terminal block
RTN32I	I/O-ready for 32-channel 1769-IQ32
RTN320	I/O-ready for 32-channel 1769-OB32
For Use with Bulletin 1794 Flex I/O, Cat. Nos. 1794- TB37DS, and 1794-TB62DS base units	
A94	Pre-wired cables for Bulletin 1794 Flex digital I/O using the Bulletin 1794-TB37DS base
B94	Pre-wired cables for Bulletin 1794 Flex digital I/O using the Bulletin 1794-TB62DS base
G94	Digital I/O-ready cable with Cat. No. 1746-RTBN10 terminal block
H94	Digital I/O ready cable for digital I/O using the Bulletin 1794 TB62DS base

Digital IFMs and Cables for Bulletin 1769 CompactLogix 32-point I/O Expansion Modules

Voltage [V]	Term. per I/O	Description	Fixed Terminal Block	Removable Terminal Block	RTB Plugs ❖	Bulletin 1769 CompactLogix I/O Module				
						1769-IQ32	1769-IQ32T	1769-OB32	1769-OB32T	1769-OV32T
			Cat. No.	Cat. No.	Cat. No.	Digital Cable Cat. No. Suffix ✦				
Feed-Through										
24...120	1	Standard	**1492-IFM40F**	**1492-RIFM40F**	1492-RTB20✪	J69	H	K69	H	H
	2	Extr. Term.	**1492-IFM40F-2**	**1492-RIFM40F-2**	1492-RTB20✪	J69	H	K69	H	H
	3	Sensor	**1492-IFM40F-3**	—	—	J69	H			
LED Indicating										
24	1	Standard	**1492-IFM40D24**	1492-RIFM40D24	1492-RTB20✪	J69	H	K69	H	H
	2	Extr. Term. (output)	1492-IFM40D24-2	—	—			K69	H	H
		Extr. Term. (input)	**1492-IFM40D24A-2**	1492-RIFM40D24A-2	1492-RTB20✪	J69	H			
	3	Sensor	**1492-IFM40D24-3**	—	—	J69	H			
24	2	Extr. Term.	**1492-IFM40F-F24-2**	1492-RIFM40F-F24-2	1492-RTB20✪			K69	H	H
24...120	2	Extr. Term.	**1492-IFM40F-F-2**	—	—			K69	H	H

See footnotes on the following page.

Relay XIMs and Cables for Bulletin 1769 CompactLogix 32-point I/O Expansion Modules

Voltage [V]	Term. per I/O	Description	Fixed Terminal Block	Removable Terminal Block	RTB Plugs ❖	Bulletin 1769 CompactLogix I/O Module				
						1769-IQ32	1769-IQ32T	1769-OB32	1769-OB32T	1769-OV32T
			Cat. No.	Cat. No.	Cat. No.	Digital Cable Cat. No. Suffix✦				
Relay Master (LED Indicating)§♣										
24	1	8 Relays	1492-XIM4024-8R	—	—			K69	H	
	1	16 Relays	**1492-XIM4024-16R**	1492-RXIM4024-16R	1492-RTB14✪			K69	H	
	1	16 Relays w/ fusing	**1492-XIM4024-16RF**	—	—			K69	H	
High Density Relay Master (LED Indicating) §♣										
24	1	32 relays - mechanical	1492-XIMTR4024-32R	♠ 1492-RXIMTR4024-32R	1492-RTB20✪			K69	H	
24	1	32 relays - solid-state	1492-XIMTS4024-32R	♠ 1492-RXIMTS4024-32R				K69	H	
Relay Expander (LED Indicating)§♣										
24	1	8-ch Expander	**1492-XIM24-8R**	1492-RXIM24-8R	1492-RTB12✪			❄	❄	
Fusible Expander										
24	2	8-ch Expander	1492-XIMF-F24-2	—	—			❄	❄	
	1	16-ch Expander	**1492-XIM24-16RF**	—	—			‡	‡	
Feed-Through Expander										
120	2	8-ch	**1492-XIMF-2**	—	—			❄	❄	

✦ To order a Pre-wired Cable, add the **Suffix No.** from the table above to the end of the **Cat. No.** below.

0.5M Cable = 1492-CAB005_
1.0M Cable = 1492-CAB010_
2.5M Cable = 1492-CAB025_
5.0M Cable = 1492-CAB050_

Custom Length Cable = 1492-CABXXX_. See Catalog Number Explanation on page 12-136 for available Custom Length Codes to replace XXX in Cat. No.

❖ Order plugs separately (two plugs per catalog number). Plugs are available in screw style and push in style terminal types. To order, replace the ✪ in the catalog number with the code for the desired terminal style. The code for screw style is **N** and the code for push in style is **P**.

♠ Requires four RTB plugs

❄ Can have up to 2 or 3 expander modules depending upon master used (total 32 outputs or less). An extender cable is provided.

‡ The 1492-XIM24-16RF is to be used with one 1492-XIM4024-16R or 1492-XIM4024-16RF master (32 pts. max.).

♣ The LED indicates the PLC output status.

§ The voltage rating is relay control/coil voltage. For relay contact ratings, refer to page 9-42.

General Wiring System Specifications

	Catalog Number 1492-...
Agency Certifications: Modules and Cables	cULus Listed: Hazardous Locations: Class I Div 2 (all except modules with relays); Groups A, B, D, and D. Temperature Code: T3C @ 60 °C. Standard UL File No. E10314, Guide No. NRAG/NRAG7
	cULus Standard Locations; Module with relays; UL File No. E11372, Guide No. NRAQ/NRAQ7
Agency Certification Modules	Factory Mutual (FM): Hazardous Locations; Class I Div 2 (all except modules with relays): Groups A, B, C, and D. Temperature Rating: T3C @ 60 °C. FM File J.I.3000590
CE Certifications	Compliant for all applicable directives
Maximum Peak Transient Voltage	600V ‡
Maximum Current (per circuit)	2 A (except relays) §
Maximum Current (per module)	12 A (except relays) ➢§
Terminal Block Wire Range (Rated Cross Section) ✶	Fixed Screw Style: #12…#22 AWG (4.0...0.2 mm^2) Removable Screw Style: #12 to #22 AWG 2.5...0.5 mm^2) Removable Push-in Style: #12 to #26 AWG (2.5...0.2mm^2)
Wire Strip Length	Fixed Screw Style:.32 in. (8.0 mm) Removable Screw Style:.28 in. (7.0 mm) Removable Push-in Style:.39 in. (10.0 mm)
Recommended Terminal Block Screw Tightening Torque	Fixed Screw Style: 3.5…4.5 lb-in. (0.38…0.50 Nm) Removable Screw Style: 3.5…4.5 lb-in. (0.38…0.50 Nm) Removable Push-in Style: NA (See Push-in RTB Plug Specifications)
Operating Temperature Range	0...+60 °C
Storage Temperature Cables	-20...+80 °C
Storage Temperature Modules	-40...+85 °C
Operating Humidity	5…95% non-condensing
Pollution Degree	2❄

Max. AWG	#22	#20	#18	#16	#14	#12
Max. No. of Wires per Terminal ✶	3	3	3	2	1	1

➢ Cat. Nos. 1492-IFM40F-F24AD-4 and 1492-IFM40F-F24D-2 are rated at 8 A.
✶ Maximum number of the same gauge stranded copper conductors allowed per wire funnel.
❄ Pollution Degree 2 is an environment where normally only non-conductive pollution occurs, except for occasional temporary conductivity caused by condensation shall be expected.
‡ For transients >600V, use UL Recognized suppression device rated at 2.5 kV withstand.
§ For relay contact ratings, refer to page 9-42.