1794 FLEX I/O

I/O Communication Adapters

A FLEX I/O adapter module interfaces FLEX I/O modules to an I/O scanner port across a communication network. The FLEX I/O adapter module contains a built-in power supply that converts 24V DC to 5V DC for the backplane to power the FLEX I/O modules. One adapter communicates with up to eight I/O modules, allowing connection to 256 digital input/output points, or 64 analog input points/32 analog output points, or a mix to meet your needs. Redundant media versions of standard modules have the letter R in the catalog number. Extreme environment versions have the letters XT in the last position of the catalog number, before the series designation. Conformal coated versions of have the letter K in this position.

EtherNet, ControlNet, and DeviceNet Adapters

	1794-AENT	**1794-AENTR §**	**1794-AENTRXT § ⋆**	**1794-ACN15, 1794-ACN15K‡ ,**	**1794-ACNR15 § , 1794-ACNR15XT § ⋆**	**1794-ADN, 1794-ADNK‡**
Network	EtherNet/IP	Dual-Port EtherNet/IP	Dual-Port EtherNet/IP	ControlNet		DeviceNet
I/O Module Capacity	8					
Communication Rate	10/100 Mbps		10/100 Mbps	5 Mbps		125 Kbps 250 Kbps 500 Kbps
Thermal Dissipation, Max.	24.9 BTU/hr at 24.0V DC	24.2 BTU/hr at 19.2V DC	20.8 BTU/hr at 24V DC	15.7 BTU/hr at 19.2V DC		26 BTU/hr at 19.2V DC
Power Dissipation, Max.	7.3 W at 19.2V DC	7.1 W at 19.2V DC	6.1 W at 19.2V DC	3.4 W at 19.2V DC		7.6 W at 19.2V DC
Input current at 24V DC	440 mA	400 mA	400 mA	400 mA		400 mA
Power Supply Input Voltage, Nom.	24V DC					
Input Voltage Range	19.2...31.2V DC (includes 5% AC ripple)					

§ Redundant media versions of EtherNet/IP and ControlNet adaptors.
⋆ XT = Extreme environment version.
‡ K = Conformal Coated.

Profibus DP Adapter

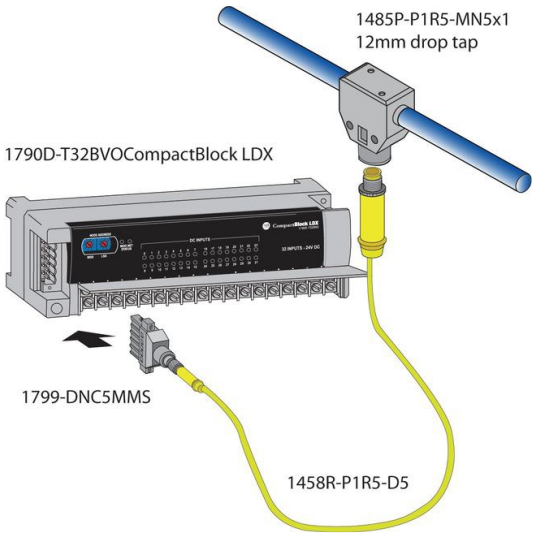
	1794-APBDPV1
Network	PROFIBUS DP
I/O Module Capacity	8
Communication Rate	All rates up to 12.0 Mbps
Thermal Dissipation, Max.	14 BTU/hr at 19.2V DC
Power Dissipation, Max.	4.2 W at 19.2V DC
Input Current at 24V DC	309 mA
Power Supply Input Voltage, Nom.	24V DC
Operating Voltage Range	19.2...31.2V DC (includes 5% AC ripple)

DeviceNet Straight 5-pin Open Plug to 5-pin Micro Male Connector

The DeviceNet straight 5-pin open plug to 5-pin micro male connector can be used in place of the 5-position open style plugs for DeviceNet, making it easier to connect I/O modules to the network, as well as reducing potential for miswiring and saving wiring time.

The DeviceNet straight 5-pin open plug to 5-pin micro male connector is compatible with:

- 1790 CompactBlock LDX I/O
- 1794-ADN FLEX I/O DeviceNet adapter
- 1799 Embedded I/O



Cat. No.	**Description**
1799-DNC5MMS	Female Open-style DeviceNet Y Adapter (Qty. 5)
1799-DNC100MMS	DeviceNet straight 5-pin open plug to 5-pin micro male connector (Qty. 100)

Digital I/O Modules

The FLEX I/O module plugs into the terminal base, connecting to the I/O bus and field devices. Since there is no direct wiring to the I/O module, you can remove and

insert modules under power, enabling you to change modules without disturbing field wiring, other I/O modules, or system power. This eliminates costly downtime and the inefficiencies of restarting a system.

Features

- Modules are available in densities ranging from 8 to 32 points.
- Digital I/O modules cover a wide electrical range:
  - 120V AC: input, output and isolated input, output modules; 8 and 16 point
  - 220V AC: input and output modules; 8 and 16 point
  - 5V DC: TTL input and output modules, 16 point
  - 24V DC: input, output, and combination modules; sink or source; protected; electronically fused; diagnostic; 8, 16, and 32 point
  - 48V DC: sink input, source output modules; 16 point
  - 125V DC: sink input module; 16 point
  - Relay: sink/source, 8 point
- Isolated inputs and outputs can be used in applications such as motor control centers, where individual control transformers are used.
- Protected (P) outputs have electronic protection, which acts to shut the module down in reaction to a short circuit, overload, or over-temperature condition. Recovery from shutdown is automatic upon removal of the output fault. No fault status is provided to the processor.
- Electronic fused (EP) module acts to open the output when a fault occurs. The "fuse" can be reset by operating a pushbutton, via software, or by cycling the input power. Fault status is provided to the processor.
- Diagnostic (D) modules detect, indicate, and report the following faults:
  - open input or output field devices or wiring
  - shorted output field devices
  - shorted input or output wiring
  - reverse polarity of user supply wiring
- Selectable input filter times from <1…60 ms.
- LED for each channel indicating status of:
  - corresponding input device
  - output signal
- Extreme environment (XT) versions of standard modules.

FLEX Digital AC Input Modules

Cat. No.	Number of Inputs	Voltage, On-State Input, Nom.	Voltage, On-State Input, Min.	Voltage, Off-State Input, Max.	Current, Off-State Input, Max.	Default Input Filter Time	Power Dissipation, Max.	Terminal Base Unit
1794-IA8	8	120V AC	65V AC	43V AC	2.9 mA	Off to On: 8.4 ms On to Off: 26.4 ms	4.5 W at 132V AC	1794-TBN, 1794-TB2, 1794-TB3, 1794-TB3S, 1794-TBKD
1794-IA8I	8 Isolated							
1794-IA16	16	120V AC	74V AC	20V AC	2.9 mA	Off to On: 7.5 ms On to Off: 26.5 ms	6.4 W at 132V AC	1794-TB3, 1794-TB3S, 1794-TBN⋆
1794-IM8	8	220V AC	159V AC	40V AC	2.6 mA		4.7 W at 264V AC	1794-TBN
1794-IM16	16	240V AC	159V AC	40V AC	2.6 mA		6 W at 264V AC	1794-TBN

⋆ Auxiliary terminal strips are required when using the 1794-TBN for the 1794-IA16.

FLEX Digital AC Output Modules

Cat. No.	Number of Outputs	Voltage, On-State Output, Nom.♣	Voltage Range, On-State Output♣	Current per Output, Max.	Current per Module, Max.	Power Dissipation, Max.	Terminal Base Unit
1794-OA8	8	120V AC	85V AC…132V AC	500 mA at 55 °CΔ (5 mA min)	4.0 A (8 outputs at 500 mA)	4.1 W at 0.5 A 6.3 W at 0.75 A 6.3 W at 1.0 A	1794-TBNF, 1794-TB2, 1794-TB3, 1794-TB3S, 1794-TBN, 1794-TBKD
1794-OA16	16	120V AC	85V AC…132V AC	500 mA at 55 °C (5 mA min)	4.0 A (16 outputs at 250 mA)	4.7 W at 0.5 A	1794-TB3, 1794-TB2, 1794-TB3S, 1794-TBN, 1794-TBKD⋆
1794-OM8	8	220V AC	159V AC…264V AC	500 mA at 55 °C500 mA @ 55°C (5 mA min)	4.0 A (8 outputs at 500 mA)	5 W at 0.5 A	1794-TBNF, 1794-TBN
1794-OM16	16	240V AC	159V AC…264V AC	500 mA at 55 °C♦ (50 mA min)	4.0 A	6 W at 264V AC	1794-TBNF, 1794-TBN

♣ The external AC supply voltage must be capable of a 50 A surge for 1/2 cycle at power-up.
Δ 750 mA per output @ 35 °C. 1.0 A on 4 nonadjacent outputs and 500 mA on the remaining 4 outputs @ 30 °C.
♦ If using 500 mA outputs, alternate wiring so that no two 500 mA outputs are next to each other.
⋆ Auxiliary terminal strips are required when using the 1794-TBN for the 1794-OA16.

FLEX Digital DC Input Modules

Cat. No.♠	Number of Inputs	Voltage, On-State Input, Nom.	Voltage Range, On-State Input	Current, Off-State Input	Power Dissipation, Max.	Terminal Base Unit
1794-IG16	16 TTL	0V	-0.2V DC...0.8V DC	4.1 mA at 5V DC (3.7 mA nom) max	1.4 W at 5.5V DC	1794-TB3, 1794-TB3S
1794-IB8	8 current sinking	24V DC	10V DC...31.2V DC	1.5 mA min	3.5 W at 31.2V DC	1794-TB3, 1794-TB3S
1794-IB16	16 current sinking	24V DC	10V DC...31.2V DC	1.5 mA min	6.1 W at 31.2V DC	1794-TB3, 1794-TB3S
1794-IB16XT					2 W at 31.2V DC	1794-TB3, -TB3S, TB3SK
1794-IB16D			10V DC...31.2V DC		8.5 W at 31.2V DC	1794-TB32, 1794-TB32S
1794-IV16	16 current sourcing	24V DC	10V DC...31.2V DC	1.5 mA min	5.7 W at 31.2V DC	1794-TB2, 1794-TB3, 1794-TB3S, 1794-TBK
1794-IB32	32 current sinking (2 groups of 16)	24V DC	19.2V DC...31.2V DC	1.5 mA min	6.0 W at 31.2V DC	1794-TB32, 1794-TB32S
1794-IV32	32 current sourcing (2 groups of 16)	24V DC	19.2V DC...31.2V DC	1.5 mA min	6.0 W at 31.2V DC	1794-TB32, 1794-TB32S
1794-IC16	16 current sinking	48V DC	30V DC...60V DC	1.5 mA min	6.4 W at 60V DC	1794-TB3, 1794-TB3S
1794-IH16	16 current sinking	125V DC	90V DC...146V DC	0.8 mA min	6 W at 146V DC	1794-TB3, 1794-TB3S

♠ Catalog numbers ending with: (D) = includes diagnostics, (XT) = extreme environment.

FLEX Digital DC Output Modules

Cat. No.♠	Number of Outputs	Voltage, On-State Output, Nom.	Voltage Range, On-State Output	Current, On-State Output, Max.	Output Delay Time, Max.	Power Dissipation, Max.	Terminal Base Unit
1794-OG16	16 TTL	0	0V DC...0.4V DC	24.0 mA per channel	Off to On: 0.25 ms On to Off: 0.5 ms	0.8 W at 5.5V DC	1794-TB3, 1794-TB3S
1794-OB8	8 current sourcing	24V DC	10V DC...31.2V DC	500 mA per channel, 4.0 A per module	Off to On: 0.5 ms On to Off: 1.0 ms	3.3 W at 31.2V DC	1794-TB2, 1794-TB3, 1794-TB3S, 1794-TBKD
1794-OB8EP	8 current sourcing	24V DC	19.2V DC...31.2V DC	2.0 A per channel, 10.0 A per module	Off to On: 0.1 ms On to Off: 0.1 ms	5.5 W at 31.2V DC	1794-TB2, 1794-TB3, 1794-TB3S, 1794-TBN, 1794-TBKD
1794-OB8EPXT				2.0 A per channel	Off to On: 0.5 ms On to Off: 1.0 ms	5 W at 31.2V DC	1794-TB2, -TB3, -TB3S, -TBN
1794-OB16	16 current sourcing	24V DC	10V DC...31.2V DC	500 mA per channel, 8.0 A per module	Off to On: 0.5 ms On to Off: 1.0 ms	5.3 W at 31.2V DC	1794-TB2, 1794-TB3, 1794-TB3S, 1794-TBKD
1794-OB16D					Off to On: 0.1 ms On to Off: 0.1 msOff to On: 0.1 ms On to Off: 0.1 ms	4.8 W at 31.2V DC	1794-TB3, 1794-TB3S, 1794-TBKD
1794-OB16P	16 current sourcing	24V DC	10V DC...31.2V DC	500 mA per channel, 8.0 A per module	Off to On: 0.5 ms On to Off: 1.0 ms	5.0 W at 31.2V DC	1794-TB2, 1794-TB3, 1794-TB3S, 1794-TBKD
1794-OB16PXT							1794-TB2, -TB3, -TB3S
1794-OB32P	32 current sourcing (2 groups of 16)	24V DC	10V DC...31.2V DC	500 mA per channel; 14.0 A per module⋆	Off to On: 0.5 ms On to Off: 1.0 ms	5.3 W at 31.2V DC	1794-TB32, 1794-TB32S
1794-OV16	16 current sinking	24V DC	10V DC...31.2V DC	500 mA per channel, 8 A per module	Off to On: 0.5 ms On to Off: 1.0 ms	4.2W at 31.2V DC	1794-TB3, 1794-TB3S
1794-OV16P							
1794-OV32	32 current sinking (2 groups of 16)	24V DC	10V DC...31.2V DC	500 mA	Off to On: 0.5 ms On to Off: 1.0 ms	4.4 W at 31.2V DC	1794-TB32, 1794-TB32S
1794-OC16	16 current sourcing	48V DC	30V DC...60V DC @ 45 °C 55V DC @ 55 °C	500 mA per channel, 8 A per module	Off to On: 0.5 ms On to Off: 1.0 ms @ 25 °C; 2.0 ms @ 55 °C	3.7 W at 60V DC	1794-TB2, 1794-TB3, 1794-TB3S, 1794-TBKD

♠ Catalog Numbers ending with: (P) = Protected Outputs, (EP) = Electronic Fused, (D) = Diagnostic, (XT) = extreme environment.
⋆ 6.0 A total for channels 0...15; 8.0 A total for channels 16...31.

24V DC External Power - FLEX Digital DC Output Modules

Cat. No.	External DC Supply Voltage Range	External DC Supply Current Range
1794-OB8	10...31.2V DC (5% AC ripple)	10...35 mA
1794-OB8EP	19.2...31.2V DC (5% AC ripple)	20...35 mA
1794-OB8EPXT	19.2...31.2V DC (5% AC ripple)	55 mA
1794-OB16	10...31.2V DC (5% AC ripple)	20...65 mA
1794-OB16D	10...31.2V DC (5% AC ripple)	56...78 mA
1794-OB16P	10...31.2V DC (5% AC ripple)	25...75 mA
1794-OB16PXT	10...31.2V DC	35 mA
1794-OB32P	10...31.2V DC (5% AC ripple)	103...273 mA
1794-OV16	10...31.2V DC (5% AC ripple)	20...65 mA
1794-OV16P	10...31.2V DC (5% AC ripple)	20...65 mA
1794-OV32	10...31.2V DC (5% AC ripple)	50 mA
1794-OC16	30...60V DC (5% AC ripple)	13...27 mA

FLEX Digital DC Combination Input/Output Modules

Cat. No.♠	Voltage, On-State, Nom.	Voltage, On-State, Range	Inputs			Outputs			Power Dissipation, Max.	Terminal Base Unit
			Number of Inputs	Default Input Delay Time‡	Current, Off-State Input, Max.	Number of Outputs	Output Delay Time♣	Output Currenty, Max.		
1794-IB10XOB6	24V DC	10V DC…31.2V DC	10 current sinking	Off to On: 0.25 ms§ On to Off: 0.25 ms§	1.5 mA	6 current sourcing	OFF to ON: 0.5 ms ON to OFF: 1.0 ms	2 A per output 10 A per module	6.0 W at 31.2V DC	1794-TB3, 1794-TB3S
1794-IB10XOB6XT										1794-TB2, 1794-TB3, -TB3S, -TB3SK
1794-IB16XOB16P			16 current sinking			16 current sourcing		0.5 A per output 8 A per module	7.0 W at 31.2V DC	1794-TB32, TB32S

♠ Catalog numbers ending with (P) = Protected Outputs, (XT) = extreme environment.
‡ Input On to Off delay is the time from the input signal dropping below the valid level to recognition by the module. Input Off to On delay time is the time from a valid input signal to recognition by the module.
§ 0.25 ms (default), 0.5 ms, 1 ms, 2 ms, 4 ms, 8 ms, 16 ms, 32 ms. Selectable using configuration word 3. (Not selectable when used with the 1794-ASB adapter.)
♣ Output Off to On or On to Off delay is the time from the module issuing an output on or off until the output actually turns on or off.

24V DC External Power - FLEX Digital DC Combination Modules

Cat. No.	External DC Supply Voltage Range	External DC Supply Current Range
1794-IB10XOB6 1794-IB10XOB6XT	10…31.2V DC (includes 5% AC ripple)	8 mA at 10V DC 15 mA at 19.2V DC 19 mA at 24V DC 25 mA at 31.2V DC
1794-IB16XOB16P	10…31.2V DC (includes 5% AC ripple)	78 mA at 10V DC

FLEX Digital Contact Output Modules

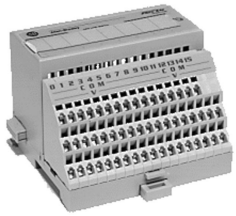
The 1794-OW8 module provides 8 isolated Form A (normally open) contacts capable of switching up to 2.0 A at up to 230V AC and 125V DC. Load power can be obtained from a variety of sources and can range from +5V DC to 240V AC.

Cat. No.♠	Number of Outputs	Relay Contact Rating	Output Delay Time, Max.	Power Dissipation, Max.	External DC Supply Current Range	Terminal Base Unit
1794-OW8 1794-OW8XT	8 Isolated N.O. relay contact	250V AC, 2 A, 50/60 Hz, Resistive; 120/240V AC, 50/60 Hz, 1800 VA Make, 180 VA Break; 5…30V DC, 2 A, Resistive; R150, 5…30V DC, 28 VA not to exceed 1 A below 28V DC	Off to On: 10 ms⋆ On to Off: 10 ms‡	5.5 W	–	1794-TB2, 1794-TB3, 1794-TB3S, 1794-TBN and 1794-TBNF

♠ Catalog Numbers ending with: (XT) = extreme environment.
⋆ Time from valid output on signal to relay energization by module.
‡ Time from valid output off signal to relay deenergization by module.

Terminal Bases and Accessories

Conformal coated versions of standard modules have the letter K in the last position of the catalog number, before the series designation.



Terminal Bases

Each FLEX I/O module requires a terminal base unit that snaps onto the DIN rail to the right of the I/O adapter. The terminal bases provide terminal connection points for I/O wiring and plug together to form the backplane. They are available with screw or spring terminations.

Cat. No.♠	Termination Type	Connections	Used in Applications
1794-TB2	Cage-clamp	16 I/O; 18 common; 2 +V	Up to 132V AC/156V DC
1794-TB3 1794-TB3K	Cage-clamp	16 I/O; 18 common; 18 +V	Up to 132V AC/156V DC
1794-TB3S	Spring-clamp		
1794-TB3SK			
1794-TB32	Cage-clamp	32 I/O; 8 common; 8 +V	Up to 31.2V DC
1794-TB32S	Spring-clamp		
1794-TB3G 1794-TB3GK	Cage-clamp	36 I/O; 2 common; 2 +V; 10 chassis ground	Up to 31.2V DC
1794-TB3GS	Spring-clamp		
1794-TB3GSK			
1794-TB3T 1794-TB3GK	Cage-clamp	16 I/O; 10 common; 4 +V; 8 chassis ground; 2 sets of CJC to be used with temperature modules	Up to 132V AC/156V DC
1794-TB3TS	Spring-clamp		
1794-TB3TSK			
1794-TBN	Screw-clamp	16 I/O; 2 common; 2 +V	264V AC/DC
1794-TBNK			
1794-TBNF			

♠ Catalog numbers ending with (K) = Conformal Coated.

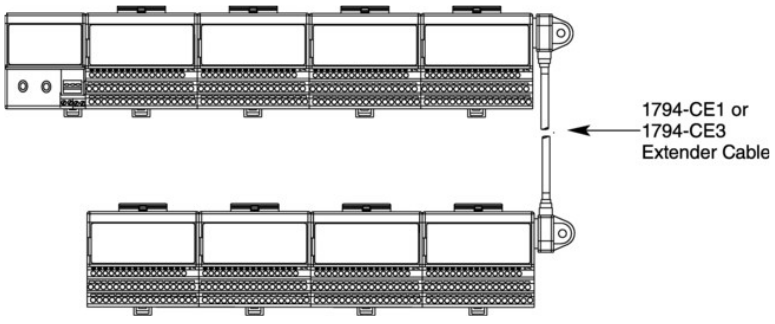
D-shell Terminal Bases

Cat. No.	Termination Type	Description	Current Capacity, Max.
1794-TB37DS	D-shell	37 Pin D-Shell Termination (digital and analog modules)	5 A per pin 10 A per module
1794-TB62DS	D-shell	62-pin D-Shell Termination (32-point I/O modules)	V2 - 8 A V1 - 8 A 5 A per pin 10 A per module

1794 FLEX Extender Cables

Use the optional 1794-CE1 (0.3 m, 1ft) or 1794-CE3 (0.9 m, 3ft) extender cable to arrange your system in two rows or split your system into horizontal and vertical orientation. The cable can be used between any module or adapter.

Cat. No.	Description
1794-CE1	FLEX I/O 1 ft Extender Cable (0.3 m)
1794-CE3	FLEX I/O 3 ft Extender Cable (0.9 m)



Accessory Products

Cat. No.	Description	
1794-NM1	FLEX I/O Panel Mounting Kit	Use this kit to mount your FLEX I/O system on a panel without a DIN rail.
1794-LBL	FLEX I/O Label Kit	Use this kit to tailor the label on you FLEX I/O terminal base unit. Kit includes a diecut drawing and label sheet with five labels.
1492-EA5	DIN rail locks	Use DIN rail locks for FLEX I/O modules in a high-vibration installation, particularly when mounting the modules vertically.
1794-N2	FLEX Dummy Filler Module - Slot Cover	Use this module to fill a vacant slot, if desired.
1794-CJC2	Cold Junction Compensation Kit (2 Pieces)	Use these as replacements for CJCs supplied with 1794-IT8 and 1794-IRT8.