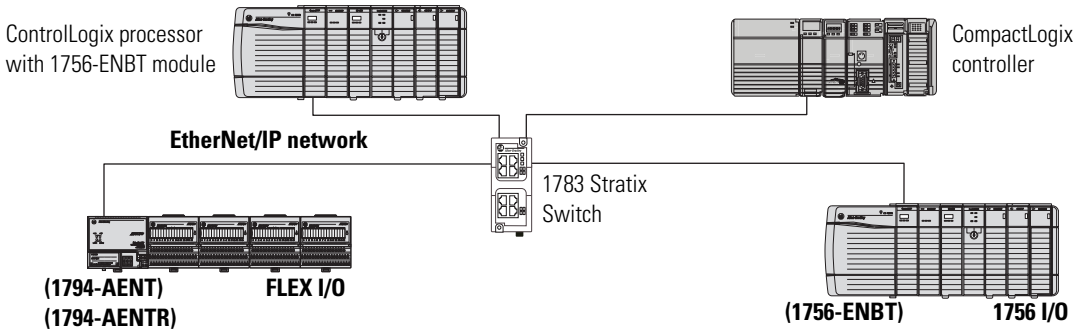
Figure 1 - EtherNet/IP Communication



FLEX I/O EtherNet/IP Adapter Specifications

Attribute	1794-AENT	1794-AENTR	1794-AENTRXT
I/O module capacity	8		
Communication rate	10/100 Mbps		
Power consumption at 24V DC	9.6 W	9.3 W	
Power dissipation, max	7.3 W @ 19.2V DC	7.1 W @ 19.2V DC	6.1 W @ 19.2V DC
Thermal dissipation	24.9 BTU/hr @ 24V DC	24.2 BTU/hr @ 24V DC	20.8 BTU/hr @ 24V DC
Power supply 24V current load	450 mA	400 mA @ 24V DC 500 mA max	
Power supply input voltage, nom	24V DC		
Operating voltage range	19.2…31.2V DC (includes 5% AC ripple)		
Ethernet interface	1 – RJ-45 category 5	2 – RJ-45 category 5	
Dimensions (HxWxD), approx	87 x 94 x 69 mm 3.4 x 3.7 x 2.7 in.	87 x 94 x 92 mm 3.44 x 3.7 x 3.6 in.	

Device-Level Ring Topology

A DLR network is a single-fault tolerant ring network intended for the interconnection of automation devices. FLEX I/O modules can connect to a

FLEX I/O ControlNet Adapter Specifications

Attribute	1794-ACN15, 1794-ACN15K, 1794-ACNR15, 1794-ACNR15XT
I/O module capacity	8
Communication rate	5 Mbps
Power consumption at 24V	7.9 W
Inrush current at 24V	23 A for 2 ms
Power dissipation, max	4.6 W @ 19.2V DC
Thermal dissipation	15.7 BTU/hr @ 19.2V DC
Power supply 24V current load	330 mA
Power supply 24V output current, max	450 mA
Power supply input voltage, nom	24V DC
Operating voltage range	19.2…31.2V DC (includes 5% AC ripple)
ControlNet cable	Allen-Bradley RG-6/U Quad shield coax, part no. 1786-RG6 (standard-PVC CM-CL2) or 1786-RG6F/A (high-flex)
Isolation voltage	Tested @ 850V DC for 1 s, user power to system
Dimensions (HxWxD), approx	87 x 94 x 92 mm 3.4 x 3.7 x 3.6 in.

DeviceNet Network

The DeviceNet network is an open low-level network that provides connections between simple industrial devices (such as sensors and actuators) and higher-level devices (such as PLCs and computers). The DeviceNet network uses the proven Common Industrial Protocol (CIP) to provide the control, configure, and data collection capabilities for industrial devices. The DeviceNet network is a flexible network that works with devices from multiple vendors.

The following illustration shows the FLEX I/O platform on a DeviceNet network.

Select FLEX I/O Modules

Step 2 – Select:

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

The choices and flexibility you have with I/O types range from digital and analog to temperature and motion control. FLEX I/O allows you to use as many as eight terminal bases per adapter which can provide a maximum of 256 digital I/O points or 96 analog channels per adapter. You can mix and match digital and analog I/O with mounting and wiring options, supplying you with a successful distributed system solution.

This flexibility gives you the following choices of I/O signal types:

- Digital: AC and DC voltage signals
- Analog: current or voltage
- Relay: normally open, 2 A capability
- Protected outputs: non-latching, latching, and with diagnostics
- Temperature: thermocouple or RTD
- Motion: high-speed counters, flow metering, and totalization
- Combo modules: combination of input and output capability
- Harsh environments: use FLEX I/O XT in harsh environments
- Intrinsic Safety (IS): use FLEX Ex I/O in hazardous areas to connect to field devices

Digital I/O Modules

Digital I/O modules interface with field devices such as:

- pushbutton and limit switches
- on/off actuators such as motor starters, pilot lights, and annunciators
- relay contacts

Features

Modules are available in different densities ranging from 8 to 32 points.

- Digital I/O modules cover a wide electrical range:

120V AC: Input/Output and Isolated Input/Output, 8 and 16 point

220V AC: Input/Output, 8 point

24V DC: Input/Output/Combination, Sink/Source, Protected, Electronically Fused, Diagnostic, 8, 16, and 32 point

48V DC: Sink Input/Source Output, 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 outputs (P) have electronic protection which acts to shut the output 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 to the processor 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 to 60 ms.
- LED for each channel indicating status of:

  corresponding input device

  output signal

Digital I/O Module Summary

Catalog Number	Inputs	Outputs	Terminal Base Unit	Electrical Range	Module Type
AC Modules					
1794-IA8	8	—	1794-TBN, 1794-TB2, 1794-TB3, 1794-TB3S, 1794-TBKD, 1794-TB3K, 1794-TB3SK, 1794-TBNK	120V AC	Nonisolated inputs
1794-IA8I					Isolated inputs
1794-IA16	16		1794-TB3, 1794-TB3S, 1794-TBN(1), 1794-TB3K, 1794-TB3SK, 1794-TBNK		Nonisolated inputs
1794-IM8	8	—	1794-TBN, 1794-TBNK	240V AC	
1794-IM16	16				
1794-OA8	—	8	1794-TBNF, 1794-TB2, 1794-TB3, 1794-TB3S, 1794-TBN, 1794-TBKD, 1794-TBNFK, 1794-TB3K, 1794-TB3SK, 1794-TBNK	120V AC	Nonisolated inputs
1794-OA8I					Isolated outputs
1794-OA16		16	1794-TB3, 1794-TB2, 1794-TB3S,1794-TB3K 1794-TB3SK, 1794-TBN(1), 1794-TBKD, 1794-TBNK	120V AC	Nonisolated outputs
1794-OM8		8	1794-TBNF, 1794-TBN, 1794-TBNFK, 1794-TBNK	240V AC	
1794-OM16		16			

HART Enabled Isolated Analog 8 Output Module

Specification	1794-OF8IH
Thermal dissipation, max	16 BTU/hr @ 31.2V DC
Wire size	0.34... 2.5 mm^2 (22...12 AWG) solid or stranded shielded copper wire rated at 75 °C (167 °F) or greater 1.2 mm (3/64 in.) insulation max
Wire category	2 – on signal ports 3 – on power ports(1)
Dimensions (HxWxD), approx	46 x 94 x 75 mm (1.8 x 3.7 x 2.95 in.) 94 x 94 x 91 mm (3.7 x 3.7 x 3.6 in.) installed

(1) Use this Conductor Category information for planning conductor routing. Refer to Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.