

ControlLogix System

Catalog Numbers 1756 Series



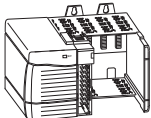
- [1756 ControlLogix I/O Modules](#)
- [1756 ControlLogix Integrated Motion](#)
- [1756 ControlLogix Communication Modules](#)
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Logix Controllers Comparison


Characteristic	1756 ControlLogix	1756 GuardLogix	1768 CompactLogix	1768 Compact GuardLogix	1769-L3x CompactLogix	1769-L23x CompactLogix	1789 SoftLogix5800
Controller tasks:	<ul style="list-style-type: none"> • 32 tasks • 100 programs/task • Event tasks: all event triggers 	<ul style="list-style-type: none"> • 32 tasks • 100 programs/task • Event tasks: all event triggers 	<ul style="list-style-type: none"> • 16 tasks • Event tasks: consumed tag, EVENT instruction, axis, and motion event triggers 	<ul style="list-style-type: none"> • 16 tasks • Event tasks: consumed tag, EVENT instruction, axis, and motion event triggers 	<ul style="list-style-type: none"> • 1769-L35x: 8 tasks • 1769-L32x: 6 tasks • 1769-L31: 4 tasks • Event tasks: consumed tag and EVENT instruction triggers 	<ul style="list-style-type: none"> • 3 tasks • 16 programs/task • Event tasks: consumed tag and EVENT instruction triggers 	<ul style="list-style-type: none"> • 32 tasks • 100 programs/task • Event tasks: all event triggers, plus outbound and Windows events
User memory	1756-L61: 2 MB 1756-L62: 4 MB 1756-L63: 8 MB 1756-L64: 16 MB 1756-L65: 32 MB 1756-L72: 4 MB 1756-L73: 8 MB 1756-L74: 16 MB 1756-L75: 32 MB	1756-L61S: 2 MB Standard 1 MB Safety 1756-L62S: 4 MB Standard 1 MB Safety 1756-L63S: 8 MB Standard 3.75 MB Safety	1768-L43: 2 MB 1768-L45: 3 MB	1768-L43S: 2 MB Standard 0.5 MB Safety 1768-L45S: 3 MB Standard 1 MB Safety	1769-L31: 512 KB 1769-L32x: 750 KB 1769-L35x: 1.5 MB	512 KB	1789-L10: 2 MB; 1 controller; no motion 1789-L30: 64 MB; 3 controllers 1789-L60: 64 MB; 6 controllers
Nonvolatile user memory	1756-L6x: CompactFlash 1756-L7x: Secure Digital card	CompactFlash	CompactFlash	CompactFlash	CompactFlash	None	None
Built-in communication ports	1756-L6x: 1 port RS-232 serial 1756-L7x: 1 port USB	1 port RS-232 serial	1 port RS-232 serial	1 port RS-232 serial	<ul style="list-style-type: none"> • 1769-L31: 2 RS-232 ports • 1769-L32C, 1769-L35CR: 1 ControlNet port and 1 RS-232 serial port • 1769-L32E, 1769-L35E: 1 EtherNet/IP port and 1 RS-232 serial port 	<ul style="list-style-type: none"> • 1769-L23E-QB1B: 1 EtherNet/IP port and 1 RS-232 serial port • 1769-L23E-QBFC1B: 1 EtherNet/IP port and 1 RS-232 serial port • 1769-L23-QBFC1B: 2 RS-232 serial ports 	Depends on personal computer
Communication options	<ul style="list-style-type: none"> • EtherNet/IP • ControlNet • DeviceNet • Data Highway Plus • Remote I/O • SynchLink 	<ul style="list-style-type: none"> • EtherNet/IP (standard and safety) • ControlNet (standard and safety) • DeviceNet (standard and safety) • Data Highway Plus • Remote I/O • SynchLink 	<ul style="list-style-type: none"> • EtherNet/IP • ControlNet • DeviceNet 	<ul style="list-style-type: none"> • EtherNet/IP (standard and safety) • ControlNet (standard and safety) • DeviceNet (standard) 	<ul style="list-style-type: none"> • EtherNet/IP • ControlNet • DeviceNet 	<ul style="list-style-type: none"> • EtherNet/IP • DeviceNet 	<ul style="list-style-type: none"> • EtherNet/IP • ControlNet • DeviceNet
Controller connections	1756-L6x: 250 1756-L7x: 500	250	250	250	100	100	250
Network connections	Per network module: <ul style="list-style-type: none"> • 100 ControlNet (CN2/A) • 40 ControlNet (CNB) • 256 EtherNet/IP; 128 TCP (EN2x) • 128 EtherNet/IP; 64 TCP (ENBT) 	Per network module: <ul style="list-style-type: none"> • 100 ControlNet (CN2/A) • 40 ControlNet (CNB) • 256 EtherNet/IP; 128 TCP (EN2x) • 128 EtherNet/IP; 64 TCP (ENBT) 	Per network module: <ul style="list-style-type: none"> • 48 ControlNet • 128 EtherNet/IP; 64 TCP 	Per network module: <ul style="list-style-type: none"> • 48 ControlNet • 128 EtherNet/IP; 64 TCP 	Per controller: <ul style="list-style-type: none"> • 32 ControlNet • 32 EtherNet/IP; 32 TCP 	Per controller: <ul style="list-style-type: none"> • 32 EtherNet/IP; 8 TCP 	Per network module: <ul style="list-style-type: none"> • 48 ControlNet • 128 EtherNet/IP; 64 TCP
Controller redundancy	Full support	None	Backup via DeviceNet	Backup via DeviceNet	Backup via DeviceNet	Backup via DeviceNet	N/A
Simple motion	<ul style="list-style-type: none"> • Stepper • Servo via DeviceNet • Analog or networked AC drive 	<ul style="list-style-type: none"> • Stepper • Servo via DeviceNet • Analog or networked AC drive 	<ul style="list-style-type: none"> • Stepper • Servo via DeviceNet • Analog or networked AC drive 	<ul style="list-style-type: none"> • Stepper • Servo via DeviceNet • Analog or networked AC drive 	<ul style="list-style-type: none"> • Stepper • Servo via DeviceNet • Analog or networked AC drive 	<ul style="list-style-type: none"> • Stepper • Servo via DeviceNet • Analog or networked AC drive 	<ul style="list-style-type: none"> • Stepper • Servo via DeviceNet • Analog or networked AC drive
Integrated motion	EtherNet/IP SERCOS interface Analog options: <ul style="list-style-type: none"> • Encoder input • LDT input • SSI input 	EtherNet/IP SERCOS interface Analog options: <ul style="list-style-type: none"> • Encoder input • LDT input • SSI input 	SERCOS interface	SERCOS interface	N/A	N/A	SERCOS interface Analog encoder input
Programming languages	<ul style="list-style-type: none"> • Relay ladder • Structured text • Function block • Sequential function chart 	<ul style="list-style-type: none"> • Standard task: all languages • Safety task: relay ladder, safety application instructions 	<ul style="list-style-type: none"> • Relay ladder • Structured text • Function block • Sequential function chart 	<ul style="list-style-type: none"> • Standard task: all languages • Safety task: relay ladder, safety application instructions 	<ul style="list-style-type: none"> • Relay ladder • Structured text • Function block • Sequential function chart 	<ul style="list-style-type: none"> • Relay ladder • Structured text • Function block • Sequential function chart 	<ul style="list-style-type: none"> • Relay ladder • Structured text • Function block • Sequential function chart • External routines (developed in C/C++)

1756 ControlLogix System




Step 1
[ControlLogix I/O Modules](#)

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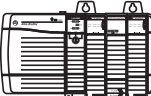
- Select:
- I/O modules - some modules have field-side diagnostics, electronic fusing, or individually isolated inputs/outputs
 - A remote terminal block (RTB) or wiring system for each I/O module

Step 2
[ControlLogix Integrated Motion](#)

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- Select:
- A SERCOS or analog interface module
 - Associated cables
 - A removable terminal block (RTB) - only for analog interface modules
 - Select drives, motors, and accessories (use the Motion Analyzer software)

Step 3
[ControlLogix Communication Modules](#)

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- Select:
- Networks
 - Communication modules
 - Associated cables and network equipment
 - Sufficient modules and cables if you are planning a redundant system

Step 4
[ControlLogix Controllers](#)

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- Select:
- A controller with sufficient memory
 - Secure Digital or CompactFlash card
 - Replacement batteries, if needed


Step 5
[ControlLogix Chassis](#)

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- Select:
- A chassis with sufficient slots
 - Slot fillers for empty slots

Step 6
[ControlLogix Power Supplies](#)

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- Select:
- One power supply for each chassis, if you are using standard power supplies
 - A power supply bundle if you are planning a redundant power supply system

Optional Step
[Visualization Products](#)

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Optional Step
[Programming Software](#)

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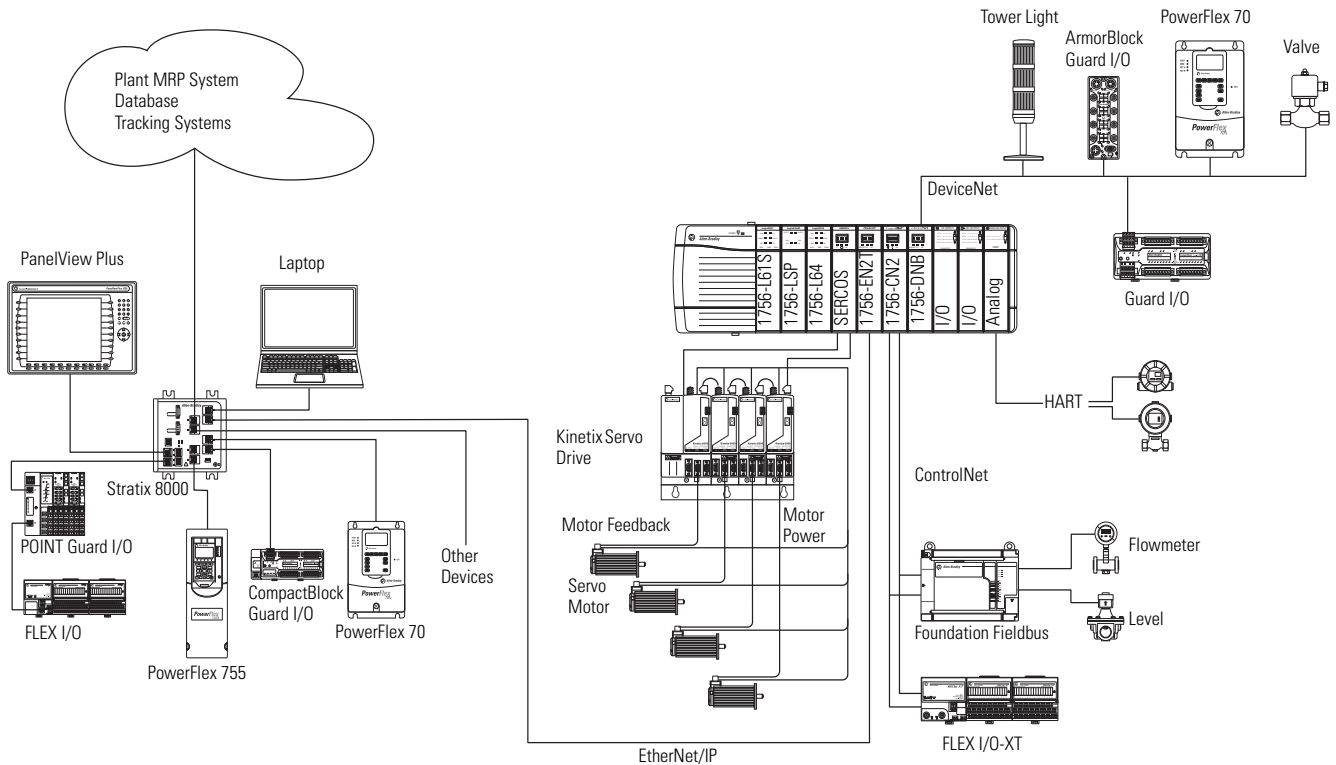
ControlLogix System Overview

The ControlLogix system provides discrete, drives, motion, process, and safety control together with communication and state-of-the-art I/O in a small, cost-competitive package. The system is modular, so you can design, build, and modify it efficiently with significant savings in training and engineering.

Example Configuration - ControlLogix System

A simple ControlLogix system consists of a standalone controller and I/O modules in a single chassis. For a more comprehensive system, use the following:

- Multiple controllers in a single chassis
- Multiple controllers joined across networks
- I/O in multiple platforms that are distributed in many locations and connected over multiple I/O links



ControlLogix-XT System

The ControlLogix-XT controllers function in the same way as the traditional ControlLogix controllers. The ControlLogix-XT products include control and communication system components that are conformally coated to extend product life in harsh, corrosive environments.

- When used with FLEX I/O-XT products, the ControlLogix-XT system can withstand temperatures range from -20...70 °C (-4...158 °F).
- When used independently, the ControlLogix-XT system can withstand temperature ranges from -25...70 °C (-13...158 °F).

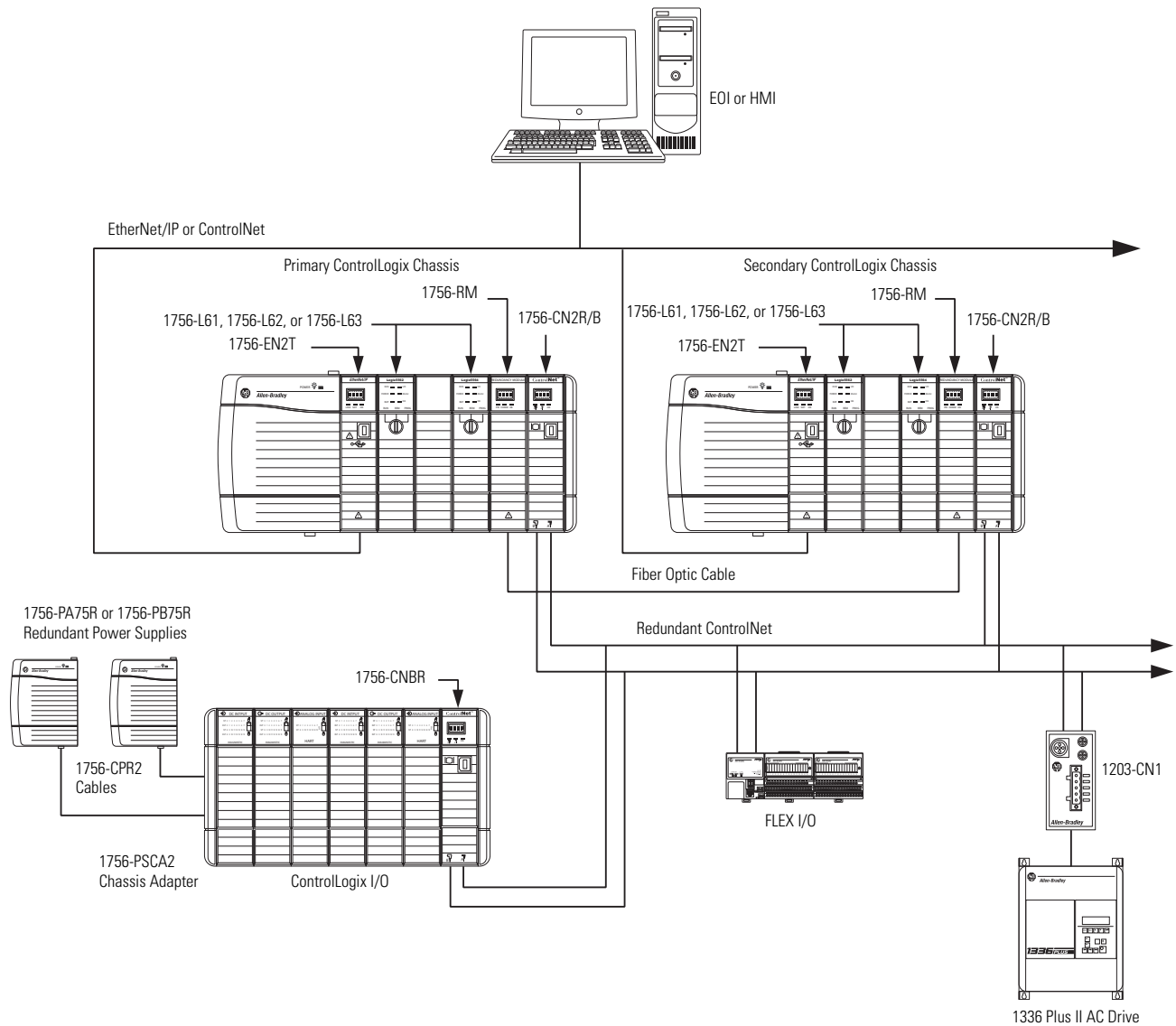
GuardLogix Safety System

A GuardLogix controller is a ControlLogix controller that also provides safety control. The GuardLogix system is a dual controller solution — you must use a 1756-L6xS primary controller and a 1756-LSP safety partner to achieve SIL 3/CAT. 4. A major benefit of this system is that it's still a single project, safety and standard together. The safety partner controller is a part of the system, is automatically configured, and requires no user setup.

Application	Description
SIL 3	The GuardLogix controller system is type-approved and certified for use in safety applications up to and including SIL 3 according to IEC 61508, and applications up to and including category (CAT) 4, according to EN954-1. For more information, see the following: <ul style="list-style-type: none">• GuardLogix Controllers Systems Safety Reference Manual, publication 1756-RM093• GuardLogix Controllers User Manual, publication 1756-UM020• GuardLogix Safety Application Instruction Set Reference Manual, publication 1756-RM095
SIL 2	Components of the ControlLogix system are type-approved and certified for use in SIL 2 applications, according to IEC 61508, and AK4 applications according to DIN V19250. For a list of ControlLogix system components that meet SIL 2 requirements, see Using ControlLogix in SIL 2 Applications Safety Reference Manual, publication 1756-RM001

Example Configuration - Redundant ControlLogix System

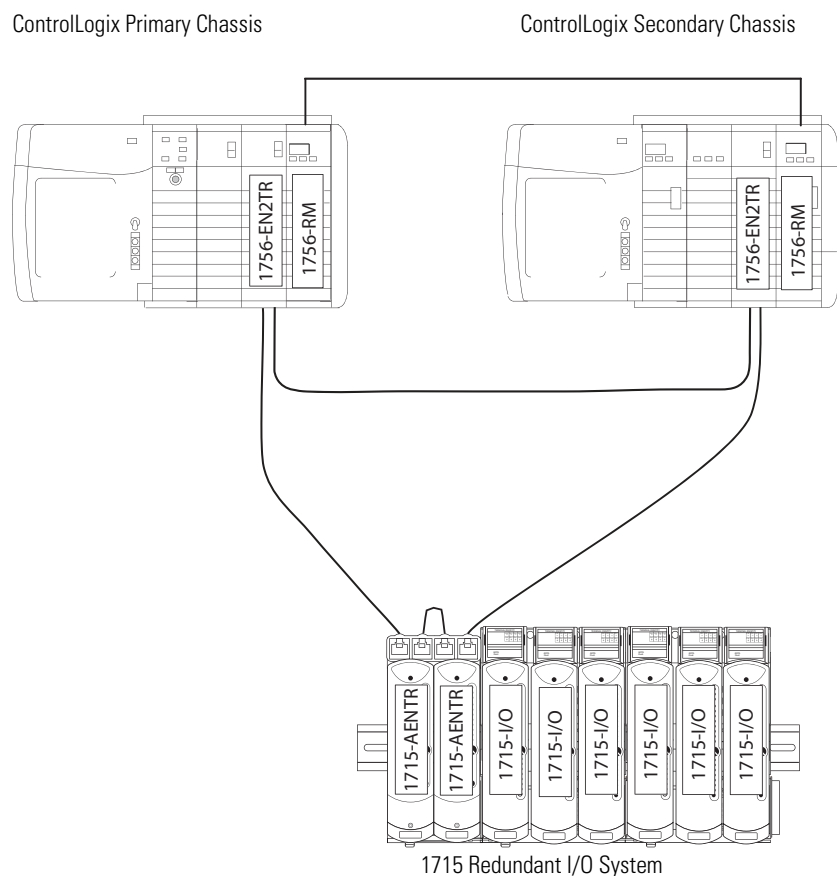
The ControlLogix controller supports controller redundancy.



Example Configuration - Redundant I/O System

The 1715 redundant I/O system lets a ControlLogix controller communicate to a remote, redundant I/O chassis over an EtherNet/IP network. The 1715 redundant I/O system provides fault tolerance and redundancy for critical processes by using a redundant adapter pair and multiple I/O modules that have diagnostics.

The redundant I/O system must be connected to a ControlLogix system via an EtherNet/IP network. All connections are established via the Ethernet network by using the topologies supported by the 1756-EN2TR communication bridge.



For detailed specifications, see the 1715 Redundant I/O System Specifications Technical Data, publication 1715-TD001A-EN-P.

ControlLogix I/O Modules

The ControlLogix architecture provides a wide range of input and output modules to span many applications, from high-speed digital to process control. The ControlLogix architecture uses a producer/consumer model so that input information and output status can be shared among multiple controllers.

Each ControlLogix I/O module mounts in a ControlLogix chassis and **requires** either a removable terminal block (RTB) or a 1492 interface module (IFM) to connect all field-side wiring. RTBs and IFMs are not included with the I/O modules. They must be ordered separately.

For detailed specifications, see 1756 ControlLogix I/O Modules Specifications, publication [1756-TD002](#).

AC Digital Input Modules

Cat. No.	Inputs/Outputs	Voltage Category	Operating Voltage Range	Removable Terminal Block
1756-IA8D	8 diagnostic inputs (4 points/group)	120V AC	79...132V AC	1756-TBNH 1756-TBSH
1756-IA16	16 inputs (8 points/group)	120V AC	74...132V AC	1756-TBNH 1756-TBSH
1756-IA16I	16 individually isolated inputs	120V AC	74...132V AC	1756-TBCH 1756-TBS6H
1756-IA32	32 diagnostic inputs (4 points/group)	120V AC	74...132V AC	1756-TBCH 1756-TBS6H
1756-IM16I	16 individually isolated inputs	240V AC	159...265V AC	1756-TBCH 1756-TBS6H
1756-IN16	16 inputs (8 points/group)	24V AC	10...30V AC	1756-TBNH 1756-TBSH

AC Digital Output Modules

Cat. No.	Inputs/Outputs	Voltage Category	Operating Voltage Range	Removable Terminal Block
1756-OA8	8 outputs (4 points/group)	120/240V AC	79...265V AC	1756-TBNH 1756-TBSH
1756-OA8D	8 diagnostic, electronically fused outputs (4 points/group)	120V AC	74...132V AC	1756-TBNH 1756-TBSH
1756-OA8E	8 electronically fused outputs (4 points/group)	120V AC	74...132V AC	1756-TBNH 1756-TBSH
1756-OA16	16 mechanically fused/group outputs (8 points/group)	120/240V AC	74...265V AC	1756-TBNH 1756-TBSH
1756-OA16I	16 individually isolated outputs	120/240V AC	74...265V AC	1756-TBCH 1756-TBS6H
1756-ON8	8 outputs (4 points/group)	24V AC	10...30V AC, current >50 mA 16...30V AC, current <50 mA	1756-TBNH 1756-TBSH

DC Digital Input Modules

Cat. No.	Inputs/Outputs	Voltage Category	Operating Voltage Range	Removable Terminal Block
1756-IB16	16 inputs (8 points/group)	12/24V DC sink	10...31.2V DC	1756-TBNH 1756-TBSH
1756-IB16D	16 diagnostic inputs (4 points/group)	12/24V DC sink	10...30V DC	1756-TBCH 1756-TBS6H
1756-IB16I	16 individually isolated inputs	12/24V DC sink/source	10...30V DC	1756-TBCH 1756-TBS6H
1756-IB16ISOE	16 individually isolated, sequence of events inputs	24/48V DC sink/source	10...55V DC	1756-TBCH 1756-TBS6H
1756-IB32	32 inputs (16 points/group)	12/24V DC sink	10...31.2V DC	1756-TBCH 1756-TBS6H
1756-IC16	16 inputs (8 points/group)	48V DC sink	30...55V DC @ 60 °C (140 °C) 30...60V DC @ 55 °C (131 °C)	1756-TBNH 1756-TBSH
1756-IG16	16 inputs (8 points/group)	5V DC TTL source (Low=True)	4.5...5.5V DC	1756-TBNH 1756-TBSH
1756-IH16I	16 individually isolated inputs	125V DC sink/source	90...146V DC	1756-TBCH 1756-TBS6H
1756-IH16ISOE	16 individually isolated, sequence of events inputs	125V DC sink/source	90...140V DC	1756-TBCH 1756-TBS6H
1756-IV16	16 inputs (8 points/group)	12/24V DC source	10...30V DC	1756-TBNH 1756-TBSH
1756-IV32	32 inputs (16 points/group)	12/24V DC source	10...30V DC	1756-TBCH 1756-TBS6H

DC Digital Output Modules

Cat. No.	Inputs/Outputs	Voltage Category	Operating Voltage Range	Removable Terminal Block
1756-OB8	8 outputs	12/24V DC source	10...30V DC	1756-TBNH 1756-TBSH
1756-OB8EI	8 electronically fused, individually isolated outputs	12/24V DC source	10...30V DC	1756-TBCH 1756-TBS6H
1756-OB8I	8 individually isolated outputs	12/24V DC source	10...30V DC	1756-TBCH 1756-TBS6H
1756-OB16D	16 diagnostic outputs (8 points/group)	24V DC source	19.2...30V DC	1756-TBCH 1756-TBS6H
1756-OB16E	16 electronically fused outputs (8 points/group)	12/24V DC source	10...31.2V DC	1756-TBNH 1756-TBSH
1756-OB16I	16 individually isolated outputs	12/24V DC sink/source	10...30V DC	1756-TBCH 1756-TBS6H
1756-OB16IS	16 individually isolated outputs 8 scheduled outputs	12/24V DC sink/source	10...30V DC	1756-TBCH 1756-TBS6H
1756-OB32	32 outputs (16 points/group)	12/24V DC source	10...31.2V DC	1756-TBCH 1756-TBS6H

Cat. No.	Inputs/Outputs	Voltage Category	Operating Voltage Range	Removable Terminal Block
1756-OC8	8 outputs (4 points/group)	48V DC source	30...60V DC	1756-TBNH 1756-TBSH
1756-OG16	16 (8 points/group)	5V DC TTL source (Low=True)	4.5...5.5V DC	1756-TBNH 1756-TBSH
1756-OH8I	8 outputs individually isolated	120V DC	90...146V DC	1756-TBCH 1756-TBS6H
1756-OV16E	16 electronically fused outputs (8 points/group)	12/24V DC sink	10...30V DC	1756-TBNH 1756-TBSH
1756-OV32E	32 electronically fused outputs (16 points/group)	12/24V DC sink	10...30V DC	1756-TBCH 1756-TBS6H

Contact Output Modules

Cat. No.	Inputs/Outputs	Operating Voltage Range	Removable Terminal Block
1756-OW16I	16 normally open, individually isolated outputs	5...150V DC 10...265V AC	1756-TBCH 1756-TBS6H
1756-OX8I	8 normally open 8 normally closed, individually isolated outputs (2 points/group)	5...150V DC 10...265V AC	1756-TBCH 1756-TBS6H

Analog Input Modules

Cat. No.	Inputs/Outputs	Range	Resolution	Removable Terminal Block
1756-IF6CIS	6 individually isolated inputs, current sourcing	0...21 mA	16 bits 0.34 μ A/bit	1756-TBNH 1756-TBSH
1756-IF6I	6 individually isolated inputs	\pm 10.5V 0...10.5V 0...5.25V 0...21 mA	16 bits 10.5V: 343 μ V/bit 0...10.5V: 171 μ V/bit 0...5.25V: 86 μ V/bit 0...21 mA: 0.34 μ A/bit	1756-TBNH 1756-TBSH
1756-IF8	8 single-ended inputs 4 differential inputs 2 high-speed differential inputs	\pm 10.25V 0...10.25V 0...5.125V 0...20.5 mA	\pm 10.25V: 320 μ V/cnt (15 bits plus sign bipolar) 0...10.25V: 160 μ V/cnt (16 bits) 0...5.125V: 80 μ V/cnt (16 bits) 0...20.5mA: 0.32 μ A/cnt (16 bits)	1756-TBCH 1756-TBS6H

Cat. No.	Inputs/Outputs	Range	Resolution	Removable Terminal Block
1756-IF8H	8 differential voltage or current inputs, HART interface	±10V 0...5V 1...5V 0...10V 0...20 mA 4...20 mA	16...21 bits	1756-TBCH 1756-TBS6H
1756-IF16	16 single-ended inputs 8 differential or 4 differential (high speed) inputs	±10.5V 0...10.5V 0...5.25V 0...21 mA	16 bits 10.5V: 343 µV/bit 0...10.5V: 171 µV/bit 0...5.25V: 86 µV/bit 0...21 mA: 0.34 µA/bit	1756-TBCH 1756-TBS6H
1756-IF16H	16 differential current inputs, HART interface	0...20 mA 4...20 mA	16...21 bits	1756-TBCH 1756-TBS6H

Analog RTD and Thermocouple Modules

Cat. No.	Inputs/Outputs	Range	Resolution	Removable Terminal Block
1756-IR6I	6 individually isolated RTD inputs	1...487 Ω 2...1000 Ω 4...2000 Ω 8...4020 Ω	16 bits 1...487 Ω: 7.7 mΩ/bit 2...1000 Ω: 15 mΩ/bit 4...2000 Ω: 30 mΩ/bit 8...4020 Ω: 60 mΩ/bit	1756-TBNH 1756-TBSH
1756-IT6I	6 individually isolated thermocouple inputs 1 CJC	-12...78 mV -12...30 mV	16 bits -12...78 mV: 1.4 µV/bit -12...30 mV: 0.7 µV/bit	1756-TBNH 1756-TBSH
1756-IT6I2	6 individually isolated thermocouple inputs 2 CJC	-12...78 mV (1.4 µV per bit) -12...30 mV (0.7 µV per bit – high resolution range)	16 bits -12...78 mV: 1.4 µV/bit -12...30 mV: 0.7 µV/bit	1756-TBNH 1756-TBSH

Analog Output Modules

Cat. No.	Inputs/Outputs	Range	Resolution	Removable Terminal Block
1756-OF4	4 voltage or current outputs	±10.4V 0...21 mA	Voltage: 15 bits across 10.5V, 320 µV/bit Current: 15 bits across 21mA, 650 nA/bit	1756-TBNH 1756-TBSH
1756-OF6CI	6 individually isolated outputs, current	0...21 mA	13 bits across 21 mA (2.7 µA)	1756-TBNH 1756-TBSH
1756-OF6VI	6 individually isolated outputs, voltage	±10.5V	14 bits across 21V (1.3 mV) (13 bits across 10.5V +sign bit)	1756-TBNH 1756-TBSH
1756-OF8	8 voltage or current outputs	±10.4V 0...21 mA	15 bits across 21 mA - 650 nA/bit 15 bits across 10.4V - 320 µV/bit	1756-TBNH 1756-TBSH
1756-OF8H	8 voltage or current outputs, HART interface	±10.4V 0...20 mA 4...20 mA	15...16 bits	1756-TBNH 1756-TBSH

Analog Combination Input and Output Module

Cat. No.	Inputs/Outputs	Range	Resolution	Removable Terminal Block
1756-IF4FXOF2F	4 high-speed, sub-millisecond, differential inputs 2 high-speed voltage or current outputs	Input: ±10.5V 0...10.5V 0...5.25V 0...21 mA Output: ±10.4V 0...21 mA	Input: Approx. 14 bits across ±10V DC (21V total) ±10V: 1.3 mV/bit, 14-bit effective 0...10.5V: 1.3 mV/bit, 13-bit effective 0...5.25V: 1.3 mV/bit, 12-bit effective Approx. 12 bits across 21 mA 0...21 mA: 5.25 µA/bit Output: 13 bits across 21 mA = 2.8 µA/bit 14 bits across 21.8V = 1.3 mV/bit	1756-TBCH 1756-TBS6H

Specialty I/O Modules

Cat. No.	Inputs/Outputs	Description	Removable Terminal Block
1756-CFM	4 inputs (2 per channel) 2 outputs, current sourcing	Configurable flowmeter module 2 Flowmeter (F) inputs used for all modes 2 Gate inputs used in Totalizer mode for prover/store count	1756-TBNH 1756-TBSH
1756-HSC	2 counters, each with 3 inputs (A, B, Z for gate/reset) 4 outputs (2 points/group)	High-speed counter module 5V operation: 4.5...5.5V DC 12/24V operation: 10...31.2V DC	1756-TBCH 1756-TBS6H
1756-PLS	Left section: 2 groups of 4 outputs and 4 inputs each Center section: resolver interface and I/O control Right section: 2 groups of 4 outputs and 4 inputs each	Programmable limit switch module	Requires 3 RTBs: 1756-TBNH or 1756-TBSH