ControlLogix Selection Guide

Allen-Bradley • Rockwell Software

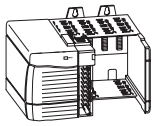
Rockwell Automation

Logix Controllers Comparison

Characteristic	1756 ControlLogix	1756 GuardLogix	1768 CompactLogix	1769-L3x CompactLogix	1769-L23x CompactLogix	1789 SoftLogix5800	PowerFlex 700S Phase 2 with DriveLogix
Controller tasks: • Continuous • Periodic • Event	• 32 tasks • 100 programs/task • Event tasks: all event triggers	• 32 tasks • 100 programs/task • Event tasks: all event triggers	• 16 tasks • Event tasks: consumed tag, EVENT instruction, axis, and motion event triggers	• 1769-L35*x*: 8 tasks • 1769-L32*x*: 6 tasks • 1769-L31: 4 tasks • Event tasks: consumed tag and EVENT instruction triggers	• 3 tasks • 4 programs total • Event tasks: consumed tag and EVENT instruction triggers	• 32 tasks • 100 programs/task • Event tasks: all event triggers, plus outbound and Windows events	• 8 tasks • Event tasks: axis and motion event triggers
User memory	1756-L61: 2 MB 1756-L62: 4 MB 1756-L63: 8 MB 1756-L64: 16 MB 1756-L65: 32 MB	1756-L61S: 2 MB Standard 1 MB Safety 1756-L62S: 4 MB Standard 1 MB Safety	1768-L43: 2 MB 1768-L45: 3 MB	1769-L31: 512 KB 1769-L32*x*: 750 KB 1769-L35*x*: 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	1.5 MB
Nonvolatile user memory	CompactFlash	CompactFlash	CompactFlash	CompactFlash	None	None	CompactFlash
Built-in communication ports	1 port RS-232 serial	1 port RS-232 serial	1 port RS-232 serial	• 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	• 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	1 port RS-232 serial
Communication options	• EtherNet/IP • ControlNet • DeviceNet • Data Highway Plus • Remote I/O • SynchLink	• EtherNet/IP (standard and safety) • ControlNet (standard and safety) • DeviceNet (standard and safety) • Data Highway Plus • Remote I/O • SynchLink	• EtheNet/IP • ControlNet • DeviceNet	• EtherNet/IP • ControlNet • DeviceNet	• EtherNet/IP • DeviceNet	• EtherNet/IP • ControlNet • DeviceNet	• EtherNet/IP • ControlNet • DeviceNet
Serial port communication	• ASCII • DF1 full/half-duplex • DF1 radio modem • DH-485 • Modbus via logic	• ASCII • DF1 full/half-duplex • DF1 radio modem • DH-485 • Modbus via logic	• ASCII • DF1 full/half-duplex • DF1 radio modem • DH-485 • Modbus via logic	• ASCII • DF1 full/half-duplex • DF1 radio modem • DH-485 • Modbus via logic	• ASCII • DF1 full/half-duplex • DF1 radio modem • DH-485 • Modbus via logic	• ASCII • DF1 full/half-duplex • DH-485 • Modbus via logic	• ASCII • DF1 full/half-duplex • DF1 radio modem • DH-485 • Modbus via logic
Controller connections	250	250	250	100	100	250	100
Network connections	Per network module: • 100 ControlNet (CN2/A) • 40 ControlNet (CNB) • 256 EtherNet/IP; 128 TCP (EN2*x*) • 128 EtherNet/IP; 64 TCP (ENBT)	Per network module: • 100 ControlNet (CN2/A) • 40 ControlNet (CNB) • 256 EtherNet/IP; 128 TCP (EN2*x*) • 128 EtherNet/IP; 64 TCP (ENBT)	Per network module: • 48 ControlNet • 64 EtherNet/IP; 32 TCP	Per controller: • 32 ControlNet • 32 EtherNet/IP; 32 TCP	Per controller: • 32 EtherNet/IP; 8 TCP	Per network module: • 48 ControlNet • 128 EtherNet/IP; 64 TCP	Per network module: • 32 ControlNet • 32 EtherNet/IP; 32 TCP
Controller redundancy	Full support	None	Backup via DeviceNet	Backup via DeviceNet	Backup via DeviceNet	N/A	N/A
Simple motion	• Stepper • Servo via DeviceNet • Analog or networked AC drive	• Stepper • Servo via DeviceNet • Analog or networked AC drive	• Stepper • Servo via DeviceNet • Analog or networked AC drive	• Stepper • Servo via DeviceNet • Analog or networked AC drive	• Stepper • Servo via DeviceNet • Analog or networked AC drive	• Stepper • Servo via DeviceNet • Analog or networked AC drive	• Stepper • Servo via DeviceNet • Analog or networked AC drive
Integrated motion	SERCOS interface Analog options: • Encoder input • LDT input • SSI input	SERCOS interface Analog options: • Encoder input • LDT input • SSI input	SERCOS interface	N/A	N/A	SERCOS interface Analog encoder input	• 1 full servo • 1 feedback axis
Programming languages	• Relay ladder • Structured text • Function block • SFC	• Relay ladder • Structured text • Function block • SFC	• Relay ladder • Structured text • Function block • SFC	• Relay ladder • Structured text • Function block • SFC	• Relay ladder • Structured text • Function block • SFC	• Relay ladder • Structured text • Function block • SFC • External routines (developed in C/C++)	• Relay ladder • Structured text • Function block • SFC

1756 ControlLogix System

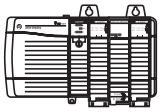
Step 1
ControlLogix I/O Modules



Page 7

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

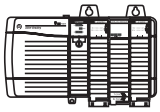
Step 2
ControlLogix Integrated Motion Modules



Page 15

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)

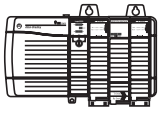
Step 3
ControlLogix Communication Modules



Page 18

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

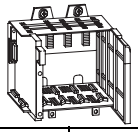
Step 4
ControlLogix Controllers



Page 33

Select:
- A controller with sufficient memory
- CompactFlash card
- Replacement batteries

Step 5
ControlLogix Chassis



Page 38

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

Step 6
ControlLogix Power Supplies

Page 40

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

Page 42

Optional Step
Programming Software

Page 43

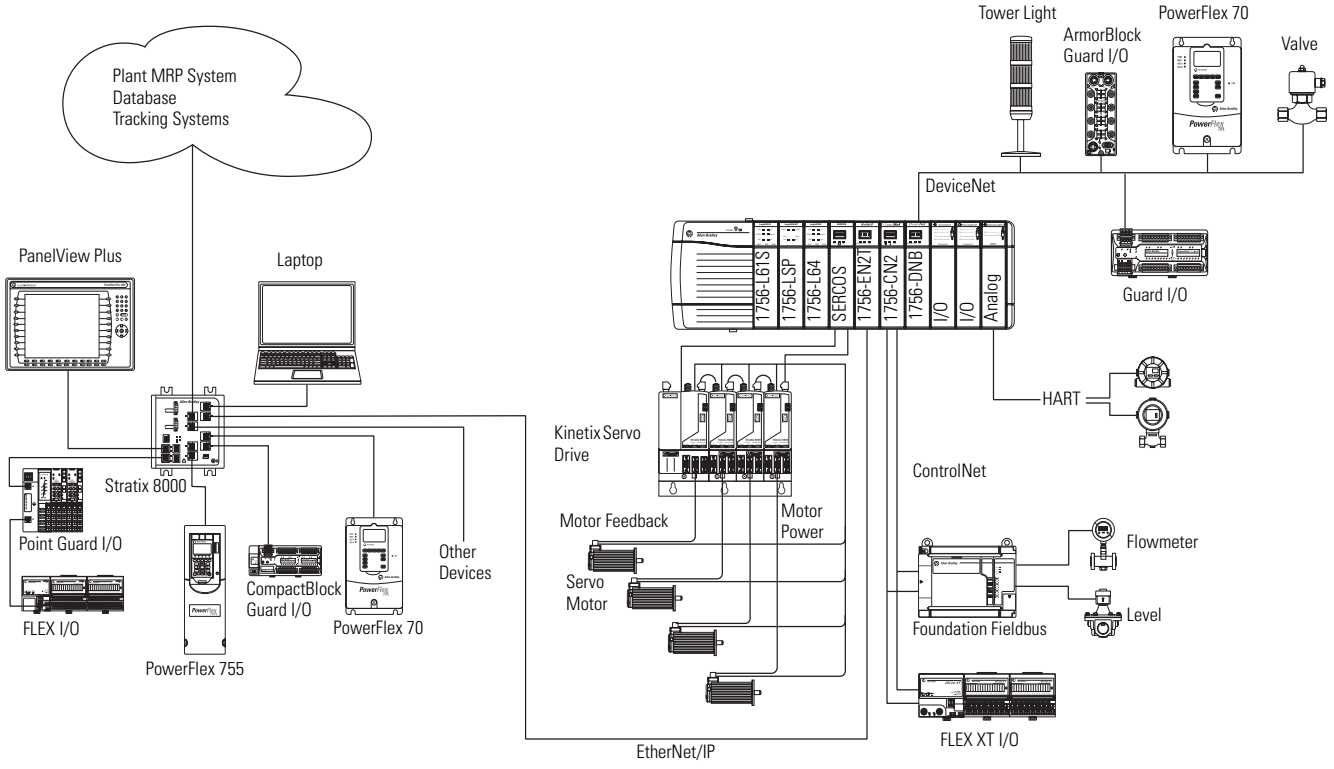
ControlLogix System Overview

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:

- 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, when used with FLEX I/O-XT products, provide a complete control system solution that can be used in environments where temperatures range from -20...70 °C (-4...158 °F).

When used independently, the ControlLogix-XT system can withstand environments where the temperature ranges from -25...70 °C (-13...158 °F).

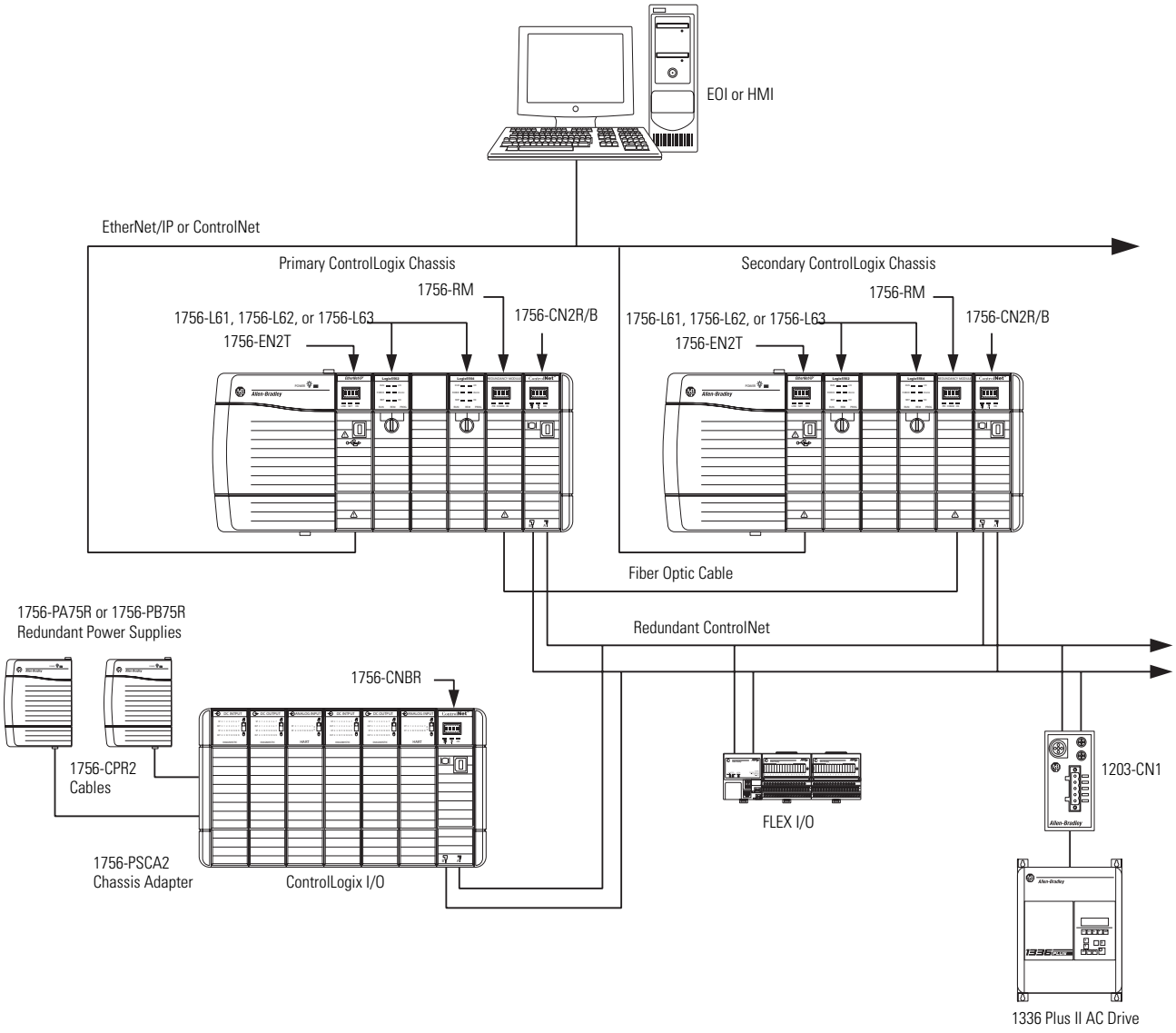
GuardLogix Safety System

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-L6*x*S 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: • 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.

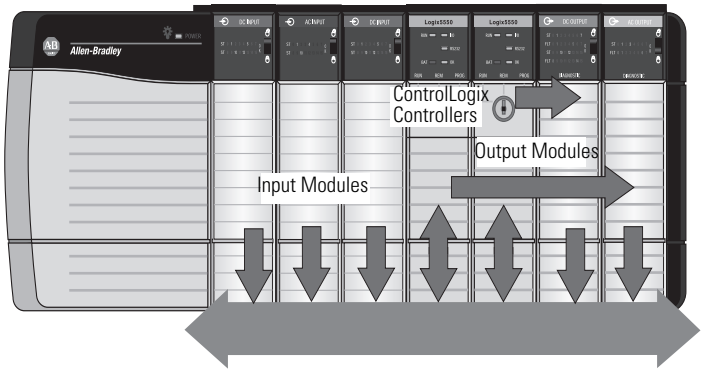
Example Configuration - Redundant ControlLogix System

The ControlLogix controller supports controller redundancy.



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 Producer-Consumer technology, which allows input information and output status to be shared among multiple ControlLogix 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-TD002A-EN-P.

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-IC16	16 inputs (8 points/group)	48V DC sink	30...55V DC @ 60 °C 30...60V DC @ 55 °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-TBCH 1756-TBS6H
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
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 μA/bit	1756-TBNH 1756-TBSH
1756-IF6I	6 individually isolated 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-TBNH 1756-TBSH
1756-IF8	8 single-ended inputs 4 differential inputs 2 high-speed differential inputs	±10.25V 0...10.25V 0...5.125V 0…20.5 mA	±10.25V: 320 μV/cnt (15 bits plus sign bipolar) 0…10.25V: 160 μV/cnt (16 bits) 0…5.125V: 80 μ/V cnt (16 bits) 0…20.5mA: 0.32 μA/cnt (16 bits)	1756-TBCH 1756-TBS6H
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-TBNH 1756-TBSH

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 flow meter 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

Accessories - I/O Modules

1756 Removable Terminal Blocks

Removable terminal blocks (RTBs) provide a flexible interconnection between your plant wiring and 1756 I/O modules. The RTB plugs into the front of the I/O module. The type of module determines which RTB you need. You can choose screw-clamp or spring-clamp RTBs.

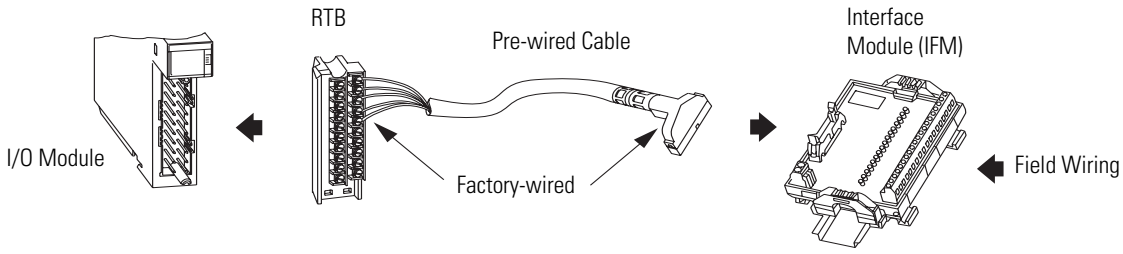
RTBs are not shipped with I/O modules. You must order them separately. The standard housing on the front of the wiring arm is not deep enough for 2.5 mm^2 (14 AWG) wiring. If you plan to use 2.5 mm^2 (14 AWG) wiring, also order the extended housing.

Attribute	1756-TBNH	1756-TBSH	1756-TBCH	1756-TBS6H	1756-TBE
Description	20-position NEMA screw-clamp removable block	20-pin spring-clamp removable terminal block with standard housing	36-pin cage-clamp removable terminal block with standard housing	36-pin spring-clamp removable terminal block with standard housing	Extended depth terminal block housing
Screw torque	0.8…1 N•m 7…9 lb•in		0.4 N•m 4.4 lb•in		—
Screwdriver width	8 mm (5/16 in.) max				

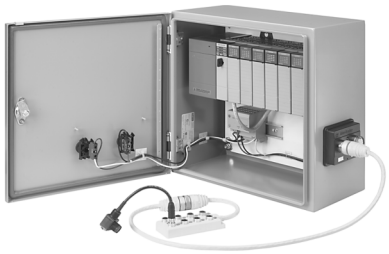
Wiring Systems

As an alternative to buying RTBs and connecting the wires yourself, you can buy a wiring system of:

- interface modules (IFMs) that provide the output terminal blocks for digital I/O modules. Use the pre-wired cables that match the I/O module to the IFM.
- analog interface modules (AIFMs) that provide the output terminal blocks for analog I/O modules. Use the pre-wired cables that match the I/O module to the AIFM.
- I/O module-ready cables. One end of the cable assembly is an RTB that plugs into the front of the I/O module. The other end has individually color-coded conductors that connect to a standard terminal block.



PanelConnect Modules



A PanelConnect module and its sensor connection system connect sensors directly to I/O modules by using convenient pre-built cables and connectors.

The PanelConnect module mounts on the enclosure and creates the correct seal for the entry of the sensor connections. You do not need to seal the opening where the sensor cables enter the enclosure, create custom connectors, or wire to those custom connectors.

ControlLogix Integrated Motion Modules

The Logix architecture supports motion control components that work in a wide variety of machine architectures.

- The Kinetix integrated-motion solution uses a SERCOS interface module to perform complex, multi-axis, synchronized motion. With a Kinetix system, you reap the full benefit of the Integrated Architecture platform because the integration doesn't stop at the controller. This system integrates the drive, the motor, and even the actuator at a lower cost per axis of motion. Use the same RSLogix 5000 programming software to configure, program, and commission your application.
- Logix integrated motion supports the analog family of servo modules for controlling drives/actuators. This solution is separate from the SERCOS interface. The analog family of servo modules provide a ±10 voltage analog output and can interface with a variety of feedback device types including rotary/linear absolute and incremental.
- Networked motion provides the ability to connect via the DeviceNet network to a single axis drive to perform simple, point-to-point indexing. You need Ultraware software for drive and indexing configuration.

For detailed specifications, see 1756 ControlLogix Integrated Motion Specifications, publication 1756-TD004A-EN-P.

For more information, see the:

- Motion Analyzer CD to size your motion application and to make final component selection. Download the software from http://www.ab.com/motion/software/analyzer.html
- Kinetix Motion Control Selection Guide, publication GMC-SG001, to verify drive, motor, and accessory specifications.

SERCOS Interface Modules

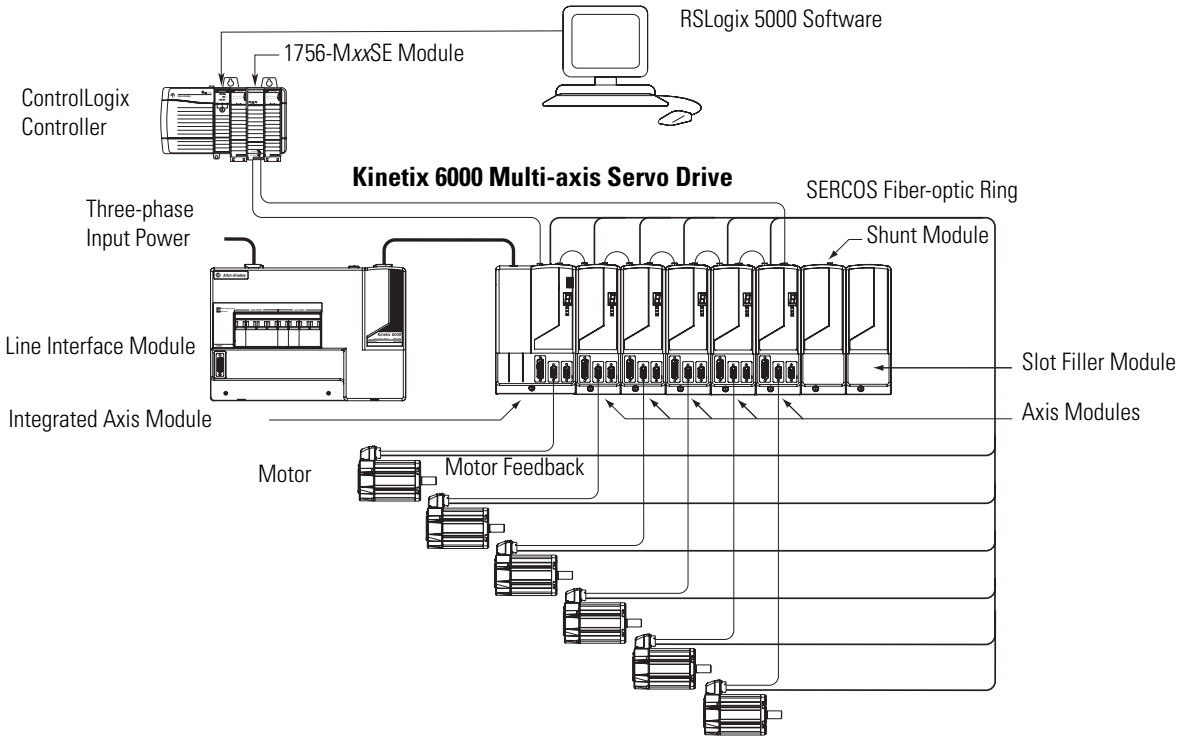
Cat. No.	Description	Number of Axis
1756-M16SE	Rockwell Automation SERCOS interface modules	16
1756-M08SE		8
1756-M03SE		3
1756-M08SEG	SERCOS interface drives that are Extended Pack Profile compliant	8

Example Configuration - SERCOS Interface Module

The SERCOS interface modules use a single, digital fiber-optic link, which eliminates as many as 18 digital wires per axis. Detailed drive-status information can be sent from drive to controller and from controller to drive.

The SERCOS interface modules can connect to these servo drives:

- 2093 Kinetix 2000 multi-axis servo drive
- 2094 Kinetix 6000 multi-axis servo drive
- 2099 Kinetix 7000 high-power servo drive
- 2098 Ultra3000 SERCOS servo drive

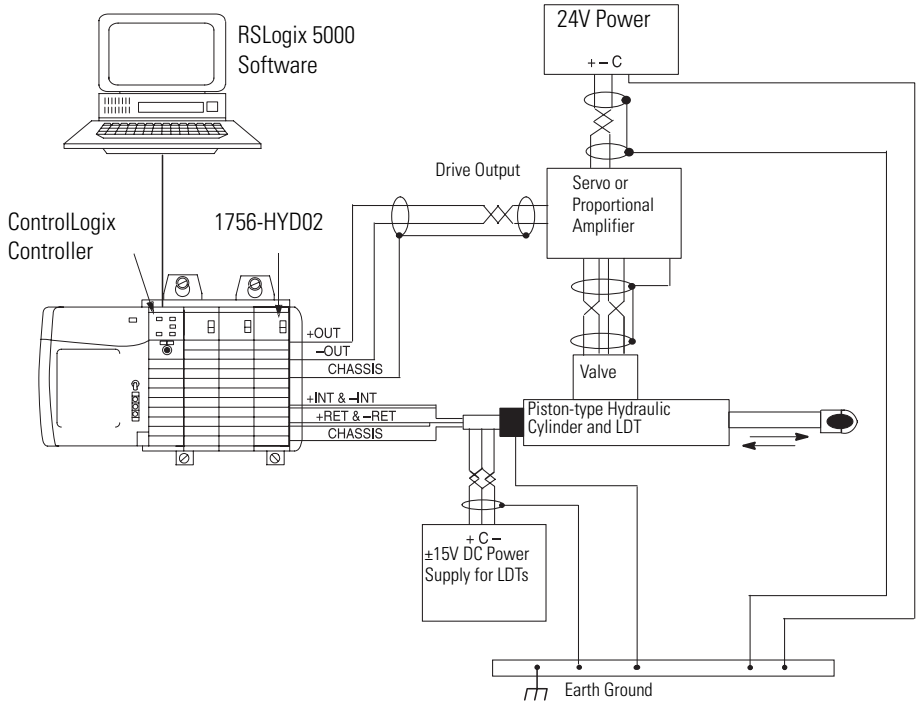


Analog Motion Interface Modules

Cat. No.	Description	Number of Axis
1756-M02AE	Analog servo interface drives with quadrature feedback	2
1756-HYD02	Analog, hydraulic servo interface drives LDT feedback	2
1756-M02AS	Analog servo interface drives with SSI feedback	2

Example Configuration - Analog Motion Interface Module

The ControlLogix family of analog servo modules is a cost effective option for closed-loop or open-loop motion control of devices that support an analog interface. The analog servo modules provide a ±10 volt analog output-command reference and support a variety of position feedback devices. As many as two axes can be controlled per module, and multiple modules can be used to provide as many as 32 axes of control per ControlLogix controller.



ControlLogix Communication Modules

Separate communication modules are available for different networks. Install multiple communication modules into the ControlLogix backplane to bridge or route control and information data between different networks. You can route a message through a maximum of four chassis (eight communication hops). You do not need a ControlLogix controller in the chassis.

Networks

Application	Network	
• Plant management (material handling) • Configuration, data collection, and control on a single, high-speed network • Time-critical applications with no established schedule • Inclusion of commercial technologies (such as video over IP) • Internet/Intranet connection	EtherNet/IP network	page 19
• High-speed transfer of time-critical data between controllers and I/O devices • Deterministic and repeatable data delivery • Media redundancy • Intrinsic safety • Redundant controller systems	ControlNet network	page 21
• Connections of low-level devices directly to plant floor controllers, without interfacing them through I/O modules • Data sent as needed • More diagnostics for improved data collection and fault detection • Less wiring and reduced start-up time than a traditional, hard-wired system	DeviceNet network	page 23
• Plant-wide and cell-level data sharing with program maintenance • Data sent regularly • Transfer of information between controllers	Data Highway Plus network	page 25
• Connections between controllers and I/O adapters • Data sent regularly • Distributed control so that each controller has its own I/O and communicates with a supervisory controller	Remote I/O network	page 25
• Fieldbus transmitters and actuators • Closed-loop control • Process automation	Foundation Fieldbus network	page 27
• Modems • Supervisory control and data acquisition (SCADA)	Serial network	page 29
Connections to existing DH-485 networks	DH-485 network	page 30
SynchLink fiber-optic communication to: • controllers • power distribution systems • PowerFlex 700S drives	SynchLink network	page 31

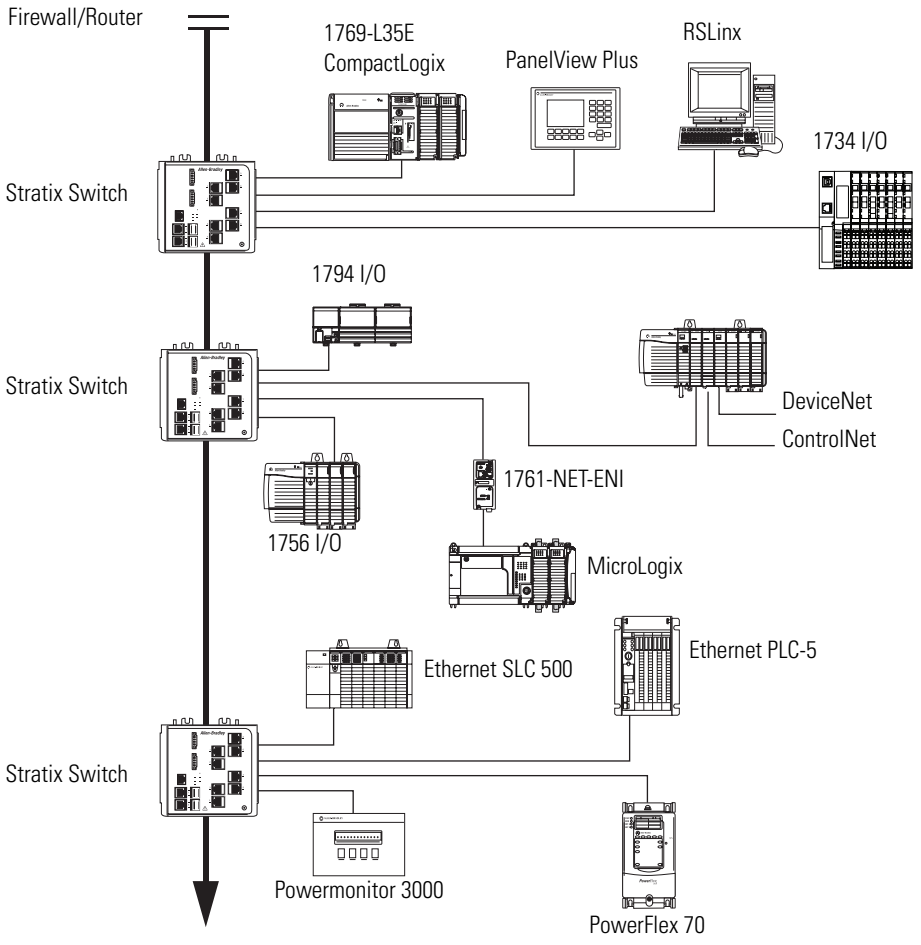
For detailed specifications, see 1756 ControlLogix Network Specifications, publication 1756-TD003A-EN-P.

EtherNet/IP Communication Modules

The Ethernet Industrial (EtherNet/IP) network protocol is an open industrial-networking standard that supports both real-time I/O messaging and message exchange. The EtherNet/IP network uses off-the-shelf Ethernet communication chips and physical media.

Cat. No.	Description	Communication Rate	TCP/IP Connections	Logix Connections
1756-EN2F	EtherNet/IP communication bridge module, fiber	100 Mbps	128	256
1756-EN2T	EtherNet/IP communication bridge module, copper	10/100 Mbps	128	256
1756-ENBT	EtherNet/IP communication bridge module, copper	10/100 Mbps	64	128
1756-EWEB	Ethernet web server module	10/100 Mbps	64	128
1756-EN2TXT	ControlLogix-XT, EtherNet/IP communication bridge module, copper	10/100 Mbps	64	256

Example Configuration - EtherNet/IP Network



Accessories - EtherNet/IP Network

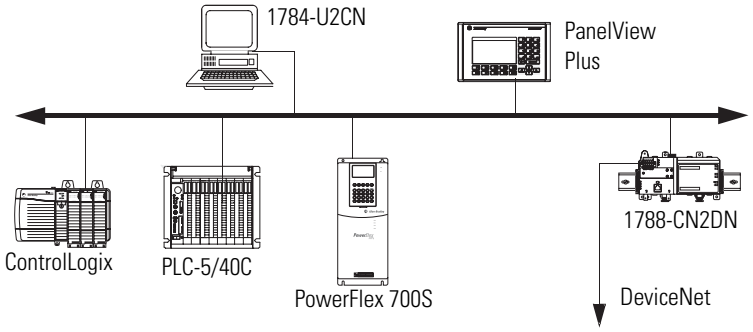
Cat. No.	Description	Specifications
1585J-M8PBJM-*x*	Ethernet RJ45 patchcord *x* = 2 (2 m), 5 (5 m) or 10 (10 m)	8-conductor, Teal Riser PVC Cable (Flex Rated cable also available)
1585J-M8CC-H	RJ45 insulation displacement connector (IDC)	0.128...0.325 mm^2 (26…22 AWG), Cat. 6, IDC, no tool required
1585J-M8CC-C	RJ45 crimp connector with boot, qty = 50 pieces	0.128...0.205 mm^2 (26…24 AWG, Cat. 5e, requires crimp tool for assembly
1585A-Jcrimp	Crimp tool	—
9300-RADES	Remote access dial-in kit	56 Kbps modem connection to devices on an Ethernet network, includes: • pre-configured modem • communication module • DIN rail mounting hardware • associated cables

ControlNet Communication Modules

The ControlNet network is an open, control network for real-time, high-throughput applications. The ControlNet network uses the Common Industrial Protocol (CIP) to combine the functionality of an I/O network and a peer-to-peer network, providing high-speed performance for both functions. The ControlNet network gives you deterministic, repeatable transfers of all mission-critical control data in addition to supporting transfers of non-time-critical data. I/O updates and controller-to-controller interlocking always take precedence over program uploads and downloads and messaging.

Cat. No.	Description	Communication Rate	Logix Connections	Number of Nodes
1756-CN2	ControlNet communication bridge module, standard media	5 Mbps	100	99
1756-CN2R	ControlNet communication bridge module, redundant media	5 Mbps	100	99
1756-CNB	ControlNet communication bridge module, standard media	5 Mbps	40...48	99
1756-CNBR	ControlNet communication bridge module, redundant media	5 Mbps	40...48	99
1756-CN2RXT	ControlLogix-XT, ControlNet communication bridge module, redundant media	5 Mbps	100	99

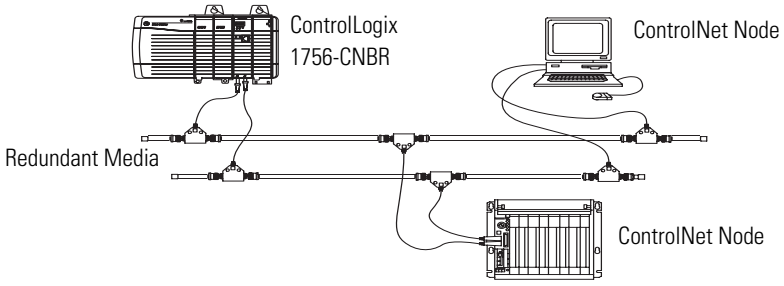
Example Configuration - ControlNet Network



Example Configuration - Redundant ControlNet Media

Redundant ControlNet media requires these components:

- 1756-CN2R or 1756-CNBR ControlNet module
- Two identical ControlNet links



Accessories - ControlNet Network

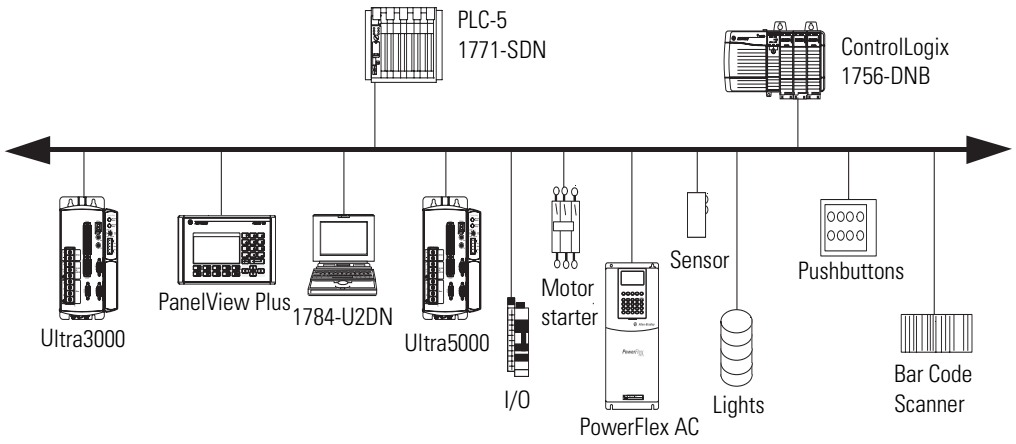
Cat. No.	Description
Taps	
1786-TPR	T-tap right angle
1786-TPS	T-tap straight
1786-TPYR	Y-tap right angle
1786-TPYS	Y-tap straight
Cables	
1786-CP	Programming cable to ControlNet RJ45 port
1786-RG6	ControlNet network, shield high-flex cable
1756-RG6F	ControlNet network, quad-shield high-flex coax cable
Other	
1786-XT	ControlNet termination resistor
Repeaters	
1786-RPA	ControlNet modular repeater adapter
1786-RPCD	ControlNet coaxial hub repeater
1786-RPFRL	ControlNet fiber ring repeater, long
1786-RPFRXL	ControlNet fiber ring repeater, extra long
1786-RPFS	ControlNet fiber ring repeater, short
1786-RPFM	ControlNet fiber ring repeater, medium

DeviceNet Communication Module

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 controllers and computers). The DeviceNet network uses the proven Common Industrial Protocol (CIP) to provide the control, configure, and data collection capabilities for industrial devices.

Cat. No.	Description	Communication Rate	Number of Nodes
1756-DNB	DeviceNet communication bridge module	125 Kbps (500 m max) 250 Kbps (250 m max) 500 Kbps (100 m max)	64

Example Configuration - DeviceNet Network



Accessories - DeviceNet Network

Cat. No.	Description
KwikLink Lite flat media	KwikLink Lite flat media is a newer, ODVA-approved solution for wiring DeviceNet networks. Drop-lines for connecting nodes are added by using the KwikLink Lite two-piece connectors. This cable system supports the intermixing of DeviceNet cable types (thin-round with flat). All of the KwikLink Lite connectors provide insulation displacement technology with reduced assembly time.
KwikLink flat media	The KwikLink flat media system provides a modular cabling method with its flat 4-wire cable and insulation displacement connectors (IDCs). The KwikLink system allows nodes to be added to the network without severing the trunkline. Cutting or stripping of the trunkline is eliminated, as is the need for predetermined cable lengths.
Round media	Round trunk cable is available in bulk spools or as pre-molded cordsets or patchcords in varying lengths. A wide variety of rugged, durable DeviceNet components is available for use in round trunk systems. Stainless steel versions of round cable system components are also available. • Thick-trunk round media systems use thick cable for maximum DeviceNet trunk line length. • Round media thin-trunk systems use thin cable to reduce maximum trunk line distances with a more compact and cost-effective installation for some applications. Thin-cable outer jacket material is TPE for additional chemical resistance.

Data Highway Plus and Remote I/O Communication Modules

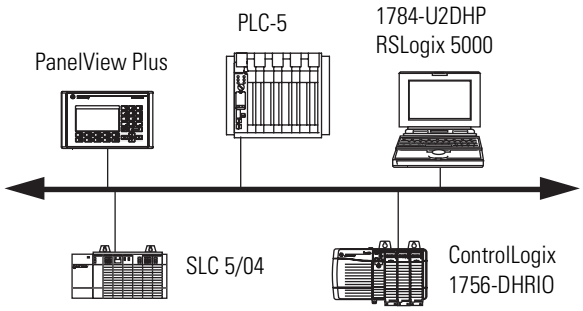
The Data Highway Plus network supports messaging between devices. The remote I/O link connects to remote I/O chassis and other intelligent devices.

The 1756-DHRIO module supports messaging between devices on DH+ networks. The remote I/O functionality enables the module to act as a scanner for transferring digital and block-transfer data to and from remote I/O devices.

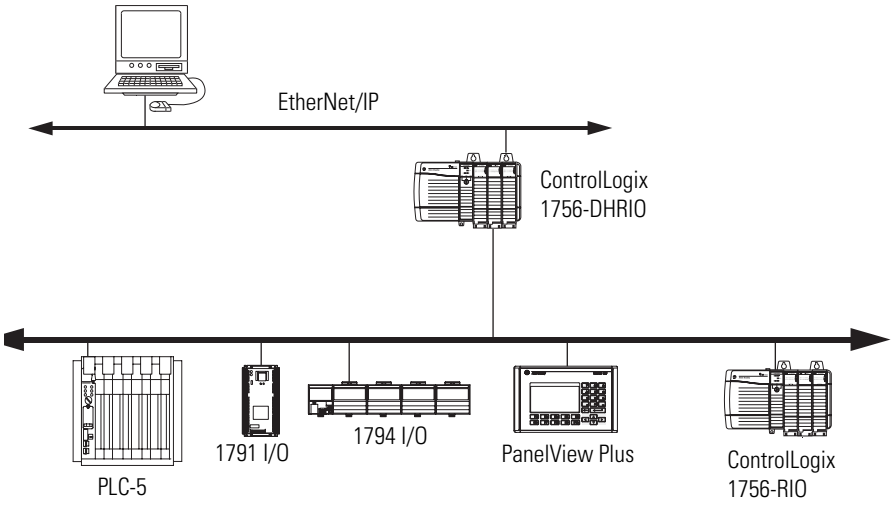
The 1756-RIO module can act as a scanner or adapter on a remote I/O network. In addition to digital and block-transfer data, the 1756-RIO module transfers analog and specialty data without message instructions.

Cat. No.	Description	Communication Rate	DH+ Connections	RIO Connections	Logix Connections
1756-DHRIO	Data Highway Plus/Remote I/O communication module	DH+: 57.6 Kbps RIO: 57.6 Kbps, 115.2 Kbps, 230.4 Kbps	32 DH+ messages per DH+ channel	32 logical rack connections per remote I/O channel 16 block-transfer connections per remote I/O channel	32
1756-RIO	Remote I/O communication module	RIO: 57.6 Kbps, 115.2 Kbps, 230.4 Kbps	na	32 physical racks (0...76), any combination of rack size and block transfers	10 scheduled I/O
1756-DHRIOXT	ControlLogix-XT, Data Highway Plus/Remote I/O communication module	DH+: 57.6 Kbps RIO: 57.6 Kbps, 115.2 Kbps, 230.4 Kbps	32 DH+ messages per DH+ channel	32 logical rack connections per remote I/O channel 16 block-transfer connections per remote I/O channel	32

Example Configuration - DH+ Network



Example Configuration - Remote I/O Network



Accessories - DH+ and Remote I/O Networks

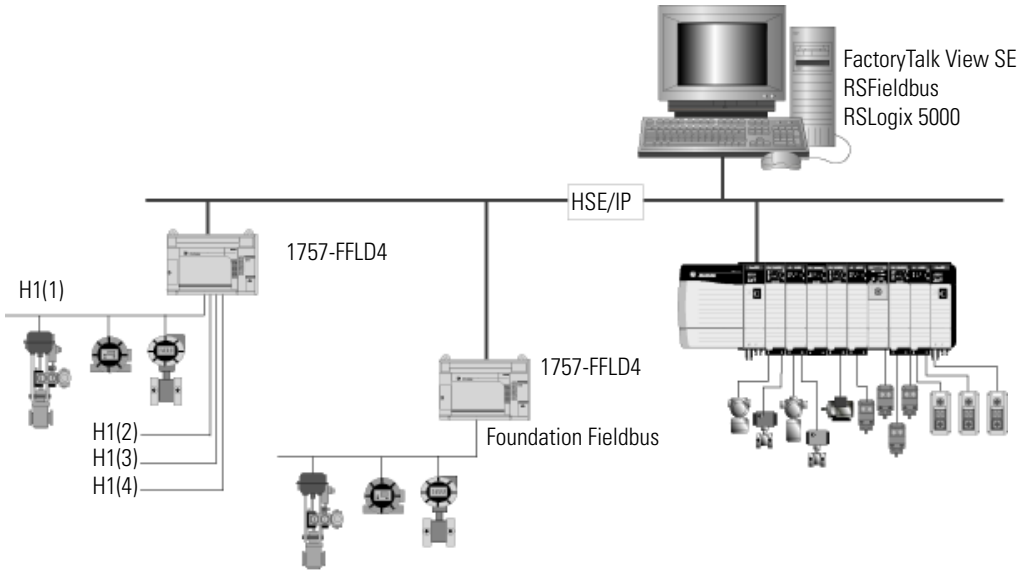
Cat. No.	Description	Specifications
1770-CD	Cable to connect communication module to DH+ network	Belden 9463 twinaxial
9300-RADKIT	Remote access dial-in kit	56 Kbps modem connection to devices on a DH+ network, includes: • pre-configured modem • communication module • DIN rail mounting hardware • associated cables

Foundation Fieldbus Linking Devices

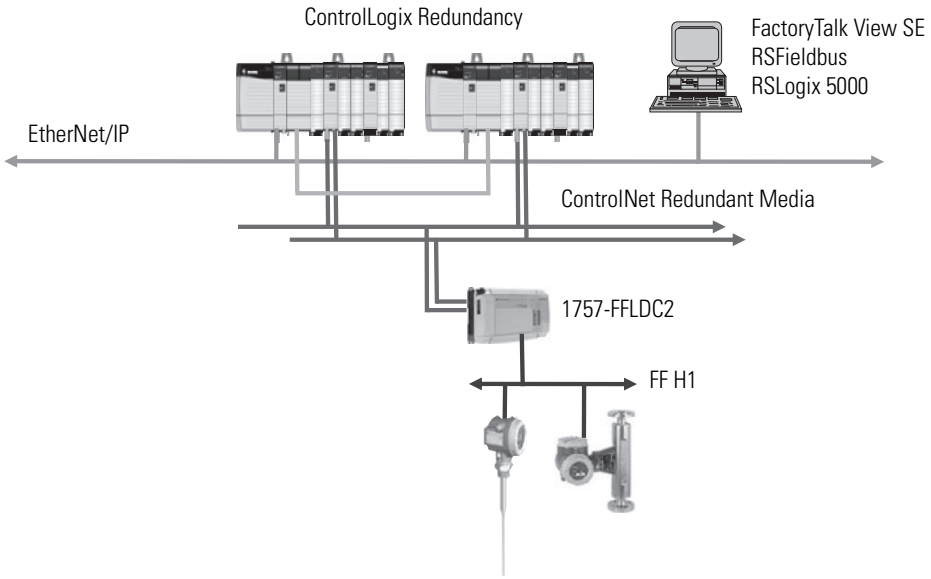
Foundation Fieldbus is a communication network created by the Fieldbus Foundation. It is a protocol designed for robust, distributed control of process control applications. Devices connected by a Foundation Fieldbus network can be used for sophisticated, highly-distributed process control.

Cat. No.	Description	Communication Rate	Number of H1 ports	Number of Devices per H1 Link	Number of Devices per Linking Device
1757FFLD2	Foundation Fieldbus linking device bridges from an Ethernet network	Foundation Fieldbus: 31.25 Kbps EtherNet/IP: 10/100 Mbps	2	16 (8…10 recommended)	32
1757-FFLD4			4		64
1757-FFLDC2	Foundation Fieldbus linking device bridges from a ControlNet network	Foundation Fieldbus: 31.25 Kbps ControlNet: 5 Mbps	2	16 (8…10 recommended)	32
1757-FFLDC4			4		64

Example Configuration - EtherNet/IP Network to Foundation Fieldbus Network



Example Configuration - ControlNet Network to Foundation Fieldbus Network



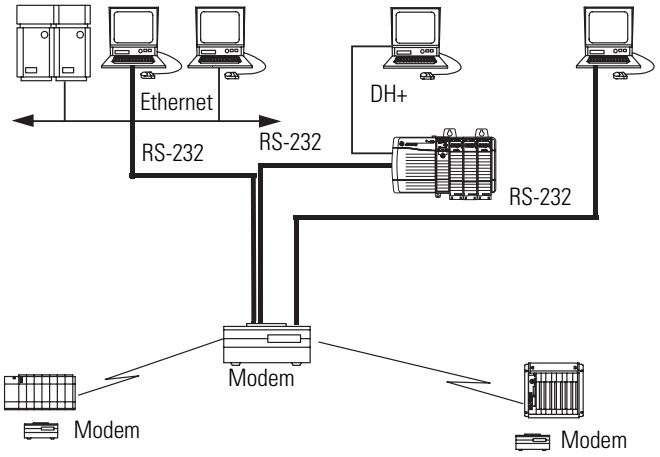
Accessories - Foundation Fieldbus Network

Cat. No.	Description
DIN rail	35 x 7.5 or 35 x 15 DIN (EN 50 022), zinc-plated yellow chromate steel

Serial Communication

The controller serial port is compatible with RS-232 serial communication. The serial port supports the DF1 protocol to communicate with other devices on the serial link.

Example Configuration - Serial Communication



Modbus Support

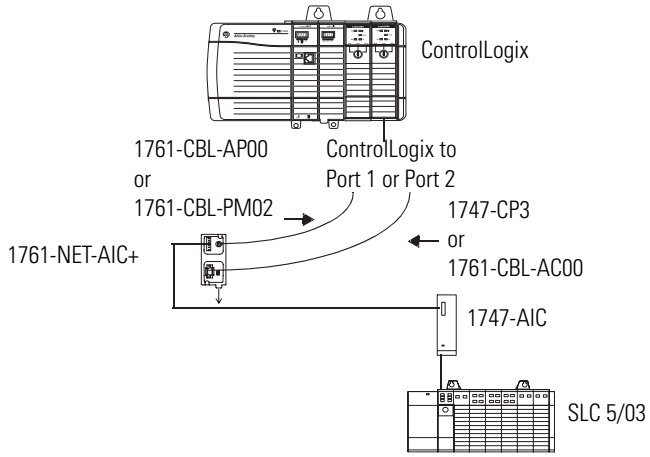
To use Logix5000 controllers on Modbus, you connect through the serial port and execute a specific ladder logic routine. The controller project is available with RSLogix 5000 Enterprise programming software. For more information, see Using Logix5000 Controllers as Masters or Slaves on Modbus Application Solution, publication CIG-AP129.

DH-485 Communication Module

The controller serial port is compatible with DH-485 communication. The DH-485 connection does support remote programming and monitoring via RSLogix 5000 software.

Cat. No.	Description	Communication Rate
1756-DH485	DH-485 communication bridge module	19.2 Kbps 9600 Kbps

Example Configuration - DH-485 Network



Accessories - DH-485 Network

Cat. No.	Description	Specifications
1747-CP3	9-pin D-shell, straight; 9-pin D-shell, right angle	3 m (9.8 ft)
1761-CBL-AC00	9-pin D-shell, right angle; 9-pin D-shell, right angle	45 cm (17.7 in.)
1761-CBL-AP00	9-pin D-shell, right angle; 8-pin mini-DIN	45 cm (17.7 in.)
1761-CBL-PM02	9-pin D-shell, straight; 8-pin mini-DIN	2 m (6.5 ft)
1761-NET-AIC	Advanced Interface Converter (AIC+) connects each channel on the 1756-DH485 module to the DH-485 network	• 20.4…28.8V DC power source required • Typical 120 mA 24V DC current draw
9300-RADKIT	Remote access dial-in kit	56 Kbps modem connection to devices on a DH+ network, includes: • Pre-configured modem • Communication module • DIN rail mounting hardware • Associated cables

SynchLink Communication Module

The SynchLink module provides time synchronization and data broadcasting capabilities for distributed motion and coordinated drive control. The 1756-SYNCH SynchLink module connects a ControlLogix chassis to a SynchLink fiber-optic communication link. The module:

- coordinates Coordinated System Time across multiple ControlLogix chassis.
- moves a limited amount of data from one chassis to another at a high speed.
- lets one controller consume motion axes data from a controller in another chassis.

Cat. No.	Description	Communication Rate
1756-SYNCH	SynchLink communication bridge module	5 Mbps

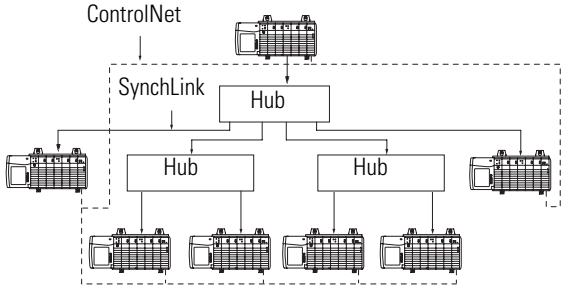
Example Configuration - 1756-SYNCH Star Topology

Requires:

- 1751-SLBA base block
- 1751-SL4SP four-port splitter block

Supports**:**

- 2 layers of hubs
- 16 end nodes per hub
- 257 nodes (including master node) per star network



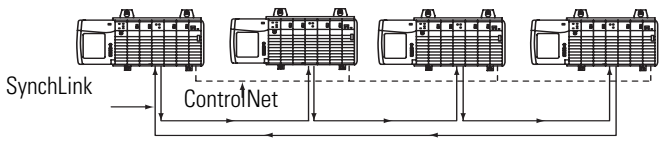
Example Configuration - 1756-SYNCH Daisy-chain Topology

Optional:

- 1751-SLBP bypass switch block

Supports:

- 10 nodes (including master and end nodes) per daisy-chain network



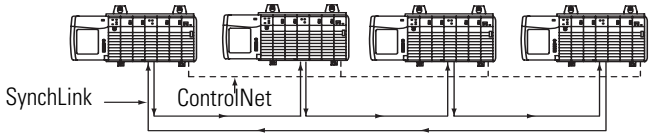
Example Configuration - 1756-SYNCH Ring Topology

Optional:

- 1751-SLBP bypass switch block

Supports:

- 10 nodes (including master and end nodes) per ring network



Accessories - SynchLink Network

Cat. No.	Description
1403-CFxxx	Fiber-optic cable assembly (Rockwell Automation)
HCP-M0200T V01RK	Lucent Technologies 200 μm simplex cable

ControlLogix Controllers

The ControlLogix controller provides a scalable controller solution that is capable of addressing a large amount of I/O points.

The controller can be placed into any slot of a ControlLogix chassis and multiple controllers can be installed in the same chassis. Multiple controllers in the same chassis communicate with each other over the backplane (just as controllers can communicate over networks) but operate independently.

ControlLogix controllers can monitor and control I/O across the ControlLogix backplane, as well as over I/O links. ControlLogix controllers can communicate over EtherNet/IP, ControlNet, DeviceNet, DH+, Remote I/O, and RS-232-C (DF1/DH-485 protocol) networks and many third party process and device networks. To provide communication for a ControlLogix controller, install the appropriate communication interface module into the chassis.

Cat. No.	Description	User Memory
1756-L61	ControlLogix, standard controller	2 MB
1756-L62		4 MB
1756-L63		8 MB
1756-L64		16 MB
1756-L65		32 MB
1756-L61S	GuardLogix, safety controller	2 MB
1756-L62S		4 MB
1756-L63S		8 MB
1756-LSP	GuardLogix safety partner (one is required for each GuardLogix controller)	na
1756-L63XT	ControlLogix-XT controller	8 MB

For detailed specifications, see 1756 ControlLogix Controllers Specifications, publication 1756-TD001A-EN-P.

Standard ControlLogix Controllers

The ControlLogix controller is part of the Logix5000 family of controllers. A ControlLogix system includes:

- the ControlLogix controller, available in different combinations of user memory.
- RSLogix 5000 programming software.
- 1756 ControlLogix I/O modules that reside in a 1756 chassis.
- separate communication modules for network communications
- a built-in serial port on every ControlLogix controller.

Features - Standard ControlLogix Controllers

Feature	1756-L61, 1756-L62, 1756-L63, 1756-L64, 1756-L65	
Controller tasks	• 32 tasks • 100 programs/task • Event tasks: all event triggers	
Built-in communication ports	1 port RS-232 serial	
Communication options	• EtherNet/IP • ControlNet • DeviceNet	• Data Highway Plus • Remote I/O • SynchLink • Third party process and device networks
Serial port communication	• ASCII • DF1 full/half-duplex • DF1 radio modem	• DH-485 • Modbus via logic
Controller connections supported, max	250	
Network connections, per network module	• 100 ControlNet (1756-CN2/A) • 40 ControlNet (1756-CNB)	• 256 EtherNet/IP; 128 TCP (1756-EN2*x*) • 128 EtherNet/IP; 64 TCP (1756-ENBT)
Controller redundancy	Full support	
Integrated motion	SERCOS interface	Analog options: • Encoder input • LDT input • SSI input
Programming languages	• Relay ladder • Structured text	• Function block • SFC

GuardLogix Controllers

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-L6*x*S 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.

During development, safety and standard have the same rules, multiple programmers, online editing, and forcing are all allowed. Once the project is tested and ready for final validation, you set the Safety Task to a SIL 3 integrity level, which is then enforced by the GuardLogix controller. When safety memory is locked and protected, the safety logic can't be modified and all safety functions operate with SIL 3 integrity. On the standard side of the GuardLogix controller, all functions operate like a regular Logix controller. Thus online editing, forcing, and other activities are all allowed.

With this level of integration, safety memory can be read by standard logic and external devices, like HMIs or other controllers, eliminating the need to condition safety memory for use elsewhere. The result is easy system-wide integration and the ability to display safety status on displays or marquees. Use Guard I/O modules for field device connectivity on Ethernet or DeviceNet networks, and for safety interlocking between GuardLogix controllers use Ethernet or ControlNet networks. Multiple GuardLogix controllers can share safety data for zone to zone interlocking, or a single GuardLogix controller can use remote distributed safety I/O between different cells/areas.

Features - GuardLogix Controllers

In addition to the standard features of a ControlLogix controller, the GuardLogix controller has these safety-related features.

Feature	1756-L61S, 1756-L62S, 1756-L63S, 1756-LSP	
Safety communication options	Standard and safety networks • EtherNet/IP • ControlNet • DeviceNet	
Network connections, per network module	• 100 ControlNet (1756-CN2/A) • 40 ControlNet (1756-CNB)	• 256 EtherNet/IP; 128 TCP (1756-EN2*x*) • 128 EtherNet/IP; 64 TCP (1756-ENBT)
Controller redundancy	Not supported	
Programming languages	Relay ladder	

ControlLogix-XT Controllers

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, when used with FLEX I/O-XT products, provide a complete control system solution that can be used in environments where temperatures range from -20...70 °C (-4...158 °F).

When used independently, the ControlLogix-XT system can withstand environments where the temperature ranges from -25...70 °C (-13...158 °F).

Redundant ControlLogix Controllers

The ControlLogix controller supports controller redundancy. In a redundant controller system, you need these components:

- Two 1756 chassis each with the same:
  - number of slots.
  - modules in the same slots.
  - redundancy firmware revisions in each module.
  - Two additional ControlNet nodes outside the redundant chassis pair.

You need **one** of the following redundancy modules:

- One 1756-RM module per chassis, which supports:
  - two 1756-L61, 1756-L62, 1761-L63 controllers or one 1756-L64 controller.
  - maximum of seven communication modules, which can be 1756-CN2 series B, 1756-CN2R series B, and 1756-EN2T modules.
  - one 1756-RMC*x* cable.
- One 1757-SRM module per chassis, which supports:
  - one 1756-L61, 1756-L62, 1756-L63, 1756-L64 controller.
  - maximum of seven communication modules, which can be 1756-CNB series D or E, 1756-CNBR series D or E, 1756-ENBT, and 1756-EWEB modules.
  - one 1757-SRC*x* cable.

Accessories - Controllers

1784 Industrial CompactFlash Cards

CompactFlash cards offer nonvolatile memory (flash) to permanently store a user program and tag data on a ControlLogix controller. You install the 1784 CompactFlash card in a socket on the controller. You can manually trigger the controller to save to or load from nonvolatile memory or configure the controller to load from nonvolatile memory on powerup.

The GuardLogix controller does not support user program storage or retrieval by using a CompactFlash card.

Attribute	1784-CF64	1784-CF128
Memory	64 MB	128 MB
Weight, approx.	14.2 g (0.5 oz)	

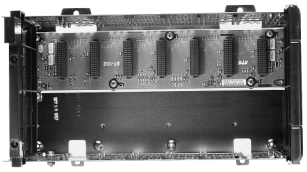
1756 ControlLogix Batteries

Each ControlLogix controller ships with a battery. The 1756-L6*x* controllers have nonvolatile memory if you install a 1784-CF64 or 1784-CF128 industrial CompactFlash card. With nonvolatile memory, the controller can be used without a battery. If you do not use a battery, current tag data will be at the state it was when the nonvolatile memory was saved.

Attribute	1756-BA1	1756-BA2	1756-BATM[1]	1756-BATA
Description	Lithium battery (0.59 g)	Lithium battery (0.59 g)	Externally mounted battery assembly	Replacement lithium battery for 1756-BATM (5 g max lithium per each D cell; contains 2 D cells)
ControlLogix controllers	1756-L61, 1756-L62, 1756-L63 controllers, series A	1756-L61, 1756-L62, 1756-L63 controllers, series B 1756-L64, 1756-L65 controllers	1756-L61, 1756-L62, 1756-L63 controllers, series A	1756-BATM battery module
GuardLogix controllers	—	1756-L61S, 1756-L62S, 1756-L63S	—	—
ControlLogix-XT controllers	—	1756-L63XT controllers	—	—

(1) The 1756-BATM externally mounted battery assembly is highly recommended for use with all series A 1756-L6*x* controllers and provides longer battery life than the 1756-BA1 battery. The 1756-BATM includes one 1756-BATA lithium battery assembly and a 1 m (3.28 ft) cable to connect housing to controller.

ControlLogix Chassis



The ControlLogix system is a modular system that requires a 1756 I/O chassis. Place any module into any slot. The backplane provides a high-speed communication path between modules.

All of the chassis are designed for horizontal-only, back-panel mounting. The chassis are available in these configurations:

- standard chassis.
- ControlLogix-XT chassis.

For detailed specifications, see 1756 ControlLogix Chassis Specifications Specifications, publication 1756-TD006A-EN-P.

Features - Chassis

- Slot guides and snap-in retention for easy and secure module fit for any type of 1756 module.
- Direct mounting accommodates any 1756 power supply.

Standard Chassis

The chassis backplane provides a high-speed communication path between modules and distributes power to each of the modules within the chassis.

Cat. No.	Description	Slots
1756-A4	ControlLogix, standard chassis	4
1756-A7		7
1756-A10		10
1756-A13		13
1756-A17		17

ControlLogix-XT Chassis

The ControlLogix-XT products include control and communication system components that, when used with FLEX I/O-XT products, provide a complete control system solution that can be used in environments where temperatures range from -20...70 °C (-4...158 °F).

When used independently, the ControlLogix-XT system can withstand environments where the temperature ranges from -25...70 °C (-13...158 °F).

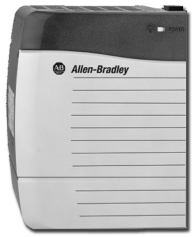
Cat. No.	Description	Slots
1756-A5XT	ControlLogix-XT chassis	5
1756-A7LXT		7

Accessories - Chassis

Use a slot filler module to fill empty slots.

Cat. No.	Description
1756-N2	Slot filler module for empty slots in standard ControlLogix chassis
1756-N2XT	Slot filler module for empty slots in ControlLogix-XT chassis

ControlLogix Power Supplies



ControlLogix power supplies are used with the 1756 chassis to provide 1.2V, 3.3V, 5V, and 24V DC power directly to the chassis backplane. Select from these configurations:

- standard power.
- redundant power.
- ControlLogix-XT power.

For detailed specifications, see 1756 ControlLogix Power Supplies Specifications, publication 1756-TD005A-EN-P.

Standard Power Supplies

You mount a standard power supply directly on the left end of the chassis, where it plugs directly into the backplane.

Cat. No.	Description	Voltage Category	Operating Voltage Range	Chassis
1756-PA72	ControlLogix, standard	120V/220V AC	85…265V AC	Standard, series A and series B
1756-PB72		24V DC	18…32V DC	Standard, series A and series B
1756-PA75		120V/220V AC	85…265V AC	Standard series B
1756-PB75		24V DC	18...32V DC	Standard series B
1756-PC75		48V DC	30…60V DC	Standard series B
1756-PH75		125V DC	90…143V DC	Standard series B

Redundant Power Supplies

To build a redundant power supply system, you need:

- two redundant power supplies (both 1756-PA75R or 1756-PB75R).
- one 1756-PSCA2 chassis adapter module.
- two 1756-CPR2 cables to connect the power supplies to the 1756-PSCA2 chassis adapter module (0.91 m (3 ft) length).
- user-supplied annunciator wiring to connect the power supplies to the input modules, as needed.

The 1756-PSCA2 chassis adapter module is a passive device that funnels power from the redundant power supplies to the single power connector on the ControlLogix series B chassis backplane.

Cat. No.	Description	Voltage Category	Operating Voltage Range	Chassis
1756-PA75R	ControlLogix, redundant	120V/220V AC	85…265V AC	Standard series B
1756-PB75R		24V DC	19.2…32V DC	Standard series B

Accessories - Redundant Power Supplies

Cat. No.	Description	Specifications
1756-PSCA2	Chassis adapter module. Funnels power from the redundant power supplies to the single power connector on the ControlLogix series B chassis backplane.	Mounts directly to left side of 1756 chassis
1756-CPR2	Chassis adapter cable. Connects redundant power supply to 1756-PCSA2 chassis adapter.	Length: 0.91 m (3 ft)

ControlLogix-XT Power Supplies

The ControlLogix-XT products include control and communication system components that, when used with FLEX I/O-XT products, provide a complete control system solution that can be used in environments where temperatures range from -20...70 °C (-4...158 °F).

When used independently, the ControlLogix-XT system can withstand environments where the temperature ranges from -25...70 °C (-13...158 °F).

Cat. No.	Description	Voltage Category	Operating Voltage Range	Chassis
1756-PBXT	ControlLogix-XT	24V DC	18…32V DC	XT

Visualization Products

Visualization products, together with Logix for control and NetLinx architecture for communication, make up the Rockwell Automation Integrated Architecture strategy. The visualization strategy combines Rockwell Automation expertise in Allen-Bradley electronic operator interface and industrialized personal computer hardware with Rockwell Software supervisory control software. Current visualization products include:

- FactoryTalk View software.
- PanelView Plus operator interface.
- PanelView Plus CE operator interface.
- Industrial computers and monitors.

For more information, see the Operator Interface catalog pages at http://www.ab.com/en/epub/catalogs/12762/2181376/1239781/

Programming Software

Your selection of modules and network configuration determines what software packages you need to configure and program your system.

1756 System Software

If you have	You need	Order
1756 ControlLogix controller	RSLogix 5000 Enterprise Series software	9324 series
1756 SERCOS or analog motion module		
1756-CN2, 1756-CN2R 1756-CN2RXT 1756-CNB, 1756-CNBR ControlNet communication module	RSNetWorx for ControlNet software (comes with the Standard/NetWorx and Professional Editions of RSLogix 5000 Enterprise Series software)	9324-RLD300NXENE (RSNetWorx option) or 9324-RLD700NXENE (RSLogix 5000 Professional software) or 9357-CNETL3 (RSNetWorx for ControlNet)
1756-DNB DeviceNet communication module	RSNetWorx for DeviceNet software (comes with the Standard/NetWorx and Professional Editions of RSLogix 5000 Enterprise Series software)	9324-RLD300NXENE (RSNetWorx option) or 9324-RLD700NXENE (RSLogix 5000 Professional software) or 9357-DNETL3 (RSNetWorx for DeviceNet)
1756-EN2F, 1756-EN2T 1756-EN2TX 1756-ENBT, 1756-EWEB EtherNet/IP communication module (set the IP address)	RSLinx software or BOOTP/DHCP server utility to set IP addresses (RSLinx Lite and BOOTP server come with RSLogix 5000 Enterprise Series software) Optional RSNetWorx for EtherNet/IP software (comes with the Standard/RSNetWorx and Professional Editions of RSLogix 5000 Enterprise Series software)	9324 series Optional 9357-ENETL3 (RSNetWorx for EtherNet/IP)
1756-DHRIO, 1756-DHRIOXT communication module 1756-DH485 communication module	RSLinx software	9324 series
1757-FFLD2, 1757-FFLD4 1757-FFLDC2, 1757-FFLDC4 Foundation Fieldbus linking device	RSFieldbus configuration software	9308 series
Communication card in a workstation	RSLinx software (RSLinx Lite comes with RSLogix 5000 Enterprise Series software)	9324 series

RSLogix 5000 Programming Software

RSLogix 5000 Enterprise Series software is designed to work with Logix5000 controller platforms. RSLogix 5000 Enterprise Series software is an IEC 61131-3 compliant software package that offers relay ladder, structured text, function block diagram, and sequential function chart editors for you to develop application programs. Create your own instructions by encapsulating a section of logic in any programming language into an Add-On Instruction.

RSLogix 5000 Enterprise Series Software Requirements

Description	Value
Personal computer	Pentium II 450 MHz min Pentium III 733 MHz (or better) recommended
Software requirements	Supported operating systems: RSLogix 5000 software, version 17 has been tested on the following operating systems: • Microsoft Windows XP Professional with Service Pack 2 • Microsoft Windows Server 2003 R2 Standard Edition with Service Pack 1 and User Account Control (UAC) turned off • Microsoft Windows 2000 Professional with Service Pack 4 • Microsoft Windows Vista Home Basic with SPI • Microsoft Windows Vista Business with SPI RSLogix 5000 software is expected to operate correctly on the following operating systems, but has not been tested: • Microsoft • Microsoft Windows XP Home • Microsoft Windows Server 2003 Standard Edition with Service Pack 1 • Microsoft Windows 2000 Professional with Service Pack 1, 2, or 3 • Microsoft Windows Vista Ultimate • Microsoft Windows Vista Home Premium The Chinese, Japanese, and Korean editions of RSLogix 5000 software are supported only on Microsoft Windows XP, Microsoft Windows Vista, and Microsoft Windows Server 2003. RSLogix 5000 software is supported for 32-bit architectures (x86) and has not been tested with 64-bit architectures (x64).
RAM	128 MB min 256 MB recommended
Hard disk space	3 GB of free hard disk space (or more based on application requirements)
Optical drives	DVD
Video requirements	256-color VGA graphics adapter 800 x 600 min resolution (True Color 1024 x 768 recommended)

RSLogix 5000 Enterprise Series Software Packages

- Replace *xx* in the catalog number with the appropriate language designation: ZH=Chinese, EN=English, FR=French, DE=German, IT=Italian, JP=Japanese, KO=Korean, PT=Portuguese, and ES=Spanish.
- For upgrades from one package to another, see the StepForward program.

Available Features	Service Edition 9324-RLD000*xx*E	Mini Edition 9324-RLD200*xx*E	Lite Edition 9324-RLD250*xx*E	Standard Edition: Node Locked 9324-RLD300*xx*E Concurrent License[1] 9324-RLD300*xx*F	Standard/ NetWorx Edition 9324-RLD300NX*xx*E	Full Edition: Node Locked 9324-RLD600*xx*E Concurrent License[1] 9324-RLD600*xx*F	Professional Edition: Node Locked: 9324-RLD700NX*xx*E Concurrent License[1] 9324-RLD700NX*xx*F
Logix5000 controllers supported	All[2]	CompactLogix FlexLogix	CompactLogix FlexLogix	All	All	All[3]	All
Relay ladder diagram editor[4]	Upload/download and view	Full support	Full support	Full support	Full support	Full support	Full support
Function block diagram 9324-RLDFBDENE[4]	Upload/download and view	Upload/download Available separately	Full support	Upload/download Available separately	Upload/download Available separately	Full support	Full support
Sequential function chart editor 9324-RLDSFCE[4][5]	Upload/download and view	Upload/download Available separately	Full support	Upload/download Available separately	Upload/download Available separately	Full support	Full support
Structured text 9324-RLDSTXE[4]	Upload/download and view	Upload/download Available separately	Full support	Upload/download Available separately	Upload/download Available separately	Full support	Full support
PhaseManager 9324-RLDPME	Upload/download	Upload/download Available separately	Upload/download Available separately	Upload/download Available separately	Upload/download Available separately	Full support	Full support
GuardLogix Safety 9324-RLDGLXE[6]	Upload/download and view	NA	NA	Upload/download Available separately	Upload/download Available separately	Full support	Full support
Highly integrated motion	Upload/download and view	Upload/download	Full support	Full support	Full support	Full support	Full support
Graphical trending	Full support	Full support[7]	Full support[7]	Full support	Full support	Full support	Full support
DriveExecutive Lite 9303-4DTE01ENE	Available separately	Available separately	Available separately	Included	Included	Included	Included
PIDE autotune 9323-ATUNEENE[8]	Available separately	Available separately	Available separately	Available separately	Available separately	Included	Included
Advanced Process Control instructions 9324-RLDAPCENE 9324-RLDAPCLENE[9]	Upload/download and view	Available separately	Available separately	Available separately	Available separately	Available separately	Available separately
Routine source protection	Included	Included	Included	Included	Included	Included	Included
RSLogix 5000 project compare	Included	Included	Included	Included	Included	Included	Included

(1) As of RSLogix 5000 programming software, version 16. The software is designed to grab the highest functionality license first. For example, if Standard, Full and Professional Concurrent licenses are available on the FactoryTalk Activation server, RSLogix 5000 software will grab the highest functionality license first.

(2) Service Edition supports controllers with firmware revision 12 and later.

(3) Full Edition supports controllers with firmware revision 10 and later.

(4) A multiple language editor package is available as 9324-RLDMLPE. It contains the function block, sequential function chart, and structured text editors.

(5) The Structured Text editor option (9324-RLDSTXE) is required to program SFC actions in structured text.

(6) As of RSLogix 5000 programming software, version 16.

(7) As of RSLogix 5000 programming software, version 15.

(8) PIDE Autotune is not supported on 1769-L23*x* controllers.

(9) Select 9324-RLDAPCENE for a design license for software and a runtime license for one controller. Select 9324-RLDAPCLENE for only a runtime license for one controller (for pay to deploy).

RSLogix 5000 Integration with Other Applications

Available Features	Service Edition 9324-RLD000*xx*E	Mini Edition 9324-RLD200*xx*E	Lite Edition 9324-RLD250*xx*E	Standard Edition: Node Locked 9324-RLD300*xx*E Concurrent License[1] 9324-RLD300*xx*F	Standard/ NetWorx Edition 9324-RLD300NX*xx*E	Full Edition: Node Locked 9324-RLD600*xx*E Concurrent License[1] 9324-RLD600*xx*F	Professional Edition: Node Locked: 9324-RLD700NX*xx*E Concurrent License[1] 9324-RLD700NX*xx*F
RSLinx Classic software	Lite included	Lite included	Lite included	Lite included	Lite included	Lite included	Lite included
RSNetWorx ControlNet, RSNetWorx DeviceNet, RSNetWorx EtherNet/IP software[2]	Available separately	Available separately	Available separately	Available separately	Included	Available separately	Included
FactoryTalk AssetCentre audit support	Included	Included	Included	Included	Included	Included	Included
FuzzyDesigner 9324-RLDFZYENE[3]	NA	Available separately	Available separately	Available separately	Available separately	Available separately	Available separately
RSLogix Emulate 5000 9310-WED200ENE[4]	Available separately	NA	NA	Available separately	Available separately	Available separately	Included
FactoryTalk security server[5]	Included	Included	Included	Included	Included	Included	Included
Security server emulator[5]	Included	Included	Included	Included	Included	Included	Included
RSLogix Architect 9326-LGXARCHENE[6]	Available separately	Available separately	Available separately	Available separately	Available separately	Available separately	Included
FactoryTalk View SE demo (50 tags/2 hours)	Available separately	Available separately	Available separately	Available separately	Available separately	Available separately	Included

(1) As of RSLogix 5000 programming software, version 16. The software is designed to grab the highest functionality license first. For example, if Standard, Full and Professional Concurrent licenses are available on the FactoryTalk Activation server, RSLogix 5000 software will grab the highest functionality license first.

(2) RSNetWorx for ControlNet software is 9357-CNETL3. RSNetWorx for DeviceNet software is 9357-DNETL3. RSNetWorx for EtherNet/IP software is 9357-ENETL3. They are available together as 9357-ANETL3.

(3) As of RSLogix 5000 programming software, version 16.

(4) RSLogix Emulate 5000 software does not support Microsoft Windows Vista at this time.

(5) FactoryTalk AP install required - included on disk.

(6) As of RSLogix 5000 programming software, version 15.

Notes:

Rockwell Automation Support

Rockwell Automation provides technical information on the Web to assist you in using its products. At http://support.rockwellautomation.com, you can find technical manuals, a knowledge base of FAQs, technical and application notes, sample code and links to software service packs, and a MySupport feature that you can customize to make the best use of these tools.

For an additional level of technical phone support for installation, configuration, and troubleshooting, we offer TechConnect support programs. For more information, contact your local distributor or Rockwell Automation representative, or visit http://support.rockwellautomation.com.

Installation Assistance

If you experience a problem within the first 24 hours of installation, please review the information that's contained in this manual. You can also contact a special Customer Support number for initial help in getting your product up and running.

United States	1.440.646.3434 Monday – Friday, 8am – 5pm EST
Outside United States	Please contact your local Rockwell Automation representative for any technical support issues.

New Product Satisfaction Return

Rockwell Automation tests all of its products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned, follow these procedures.

United States	Contact your distributor. You must provide a Customer Support case number (call the phone number above to obtain one) to your distributor in order to complete the return process.
Outside United States	Please contact your local Rockwell Automation representative for the return procedure.

www.rockwellautomation.com

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