Technical Data

Original Instructions

ControlLogix and GuardLogix Controller Specifications

Bulletin 1756

Summary of Changes

This publication contains the following new or updated information. This list includes substantive updates only and is not intended to reflect all changes.

Topic	Page
Added information about the ControlLogix 5590 Controllers	2...16
Corrected footnotes related to I/O Capacity and Message Rate Capacity	Throughout
Added information about the 1784-MSD8, 1784-MSD8XT, 1784-SD4, and 1784-SD4XT Memory Cards	Throughout
Updated the GuardLogix 5580 and GuardLogix-XT 5580 Controllers Specification tables with TÜV security information	47, 51
Updated Message Rate Capacity for ControlLogix 5590, ControlLogix 5580, and GuardLogix 5580 Controllers	4, 8, 12, 18, 22, 26, 30, 34, 38, 44, 48

Catalog Numbers

This publication is applicable to these controllers and modules:

ControlLogix 5590 Controllers

ControlLogix® 5590 Controllers:	1756-L902TS, 1756-L905TS, 1756-L908TS, 1756-L915TS, 1756-L925TS, 1756-L950TS, 1756-L980TS, 1756-L9SP
ControlLogix-XT™ 5590 Controllers:	1756-L902TSXT, 1756-L905TSXT, 1756-L908TSXT, 1756-L915TSXT, 1756-L925TSXT, 1756-L950TSXT, 1756-L980TSXT, 1756-L9SPXT
ControlLogix-XT 5590 Process Controllers:	1756-L905TPSXT, 1756-L915TPSXT, 1756-L950TPSXT, 1756-L980TPSXT

ControlLogix 5580 and GuardLogix 5580 Controllers

ControlLogix 5580 Controllers:	1756-L81E, 1756-L82E, 1756-L83E, 1756-L84E, 1756-L85E
ControlLogix 5580 Conformal Coated Controllers:	1756-L81EK, 1756-L82EK, 1756-L83EK, 1756-L84EK, 1756-L85EK
ControlLogix-XT 5580 Controllers:	1756-L81EXT, 1756-L82EXT, 1756-L83EXT, 1756-L84EXT, 1756-L85EXT
ControlLogix 5580 No Stored Energy (NSE) Controllers:	1756-L81E-NSE, 1756-L82E-NSE, 1756-L83E-NSE, 1756-L84E-NSE, 1756-L85E-NSE
ControlLogix-XT 5580 NSE Controllers:	1756-L81E-NSEXT, 1756-L82E-NSEXT, 1756-L83E-NSEXT, 1756-L84E-NSEXT, 1756-L85E-NSEXT
ControlLogix 5580 Process Controllers:	1756-L81EP, 1756-L83EP, 1756-L85EP
ControlLogix-XT 5580 Process Controllers:	1756-L81EPXT, 1756-L83EPXT, 1756-L85EPXT
GuardLogix© 5580 Controllers:	1756-L81ES, 1756-L82ES, 1756-L83ES, 1756-L84ES, 1756-L85ES, 1756-L8SP
GuardLogix 5580 Conformal Coated Controllers:	1756-L81ESK, 1756-L82ESK, 1756-L83ESK, 1756-L84ESK, 1756-L8SPK
GuardLogix-XT 5580 Controllers:	1756-L81EXTS, 1756-L82EXTS, 1756-L83EXTS, 1756-L84EXTS, 1756-L8XTSP 1756-L81ESXT, 1756-L82ESXT, 1756-L83ESXT, 1756-L84ESXT, 1756-L8SPXT

ControlLogix 5570 and GuardLogix 5570 Controllers

ControlLogix 5570 Controllers:	1756-L71, 1756-L72, 1756-L73, 1756-L74, 1756-L75
ControlLogix 5570 Conformal Coated Controllers:	1756-L71K, 1756-L72K, 1756-L73K, 1756-L74K, 1756-L75K
ControlLogix-XT 5570 Controllers:	1756-L73XT
GuardLogix 5570 Controllers:	1756-L71S, 1756-L72S, 1756-L73S, 1756-L7SP
GuardLogix 5570 Conformal Coated Controllers:	1756-L71SK, 1756-L72SK, 1756-L73SK, 1756-L7SPK
GuardLogix-XT 5570 Controllers:	1756-L73SXT, 1756-L7SPXT
Armor™ ControlLogix 5570 Controllers:	1756-L72EROM, 1756-L73EROM
Armor™ GuardLogix® 5570 Controllers:	1756-L72EROMS, 1756-L73EROMS

Controller Redundancy

ControlLogix Redundancy Modules:	1756-RM3, 1756-RM3-2SFP, 1756-RM3XT 1756-RM2, 1756-RM2K, 1756-RM2XT

ControlLogix 5590 Controllers

The ControlLogix 5590 controllers are configurable for standard, safety, redundancy, and Logix SIS applications to help enable faster system performance, capacity, productivity, and security to help meet the growing demands of smart machines and equipment for manufacturing.

ControlLogix 5590 Standard Controller with Safety Partner

Working as part of the Integrated Architecture offering, these controllers provide:

- Support for Integrated Motion over EtherNet/IP™ for high-speed motion applications.
- Support for security, including IEC-62443-4-2 SL 1 certification.
- Support for safety solutions.
- Support for redundancy solutions.
- Support for plant-wide process control.

With a ControlLogix 5590 controller, up to SIL 2/PLd (Category 3) can be achieved with one controller using the safety task and safety I/O.

When used in combination with a ControlLogix 5590 safety partner, a ControlLogix 5590 controller can achieve up to SIL 3/PLe (Category 4).

ControlLogix-XT 5590 and ControlLogix-XT 5590 Process controllers provide extended protection in corrosive gas environments.

ATTENTION: Select products that are rated for corrosive atmospheres ship with port plugs, covers, or memory cards installed which provide connectors with a degree of protection in corrosive gas environments.
Once the factory packaging seal is broken, plugs or covers must be installed in all unoccupied ports or slots for the product to maintain its corrosive atmosphere rating.

If temporary access is required, port plugs, covers, memory cards, and so on can be removed from ports or slots, but should be reinstalled after temporary access is complete.

IMPORTANT When a ControlLogix product that is rated for harsh environments (corrosive atmosphere, extended temperature, etc.) is used in a system with other ControlLogix products that have lower specification values, the system is derated to the lowest common value.

EXAMPLE: If the maximum operating temperature specification found in the Technical Data for your ControlLogix-XT module is 70 °C (158 °F) and you pair it with a ControlLogix chassis that is temperature rated to 60 °C (140 °F), your system is derated to 60 °C (140 °F).

To ensure that your system is equipped for harsh environments, compare the corrosive atmosphere, temperature, and other specifications found in the Technical Data publication for each product.

Logix SIS

With the Studio 5000 Logix Designer® application version 38 and later, you can use ControlLogix 5590 controllers in a redundant configuration without a safety partner. In Logix SIS, ControlLogix 5590 controllers can achieve up to SIL 3/PLe (Category 3). For more information, see the ControlLogix 5590 High Availability Systems User Manual, publication 1756-UM901.

ControlLogix 5590 Standard Controllers

Features - ControlLogix 5590 Standard Controllers

Feature	1756-L902TS	1756-L905TS	1756-L908TS	1756-L915TS	1756-L925TS	1756-L950TS	1756-L980TS	1756-L9SP
Controller tasks	32 tasks, including a combination of one continuous, periodic, and event tasks 1000 programs/task							–
Built-in communication ports[1]	1-port USB[2] 2 Embedded Ethernet ports							–
USB port communication	USB 2.0 Type-C (does not support powering external devices) Full speed (12 Mbps) Programming, configuration, firmware update, and online edits only							–
Ethernet performance	10/100/1000 Mbps							–
I/O Capacity (Class 0/1) - packets/second[3][4]	• 164,000 without CIP Security™ • 60,000 with integrity • 30,000 with integrity and confidentiality							–
Message Rate Capacity HMI/MSG (Class 3) - messages/second[3][4][5]								
front port without safety partner	• 4000 without CIP Security • 3000 with integrity • 2700 with integrity and confidentiality							–
front port with safety partner	• 2000 without CIP Security • 1500 with integrity • 900 with integrity and confidentiality							–
backplane without safety partner[6]	• 7000 with multiple 1756-EN4TR modules							–
backplane with safety partner[6]	• 2000							–
backplane in Logix redundancy[6]	• 2000							–
Communication options	• EtherNet/IP™ • ControlNet® • DeviceNet® • SERCOS • Third-party process and device networks							–
EtherNet/IP nodes supported max[7][8]	30 nodes	100 nodes	200 nodes	300 nodes	400 nodes	500 nodes	600 nodes[9]	–
OPC UA nodes supported max[10]	300 nodes	1000 nodes	2000 nodes	5000 nodes	20,000 nodes	50,000 nodes	100,000 nodes	–
Network connections per network module located in the local chassis	• ControlLogix 5590 Controllers front EtherNet/IP ports. See 'EtherNet/IP nodes supported, max' in this table. • 1000 I/O; 528 EtherNet/IP; 512 TCP (1756-EN4TR) • 256 EtherNet/IP; 128 TCP (1756-EN2x) • 128 EtherNet/IP; 64 TCP (1756-ENBT) • 128 ControlNet (1756-CN2/B) • 100 ControlNet (1756-CN2/A) • 40 ControlNet (1756-CNB/D, 1756-CNB/E)							–
Integrated motion	• SERCOS interface • Analog options (encoder input, LDT input, SSI input) • Integrated Motion on the EtherNet/IP network							–
Controller redundancy	Full support[1]							–
Programming languages	• Relay ladder logic (RLL) • Structured text • Function Block Diagram • Sequential function chart (SFC)							–

(1) When the controller is enabled for redundancy: the safety partner is not supported, the Ethernet ports are limited to front port crossload, Integrated motion is not supported, and DeviceNet and ControlNet networks are not supported. For more information, see the ControlLogix 5590 High Availability Systems User Manual, publication 1756-UM901.
(2) The USB port is intended for temporary local programming purposes only and not intended for permanent connection. Do not use the USB port in hazardous locations.
(3) I/O numbers are maximums; they assume no HMI/MSG. HMI/MSG numbers are maximums, they assume no I/O. Packet rates vary depending on packet size. For more details, see Troubleshoot EtherNet/IP Application Technique, publication ENET-AT003, and the EDS file for a specific catalog number.
(4) For information on integrity and confidentiality, see the CIP Security with Rockwell Automation Products Application Technique, publication SECURE-AT001.
(5) Maximums assume that the processor is the target, not the originator.
(6) Controller performance not impacted by CIP Security.
(7) An EtherNet/IP node is a device that you add directly to the I/O configuration, and counts toward the node limits of the controller. For more information on EtherNet/IP nodes, see the ControlLogix 5590 Controllers User Manual, publication 1756-UM900.
(8) Includes any/all nodes connected using the embedded Ethernet port or via 1756-ENxT modules.
(9) Additional EtherNet/IP nodes may be possible depending on remaining controller resources.
(10) An OPC UA node is a data structure, such as a single tag, that can be exchanged between industrial processes to external resources and applications. For more information on OPC UA nodes, see the OPC UA in 5580 and 5380 Controllers User Manual, publication 1756-UM023.

Technical Specifications - ControlLogix 5590 Standard Controllers

Attribute	1756-L902TS	1756-L905TS	1756-L908TS	1756-L915TS	1756-L925TS	1756-L950TS	1756-L980TS	1756-L9SP
Standard memory	2 MB	5 MB	8 MB	15 MB	25 MB	50 MB	80 MB	–
Safety memory	2 MB	5 MB	8 MB	12 MB	12 MB	12 MB	12 MB	Configured to match primary controller
Digital I/O max	128,000							–
Analog I/O max	4000							–
Total I/O max	128,000							–
Nonvolatile memory storage	8 GB microSD™ card (1784-MSD8), ships pre-installed in the controller							–
Energy storage module	Embedded in controller, non-removable							
Current draw @ 1.2V DC	5.0 mA							
Current draw @ 5.1V DC	1.20 A							
Power dissipation	6.2 W							
Thermal dissipation	21.2 BTU/hr							
Isolation voltage	50V (continuous), Basic Insulation type, USB port to backplane, Ethernet port to backplane, and USB port to Ethernet port Compliant and tested according to IEC/UL 61010-1							–
Weight approx	0.394 kg (.868 lb)							
Slot width	1							
Module location	Chassis-based, any slot							Chassis slot immediately to the right of the primary controller
Chassis	1756-A4, 1756-A4K, 1756-A7, 1756-A7K, 1756-A10, 1756-A10K, 1756-A13, 1756-A13K, 1756-A17, 1756-A17 K Series B, Series C							
Power supply, standard	1756-PA50, 1756-PA50K, 1756-PA72, 1756-PA72K, 1756-PA75, 1756-PA75K, 1756-PB50, 1756-PB50K 1756-PB72, 1756-PB72K, 1756-PB75, 1756-PB75K, 1756-PC75, 1756-PH75							
Power supply, redundant	1756-PA75R, 1756-PA75RK, 1756-PB75R, 1756-PB75RK, 1756-PSCA2, 1756-PSCA2K							
Wire category(1)	3 - on USB port 2 - on Ethernet ports							–
Wire size	Ethernet cabling and installation according to IEC 61918 and IEC 61784-5-2							–
Temperature code	T4							
Enclosure type rating	None (Open style)							

(1) Use this conductor category information to plan conductor routing. See Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

Environmental Specifications - ControlLogix 5590 Standard Controllers

Attribute	1756-L902TS, 1756-L905TS, 1756-L908TS, 1756-L915TS, 1756-L925TS, 1756-L950TS, 1756-L980TS, 1756-L9SP
Temperature, operating (SIL 2/PLd) IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	0 °C ≤ Ta ≤ +60 °C (+32 °F ≤ Ta ≤ +140 °F) for Series C Chassis 0 °C ≤ Ta ≤ +50 °C (+32 °F ≤ Ta ≤ +122 °F) for Series B Chassis
Temperature, operating (SIL 3/PLe) IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	0 °C ≤ Ta ≤ +60 °C (+32 °F ≤ Ta ≤ +140 °F) for Series C Chassis 0 °C ≤ Ta ≤ +50 °C (+32 °F ≤ Ta ≤ +122 °F) for Series B Chassis
Temperature, nonoperating IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40...+85 °C (-40...+185 °F) Chassis Series C and B
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5...95% noncondensing
Conformal coated	No
Vibration	IEC 60068-2-6 (Test Fc, Operating)
Shock, operating	IEC 60068-2-27 (Test Ea, Unpackaged Shock)
Shock, nonoperating	IEC 60068-2-27 (Test Ea, Unpackaged Shock)
Emissions	IEC 61000-6-4(1)
ESD immunity	IEC 61000-4-2
Radiated RF immunity	IEC 61000-4-3
EFT/B Immunity(2)	IEC 61000-4-4
Surge Transient Immunity	IEC 61000-4-5
Conducted RF Immunity	IEC 61000-4-6

(1) ControlLogix 5590 controllers require a NEMA 1 or equivalent, windowless, metal enclosure.
(2) Shielded cable is recommended for a coarse Update Rate (CUR)/ Requested Packet Interval (RPI) of 6ms or less. To use unshielded cable, the CUR/RPI must be at least 8ms.

Certifications - ControlLogix 5590 Standard Controllers

Certification[1]	1756-L902TS, 1756-L905TS, 1756-L908TS, 1756-L915TS, 1756-L925TS, 1756-L950TS, 1756-L980TS, 1756-L9SP
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.
FM	FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations
CE	European Union 2014/30/EU EMC Directive, compliant with: • EN 61326-1; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity • EN 61000-6-4; Industrial Emissions • EN 61131-2; Programmable Controllers (Clause 8, Zone A & B)
RCM	Australian Radiocommunications Act, compliant with EN 61000-6-4; Industrial Emissions
ATEX	European Union 2014/34/EU ATEX Directive, compliant with: • EN IEC 60079-0; General Requirements • EN IEC 60079-7; Potentially Explosive Atmospheres, Protection "e" • II 3 G Ex ec IIC T4 Gc • UL 22 ATEX 2817X
IECEx	IECEx System, compliant with: • IEC 60079-7; Potentially Explosive Atmospheres, Protection "e" • IEC 60079-0; General Requirements • II 3 G Ex ec IIC T4 Gc • IECEx UL 22.0062X
UKCA	In conformity with the following UK Statutory Instruments and their amendments: • 2016 No. 1091, Electromagnetic Compatibility Regulations • 2016 No. 1107, Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations • 2012 No. 3032, Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with Article 58-2 of Radio Waves Act, Clause 3
CCC	CCC 2020122309111998 CNCA-C23-01 强制性产品认证实施规则 防爆电气 CNCA-C23-01 CCC Implementation Rule Explosion-Proof Electrical Products
EtherNet/IP	ODVA conformance tested to EtherNet/IP specifications
CIP Security	ODVA conformance tested to CIP Security specifications
Product safety function (MD)	• Suitable for applications up to Cat. 3/PLd according to EN ISO 13849-1 and SIL CL 2 according to EN/IEC 62061 • Suitable for applications up to Cat. 4/PLe according to EN ISO 13849-1 and SIL CL 3 according to EN/IEC 62061 when used in combination with the 1756-L9SP safety partner
TÜV certified for functional safety	• Capable of Cat. 4/PLe according to EN ISO 13849-1 and SIL 3 according to EN 62061/IEC 61508 when used as described in the ControlLogix 5590 Controllers User Manual, publication 1756-UM900 • Capable of Cat. 3/PLe according to EN ISO 13849-1 and SIL 3 according to EN 62061/IEC 61508 when used as described in the ControlLogix 5590 High Availability Systems User Manual, publication 1756-UM901 • TÜV 01/205/6058
TÜV certified for security	IEC 62443-4-2 SL1
Morocco	In conformity with the following regulations: • Arrêté ministériel n° 6404-15 du 1 er muharram 1437 (15 octobre 2015) Équipements électriques destinés à être utilisés sous certaines limites de tension • Arrêté ministériel n° 6404-15 du 29 ramadan 1436 (16 juillet 2015) Compatibilité électromagnétique des équipements

(1) See the Product Certification website at rok.auto/certifications for Declarations of Conformity, Certificates, and other certification details.

ControlLogix-XT 5590 Controllers

The ControlLogix-XT 5590 controllers function in the same way as traditional ControlLogix Controllers. These products include control and communication system components that are conformal coated to add a degree of protection against harsh, corrosive gas environments.

Features - ControlLogix-XT 5590 Controllers

Feature	1756-L902TSXT	1756-L905TSXT	1756-L908TSXT	1756-L915TSXT	1756-L925TSXT	1756-L950TSXT	1756-L980TSXT	1756-L9SPXT
Controller tasks	32 tasks, including a combination of one continuous, periodic, and event tasks 1000 programs/task							–
Built-in communication ports(1)	1-port USB(2) 2 Embedded Ethernet ports							–
USB port communication	USB 2.0 Type-C (does not support powering external devices) Full speed (12 Mbps) Programming, configuration, firmware update, and online edits only							–
Ethernet performance	10/100/1000 Mbps							–
I/O Capacity (Class 0/1) - packets/second(3)(4)	• 164,000 without CIP Security • 60,000 with integrity • 30,000 with integrity and confidentiality							–
Message Rate Capacity HMI/MSG (Class 3) - messages/second(3)(4)(5)								
front port without safety partner	• 4000 without CIP Security • 3000 with integrity • 2700 with integrity and confidentiality							–
front port with safety partner	• 2000 without CIP Security • 1500 with integrity • 900 with integrity and confidentiality							–
backplane without safety partner(6)	• 7000 with multiple 1756-EN4TR modules							–
backplane with safety partner(6)	• 2000							–
backplane in Logix redundancy(6)	• 2000							–
Communication options	EtherNet/IP, ControlNet, DeviceNet, SERCOS and third-party process and device networks							–
EtherNet/IP nodes supported max(7)(8)	30 nodes	100 nodes	200 nodes	300 nodes	400 nodes	500 nodes	600 nodes(9)	–
OPC UA nodes supported max(10)	300 nodes	1000 nodes	2000 nodes	5000 nodes	20,000 nodes	50,000 nodes	100,000 nodes	–
Network connections per network module located in the local chassis	• ControlLogix 5590 Controllers front EtherNet/IP ports. See 'EtherNet/IP nodes supported, max' in this table. • 1000 I/O; 528 EtherNet/IP; 512 TCP (1756-EN4TR variant rated for harsh environments) • 256 EtherNet/IP; 128 TCP (1756-EN2x variant rated for harsh environments) • 128 EtherNet/IP; 64 TCP (1756-ENBT variant rated for harsh environments) • 128 ControlNet (1756-CN2/B variant rated for harsh environments) • 100 ControlNet (1756-CN2/A variant rated for harsh environments) • 40 ControlNet (1756-CNB/D, 1756-CNB/E variant rated for harsh environments)							–
Integrated motion	• SERCOS interface • Analog options (encoder input, LDT input, SSI input) • Integrated Motion on the EtherNet/IP network							–
Controller redundancy	Full support(1)							–
Programming languages	• Relay ladder logic (RLL) • Structured text • Function Block Diagram • Sequential function chart (SFC)							–

(1) When the controller is enabled for redundancy: the safety partner is not supported, the Ethernet ports are limited to front port crossload, Integrated motion is not supported, and DeviceNet and ControlNet networks are not supported. For more information, see the ControlLogix 5590 High Availability Systems User Manual, publication 1756-UM901.
(2) The USB port is intended for temporary local programming purposes only and not intended for permanent connection. Do not use the USB port in hazardous locations.
(3) I/O numbers are maximums; they assume no HMI/MSG. HMI/MSG numbers are maximums, they assume no I/O. Packet rates vary depending on packet size. For more details, see Troubleshoot EtherNet/IP Application Technique, publication ENET-AT003, and the EDS file for a specific catalog number.
(4) For information on integrity and confidentiality, see the CIP Security with Rockwell Automation Products Application Technique, publication SECURE-AT001.
(5) Maximums assume that the processor is the target, not the originator.
(6) Controller performance not impacted by CIP Security.
(7) An EtherNet/IP node is a device that you add directly to the I/O configuration, and counts toward the node limits of the controller. For more information on EtherNet/IP nodes, see the ControlLogix 5590 Controllers User Manual, publication 1756-UM900.
(8) Includes any/all nodes connected using the embedded Ethernet port or via 1756-ENxTRXT or 1756-ENxTXT modules.
(9) Additional EtherNet/IP nodes may be possible depending on remaining controller resources.
(10) An OPC UA node is a data structure, such as a single tag, that can be exchanged between industrial processes to external resources and applications. For more information on OPC UA nodes, see the OPC UA in 5580 and 5380 Controllers User Manual, publication 1756-UM023.

Technical Specifications - ControlLogix-XT 5590 Controllers

Attribute	1756-L902TSXT	1756-L905TSXT	1756-L908TSXT	1756-L915TSXT	1756-L925TSXT	1756-L950TSXT	1756-L980TSXT	1756-L9SPXT
Standard memory	2 MB	5 MB	8 MB	15 MB	25 MB	50 MB	80 MB	–
Safety memory	2 MB	5 MB	8 MB	12MB	12MB	12MB	12MB	Configured to match primary controller
Digital I/O, max	128,000							–
Analog I/O, max	4000							–
Total I/O, max	128,000							–
Nonvolatile memory storage	8 GB microSD card (1784-MSD8XT), ships pre-installed in the controller							–
Energy storage module	Embedded in controller, non-removable							
Current draw @ 1.2V DC	5.0 mA							
Current draw @ 5.1V DC	1.20 A							
Power dissipation	6.2 W							
Thermal dissipation	21.2 BTU/hr							
Isolation voltage	50V (continuous), Basic Insulation type, USB port to backplane, Ethernet port to backplane, and USB port to Ethernet port Compliant and tested according to IEC/UL 61010-1							–
Weight, approx	0.394 kg (.868 lb)							
Slot width	1							
Module location	Chassis-based, any slot							Chassis slot immediately to the right of the primary controller
Chassis	1756-A7XT, 1756-A10XT, Series C 1756-A7ZXT, 1756-A10ZXT							
Power supply, standard	1756-PAXT, 1756-PBXT, 1756-PA30XT, 1756-PB30XT							
Power supply, redundant	–							
Wire category(1)	3 - on USB port 2 - on Ethernet ports							–
Wire size	Ethernet cabling and installation according to IEC 61918 and IEC 61784-5-2. Where the operating temperature exceeds 60 °C, the maximum cable length is 20 meters.							–
Temperature code	T4							
Enclosure type rating	None (Open style)							

(1) Use this conductor category information to plan conductor routing. See Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

Environmental Specifications - ControlLogix-XT 5590 Controllers

Attribute	1756-L902TSXT, 1756-L905TSXT, 1756-L908TSXT, 1756-L915TSXT, 1756-L925TSXT, 1756-L950TSXT, 1756-L980TSXT, 1756-L9SPXT
Temperature, operating (SIL 2/PLd) IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	-25 °C ≤ Ta ≤ +70 °C (-13°F ≤ Ta ≤ +158 °F)
Temperature, operating (SIL 3/PLe) IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	-25 °C ≤ Ta ≤ +70 °C (-13°F ≤ Ta ≤ +158 °F)
Temperature, nonoperating IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40...+85 °C (-40...+185 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5...95% noncondensing
Conformal coated	Yes
Corrosive Atmosphere • ASTM B845-97 Method K Accelerated Test (30-Day Exposure) • Plus additional Rockwell Automation proprietary accelerated corrosive environment test protocol for specific industries with sources of gaseous sulfur compounds.	Severity Level GX(1)(2) per ANSI/ISA 71.04-2013, Airborne Contaminants—Gases Severity Level CX(1) per IEC 60721-3-3:2019, Chemically Active Substances
Vibration	IEC 60068-2-6 (Test Fc, Operating)
Shock, operating	IEC 60068-2-27 (Test Ea, Unpackaged Shock)
Shock, nonoperating	IEC 60068-2-27 (Test Ea, Unpackaged Shock)
Emissions	IEC 61000-6-4(3)
ESD immunity	IEC 61000-4-2
Radiated RF immunity	IEC 61000-4-3
EFT/B Immunity(4)	IEC 61000-4-4
Surge Transient Immunity	IEC 61000-4-5
Conducted RF Immunity	IEC 61000-4-6

(1) Once the factory packaging seal is broken, plugs or covers must be installed in all unoccupied ports or slots for the product to maintain its corrosive atmosphere rating.
(2) Up to 2100 angstroms of film growth per 30 days of copper and/or silver reactivity.
(3) ControlLogix 5590 controllers require a NEMA 1 or equivalent, windowless, metal enclosure.
(4) Shielded cable is recommended for a coarse Update Rate (CUR)/ Requested Packet Interval (RPI) of 6ms or less. To use unshielded cable, the CUR/RPI must be at least 8ms.

Certifications - ControlLogix-XT 5590 Controllers

Certification[1]	1756-L902TSXT, 1756-L905TSXT, 1756-L908TSXT, 1756-L915TSXT, 1756-L925TSXT, 1756-L950TSXT, 1756-L980TSXT, 1756-L9SPXT
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.
FM	FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations
CE	European Union 2014/30/EU EMC Directive, compliant with: • EN 61326-1; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity • EN 61000-6-4; Industrial Emissions • EN 61131-2; Programmable Controllers (Clause 8, Zone A & B)
RCM	Australian Radiocommunications Act, compliant with EN 61000-6-4; Industrial Emissions
ATEX	European Union 2014/34/EU ATEX Directive, compliant with: • EN IEC 60079-0; General Requirements • EN IEC 60079-7; Potentially Explosive Atmospheres, Protection “e” • II 3 G Ex ec IIC T4 Gc • UL 22 ATEX 2817X
IECEx	IECEx System, compliant with: • IEC 60079-7; Potentially Explosive Atmospheres, Protection “e” • IEC 60079-0; General Requirements • II 3 G Ex ec IIC T4 Gc • IECEx UL 22.0062X
UKCA	In conformity with the following UK Statutory Instruments and their amendments: • 2016 No. 1091, Electromagnetic Compatibility Regulations • 2016 No. 1107, Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations • 2012 No. 3032, Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with Article 58-2 of Radio Waves Act, Clause 3
CCC	CCC 2020122309111998 CNCA-C23-01 强制性产品认证实施规则 防爆电气 CNCA-C23-01 CCC Implementation Rule Explosion-Proof Electrical Products
EtherNet/IP	ODVA conformance tested to EtherNet/IP specifications
CIP Security	ODVA conformance tested to CIP Security specifications
Product safety function (MD)	• Suitable for applications up to Cat. 3/PLd according to EN ISO 13849-1 and SIL CL 2 according to EN/IEC 62061 • Suitable for applications up to Cat. 4/PLe according to EN ISO 13849-1 and SIL CL 3 according to EN/IEC 62061 when used in combination with the 1756-L9SPXT safety partner
TÜV certified for functional safety	• Capable of Cat. 4/PLe according to EN ISO 13849-1 and SIL 3 according to EN 62061/IEC 61508 when used as described in the ControlLogix 5590 Controllers User Manual, publication 1756-UM900 • Capable of Cat. 3/PLe according to EN ISO 13849-1 and SIL 3 according to EN 62061/IEC 61508 when used as described in the ControlLogix 5590 High Availability Systems User Manual, publication 1756-UM901 • TÜV 01/205/6058
TÜV certified for security	IEC 62443-4-2 SL1
Morocco	In conformity with the following regulations: • Arrêté ministériel n° 6404-15 du 1 er muharram 1437 (15 octobre 2015) Équipements électriques destinés à être utilisés sous certaines limites de tension • Arrêté ministériel n° 6404-15 du 29 ramadan 1436 (16 juillet 2015) Compatibilité électromagnétique des équipements

(1) See the Product Certification website at rok.auto/certifications for Declarations of Conformity, Certificates, and other certification details.

ControlLogix-XT 5590 Process Controllers

The ControlLogix-XT 5590 process controllers are an extension of the Logix 5000 controller family that focuses on plant-wide process control. These process controllers come configured with a default process tasking model and dedicated PlantPAx® process instructions optimized for process applications and that improve design and deployment efforts.

The ControlLogix-XT 5590 process controllers provide extended protection in corrosive gas environments and can be used in temperature extremes from -25...+70 °C (-13...+158 °F) when deployed as part of a Logix-XT system.

Features - ControlLogix-XT 5590 Process Controllers

Feature	1756-L905TPSXT	1756-L915TPSXT	1756-L950TPSXT	1756-L980TPSXT	1756-L9SPXT
Controller tasks	32 tasks, including a combination of one continuous, periodic, and event tasks 1000 programs/task				–
Built-in communication ports[1]	1 port USB[2] 2 Embedded Ethernet ports				–
USB port communication	USB 2.0 Type-C (does not support powering external devices) Full speed (12 Mbps) Programming, configuration, firmware update, and online edits only				–
Ethernet performance	10/100/1000 Mbps				–
I/O Capacity (Class 0/1) - packets/second [3][4]	• 164,000 without CIP Security • 60,000 with integrity • 30,000 with integrity and confidentiality				–
Message Rate Capacity HMI/MSG (Class 3) - messages/second[3][4][5]					
front port without safety partner	• 4000 without CIP Security • 3000 with integrity • 2700 with integrity and confidentiality				–
front port with safety partner	• 2000 without CIP Security • 1500 with integrity • 900 with integrity and confidentiality				–
backplane without safety partner[6]	• 7000 with multiple 1756-EN4TR modules				–
backplane with safety partner[6]	• 2000				–
backplane in Logix redundancy[6]	• 2000				–
Communication options	EtherNet/IP, ControlNet, DeviceNet, SERCOS, and third-party process and device networks				–
EtherNet/IP nodes supported max[7][8]	100 nodes	300 nodes	500 nodes	600 nodes[9]	–
OPC UA nodes supported max[10]	1000 nodes	5000 nodes	50,000 nodes	100,000 nodes	–
Network connections per network module located in the local chassis	• ControlLogix 5590 Controllers front EtherNet/IP ports. See 'EtherNet/IP nodes supported, max' in this table. • 1000 I/O; 528 EtherNet/IP; 512 TCP (1756-EN4TR variant rated for harsh environments) • 256 EtherNet/IP; 128 TCP (1756-EN2x variant rated for harsh environments) • 128 EtherNet/IP; 64 TCP (1756-ENBT variant rated for harsh environments) • 128 ControlNet (1756-CN2/B variant rated for harsh environments) • 100 ControlNet (1756-CN2/A variant rated for harsh environments) • 40 ControlNet (1756-CNB/D, 1756-CNB/E variant rated for harsh environments)				–
Integrated motion	• SERCOS interface • Analog options (encoder input, LDT input, SSI input) • Integrated Motion on the EtherNet/IP network				–
Controller redundancy	Full support[1]				–
Programming languages	• Relay Ladder Logic (RLL) • Structured Text • Function Block Diagram • Sequential Function Chart (SFC)				–

(1) When the controller is enabled for redundancy: the safety partner is not supported, the Ethernet ports are limited to front port crossload, Integrated motion is not supported, and DeviceNet and ControlNet networks are not supported. For more information, see the ControlLogix 5590 High Availability Systems User Manual, publication 1756-UM901.
(2) The USB port is intended for temporary local programming purposes only and not intended for permanent connection. Do not use the USB port in hazardous locations.
(3) I/O numbers are maximums; they assume no HMI/MSG. HMI/MSG numbers are maximums, they assume no I/O. Packet rates vary depending on packet size. For more details, see Troubleshoot EtherNet/IP Application Technique, publication ENET-AT003, and the EDS file for a specific catalog number.
(4) For information on integrity and confidentiality, see the CIP Security with Rockwell Automation Products Application Technique, publication SECURE-AT001.
(5) Maximums assume that the processor is the target, not the originator.
(6) Controller performance not impacted by CIP Security.
(7) An EtherNet/IP node is a device that you add directly to the I/O configuration, and counts toward the node limits of the controller. For more information on EtherNet/IP nodes, see the ControlLogix 5590 Controllers User Manual, publication 1756-UM900.
(8) Includes any/all nodes connected using the embedded Ethernet port or via 1756-ENxTRXT or 1756-ENxTXT modules.
(9) Additional EtherNet/IP nodes maybe possible depending on remaining controller resources.
(10) An OPC UA node is a data structure, such as a single tag, that can be exchanged between industrial processes to external resources and applications. For more information on OPC UA nodes, see the OPC UA in 5580 and 5380 Controllers User Manual, publication 1756-UM023.

Technical Specifications - ControlLogix-XT 5590 Process Controllers

Attribute	1756-L905TPSXT	1756-L915TPSXT	1756-L950TPSXT	1756-L980TPSXT	1756-L9SPXT
Standard memory	5 MB	15 MB	50 MB	80 MB	–
Safety memory	5 MB	12 MB	12 MB	12 MB	Configured to match primary controller
Digital I/O, max	128,000				–
Analog I/O, max	4000				–
Total I/O, max	128,000				–
Nonvolatile memory storage	8 GB microSD card (1784-MSD8XT), ships pre-installed in the controller				–
Energy storage module	Embedded in controller, non-removable				
Current draw @ 1.2V DC	5.0 mA				
Current draw @ 5.1V DC	1.20 A				
Power dissipation	6.2 W				
Thermal dissipation	21.2 BTU/hr				
Isolation voltage	50V (continuous), Basic Insulation type, USB port to backplane, Ethernet port to backplane, and USB port to Ethernet port Compliant and tested according to IEC/UL 61010-1				–
Weight, approx	0.394 kg (.868 lb)				
Slot width	1				
Module location	Chassis-based, any slot				Chassis slot immediately to the right of the primary controller
Chassis	1756-A7XT, 1756-A10XT, Series C 1756-A7ZXT, 1756-A10ZXT				
Power supply, standard	1756-PAXT, 1756-PBXT, 1756-PA30XT, 1756-PB30XT				
Power supply, redundant	–				
Wire category[1]	3 - on USB port 2 - on Ethernet ports				–
Wire size	Ethernet cabling and installation according to IEC 61918 and IEC 61784-5-2. Where the operating temperature exceeds 60 °C, the maximum cable length is 20 meters.				–
Temperature code	T4				
Enclosure type rating	None (Open style)				

(1) Use this conductor category information to plan conductor routing. See Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

Environmental Specifications - ControlLogix-XT 5590 Process Controllers

Attribute	1756-L905TPSXT, 1756-L915TPSXT, 1756-L950TPSXT, 1756-L980TPSXT, 1756-L9SPXT
Temperature, operating (SIL 2/PLd) IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	-25 °C ≤ Ta ≤ +70 °C (-13°F ≤ Ta ≤ +158 °F)
Temperature, operating (SIL 3/PLe) IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	-25 °C ≤ Ta ≤ +70 °C (-13°F ≤ Ta ≤ +158 °F)
Temperature, nonoperating IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40...+85 °C (-40...+185 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5...95% noncondensing
Conformal coated	Yes
Corrosive Atmosphere • ASTM B845-97 Method K Accelerated Test (30-Day Exposure) • Plus additional Rockwell Automation proprietary accelerated corrosive environment test protocol for specific industries with sources of gaseous sulfur compounds.	Severity Level GX(1)(2) per ANSI/ISA 71.04–2013, Airborne Contaminants—Gases Severity Level CX(1) per IEC 60721-3-3:2019, Chemically Active Substances
Vibration	IEC 60068-2-6 (Test Fc, Operating)
Shock, operating	IEC 60068-2-27 (Test Ea, Unpackaged Shock)
Shock, nonoperating	IEC 60068-2-27 (Test Ea, Unpackaged Shock)
Emissions	IEC 61000-6-4(3)
ESD immunity	IEC 61000-4-2
Radiated RF immunity	IEC 61000-4-3
EFT/B Immunity(4)	IEC 61000-4-4
Surge Transient Immunity	IEC 61000-4-5
Conducted RF Immunity	IEC 61000-4-6

(1) Once the factory packaging seal is broken, plugs or covers must remain or be reinstalled in all unoccupied ports or slots for the product to maintain its corrosive atmosphere rating.
(2) Up to 2100 angstroms of film growth per 30 days of copper and/or silver reactivity.
(3) ControlLogix 5590 controllers require a NEMA 1 or equivalent, windowless, metal enclosure.
(4) Shielded cable is recommended for a coarse Update Rate (CUR)/ Requested Packet Interval (RPI) of 6ms or less. To use unshielded cable, the CUR/RPI must be at least 8ms.

Certifications - ControlLogix-XT 5590 Process Controllers

Certification[1]	1756-L905TPSXT, 1756-L915TPSXT, 1756-L950TPSXT, 1756-L980TPSXT, 1756-L9SPXT
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.
FM	FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations
CE and UKCA	European Union 2014/30/EU EMC Directive, compliant with: • EN 61326-1; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity • EN 61000-6-4; Industrial Emissions • EN 61131-2; Programmable Controllers (Clause 8, Zone A & B)
RCM	Australian Radiocommunications Act, compliant with EN 61000-6-4; Industrial Emissions
ATEX	European Union 2014/34/EU ATEX Directive, compliant with: • EN IEC 60079-0; General Requirements • EN IEC 60079-7; Potentially Explosive Atmospheres, Protection “e” • II 3 G Ex ec IIC T4 Gc • UL 22 ATEX 2817X
IECEx	IECEx System, compliant with: • IEC 60079-7; Potentially Explosive Atmospheres, Protection “e” • IEC 60079-0; General Requirements • II 3 G Ex ec IIC T4 Gc • IECEx UL 22.0062X
UKCA	In conformity with the following UK Statutory Instruments and their amendments: • 2016 No. 1091, Electromagnetic Compatibility Regulations • 2016 No. 1107, Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations • 2012 No. 3032, Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with Article 58-2 of Radio Waves Act, Clause 3
CCC	CCC 2020122309111998 CNCA-C23-01 强制性产品认证实施规则 防爆电气 CNCA-C23-01 CCC Implementation Rule Explosion-Proof Electrical Products
EtherNet/IP	ODVA conformance tested to EtherNet/IP specifications
CIP Security	ODVA conformance tested to CIP Security specifications
Product safety function (MD)	• Suitable for applications up to Cat. 3/PLd according to EN ISO 13849-1 and SIL CL 2 according to EN/IEC 62061 • Suitable for applications up to Cat. 4/PLe according to EN ISO 13849-1 and SIL CL 3 according to EN/IEC 62061 when used in combination with the 1756-L9SPXT safety partner
TÜV certified for functional safety	• Capable of Cat. 4/PLe according to EN ISO 13849-1 and SIL 3 according to EN 62061/IEC 61508 when used as described in the ControlLogix 5590 Controllers User Manual, publication 1756-UM900 • Capable of Cat. 3/PLe according to EN ISO 13849-1 and SIL 3 according to EN 62061/IEC 61508 when used as described in the ControlLogix 5590 High Availability Systems User Manual, publication 1756-UM901 • TÜV 01/205/6058
TÜV certified for security	IEC 62443-4-2 SL1
Morocco	In conformity with the following regulations: • Arrêté ministériel n° 6404-15 du 1 er muharram 1437 (15 octobre 2015) Équipements électriques destinés à être utilisés sous certaines limites de tension • Arrêté ministériel n° 6404-15 du 29 ramadan 1436 (16 juillet 2015) Compatibilité électromagnétique des équipements

(1) See the Product Certification website at rok.auto/certifications for Declarations of Conformity, Certificates, and other certification details.

ControlLogix 5590 Controller Accessories

You can use these accessories with ControlLogix 5590 controllers.

Memory Cards

Memory cards offer nonvolatile memory to store a user program and tag data on a controller.

The ControlLogix 5590 controllers come with a 1784-MSD8 or 1784-MSD8XT microSD™ card installed inside. Through the programming software, 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.

Technical Specifications - 1784 Memory Cards Compatible with ControlLogix 5590 Controllers

Attribute	1784-MSD8	1784-MSD8XT
Type	microSD card	
Memory	8 GB	
Supported controllers	1756-L902TS, 1756-L905TS, 1756-L908TS, 1756-L915TS, 1756-L925TS, 1756-L950TS, 1756-L980TS	1756-L902TSXT, 1756-L905TSXT, 1756-L908TSXT, 1756-L915TSXT, 1756-L925TSXT, 1756-L950TSXT, 1756-L980TSXT, 1756-L905TPSXT, 1756-L915TPSXT, 1756-L950TPSXT, 1756-L980TPSXT
Weight, approx	0.4g (0.01 oz)	

Ethernet and USB Port Protection Plugs

ControlLogix-XT 5590 and ControlLogix-XT 5590 Process controllers are shipped with port protection plugs installed to provide a degree of protection from corrosive atmospheres.

Rockwell Automation Part Number	Description	Supplier	Supplier Part Number
PN-579024	Plug for Ethernet Port	Würth Elektronik	726154101
PN-725450	Plug for USB Port	Würth Elektronik	726144002

ControlLogix 5580 Controllers

The ControlLogix 5580 controller provides a scalable solution that is capable of addressing many I/O points. The controller can go into any slot of a ControlLogix I/O chassis, and install multiple controllers in the same chassis.

ControlLogix 5580 controllers monitor and control I/O across the ControlLogix backplane, and over network links. They have an embedded Ethernet port for a direct connection to Ethernet-enabled devices and networks, and support communication interface modules in the local chassis.

The ControlLogix 5580 No Stored Energy (NSE) controllers are intended for use in applications that require the installed controller to deplete its residual stored energy to specific levels before transporting it into or out of your application.

The following controllers have conformal coating that adds a degree of protection against harsh, corrosive gas environments:

- ControlLogix 5580 controllers with a 'K' or 'XT' in the catalog number
- ControlLogix 5580 NSE controllers and ControlLogix 5580 Process controllers

ControlLogix 5580 Controller

ATTENTION: Select products that are rated for corrosive atmospheres ship with port plugs, covers, or memory cards installed which provide connectors with a degree of protection in corrosive gas environments.
Once the factory packaging seal is broken, plugs or covers must be installed in all unoccupied ports or slots for the product to maintain its corrosive atmosphere rating.

If temporary access is required, port plugs, covers, memory cards, and so on can be removed from ports or slots, but should be reinstalled after temporary access is complete.

IMPORTANT When a ControlLogix product that is rated for harsh environments (corrosive atmosphere, extended temperature, etc.) is used in a system with other ControlLogix products that have lower specification values, the system is derated to the lowest common value.

EXAMPLE: If the maximum operating temperature specification found in the Technical Data for your ControlLogix-XT module is 70 °C (158 °F) and you pair it with a ControlLogix chassis that is temperature rated to 60 °C (140 °F), your system is derated to 60 °C (140 °F).

To ensure that your system is equipped for harsh environments, compare the corrosive atmosphere, temperature, and other specifications found in the Technical Data publication for each product.

ControlLogix 5580 Standard and Conformal Coated Controllers

Features - ControlLogix 5580 Standard and Conformal Coated Controllers

Feature	1756-L81E, 1756-L81EK	1756-L82E, 1756-L82EK	1756-L83E, 1756-L83EK	1756-L84E, 1756-L84EK	1756-L85E, 1756-L85EK
Controller tasks	32 tasks, including a combination of one continuous, periodic, and event tasks 1000 programs/task				
Built-in communication ports[10]	1-port USB[1] Embedded Ethernet port				
USB port communication	USB 2.0 Full speed (12 Mbps) Programming, configuration, firmware update, and online edits only				
Ethernet performance	10/100/1000 Mbps				
I/O Capacity (Class 0/1) - packets/second[2][3]	• 128,000 without CIP Security™ • 40,000 with integrity • 20,000 with integrity and confidentiality				
Message Rate Capacity HMI/MSG (Class 3) - messages/second[2][3][4]					
front port	• 2000 without CIP Security • 1500 with integrity • 900 with integrity and confidentiality				
backplane[5]	• 4000 with multiple 1756-EN4TR modules				
backplane in Logix redundancy[5]	• 2000				
Communication options	• EtherNet/IP™ • ControlNet® • DeviceNet® • Data Highway Plus™ • Remote I/O • SERCOS[6] • Third-party process and device networks				
EtherNet/IP nodes supported max[7]	60 nodes[9] 100 nodes[10]	80 nodes[9] 175 nodes[10]	100 nodes[8] 250 nodes[10]	150 nodes[9] 250 nodes[10]	300 nodes[11]
OPC UA nodes supported max[12][13]	–	600 nodes	1200 nodes	10,000 nodes	15,000 nodes
Network connections per network module located in the local chassis	• ControlLogix 5580 Controllers front EtherNet/IP port. See 'EtherNet/IP nodes supported, max' in this table. • 1000 I/O; 528 EtherNet/IP; 512 TCP (1756-EN4TR or variant rated for harsh environments) • 256 EtherNet/IP; 128 TCP (1756-EN2x or variant rated for harsh environments) • 128 EtherNet/IP; 64 TCP (1756-ENBT or variant rated for harsh environments) • 100 ControlNet (1756-CN2/A or variant rated for harsh environments) • 40 ControlNet (1756-CNB/D, 1756-CNB/E or variant rated for harsh environments) • 128 ControlNet (1756-CN2/B or variant rated for harsh environments)				
Integrated motion	• SERCOS interface beginning with Studio 5000 Logix Designer® application version 31.00.01 or later • Analog options (encoder input, LDT input, SSI input) beginning with Studio 5000 Logix Designer application version 31.00.01 or later • Integrated Motion on the EtherNet/IP network				
Controller redundancy	Full support with Studio 5000 Logix Designer application version 33.00.02 or later[14]				
Programming languages	• Relay ladder logic (RLL) • Structured text • Function Block Diagram • Sequential function chart (SFC)				

(1) The USB port is intended for temporary local programming purposes only and not intended for permanent connection. Do not use the USB port in hazardous locations.
(2) I/O numbers are maximums; they assume no HMI/MSG. HMI/MSG numbers are maximums, they assume no I/O. Packet rates vary depending on packet size. For more details, see Troubleshoot EtherNet/IP Application Technique, publication ENET-AT003, and the EDS file for a specific catalog number.
(3) For information on integrity and confidentiality, see the CIP Security with Rockwell Automation Products Application Technique, publication SECURE-AT001.
(4) Maximums assume that the processor is the target, not the originator.
(5) Controller performance not impacted by CIP Security.
(6) With Studio 5000 Logix Designer® application version 31.00.01 or later.
(7) An EtherNet/IP node is a device that you add directly to the I/O configuration, and counts toward the node limits of the controller. For more information on EtherNet/IP nodes, see the ControlLogix 5580 Controllers User Manual, publication 1756-UM543.
(8) With Studio 5000 Logix Designer application versions 28.00.01 and 29.00.02.
(9) With Studio 5000 Logix Designer application version 29.00.02.
(10) With Studio 5000 Logix Designer application version 30.00.00 or later.
(11) Additional EtherNet/IP nodes may be possible depending on remaining controller resources.
(12) An OPC UA node is a data structure, such as a single tag, that can be exchanged between industrial processes to external resources and applications. For more information on OPC UA nodes, see the OPC UA in 5580 and 5380 Controllers User Manual, publication 1756-UM023.
(13) With Studio 5000 Logix Designer application version 36.00.00 or later.
(14) When the controller is enabled for redundancy: the Ethernet port is off, Integrated motion is not supported, and DeviceNet, ControlNet, RIO, DH+™ networks are not supported. See the Redundancy Systems User Manual, publication 1756-UM015.

Technical Specifications - ControlLogix 5580 Standard and Conformal Coated Controllers

Attribute	1756-L81E, 1756-L81EK	1756-L82E, 1756-L82EK	1756-L83E, 1756-L83EK	1756-L84E, 1756-L84EK	1756-L85E, 1756-L85EK
Standard memory	3 MB	5 MB	10 MB	20 MB	40 MB
Digital I/O max	128,000				
Analog I/O max	4000				
Total I/O max	128,000				
Nonvolatile memory storage	4 GB Secure Digital (SD) card (1784-SD4), ships pre-installed in the controller(1)				
Energy storage module	Embedded in controller, non-removable				
Number of power cycles	80,000				
Current draw @ 1.2V DC	5.0 mA				
Current draw @ 5.1V DC	1.20 A				
Power dissipation	6.2 W				
Thermal dissipation	21.2 BTU/hr				
Isolation voltage	50V (continuous), Basic Insulation type, USB port to backplane, Ethernet port to backplane, and USB port to Ethernet port Compliant and tested according to IEC/UL 61010-1				
Weight approx	0.394 kg (.868 lb)				
Slot width	1				
Module location	Chassis-based, any slot				
Chassis	1756-A4, 1756-A4K, 1756-A7, 1756-A7K, 1756-A10, 1756-A10K, 1756-A13, 1756-A13K, 1756-A17, 1756-A17 K Series B, Series C				
Power supply, standard	1756-PA50, 1756-PA50K, 1756-PA72, 1756-PA72K, 1756-PA75, 1756-PA75K, 1756-PB50, 1756-PB50K 1756-PB72, 1756-PB72K, 1756-PB75, 1756-PB75K, 1756-PC75, 1756-PH75				
Power supply, redundant	1756-PA75R, 1756-PA75RK, 1756-PB75R, 1756-PB75RK, 1756-PSCA2, 1756-PSCA2K				
Wire category(2)	3 - on USB port 2 - on Ethernet ports				
Wire size	Ethernet connections: Ethernet cabling and installation according to IEC 61918 and IEC 61784-5-2				
Temperature code	T4				
Enclosure type rating	None (open-style)				

(1) Larger versions may be available. See Memory Cards on page 42.
(2) Use this conductor category information to plan conductor routing. See Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

Environmental Specifications - ControlLogix 5580 Standard and Conformal Coated Controllers

Attribute	1756-L81E, 1756-L82E, 1756-L83E, 1756-L84E, 1756-L85E	1756-L81EK, 1756-L82EK, 1756-L83EK, 1756-L84EK, 1756-L85EK
Temperature, operating IEC 60068-2-1 (Test Ae, Operating Cold), IEC 60068-2-2 (Test Be, Operating Dry Heat), IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	0 °C ≤ Ta ≤ +60 °C (+32 °F ≤ Ta ≤ +140 °F) Standard Chassis, Series C 0 °C ≤ Ta ≤ +50 °C (+32 °F ≤ Ta ≤ +122 °F) Standard Chassis, Series B	
Temperature, nonoperating IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40...+85 °C (-40...+185 °F) Chassis Series C and B	
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5...95% noncondensing	
Conformal coated	No	Yes
Corrosive Atmosphere ASTM B845-97 Method K Accelerated Test (20-Day Exposure)	–	Severity Level G3[1] per ANSI/ISA 71.04-2013, Airborne Contaminants—Gases Severity Level CX[1][2] per IEC 60721-3-3:2019, Chemically Active Substances
Vibration	IEC 60068-2-6 (Test Fc, Operating)	
Shock, operating	IEC 60068-2-27 (Test Ea, Unpackaged Shock)	
Shock, nonoperating	IEC 60068-2-27 (Test Ea, Unpackaged Shock)	
Emissions	IEC 61000-6-4	
ESD immunity	IEC 61000-4-2	
Radiated RF immunity	IEC 61000-4-3	
EFT/B Immunity	IEC 61000-4-4	
Surge Transient Immunity	IEC 61000-4-5	
Conducted RF Immunity	IEC 61000-4-6	

(1) Once the factory packaging seal is broken, plugs or covers must be installed in all unoccupied ports or slots for the product to maintain its corrosive atmosphere rating.
(2) Up to 86.4 g/(m2·yr), mass loss of copper due to corrosion.

Certifications - ControlLogix 5580 Standard and Conformal Coated Controllers

Certification[1]	1756-L81E, 1756-L81EK, 1756-L82E, 1756-L82EK, 1756-L83E, 1756-L83EK, 1756-L84E, 1756-L84EK, 1756-L85E, 1756-L85EK
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.
FM	FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations
CE	European Union 2014/30/EU EMC Directive, compliant with: • EN 61326-1; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity • EN 61000-6-4; Industrial Emissions • EN 61131-2; Programmable Controllers (Clause 8, Zone A & B)
RCM	Australian Radiocommunications Act, compliant with EN 61000-6-4; Industrial Emissions
ATEX	European Union 2014/34/EU ATEX Directive, compliant with: • EN IEC 60079-0; General Requirements • EN IEC 60079-7; Potentially Explosive Atmospheres, Protection “e” • II 3 G Ex ec IIC T4 Gc • UL 22 ATEX 2817X
IECEx	IECEx System, compliant with: • IEC 60079-7; Potentially Explosive Atmospheres, Protection “e” • IEC 60079-0; General Requirements • II 3 G Ex ec IIC T4 Gc • IECEx UL 22.0062X
UKEx	In conformity with the following UKEx Statutory Instruments and their amendments: • Schedule 1 of the UKEx Regulation 2016 No. 1107 • Equipment protection by increased safety "e", reference certificate number UL22UKEX2601X • Zone 2 classification according to UKEx Regulation 2016 No. 1107
UKCA	In conformity with the following UK Statutory Instruments and their amendments: • 2016 No. 1091, Electromagnetic Compatibility Regulations • 2016 No. 1107, Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations • 2012 No. 3032, Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with Article 58-2 of Radio Waves Act, Clause 3
CCC	CCC 2020122309111998 CNCA-C23-01 强制性产品认证实施规则 防爆电气 CNCA-C23-01 CCC Implementation Rule Explosion-Proof Electrical Products
EtherNet/IP	ODVA conformance tested to EtherNet/IP specifications
CIP Security	ODVA conformance tested to CIP Security specifications[2]
TÜV certified for security	IEC 62443-4-2 SL1[2]
Morocco	In conformity with the following regulations: • Arrêté ministériel n° 6404-15 du 1 er muharram 1437 (15 octobre 2015) Équipements électriques destinés à être utilisés sous certaines limites de tension • Arrêté ministériel n° 6404-15 du 29 ramadan 1436 (16 juillet 2015) Compatibilité électromagnétique des équipements

(1) See the Product Certification website at rok.auto/certifications for Declarations of Conformity, Certificates, and other certification details.
(2) With Studio 5000 Logix Designer application version 32.00.01 or later.