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-EN2*x*) • 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.