GuardLogix 5580 Standard and Conformal Coated Controllers

Features - GuardLogix 5580 Standard and Conformal Coated Controllers

Feature	1756-L81ES, 1756-L81ESK	1756-L82ES, 1756-L82ESK	1756-L83ES, 1756-L83ESK	1756-L84ES, 1756-L84ESK	1756-L85ES	1756-L8SP, 1756-L8SPK
Controller tasks	31 standard tasks, 1 safety task 1000 programs/task Ethernet port					–
Built-in communication ports	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 without safety partner	• 2000 without CIP Security • 1500 with integrity • 900 with integrity and confidentiality					–
front port with safety partner	• 1000 without CIP Security • 750 with integrity • 450 with integrity and confidentiality					–
backplane without safety partner(5)	• 4000 with multiple 1756-EN4TR modules					–
backplane with safety partner(5)	• 2000					–
backplane with Logix SIS(5)	• 2000					–
Communication options	• EtherNet/IP • ControlNet • DeviceNet • Data Highway Plus™ • Remote I/O • SERCOS • Third-party process and device networks					–
EtherNet/IP nodes supported, max(6)	100 nodes	175 nodes	250 nodes	250 nodes	300 nodes(7)	–
OPC UA nodes supported max(8)(9)	–	900	1500	15000	15000	–
Network connections per network module in the local chassis	• GuardLogix 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) • 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)					–
Controller redundancy	Full support with Studio 5000 Logix Designer application version 37.00.00 or later(10)					–
Integrated motion	• SERCOS interface • Analog options (encoder input, LDT input, SSI input) • Integrated Motion on the EtherNet/IP network					–
Programming languages	• For the safety task, GuardLogix controllers support Ladder Diagram only. • For standard tasks, GuardLogix controllers support: – Ladder Diagram (LD) – Structured Text (ST) – Function Block Diagram (FBD) – 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. 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) A node is an EtherNet/IP 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 and GuardLogix 5580 Controllers User Manual, publication 1756-UM543.
(7) Additional EtherNet/IP nodes maybe possible depending on remaining controller resources.
(8) 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.

(9) With Studio 5000 Logix Designer application version 36.00.00 or later.
(10) When the controller is enabled for redundancy, the safety partner is not supported, the Ethernet port is off, Integrated motion is not supported, and DeviceNet, ControlNet, RIO, DH+™ networks are not supported. For details, see the Redundancy Systems User Manual, publication 1756-UM015.

Technical Specifications - GuardLogix 5580 Standard and Conformal Coated Controllers

Attribute	1756-L81ES, 1756-L81ESK	1756-L82ES, 1756-L82ESK	1756-L83ES, 1756-L83ESK	1756-L84ES, 1756-L84ESK	1756-L85ES	1756-L8SP, 1756-L8SPK
Standard memory	3 MB	5 MB	10 MB	20 MB	40 MB	–
Safety memory	1.5 MB	2.5 MB	5 MB	6 MB	3 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	4 GB Secure Digital 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, Ethernet to backplane, USB to backplane, and USB to Ethernet 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-A17K, Series B and 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 52.
(2) Use this conductor category information to plan conductor routing. See Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

Environmental Specifications -GuardLogix 5580 Standard and Conformal Coated Controllers

Attribute	1756-L81ES, 1756-L82ES, 1756-L83ES, 1756-L84ES, 1756-L85ES	1756-L81ESK, 1756-L82ESK, 1756-L83ESK, 1756-L84ESK, 1756-L8SP, 1756-L8SPK
Temperature, operating (SIL 2/PLd) 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) for Series C Chassis 0 °C ≤ Ta ≤ +50 °C (+32 °F ≤ Ta ≤ +122 °F) for Series B Chassis **Note:** If operating above +55 °C (+131 °F), modules greater than 6.2 W shall not be installed in slots adjacent to the controller.	
Temperature, operating (SIL 3/PLe) 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) 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	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 - GuardLogix 5580 Standard and Conformal Coated Controllers

Certification[1]	1756-L81ES, 1756-L82ES, 1756-L83ES, 1756-L84ES, 1756-L85ES, 1756-L81ESK, 1756-L82ESK, 1756-L83ESK, 1756-L84ESK, 1756-L8SP, 1756-L8SPK
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
Ex	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 Regulations • 2008 No. 1597 - Supply of Machinery (Safety) Regulations
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
Product safety function (MD)	• Up to Cat. 3/PLd according to EN ISO 13849-1 and SIL CL 2 according to EN/IEC 62061 • 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-L8SP safety partner
TÜV certified for functional safety[2]	• 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 GuardLogix 5580 and Compact GuardLogix 5580 Controllers Safety Reference Manual, publication 1756-RM012. • 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 Logix SIS Safety Reference Manual, publication 1756-RM015. • TÜV 01/205/5611
CIP Security	ODVA conformance tested to CIP Security specifications[3]
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 link at rok.auto/certifications for Declarations of Conformity, Certificates, and other certification details.
(2) When used with specified firmware revisions. See the Product Safety Certificate at rok.auto/certifications for a full list of safety-related certifications.
(3) With Studio 5000 Logix Designer® application version 34.00.01 or later.