



# ControlLogix and GuardLogix Controller Specifications

Bulletin 1756

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

(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,<br>1756-L81EK                                                                                                                                                      | 1756-L82E,<br>1756-L82EK | 1756-L83E,<br>1756-L83EK | 1756-L84E,<br>1756-L84EK | 1756-L85E,<br>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 <sup>(1)</sup>                                                                                |                          |                          |                          |                          |
| 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<br>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<br>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 <sup>(2)</sup> | 3 - on USB port<br>2 - on Ethernet ports                                                                                                                                      |                          |                          |                          |                          |
| Wire size                    | Ethernet connections:<br>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,<br>1756-L84E, 1756-L85E                                                                                                                                                                                                                                       | 1756-L81EK, 1756-L82EK, 1756-L83EK,<br>1756-L84EK, 1756-L85EK                                                                                                                           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Temperature, operating<br>IEC 60068-2-1 (Test Ae, Operating Cold),<br>IEC 60068-2-2 (Test Be, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)                                              | $0^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$ ( $+32^{\circ}\text{F} \leq T_a \leq +140^{\circ}\text{F}$ ) Standard Chassis, Series C<br>$0^{\circ}\text{C} \leq T_a \leq +50^{\circ}\text{C}$ ( $+32^{\circ}\text{F} \leq T_a \leq +122^{\circ}\text{F}$ ) Standard Chassis, Series B |                                                                                                                                                                                         |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | $-40...+85^{\circ}\text{C}$ ( $-40...+185^{\circ}\text{F}$ ) Chassis Series C and B                                                                                                                                                                                                            |                                                                                                                                                                                         |
| Relative humidity<br>IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)                                                                                                                                                  | 5...95% noncondensing                                                                                                                                                                                                                                                                          |                                                                                                                                                                                         |
| Conformal coated                                                                                                                                                                                                     | No                                                                                                                                                                                                                                                                                             | Yes                                                                                                                                                                                     |
| Corrosive Atmosphere<br>ASTM B845-97 Method K Accelerated Test (20-Day Exposure)                                                                                                                                     | —                                                                                                                                                                                                                                                                                              | Severity Level G3 <sup>(1)</sup> per ANSI/ISA 71.04-2013,<br>Airborne Contaminants—Gases<br>Severity Level CX <sup>(1)(2)</sup> per IEC 60721-3-3:2019,<br>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/(m<sup>2</sup>-yr), mass loss of copper due to corrosion.

## Certifications - ControlLogix 5580 Standard and Conformal Coated Controllers

| Certification <sup>(1)</sup> | 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.<br>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: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul>                                                                                                        |
| RCM                          | Australian Radiocommunications Act, compliant with EN 61000-6-4; Industrial Emissions                                                                                                                                                                                                                                                                                                                                                             |
| ATEX                         | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>• EN IEC 60079-0; General Requirements</li> <li>• EN IEC 60079-7; Potentially Explosive Atmospheres, Protection "e"</li> <li>• II 3 G Ex ec IIC T4 Gc</li> <li>• UL 22 ATEX 2817X</li> </ul>                                                                                                                                                     |
| IECEx                        | IECEx System, compliant with: <ul style="list-style-type: none"> <li>• IEC 60079-7; Potentially Explosive Atmospheres, Protection "e"</li> <li>• IEC 60079-0; General Requirements</li> <li>• II 3 G Ex ec IIC T4 Gc</li> <li>• IECEx UL 22.0062X</li> </ul>                                                                                                                                                                                      |
| UKEx                         | In conformity with the following UKEx Statutory Instruments and their amendments: <ul style="list-style-type: none"> <li>• Schedule 1 of the UKEx Regulation 2016 No. 1107</li> <li>• Equipment protection by increased safety "e", reference certificate number UL22UKEX2601X</li> <li>• Zone 2 classification according to UKEx Regulation 2016 No. 1107</li> </ul>                                                                             |
| UKCA                         | In conformity with the following UK Statutory Instruments and their amendments: <ul style="list-style-type: none"> <li>• 2016 No. 1091, Electromagnetic Compatibility Regulations</li> <li>• 2016 No. 1107, Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations</li> <li>• 2012 No. 3032, Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment</li> </ul> |
| KC                           | Korean Registration of Broadcasting and Communications Equipment, compliant with Article 58-2 of Radio Waves Act, Clause 3                                                                                                                                                                                                                                                                                                                        |
| CCC                          | CCC 2020122309111998<br>CNCA-C23-01 强制性产品认证实施规则 防爆电气<br>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 <sup>(2)</sup>                                                                                                                                                                                                                                                                                                                                                                             |
| TÜV certified for security   | IEC 62443-4-2 SL <sup>(2)</sup>                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Morocco                      | In conformity with the following regulations: <ul style="list-style-type: none"> <li>• Arrêté ministériel n° 6404-15 du 1 er muharram 1437 (15 octobre 2015)<br/>Équipements électriques destinés à être utilisés sous certaines limites de tension</li> <li>• Arrêté ministériel n° 6404-15 du 29 ramadan 1436 (16 juillet 2015)<br/>Compatibilité électromagnétique des équipements</li> </ul>                                                  |

(1) See the Product Certification website at [rok.auto/certifications](http://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.