

# Cisco Industrial Ethernet 2000 Series Switches Data Sheet



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## Overview

The Cisco® Industrial Ethernet 2000 (IE 2000) Series is a range of compact, ruggedized access switches that handle security, voice, and video traffic across industrial networks. They provide customers in industries such as automotive, oil and gas, mining, transportation, and energy with highly secure access and industry-leading convergence using Cisco Resilient Ethernet Protocol (REP).

### Product details

The Cisco IE 2000 Series are designed for low cost, low ports, and small sizes. They offer:

- Four, eight, or 16 10/100Base-T Ethernet ports (Small Form-Factor Pluggable [SFP] downlinks on selected models); fixed configurations with a compact form factor
- Two gigabit combo ports: SFP (100 Mbps and 1 Gbps) or RJ45 uplink
- Dual-input DC power supply, alarm relays, DIN rail mount
- Industrial Power over Ethernet (PoE) solution
- Conformal coating available
- Swappable SD flash card and mini-USB connector
- Industrial environmental compliance and certifications
- Industrial partner applications: Ethernet/IP and PROFINET

### Primary benefits and features

- **Easy deployment:** Zero-touch discovery using Dynamic Host Control Protocol (DHCP), auto sync to SD card, express setup, and fast boot-up time (60 seconds) to help in migrating to an Ethernet environment without resistance.
- **Security:** 802.1x, port security, and DHCP allow dynamic port-based authentication; Secure Shell (SSHv2); SNMPv3 provides encrypted administrator traffic during Telnet and SNMP sessions; TACACS+ and RADIUS authentication facilitate centralized control and restrict unauthorized users.
- **Resiliency:** Cisco REP ring protocol and PROFINET– Media Redundancy Protocol (MRP)
- **Manageability:** Cisco DNA™ Center software, Auto SmartPort, Web Device Manager, Telnet, HTTPS access, SNMP, CNA, and Cisco Prime Infrastructure.

● **Network Address Translation (NAT):** Line-rate, hardware-enabled 1:1 static address translation designed to enable duplicate IP address usage in the Layer 2 machine node networks.

● **Layer 3 routing:** IPv4 and IPv6.

● **Industrial PoE:** PoE (IEEE 802.af) and PoE+ (802.3at) supported on selected models.

● **Industrial automation protocols:** EtherNet/IP (CIP) and PROFINET MRP (IEC 62439-2) allow integration with existing management platforms from Rockwell, Siemens, and others.

### Product specifications

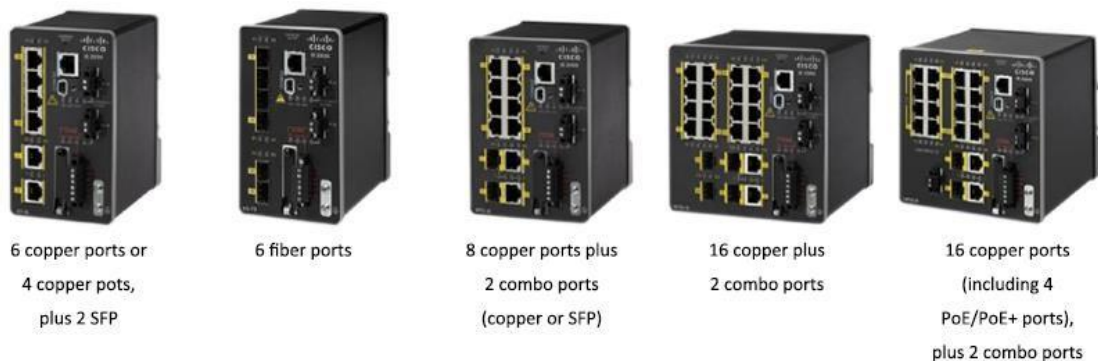
Switch performance and scalability

- Maximum Forwarding Bandwidth 3.8Gbps
- Maximum Switching Bandwidth 7.6Gbps
- Maximum Forwarding rate: 5.66Mpps with 64-byte packets (Line-rate at all packet sizes)
- Egress buffer: 2 MB
- Unicast MAC addresses: 8000
- Internet Group Management Protocol (IGMP) multicast groups: 255
- Maximum virtual LANs (VLANs): 1005
- IPv4 MAC security ACEs: 384 (default ternary content-addressable memory [TCAM] template)
- Bidirectional, 128 NAT translation entries
- IPv4 routing: 3500 routes, IPv6 routing: 1750 routes

### Detailed Product Information

Figure 1 shows switch models, and Table 1 shows the Cisco IE 2000 Series configuration information. Table 2 lists the SKUs for power supplies and license upgrades. Table 3 includes IE 2000 Series product specifications. Table 4 lists software features. Table 6 details the DNA Essentials PIDs available for order. Table 7 includes compliance specifications. Table 8 outlines management and relevant industry standards.

**Figure 1.** Cisco Industrial Ethernet 2000 Series Switches



**Table 1.** Industrial Ethernet 2000 Series configurations

Product Number	Total Ports	RJ45 Ports	Combo Ports	SFP Ports	Manufacturing License	Type of possible Upgrade	IEEE 1588	NAT	PoE(+)	Conformal Coating
<a href="#">IE-2000-4TS-L</a>	6	4 FE		2 FE	LAN Lite	3				
<a href="#">IE-2000-4TS-B</a>	6	4 FE		2 FE	LAN Base	1				
<a href="#">IE-2000-4T-L</a>	6	6 FE			LAN Lite	3				
<a href="#">IE-2000-4T-B</a>	6	6 FE			LAN Base	1				
<a href="#">IE-2000-4TS-G-L</a>	6	4 FE		2 GE	LAN Lite	3				
<a href="#">IE-2000-4TS-G-B</a>	6	4 FE		2 GE	LAN Base	1				
<a href="#">IE-2000-4T-G-L</a>	6	4 FE, 2 GE			LAN Lite	3				
<a href="#">IE-2000-4T-G-B</a>	6	4 FE, 2 GE			LAN Base	1				

Product Number	Total Ports	RJ45 Ports	Combo Ports	SFP Ports	Manufacturing License	Type of possible Upgrade	IEEE 1588	NAT	PoE(+)	Conformal Coating
<a href="#">IE-2000-4S-TS-G-L</a>	6			4 FE, 2 GE	LAN Lite					
<a href="#">IE-2000-4S-TS-G-B</a>	6			4 FE, 2 GE	LAN Base	1, 3				
<a href="#">IE-2000-8TC-L</a>	10	8 FE	2 GE		LAN Lite	3				
<a href="#">IE-2000-8TC-B</a>	10	8 FE	2 GE		LAN Base	1				
<a href="#">IE-2000-8TC-G-L</a>	10	8 FE	2 GE		LAN Lite	3				
<a href="#">IE-2000-8TC-G-B</a>	10	8 FE	2 GE		LAN Base	1,				
<a href="#">IE-2000-8TC-G-E</a>	10	8 FE	2 GE		LAN Base	1, 2, 4	X	X		
<a href="#">IE-2000-16TC-L</a>	20	16 FE	2 GE	2 FE	LAN Lite	3				
<a href="#">IE-2000-16TC-B</a>	20	16 FE	2 GE	2 FE	LAN Base	1				
<a href="#">IE-2000-16TC-G-L</a>	20	16 FE	2 GE	2 FE	LAN Lite	3				
<a href="#">IE-2000-16TC-G-E</a>	20	16 FE	2 GE	2 FE	LAN Base	1, 2, 4	X	X		
<a href="#">IE-2000-16TC-G-X</a>	20	16 FE	2 GE	2 FE	LAN Base	1, 2, 4	X	X		X
<a href="#">IE-2000-8TC-G-N</a>	10	8 FE	2 GE		Enhanced LAN Base	1, 2	X	X		
<a href="#">IE-2000-16TC-G-N</a>	20	16 FE	2 GE	2 FE	Enhanced LAN Base	1, 2	X	X		

Product Number	Total Ports	RJ45 Ports	Combo Ports	SFP Ports	Manufacturing License	Type of possible Upgrade	IEEE 1588	NAT	PoE(+)	Conformal Coating
<a href="#">IE-2000-16PTC-G-L</a>	18	16 FE	2 GE		LAN Lite	3			X	
<a href="#">IE-2000-16PTC-G-E</a>	18	16 FE	2 GE		LAN Base	1, 2	X	X2	X	
<a href="#">IE-2000-16PTC-G-NX</a>	18	16 FE	2 GE		Enhanced LAN Base	1, 2	X	X	X	X

“Type of possible upgrade” legend:

1: LAN Base to IP Lite Cisco IOS Software Upgrade

2: Enhanced LAN Base to IP Lite Cisco IOS Software Upgrade

3: LAN Lite to LAN Base Cisco IOS Software Upgrade

4: LAN Base to Enhanced LAN Base Cisco IOS Software Upgrade and License Upgrade

U: Upgradable to L2NAT via Enhanced Lan Base or IP Lite license

**Table 2.** Accessories and license upgrade PIDs

Product number	Description
<a href="#">SD-IE-1GB</a>	1 GB Ruggedized SD memory card (must be ordered, not included by default)
<a href="#">STK-RACK-DINRAIL=</a>	19 in. DIN Rail mount kit
<a href="#">IE-LICENSE-SPARE</a>	Spare license for software upgrade (L2 to L3 features, MRP ring, etc)
<a href="#">L-IE2000-L-B=</a>	IE2000 LAN Lite to LAN Base e-license
<a href="#">L-IE2000-B-E=</a>	IE2000 LAN Base to Enhanced LAN Base e-license

Product number	Description
<a href="#">LIC-IE2000-IP-L=</a>	IE2000 LAN Base or Enhanced LAN Base to IPLite e-license
<a href="#">LIC-IE2000-L-IP=</a>	IE2000 LAN Lite to IPLite e-license
<a href="#">LIC-MRP-MANAGER=</a>	MRP Ring Manager license
<a href="#">LIC-MRP-Client=</a>	MRP Ring Client license
<a href="#">Wallmount-IE2k-04=</a>	Wall mount kit accessory for IE2000 4-ports downlink PID
<a href="#">Wallmount-IE2k-08=</a>	Wall mount kit accessory for IE2000 8-ports downlink PID
<a href="#">Wallmount-IE2k-16=</a>	Wall mount kit accessory for IE2000 16-ports downlink PID

**Table 3.** Product specifications

Description	Specification
Hardware	<ul style="list-style-type: none"> <li>● 256 MB DRAM with ECC memory</li> <li>● IEEE 1588v2 FPGA</li> <li>● 64 MB on-board flash memory</li> <li>● 1GB removable SD flash memory card (optional)</li> <li>● Mini-USB connector</li> </ul>
Alarm	<ul style="list-style-type: none"> <li>● Alarm I/O: Two alarm inputs to detect dry contact open or close; one alarm output relay</li> </ul>
Power consumption	<ul style="list-style-type: none"> <li>● 4-port downlink models: 9.5-15 W</li> <li>● 8-port downlink models: 12.5-20 W</li> <li>● 16-port downlink models: 21-30 W</li> </ul>



Description	Specification
	<ul style="list-style-type: none"> <li>● 4-port PoE/PoE+ models: 21-30 W (16-port base switch) and 4 PoE/PoE+ power requirement</li> </ul>
Connectors and cabling	<ul style="list-style-type: none"> <li>● 100BASE-FX MMF (2 km), -LX SMF (10 km) -ZX SMF (100 km), BX10 SMF (10 km) SFP and CWDM SFP-based ports: LC fiber connectors</li> <li>● 10/100/1000BASE-T ports: RJ-45 connectors, 4-pair Category 5 UTP cabling</li> </ul>
Dimensions (H x W x D) including DIN rail	<ul style="list-style-type: none"> <li>● IE-2000 6 ports (copper downlinks) chassis: 5.1"H x 2.95"W x 4.51"D in (130mm H x 74.9mm W x 115mm D)</li> <li>● IE-2000 6 ports (SFP downlinks) chassis: 5.1"H x 3.15"W x 4.51"D in (130mm H x 80mm W x 115mm D)</li> <li>● IE-2000 10 ports short chassis: 5.1"H x 3.6"W x 4.51"D (130mm H x 91.4mm W x 115mm D)</li> <li>● IE-2000 10 ports long chassis: 5.1"H x 3.6"W x 5.26"D (130mm H x 91.4mm W x 134mm D)</li> <li>● IE-2000 18-20 ports chassis: 5.1"H x 5.0"W x 5.26"D (130mm H x 127mm W x 134mm D)</li> <li>● PWR-IE50W-AC=: 5.8"H x 2.0"W x 4.4"D (147mm H x 51 mm W x 112mm D)</li> <li>● PWR-65W-PC-AC=: 5.9 "H x 2.6"W x 4.6"D (150mm H x 66mm W x 117mm D)</li> <li>● PWR-65W-PC-DC=: 5.9 "H x 2.6"W x 4.6"D (150mm H x 66mm W x 117mm D)</li> <li>● PWR-IE170W-PC-AC=: 5.93 x 3.72 x 5.60 in. (150.6 x 94.5 x 142.2mm)</li> <li>● PWR-IE170W-PC-DC=: 5.93 x 4.47 x 5.75 in. (150.6 x 113.5 x 145.8mm)</li> </ul>
Weight	<ul style="list-style-type: none"> <li>● IE-2000 6 ports chassis: 2.45 lb (1.11 kg)</li> <li>● IE-2000 6 ports (SFP): 2.69 lb (1.22 kg)</li> <li>● IE-2000 10 ports short chassis: 2.75 lb (1.25 kg)</li> <li>● IE-2000 10 ports long chassis: 3.45 lb (1.56 kg)</li> <li>● IE-2000 18-20 ports chassis: 4.35 lb (1.97 kg)</li> <li>● PWR-IE50W-AC=: 1.4 lb (0.65 kg)</li> </ul>

Description	Specification
	<ul style="list-style-type: none"> <li>● PWR-IE50W-AC-IEC=: 1.4 lb (0.65 kg)</li> <li>● PWR-IE65W-PC-DC=: 2.6 (1.18 kg)</li> <li>● PWR-IE65W-PC-AC=: 2.7 (1.24 kg)</li> <li>● PWR-IE170W-PC-AC=: 3.88 pounds (1.76 kg)</li> <li>● PWR-IE170W-PC-DC=: 3.7 pounds (1.67 kg)</li> </ul>

**Table 4.** IE 2000 Series power supplies

Product number	Wattage	Rated nominal input operating range	Supported input voltage operating range	Power output	PoE/PoE + support	Use case scenario
<a href="#">PWR-IE170W-PC-AC=</a>	170W	AC 100-240V/2.3A 50-60Hz or DC 125-250V/2.1A	AC 90-264V  or DC 106-300V	54VDC/ 3.15A	Yes	Maximum PoE/PoE+ port support in a AC or high DC environment <sup>1</sup>
<a href="#">PWR-IE170W-PC-DC=</a>	170W	DC 12-54V/23A	DC 10.8-60V	54VDC/ 3.15A	Yes	Maximum PoE/PoE+ port support in a DC environment <sup>1</sup>
<a href="#">PWR-IE50W-AC=</a>	50W	AC 100-240V/1.25A 50-60Hz or	AC 90-264V  or DC 106-300V	24VDC/ 2.1A	No	Provides power to main system, not used for PoE in an AC or high DC environment

		DC 125-250V/1.25A				
<a href="#">PWR-IE50W-AC-IEC=</a>	50W	AC 100-240V/1.25A 50-60Hz	AC 90-264V	24VDC/ 2.1A	No	Provides power to main system, not used for PoE in DC environment
<a href="#">PWR-IE65W-PC-AC=</a>	65W	AC 100-240V/1.4A 5 0-60Hz or DC 125-250V/1.0A	AC 90-264V or DC 106-300V	54VDC/ 1.2 A	Yes	Supports up to 4 ports PoE or 2 ports PoE+ when used in PoE power input in an AC or high DC environment
<a href="#">PWR-IE65W-PC-DC=</a>	65W	DC 24-48VDC/4.5A	DC 18-60V	54VDC/ 1.2 A	Yes	Supports up to 4 ports PoE or 2 ports PoE+ when used in PoE power input in a DC environment

<sup>1</sup> The 170W (both AC and DC) power supplies have enough power for the base unit and the PoE. Connect one power output from the 170W PSU to the main power input of the IE2000, and the other power output of the 170W PSU to the PoE power input of the IE2000.

**Table 5.** Cisco IE 2000 software features

LAN Lite license	Baseline features
Layer 2 switching	IEEE 802.1, 802.3, 802.3at, 802.3af standard (see Table 8), VTPv2, NTP, UDLD, CDP, LLDP, Unicast MAC filter, Resilient Ethernet Protocol (REP), Media Redundancy Protocol (MRP) Ring (IEC 62439-2)
Security	SCP, SSH, SNMPv3, TACACS+, RADIUS Server/Client, MAC Address Notification, BPDU Guard, SPAN session
Multicast	IGMPv1, v2, v3 Snooping, IGMP filtering, IGMP Querier

LAN Lite license	Baseline features
Management	Fast Boot, Express Setup, Web Device Manager, CNA, Cisco Prime, LMS, MIB, SmartPort, SNMP, syslog
Industrial Ethernet	EtherNet/IP, Profinet v2
LAN Base license	Additional features
Layer 2 switching	VTPv3, EtherChannel, Voice VLAN, Flexlink
Security	IPv4 Port-Security, DHCP Snooping, Dynamic ARP Inspection, IP Source Guard, 802.1x, Guest VLAN. MAC Authentication Bypass, 802.1x Multi-Domain Authentication, Storm Control, Trust Boundary, Access-List (ACL)
Quality of service	IPv4 Ingress Policing, Rate-Limit, Egress Queuing/Shaping, AutoQoS, PROFINET QoS
Management	Port-Based DHCP, Storm Control - Unicast, Multicast, Broadcast, SPAN Sessions, RSPAN, DHCP Server, Customized TCAM/SDM Size Configuration, Embedded Event Manager (EEM)
Industrial Ethernet	IEEE 1588 PTPv2
IPv4 routing	IPv4 static routing
IPv6 routing	IPv6 host support, HTTP over IPv6, SNMP over IPv6
Enhanced LAN Base	Additional features
Industrial management	Layer 2 switching with 1:1 static Network Address Translation (NAT)
IP Lite license	Additional features
IPv4 routing	RIP, OSPF, EIGRP, VRF Lite, PIM for L3 multicast routing including sparse (SM) and dense (DM) mode.
IPv6 Routing	IPv6 Static routing, OSPFv3
Security	FIPS 140-2

LAN Lite license	Baseline features
Embedded Event Manager	EEM feature enabled with IP Lite license
DNA Essentials	Additional features
Cisco DNA Center	Discovery, topology, inventory, software image management
Visibility	DNA assurance, Device 360
Day-zero network bring-up automation	Cisco Network Plug-and-Play application

**Table 6.** Cisco IE 2000 DNA license PIDs

PID	Description
IE2000-DNA-E-L	DNA Essentials license (up to 12 ports)
IE2000-DNA-E-L-3Y	DNA Essentials 3 year term license (up to 12 ports) option
IE2000-DNA-E-L-5Y	DNA Essentials 5 year term license (up to 12 ports) option
IE2000-DNA-E-M	DNA Essentials license (up to 24 ports)
IE2000-DNA-E-M-3Y	DNA Essentials 3 year term license (up to 24 ports) option
IE2000-DNA-E-M-5Y	DNA Essentials 5 year term license (up to 24 ports) option

**Table 7.** Compliance specifications

Description	Specification
Safety certifications	<ul style="list-style-type: none"> <li>UL/CSA 60950-1</li> </ul>

Description	Specification
	<ul style="list-style-type: none"> <li>● EN 60950-1</li> <li>● CB to IEC 60950-1 (with country deviations)</li> <li>● NOM to NOM-019-SCF1 (through partners and distributors)</li> <li>● CE Marking</li> </ul>
Hazard location	<ul style="list-style-type: none"> <li>● ANSI/ISA 12.12.01 (Class1, Div2 A-D)*</li> <li>● EN 60079-0, -15 ATEX Certificate (Class 1, Zone2 A-D)*</li> </ul> <p>* Cabinet enclosure required</p>
EMC emissions and immunity compliance	<ul style="list-style-type: none"> <li>● FCC 47 CFR Part 15 Class A</li> <li>● EN 55022A Class A</li> <li>● VCCI Class A</li> <li>● RoHS compliance</li> <li>● AS/NZS CISPR 22 Class A, AS/NZS CISPR 24</li> <li>● CISPR11 Class A, CISPR22 Class A</li> <li>● ICES 003 Class A</li> <li>● KCC -Korea</li> <li>● CE Marking</li> <li>● C-Tick (Australia)</li> <li>● Russia certification</li> <li>● Brazil certification</li> <li>● IEC/EN/EN61000-4-2 (Electro Static Discharge), 15kV air/8kV contact</li> </ul>

Description	Specification
	<ul style="list-style-type: none"> <li>● IEC/EN 61000-4-3 (Radiated Immunity, 10 and 20 V/m)</li> <li>● IEC/EN 61000-4-4 (Fast Transients - 4kV power line, 4kV data line)</li> <li>● IEC/EN 61000-4-5 (Surge 2 kV/1 kV)</li> <li>● IEC/EN 61000-4-6 (Conducted Immunity, 10 V/emf)</li> <li>● IEC/EN 61000-4-8 (Power Frequency Magnetic Field Immunity)</li> <li>● IEC/EN 61000-4-9 (Pulse Magnetic Field Immunity)</li> <li>● IEC/EN 61000-4-10 (Oscillatory Magnetic Field Immunity)</li> <li>● IEC/EN 61000-4-11 (AC power Voltage Immunity)</li> <li>● IEC/EN 61000-4-29 (Voltage Dips Immunity)</li> <li>● IEC/EN 61000-6-1 (Immunity for Light Industrial Environments)</li> <li>● IEC/EN 61000-6-2 (Immunity for Industrial Environments)</li> <li>● IEC/EN 61000-6-4 Class A</li> <li>● EN 61326</li> </ul>
Shock and vibration	<ul style="list-style-type: none"> <li>● IEC 60068-2-27 (Operational Shock: 30G 11ms, half sine)</li> <li>● IEC 60068-2-27 (Non-Operational Shock 55-70G, trapezoidal)</li> <li>● IEC 60068-2-6, IEC 60068-2-64, EN 61373 (Operational Vibration)</li> <li>● IEC 60068-2-6, IEC 60068-2-64, EN 61373 (Non-operational Vibration)</li> </ul>
Industry standards	<ul style="list-style-type: none"> <li>● UL508</li> <li>● CSA C22.2 No. 142</li> <li>● EN 61131-2 (EMC/EMI, environmental, mechanical)</li> </ul>

Description	Specification
	<ul style="list-style-type: none"> <li>● Protective coating (specific models only)</li> <li>● Marine DnV</li> <li>● Substation KEMA (IEEE 1613, IEC 61850-3)</li> <li>● Railway EN 50155 (EMI/EMC, environmental, mechanical)</li> <li>● EN50121-3-2</li> <li>● EN50121-4</li> <li>● NEMA TS-2 (EMC, environmental, mechanical)</li> <li>● ABB Industrial IT certification</li> <li>● IP30</li> <li>● ODVA Industrial Ethernet/IP support</li> <li>● PROFINETv2.3 support</li> </ul>
Corrosive testing	<ul style="list-style-type: none"> <li>● ISO-12944-6</li> <li>● IEC-60068-2-60</li> </ul>
Humidity	<ul style="list-style-type: none"> <li>● IEC 60068-2-52 (salt fog mist, test Kb) marine environments</li> <li>● IEC 60068 -2-3</li> <li>● IEC 60068-2-30</li> <li>● Relative humidity: 5% to 95% non-condensing</li> </ul>
Operating temperature	<ul style="list-style-type: none"> <li>● -40C to +70C (vented enclosure - 40 LFM Air Flow)</li> <li>● -40C to +60C (sealed enclosure – 0 LFM Air Flow)</li> <li>● -34C to +75C (fan or blower-equipped enclosure – 200 LFM Air Flow)</li> </ul>



Description	Specification
	<ul style="list-style-type: none"> <li>• -40C to +85C (IEC 60068-2-2 Environmental Type Testing – 16 hours)</li> <li>• Operational altitude: Up to 15,000 ft</li> </ul>
Storage temperature	<ul style="list-style-type: none"> <li>• -40 C to +85 C (storage temperature)</li> <li>• IEC 60068-2-14</li> <li>• Storage altitude: Up to 15,000 ft</li> </ul>
Mean time between failures (MTBF)	<ul style="list-style-type: none"> <li>• Mean time between failure: 374,052 hours (42.7 years)</li> </ul>
Warranty	<ul style="list-style-type: none"> <li>• Five-year limited warranty on all IE-2000 HW PIDs and all IE Power Supplies defined in table 4 above. See link below for details on warranty</li> </ul>

**Table 8.** Management and standards

Description	Specification	Specification
IEEE standards	<ul style="list-style-type: none"> <li>• IEEE 802.1D MAC bridges, STP</li> <li>• IEEE 802.1p Layer 2 COS prioritization</li> <li>• IEEE 802.1q VLAN</li> <li>• IEEE 802.1s Multiple Spanning-Trees</li> <li>• IEEE 802.1w Rapid Spanning-Tree</li> <li>• IEEE 802.1x Port Access Authentication</li> <li>• IEEE 802.1AB LLDP</li> <li>• IEEE 802.3ad Link Aggregation (LACP)</li> <li>• IEEE 802.3af Power over Ethernet provides up to 15.4W DC power to each end device</li> </ul>	<ul style="list-style-type: none"> <li>• IEEE 802.3af Power over Ethernet</li> <li>• IEEE 802.3at Power over Ethernet Plus</li> <li>• IEEE 802.3ah 100BASE-X SMF/MMF only</li> <li>• IEEE 802.3x full duplex on 10Base-T</li> <li>• IEEE 802.3 10BASE-T specification</li> </ul>

Description	Specification	Specification
	<ul style="list-style-type: none"> <li>● IEEE 802.3at Power over Ethernet provides up to 25.5W DC power to each end device</li> </ul>	<ul style="list-style-type: none"> <li>● IEEE 802.3u 100BASE-TX specification</li> <li>● IEEE 802.3ab 1000BASE-T specification</li> <li>● IEEE 802.3z 1000BASE-X specification</li> <li>● IEEE 1588v2 PTP Precision Time Protocol</li> </ul>
RFC compliance	<ul style="list-style-type: none"> <li>● RFC 768: UDP</li> <li>● RFC 783: TFTP</li> <li>● RFC 791: IPv4 protocol</li> <li>● RFC 792: ICMP</li> <li>● RFC 793: TCP</li> <li>● RFC 826: ARP</li> <li>● RFC 854: Telnet</li> <li>● RFC 951: BootP</li> <li>● RFC 959: FTP</li> <li>● RFC 1157: SNMPv1</li> <li>● RFC 1901,1902-1907 SNMPv2</li> <li>● RFC 2273-2275: SNMPv3</li> <li>● RFC 2571: SNMP Management</li> <li>● RFC 1166: IP Addresses</li> </ul>	<ul style="list-style-type: none"> <li>● RFC 1305: NTP</li> <li>● RFC 1492: TACACS+</li> <li>● RFC 1493: Bridge MIB Objects</li> <li>● RFC 1534 DHCP and BootP interoperation</li> <li>● RFC 1542: Bootstrap Protocol</li> <li>● RFC 1643: Ethernet Interface MIB</li> <li>● RFC 1757: RMON</li> <li>● RFC 2068: HTTP</li> <li>● RFC 2131, 2132: DHCP</li> <li>● RFC 2236: IGMP v2</li> <li>● RFC 3376: IGMP v3</li> <li>● RFC 2474: DiffServ Precedence</li> </ul>

Description	Specification	Specification
	<ul style="list-style-type: none"> <li>● RFC 1256: ICMP Router Discovery</li> </ul>	<ul style="list-style-type: none"> <li>● RFC 3046: DHCP Relay Agent Information Option</li> <li>● RFC 3580: 802.1x RADIUS</li> <li>● RFC 4250-4252 SSH Protocol</li> </ul>
Simple network management protocol (SNMP) MIB objects	<ul style="list-style-type: none"> <li>● BRIDGE-MIB</li> <li>● CALISTA-DPA-MIB</li> <li>● CISCO-ACCESS-ENVMON-MIB</li> <li>● CISCO-ADMISSION-POLICY-MIB</li> <li>● CISCO-AUTH-FRAMEWORK-MIB</li> <li>● CISCO-BRIDGE-EXT-MIB</li> <li>● CISCO-BULK-FILE-MIB</li> <li>● CISCO-CABLE-DIAG-MIB</li> <li>● CISCO-CALLHOME-MIB</li> <li>● CISCO-CAR-MIB</li> <li>● CISCO-CDP-MIB</li> <li>● CISCO-CIRCUIT-INTERFACE-MIB</li> <li>● CISCO-CLUSTER-MIB</li> <li>● CISCO-CONFIG-COPY-MIB</li> <li>● CISCO-CONFIG-MAN-MIB</li> <li>● CISCO-DATA-COLLECTION-MIB</li> <li>● CISCO-DHCP-SNOOPING-MIB</li> </ul>	<ul style="list-style-type: none"> <li>● CISCO-SNMP-TARGET-EXT-MIB</li> <li>● CISCO-STACK-MIB</li> <li>● CISCO-STACKMAKER-MIB</li> <li>● CISCO-STP-EXTENSIONS-MIB</li> <li>● CISCO-SYSLOG-MIB</li> <li>● CISCO-TCP-MIB</li> <li>● CISCO-UDLD-MIB</li> <li>● CISCO-VLAN-IFTABLE-RELATIONSHIP-MIB</li> <li>● CISCO-VLAN-MEMBERSHIP-MIB</li> <li>● CISCO-VTP-MIB</li> <li>● ENTITY-MIB</li> <li>● ETHERLIKE-MIB</li> <li>● HC-RMON-MIB</li> <li>● IEEE8021-PAE-MIB</li> <li>● IEEE8023-LAG-MIB</li> </ul>

Description	Specification	Specification
	<ul style="list-style-type: none"> <li>● CISCO-ENTITY-ALARM-MIB</li> <li>● CISCO-ENTITY-VENDORTYPE-OID-MIB</li> <li>● CISCO-ENVMON-MIB</li> <li>● CISCO-ERR-DISABLE-MIB</li> <li>● CISCO-FLASH-MIB</li> <li>● CISCO-FTP-CLIENT-MIB</li> <li>● CISCO-IF-EXTENSION-MIB</li> <li>● CISCO-IGMP-FILTER-MIB</li> <li>● CISCO-IMAGE-MIB</li> <li>● CISCO-IP-STAT-MIB</li> <li>● CISCO-LAG-MIB</li> <li>● CISCO-LICENSE-MGMT-MIB</li> <li>● CISCO-MAC-AUTH-BYPASS-MIB</li> <li>● CISCO-MAC-NOTIFICATION-MIB</li> <li>● CISCO-MEMORY-POOL-MIB</li> <li>● CISCO-PAE-MIB</li> <li>● CISCO-PAGP-MIB</li> <li>● CISCO-PING-MIB</li> <li>● CISCO-PORT-QOS-MIB</li> <li>● CISCO-PORT-SECURITY-MIB</li> <li>● CISCO-PORT-STORM-CONTROL-MIB</li> </ul>	<ul style="list-style-type: none"> <li>● IF-MIB</li> <li>● IP-FORWARD-MIB</li> <li>● IP-MIB</li> <li>● LLDP-EXT-MED-MIB</li> <li>● LLDP-MIB</li> <li>● NETRANGER</li> <li>● NOTIFICATION-LOG-MIB</li> <li>● OLD-CISCO-CHASSIS-MIB</li> <li>● OLD-CISCO-CPU-MIB</li> <li>● OLD-CISCO-FLASH-MIB</li> <li>● OLD-CISCO-INTERFACES-MIB</li> <li>● OLD-CISCO-IP-MIB</li> <li>● OLD-CISCO-MEMORY-MIB</li> <li>● OLD-CISCO-SYS-MIB&lt;</li> <li>● OLD-CISCO-SYSTEM-MIB</li> <li>● OLD-CISCO-TCP-MIB</li> <li>● OLD-CISCO-TS-MIB</li> <li>● RMON-MIB</li> <li>● RMON2-MIB</li> <li>● SMON-MIB</li> <li>● SNMP-COMMUNITY-MIB</li> </ul>

Description	Specification	Specification
	<ul style="list-style-type: none"> <li>● CISCO-PRIVATE-VLAN-MIB</li> <li>● CISCO-PROCESS-MIB</li> <li>● CISCO-PRODUCTS-MIB</li> <li>● CISCO-RESILIENT-ETHERNET-PROTOCOL-MIB</li> <li>● CISCO-RTTMON-ICMP-MIB</li> <li>● CISCO-RTTMON-IP-EXT-MIB</li> <li>● CISCO-RTTMON-MIB</li> <li>● CISCO-RTTMON-RTP-MIB</li> <li>● CISCO-MRP-MIB</li> </ul>	<ul style="list-style-type: none"> <li>● SNMP-FRAMEWORK-MIB</li> <li>● SNMP-MPD-MIB</li> <li>● SNMP-NOTIFICATION-MIB</li> <li>● SNMP-PROXY-MIB</li> <li>● SNMP-TARGET-MIB</li> <li>● SNMP-USM-MIB</li> <li>● SNMP-VIEW-BASED-ACM-MIB</li> <li>● SNMPv2-MIB</li> <li>● TCP-MIB</li> <li>● UDP-MIB</li> </ul>

**Table 9.** SFP transceivers

Part number	Specification	SFP type	Max distance	Cable type	Temp range	DOM support
<a href="#">GLC-FE-100FX-RGD</a>	100BASE-FX	FE	2km	MMF	IND	Yes
<a href="#">GLC-FE-100LX-RGD</a>	100BASE-LX10	FE	10km	SMF	IND	Yes
GLC-FE-T-I	100BASE-T	FE	100m	Copper	IND	NA
<a href="#">GLC-FE-100FX</a>	100BASE-FX	FE	2km	MMF	COM	No
<a href="#">GLC-FE-100LX</a>	100BASE-LX10	FE	10km	SMF	COM	No
<a href="#">GLC-FE-100EX</a>	100BASE-EX	FE	40km	SMF	COM	No

Part number	Specification	SFP type	Max distance	Cable type	Temp range	DOM support
<a href="#">GLC-FE-100ZX</a>	100BASE-ZX	FE	80km	SMF	COM	No
<a href="#">GLC-FE-100BX-D</a>	100BASE-BX10	FE	10km	SMF	COM	No
<a href="#">GLC-FE-100BX-U</a>	100BASE-BX10	FE	10km	SMF	COM	Yes
<a href="#">GLC-SX-MM-RGD</a>	1000BASE-SX	GE	550m	MMF	IND	Yes
<a href="#">GLC-LX-SM-RGD</a>	1000BASE-LX/LH	GE	550m/10km	MMF/SMF	IND	Yes
<a href="#">GLC-ZX-SM-RGD</a>	1000BASE-ZX	GE	70km	SMF	IND	Yes
<a href="#">GLC-BX40-U-I</a>	1000BASE-BX40	GE	40km	SMF	IND	Yes
<a href="#">GLC-BX40-D-I</a>	1000BASE-BX40	GE	40km	SMF	IND	Yes
<a href="#">GLC-BX40-DA-I</a>	1000BASE-BX40	GE	40km	SMF	IND	Yes
<a href="#">GLC-BX80-U-I</a>	1000BASE-BX80	GE	80km	SMF	IND	Yes
<a href="#">GLC-BX80-D-I</a>	1000BASE-BX80	GE	80km	SMF	IND	Yes
<a href="#">GLC-SX-MMD</a>	1000BASE-SX	GE	550m	MMF	EXT	Yes
<a href="#">GLC-LH-SMD</a>	1000BASE-LX/LH	GE	550m/10km	MMF/SMF	EXT	Yes
<a href="#">GLC-EX-SMD</a>	1000BASE-EX	GE	40km	SMF	EXT	Yes
<a href="#">GLC-ZX-SMD</a>	1000BASE-ZX	GE	70km	SMF	EXT	Yes
<a href="#">GLC-BX-D</a>	1000BASE-BX10	GE	10km	SMF	COM	Yes
<a href="#">GLC-BX-U</a>	1000BASE-BX10	GE	10km	SMF	COM	Yes

Part number	Specification	SFP type	Max distance	Cable type	Temp range	DOM support
CWDM-SFP-xxxx= (8 freq)	CWDM 1000BASE-X	GE		SMF	COM	Yes
DWDM-SFP-xxxx= (40 freq)	DWDM 1000BASE-X	GE		SMF	COM	Yes
<a href="#">SFP-GE-S</a>	1000BASE-SX	GE	550m	MMF	EXT	Yes
<a href="#">SFP-GE-L</a>	1000BASE-LX/LH	GE	550m/10km	MMF/SMF	EXT	Yes
<a href="#">SFP-GE-Z</a>	1000BASE-ZX	GE	70km	SMF	EXT	Yes
<a href="#">GLC-SX-MM</a>	1000BASE-SX	GE	550m	MMF	COM	No
<a href="#">GLC-LH-SM</a>	1000BASE-LX/LH	GE	550m/10km	MMF/SMF	COM	No
<a href="#">GLC-ZX-SM</a>	1000BASE-ZX	GE	70km	SMF	COM	Yes
<a href="#">GLC-T</a>	1000BASE-T	GE	100m	Copper	EXT	NA
<a href="#">GLC-TE</a>	1000BASE-T	GE	100m	Copper	EXT	NA
GLC-T-RGD	1000BASE-T	GE	100m	Copper	IND	NA

MMF = multimode fiber

SMF = Single-mode fiber

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