Cisco Catalyst IE3400 Rugged Series

Contents

The Cisco Catalyst® IE3400 Rugged Series ushers in mainstream adoption of advanced Gigabit Ethernet connectivity in a compact form-factor, modular switch purpose-built for a wide variety of extended enterprise and industrial applications.

Product Overview

The Cisco Catalyst IE3400 Rugged Series switches deliver advanced, high-speed Gigabit Ethernet connectivity in a compact form factor, and are designed for a wide range of industrial applications where hardened products are required. The modular design of the Cisco Catalyst IE3400 Rugged Series offers the flexibility to expand to up to 26 ports of Gigabit Ethernet with a range of expansion module options. The platform is built to withstand harsh environments in manufacturing, energy, transportation, mining, smart cities, and oil and gas. The IE3400 platform is also ideal for extended enterprise deployments in outdoor spaces, warehouses, and distribution centers.

The IE3400 Series runs Cisco IOS® XE, a next-generation operating system with built-in security and trust, featuring secure boot, image signing, and the Cisco® Trust anchor module. Cisco IOS XE also provides API-driven configuration with open APIs and data models.

The Cisco Catalyst IE3400 Rugged Series can be managed with powerful management tools such as Cisco DNA Center and Industrial Network Director, and can be easily set up with a completely redesigned, user-friendly, modern GUI tool called WebUI. The platform also supports Flexible NetFlow (FNF) for real-time visibility into traffic patterns and threat analysis with Cisco Stealthwatch®.

Figure 1.

Features and Benefits

Table 1. IE3400 Features and Benefits

Feature	Benefit
Robust industrial design	• Built for harsh environments and temperature ranges (-40°C to +75°C) • Fanless, convection-cooled with no moving parts for extended durability • Hardened for vibration, shock and surge, and electrical noise immunity • Complies with multi-industry specifications for automation, ITS, and substation environments • Improves uptime, performance, and safety of industrial systems and equipment • Alarm I/O for monitoring and signaling to external equipment
Full Gigabit Ethernet interfaces	• Provides secure access for new high-speed applications in the industrial space • Packs up to 10 ports of GE - 2x1 Gigabit Small Form-Factor Pluggable (SFP) uplinks plus 8x1 Gigabit RJ45 downlinks in a small form-factor base system • Expandable to 26 ports of GE by attaching one of 7 compatible modules (copper, fiber options) • Connects high-speed wireless access points (802.11n, 802.11ac) • Enables High-Definition (HD) IP cameras and Programmable Logic Controllers (PLC) • Supports delay-sensitive applications and time-sensitive networks • Delivers multiple rings and redundant ring topology for new network configurations • Extends geographical scalability where longer-distance connectivity is required
User-friendly WEB-based UI (WebUI)	• Allows for easy configuration and monitoring • Eliminates the need for more complex terminal emulation programs • Reduces the cost of deployment
SwapDrive zero-configuration replacement	• True zero-configuration and simple switch replacement in case of a failure • No networking expertise required • Helps ensure fast recovery
Flexible NetFlow (FNF)	• Provides enhanced flow and threat visibility • Enables optimization of the network infrastructure, reduces operation costs, and improves capacity planning and security incident detection

Products Overview

Table 2. Product Feature Sets

Product family	Platforms supported	Cisco IOS Software images (feature sets) supported
IE3000	IE3400	Network Essentials

Product Specifications

Table 3 highlights the hardware configuration for Cisco Catalyst IE3400 Rugged Series switches.

Table 3. IE3400 Hardware Configurations

Hardware specifications	Cisco IE-3400-8T2S-E
Total Ethernet ports	10
100/1000 SFP-based ports	2
10/100/1000 RJ45 Copper Ports	8
Removable storage	SD card[1]
Alarms	2 alarms in, 1 alarm out
Console ports	1 RS-232 (via RJ-45), 1 USB Mini Type B
Power inputs	Dual DC power input

[1] The SD card is optional and is not shipped by default with the switch.

Figure 2.

Table 4 highlights the hardware configuration for Cisco Catalyst IE3400 Rugged Series modules.

Table 4. Hardware Configuration for Cisco Catalyst IE3400 Rugged Series Modules

Product ID	Total ports on expansion module	Copper (RJ45)	PoE/PoE+	SFP	Total system ports (including expansion module)
IEM-3400-8T=	8	8	-	-	18
IEM-3400-8S=	8	-	-	8	18
IEM-3300-8S=	8	-	-	8	18
IEM-3300-8T=	8	8	-	-	18
IEM-3300-16T=	16	16	-	-	26
IEM-3300-6T2S=	8	6	-	2	18

Product ID	Total ports on expansion module	Copper (RJ45)	PoE/PoE+	SFP	Total system ports (including expansion module)
IEM-3300-14T2S=	16	14	-	2	26

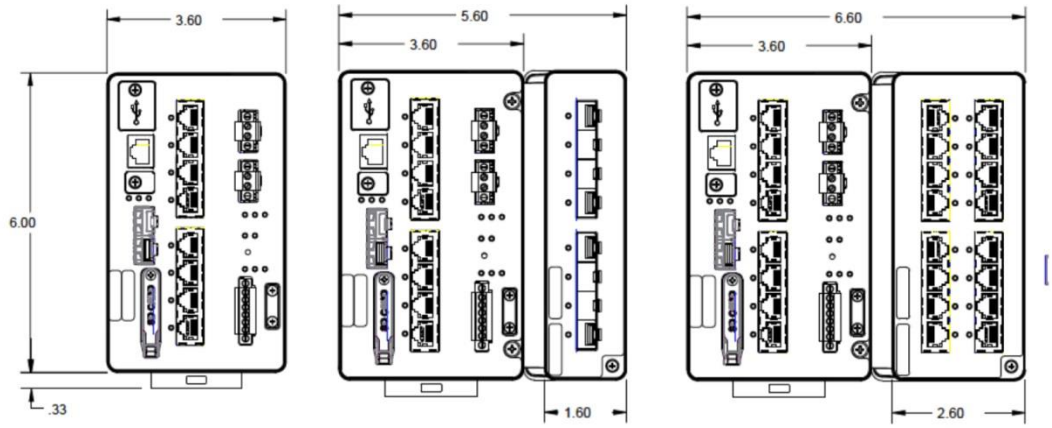
Table 5 highlights the physical configuration for Cisco Catalyst IE3400 Rugged Series switches and modules.

Table 5. IE3400 Physical Configurations

Product ID	Dimensions (H x W x D)	Weight	Mounting
IE-3400-8T2S-E	6 in. X 3.6 in. X 5.3 in.	3.75 lbs	DIN rail
IEM-3300-8T=	6 in. X 2.4 in. X 5.3 in.	1.94 lbs	DIN rail
IEM-3300-8S=	6 in. X 2.4 in. X 5.3 in.	2.06 lbs	DIN rail
IEM-3300-16T=	6 in. X 3.4 in. X 5.3 in.	2.06 lbs	DIN rail
IEM-3300-6T2S=	6 in. X 2.4 in. X 5.3 in.	1.94 lbs	DIN rail
IEM-3300-14T2S=	6 in. X 3.4 in. X 5.3 in.	2.06 lbs	DIN rail
IEM-3400-8T=	6 in. X 2.4 in. X 5.3 in.	1.94 lbs	DIN rail
IEM-3400-8S=	6 in. X 3.4 in. X 5.3 in.	3.06 lbs	DIN rail

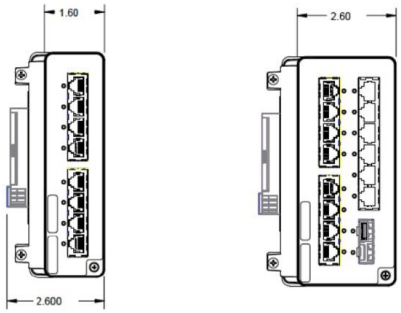
System Dimensions

Front View



With No modules | With Single Wide Module | With Double Wide Module

Module Dimensions – Front View



Single wide module | Double wide module

Top View

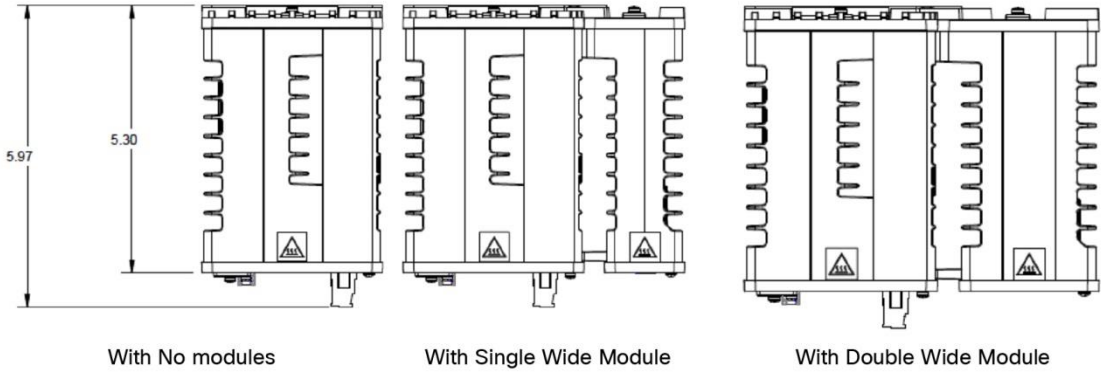


Table 6 highlights the performance and scalability features for Cisco Catalyst IE3400 Rugged Series switches.

Table 6. IE3400 Performance and Scalability Features

Features	Cisco IE-3400-8T2S-E
Forwarding rate	Line rate for all ports and all packet sizes
Number of queues	8
Unicast MAC addresses	8K
Internet Group Management Protocol (IGMP multicast groups	1K
VLAN IDs	256
Spanning Tree Protocol (STP) instances	128
Access control lists (PACL)	1.5K
DRAM	4 GB

Features	Cisco IE-3400-8T2S-E
Flash [User Accessible]	1.5 GB
SD card capacity[1]	4 GB

[1] The SD card is optional and is not shipped by default with the switch.

Table 7 highlights the power specifications for Cisco Catalyst IE3400 Rugged Series switches.

Table 7. IE3400 Power Specifications

	Cisco IE-3400-8T2S-E
Input voltage range	Redundant DC input voltage: 9.6 to 60VDC
Input current	5.4A
Power consumption[1]	39W

[1] Power consumption is measured at 12V.

Table 8 highlights the power specifications for supported expansion modules in Cisco Catalyst IE3400 Rugged Series switches.

Table 8. IEM3300/IEM3400 Modules Power Consumption

Product ID	Power Consumption[1]
IEM-3300-8T=	7W
IEM-3300-8S=	13W
IEM-3300-16T=	13W
IEM-3300-6T2S=	8W
IEM-3300-14T2S=	15W
IEM-3400-8T=	12W
IEM-3400-8S=	18W

[1] Power consumption is measured at 12V.

Table 9 highlights the power supply options for Cisco Catalyst IE3400 Rugged Series switches.

Table 9. Power Supply Options

Product ID	Wattage	Rated nominal input operating range
PWR-IE50W-AC=	50W	AC 100-240V/1.25A 50-60Hz or DC 125-250V/1.25A
PWR-IE50W-AC-L=[2]	50W	AC 100-240V/1.0A 50-60Hz

Product ID	Wattage	Rated nominal input operating range
PWR-IE65W-PC-AC=	65W	AC 100-240V/1.4A 50-60Hz or DC 125-250V/1.0A
PWR-IE65W-PC-DC=	65W	DC 24-48VDC/4.5A
PWR-IE170W-PC-AC=	170W	AC 100-240V/2.3A 50-60Hz or DC 125-250V/2.1A
PWR-IE170W-PC-DC=	170W	DC 12-54VDC/2.3A
PWR-IE240W-PCAC-L=[2]	240W	AC 100-240V/2.5A 50-60Hz
PWR-IE480W-PCAC-L=[2]	480W	AC 100-240V/5.0A 50-60Hz

[2] The power supplies are not certified for smart grid and hazardous locations. These power supplies are IP20 rated.

Table 10 highlights the supported software features for Cisco Catalyst IE3400 Rugged Series switches.

Table 10. Key Supported Software Features

Features	Wattage
Layer 2 switching	IEEE 802.1, 802.3 standard, NTP, UDLD, CDP, LLDP, unicast MAC filter, VTPv2, VTPv3, EtherChannel, voice VLAN, PVST+, MSTP, and RSTP
Multicast	IGMPv1, v2, v3 snooping, IGMP filtering, IGMP querier
Management	WebUI, MIB, SmartPort, SNMP, syslog, DHCP server, SPAN session, RSPAN, Express setup
Security	Port security, 802.1x, Dynamic Host Configuration Protocol (DHCP) snooping, dynamic ARP inspection, IP source guard, guest VLAN MAC authentication bypass, 802.1x multidomain authentication, storm control - unicast, multicast, broadcast, SCP, SSH, SNMPv3, TACACS+, RADIUS server/client, MAC address notification, BPDU guard, Port ACL, SUDI 2099 (Secure Unique Device identifier), Flexible NetFlow (FNF)
Quality of Service (QoS)	Ingress policing, rate limit, egress queuing/shaping, auto QoS
Layer 2 IPv6	IPv6 host support, SNMP over IPv6
Layer 3 routing	Inter-VLAN routing, Static routing
Industrial Ethernet	CIP Ethernet/IP, IEEE 1588 PTP v2
Redundancy	Resilient Ethernet Protocol (REP) ring
Utility	Dying gasp, SCADA protocol classification - GOOSE messaging, MODBUS TCP/IP
Automation	YANG, NETCONF, RESTCONF

Table 11 highlights the compliance specifications for Cisco Catalyst IE3400 Rugged Series switches.

Table 11. Compliance Specifications[1]

Specifications	
Electromagnetic emissions	FCC 47 CFR Part 15 subpart B Class A EN 55032/CISPR 32 Class A VCCI Class A AS/NZS CISPR 32 Class A CISPR 11 Class A ICES 003 Class A CNS 13438 Class A KN 32 Class A EN 300 386
Electromagnetic immunity	CISPR 24 EN 55024 KN 35 EN 61000-4-2 Electro Static Discharge (air – 15kV, contact – 8kV) EN 61000-4-3 Radiated RF (10V/m UTP, 20V/m STP) EN 61000-4-4 Electromagnetic Fast Transients (4kV) EN 61000-4-5 Surge (2KV/1KV Power, 4KV STP) EN 61000-4-6 Conducted RF (10Vrms UTP) EN 61000-4-8 Power Frequency Magnetic Field (1000A/m) EN 61000-4-10 Pulsed Magnetic Field (30 A/m) EN 61000-4-16 Conducted CM Disturbances (30V, Cont/ 300V, 1 sec) EN 61000-4-17 Ripple Immunity DC Power (10%) EN 61000-4-18 Damped Oscillatory Wave (2.5kV, 1MHz) EN-61000-4-29 DC Voltage Dips and Interruptions
Industry standards	EN 61000-6-2 Industrial Immunity EN 61000-6-4 Industrial Emissions EN 61000-6-1 Light Industrial Immunity EN 61326-1 Measurement, Control & Laboratory Equipment IEEE 1613 Electric Power Stations Communications Networking[2] EN/IEC 61850 -3 Electric Substations Communications Networking[2] EN50121-4 Railway – Signaling and Telecommunications Apparatus[2] ODVA Industrial EtherNet/IP IP30

Specifications	
Safety standards and certifications	Information Technology Equipment: UL/CSA 60950-1,CB to IEC 60950-1 with all country deviations UL/CSA 62368-1, CB to IEC 62368-1 with all country deviations[2] Industrial floor (control equipment): UL/CSA 61010-2-201 CB report and certificate to IEC/EN 61010-2-201 Hazardous Locations[2]: UL121201(Class I, Div 2, groups A-D) CSA 213 (Class I, Div 2, groups A-D) UL/CSA 60079-0, -15 (Class I, Zone 2, Gc/IIC) IEC 60079-0, -15 IECEx test report (Class I, Zone 2, Gc/IIC) EN 60079-0, -15 ATEX certifícate (Class I, Zone 2, Gc/IIC) cabinet enclosure required
Operating environment	Operating temperature: -40°C to +70°C (40 LFM vented enclosure) -40°C to +60°C (sealed enclosure) -34°C to +75°C (Min. 200 LFM fan or blower-equipped enclosure) +85°C (type tested for 16 hours) Altitude: up to 15,000 feet
Storage environment	Temperature: -40°C to +85°C Altitude: 15,000 feet IEC 60068-2-14
Humidity	Relative humidity of 5% to 95% non-condensing IEC 60068-2-78 IEC 60068-2-30
Shock and vibration	IEC 60068-2-27 (operational shock, 50G, 3ms, half sine) IEC 60068-2-27 (non-operational shock, 65-80G, 9ms, trapezoidal)
Corrosion	EN 60068-2-52 (salt fog)[2] EN 60068-2-60 (flowing mixed gas) [2]
Warranty	Five-year limited hardware warranty on all IE3400 product IDs and all Industrial Ethernet (IE) power supplies. See more information under the Warranty section

[1] For more detailed information on safety approved power/thermal ratings refer the Hardware Installation Guide.

[2] Test in progress.

Table 12 highlights Mean-Time-Between-Failures (MTBF) for Cisco Catalyst IE3400 Rugged Series switches.

Table 12. MTBF Information

Product ID	Rated MTBF (hours)
IE-3400-8T2S-E	549,808
IEM-3300-8T=	3,041,040

Product ID	Rated MTBF (hours)
IEM-3300-8S=	6,810,960
IEM-3300-16T=	1,594,210
IEM-3300-6T2S=	3,729,130
IEM-3300-14T2S=	1,865,300
IEM-3400-8T=	3,385,166
IEM-3400-8S=	5,572,640

Table 13 highlights information about management and standards for Cisco Catalyst IE3400 Rugged Series switches.

Table 13. Management and Standards

Description	Specifications	
IEEE standards	IEEE 802.1D MAC Bridges, STP IEEE 802.1p Layer2 COS prioritization IEEE 802.1q VLAN IEEE 802.1s Multiple Spanning-Trees IEEE 802.1w Rapid Spanning-Tree IEEE 802.1x Port Access Authentication IEEE 802.1AB LLDP IEEE 802.3ad Link Aggregation (LACP) IEEE 1588v2 PTP Precision Time Protocol	IEEE 802.3ah 100BASE-X SMF/MMF only IEEE 802.3x full duplex on 10BASE-T IEEE 802.3 10BASE-T specification IEEE 802.3u 100BASE-TX specification IEEE 802.3ab 1000BASE-T specification IEEE 802.3z 1000BASE-X specification IEEE 802.3af Power over Ethernet IEEE 802.3 at Power over Ethernet plus
RFC compliance	RFC 768: UDP RFC 783: TFTP RFC 791: IPv4 protocol RFC 792: ICMP RFC 793: TCP RFC 826: ARP RFC 854: Telnet RFC 959: FTP RFC 1157: SNMPv1 RFC 1901,1902-1907 SNMPv2 RFC 2273-2275: SNMPv3 RFC 2571: SNMP Management RFC 1166: IP Addresses RFC 1256: ICMP Router Discovery RFC 1305: NTP RFC 951: BootP	RFC 1492: TACACS+ RFC 1493: Bridge MIB Objects RFC 1534: DHCP and BOOTP interoperation RFC 1542: Bootstrap Protocol RFC 1643: Ethernet Interface MIB RFC 1757: RMON RFC 2068: HTTP RFC 2131, 2132: DHCP RFC 2236: IGMP v2 RFC 3376: IGMP v3 RFC 2474: DiffServ Precedence RFC 3046: DHCP Relay Agent Information Option RFC 3580: 802.1x RADIUS RFC 4250-4252 SSH Protocol

Description	Specifications	
SNMP MIB objects	802.1X MIB	CISCO-IF-EXTENSION-MIB
	CISCO-DHCP-SNOOPING-MIB	CISCO-IMAGE-MIB
	CISCO-UDLDP-MIB	CISCO-MEMORY-POOL-MIB
	CISCO-ENVMON-MIB	CISCO-PING-MIB
	CISCO-PRIVATE-VLAN-MIB	SNMP-TARGET-EXT-MIB
	CISCO-PAE-MIB	IF_MIB
	Cisco-Port-QoS-MIB	ENTITY-MIB
	CISCO-ERR-DISABLE-MIB	LLDP-EXT-PNO-MIB
	CISCO- PROCESS-MIB	NOTIFICATION-LOG-MIB
	LLDP-MIB	OLD-CISCO-CPU-MIB
	CiscoMACNotification-MIB	ETHERLIKE-MIB
	CISCO-CONFIG-COPY-MIB	OLD-CISCO-SYSTEM-MIB
	LLDP-MED-MIB	OLD-CISCO-MEMORY-MIB
	Bridge-MIB	RMON-MIB
	CISCO-CAR-MIB	SNMP-COMMUNITY-MIB
	CISCO-LAG-MIB	SNMP-FRAMEWORK-MIB
	CISCO-SYSLOG-MIB	SNMP-PROXY-MIB
	CISCO-FTP-CLIENT-MIB	SNMP-MPD-MIB
	CISCO-VLAN-IFTABLE-RELATIONSHIP-MIB	SNMP-NOTIFICATION-MIB
	CISCO-VLAN-MEMBERSHIP-MIB	SNMP-TARGET-MIB
	Cisco-REP-MIB	SNMP-USM-MIB
	CISCO-PORT-STORM-CONTROL-MIB	CISCO-DATACOLLECTION-MIB
	CISCO-CDP-MIB	CISCO-CABLE-DIAG-MIB
	CISCO-IP-STAT-MIB	CISCO-PORT-SECURITY-MIB
	CISCO-LICENSE-MGMT-MIB	BULK_FILE_MIB
	CISCO-STP-EXTN-MIB	NAC-NAD-MIB
	CISCO-VTP-MIB	CISCO-ENTITY-ALARAM-MIB
	IEEE8023-LAG-MIB	SNMP-VIEW-BASED-ACM-MIB
	SMON-MIB	CISCO-MAC-AUTH-BYPASS-MIB
	CISCO-ACCESS-ENVMON-MIB	CISCO-AUTH-FRAMEWORK-MIB
	CISCO-CALLHOME-MIB	CISCO-BRIDGE-Ext-MIB
	CISCO-CONFIG-MAN-MIB	SNMPv2-MIB
	CISCO-FLASH-MIB	CISCO-ENTITY-VENDORTYPE-OID-MIB
		CISCO-PRODUCTS-MIB

Table 14 highlights information about supported SFPs for Cisco Catalyst IE3400 Rugged Series switches.

Table 14. SFP Support

Product ID	Specifications	SFP type	Temperature range[1]	Maximum distance	Cable type	Dom support
GLC-FE-100FX-RGD	100BASE-FX	FE	IND	2 km	Multimode fiber (MMF)	No
GLC-FE-100LX-RGD	100BASE-LX10	FE	IND	10 km	Single-Mode Fiber (SMF)	No
GLC-FE-100FX	100BASE-FX	FE	COM	2 km	MMF	No
GLC-FE-100LX	100BASE-LX10	FE	COM	10 km	SMF	No
GLC-FE-100EX	100BASE-EX	FE	COM	40 km	SMF	No
GLC-FE-100ZX	100BASE-ZX	FE	COM	80 km	SMF	No
GLC-FE-100BX-U	100BASE-BX10	FE	COM	10 km	SMF	No
GLC-FE-100BX-D	100BASE-BX10	FE	COM	10 km	SMF	No
GLC-SX-MM-RGD	1000BASE-SX	GE	IND	220-550 m	MMF	Yes
GLC-LX-SM-RGD	1000BASE-LX/LH	GE	IND	550 m/10 km	MMF/SMF	Yes
GLC-ZX-SM-RGD	1000BASE-ZX	GE	IND	70 km	SMF	Yes
SFP-GE-S	1000BASE-SX	GE	EXT	220-550 m	MMF	Yes
SFP-GE-L	1000BASE-LX/LH	GE	EXT	550 m/10 km	MMF/SMF	Yes
SFP-GE-Z	1000BASE-ZX	GE	EXT	70 km	SMF	Yes
GLC-BX-U	1000BASE-BX10	GE	COM	10 km	SMF	Yes
GLC-BX-D	1000BASE-BX10	GE	COM	10 km	SMF	Yes
GLC-SX-MM	1000BASE-SX	GE	COM	220-550 m	MMF	Yes
GLC-LH-SM	1000BASE-LX/LH	GE	COM	550 m/10 km	MMF/SMF	Yes
GLC-ZX-SM	1000BASE-ZX	GE	COM	70 km	SMF	Yes
GLC-EX-SMD	1000BASE-EX	GE	COM	40 km	SMF	Yes
GLC-TE	1000BASE-T	GE	EXT	100 m	Cat5e	No

[1] If non-industrial SFPs (EXT, COM) are used, the switch operating temperature must be derated.

Ordering Information

Table 15 lists the ordering information for fixed system, expansion modules and memory that are commonly used with the Cisco Catalyst IE3400 switches.

Table 15. Ordering Information

Product ID	Description
IE-3400-8T2S-E	Cisco Catalyst IE3400 Rugged Series Advanced Modular System
IEM-3300-8T=	Cisco Catalyst IE3300 Rugged 8 Port GE Copper Exp Module
IEM-3300-8S=	Cisco Catalyst IE3300 Rugged 8 Port SFP Fiber Exp Module
IEM-3300-16T=	Cisco Catalyst IE3300 Rugged 16 Port GE Copper Exp Module
IEM-3300-6T2S=	Cisco Catalyst IE3300 Rugged 6 Port GE Copper + 2 Port SFP Module
IEM-3300-14T2S=	Cisco Catalyst IE3300 Rugged 14 Port GE Copper + 2 Port SFP Module
IEM-3400-8T=	Cisco Catalyst IE3400 Rugged 8 Port GE Adv Exp Module
IEM-3400-8S=	Cisco Catalyst IE3400 Rugged 8 Port SFP Fiber Adv Exp Module
SD-IE-4GB=	IE 4GB SD memory card for IE
STK-RACK-DINRAIL=	19" DIN Rail mount kit

Warranty

Five-year limited HW warranty on all IE3400 PIDs and all IE Power Supplies (see table 9 above). See link below for more details on warranty https://www.cisco.com/c/en/us/products/warranties/warranty-doc-c99-740591.html.

Cisco Services

https://www.cisco.com/web/services/.

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C78-741760-00 05/19