

Technical Specifications

This appendix provides the technical specifications for the Cisco IE3500 Heavy Duty Series Switches.

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Operating Temperature Specifications

Note The safety certifications apply only to ambient temperatures under 140°F (60°C). However, the Cisco IE3500 Heavy Duty Series Switches can function in substation and traffic signal installations under the environmental conditions described in the table.

The table lists the operating temperatures for the Cisco IE3500 Heavy Duty Series Switches in three different environments.

Table 1: Operating Temperature for the Cisco IE3500H switches

	Industrial Automation and Other Locations Requiring Enclosures	**Substation**	**Traffic Signal**
Enclosure types	Sealed enclosures For example: NEMA 4, NEMA 4X, NEMA 12, NEMA 13, IP54, and IP66 -40 °C to +60 °C (-40 °F to +140 °F)	Vented enclosures For example: NEMA 1, IP66, and IP67 -40 °C to +70 °C (-40 °F to +158 °F)	Fan or blower-equipped enclosures For example: NEMA TS-2. -34 °C to +75 °C (-29.2 °F to +167 °F) **Note** The minimum airflow is 200 LFM[1].

[1] LFM= linear feet per minute.

Technical Specifications

Table 2: Cisco IE3500H Technical Specifications

Environment	Values
Storage temperature	–40 to 85 °C (–40 to 185 °F)
Operating temperature (measured inside the enclosure, 1 inch below the bottom surface of the switch)	–40 to 75°C (–40 to 167 °F) **Caution** Operating temperatures exceeding 60 °C are not covered by the product safety certifications and approvals. • Sealed Enclosure Operating: -40 °C to +60 °C (-40 °F to +140 °F) • Vented Enclosure Operating: -40 °C to +70 °C (-40 °F to +158 °F) • 200 LFM or more Fan or Blower equipped Enclosure Operating: -34 °C to +75 °C (-29.2 °F to +167 °F) • Type-tested to +85C for 16 hours: -40 °C to +85 °C (-40 °F to +185 °F)
Operating humidity	5 to 95% (non-condensing)
Ingress Protection/Type Ratings	IP66 and IP67 Rated for protection against dust and submersion in water NEMA Type 4X **Caution** IP66 and IP67, NEMA Type 4X compliant only when all IP67 cables are mated and torqued appropriately or with the supplied dust caps attached.
Operating altitude	Up to 40,000 feet (4570 meters)
Storage altitude	Up to 40,000 feet (4570 meters)

Connectors and Cabling

The connectors and cabling for the Cisco IE3500 Heavy Duty Series Switches are below.

Table 3: Cisco IE3500H Cables and Connectors

Data Ports	Downlink connections • Copper 100 Base-T M12 D-coded 4-pole (pin) cable: M12 Male and/or M12/RJ-45 connector • Copper GE M12 X-coded 8-pole (pin) shielded cable: M12 Male and/or M12/RJ-45 connector • Copper 2.5 GE M12 X-coded 8-pole (pin) shielded cable: M12 Male and/or M12/RJ-45 connector • For IE-3500H-12P2MU2X: 2.5G (mGig) Copper M12 X-coded 8-pole (pin) shielded cable: M12 Male and/or M12/RJ-45 connector Uplink connections • For IE-3500H-12P2MU2X: 1G/10G SFP Fiber-optic cable: LC or SC connector (for fiber-optic cable) with SFP/SFP+ module. **Note** The SFP/SFP+ module determines the type of fiber-optic cable (LC or SC) to be used with the switch.
Alarm Port	• Copper M12 A-coded 5 Pin connector
Power Input	• Mini-Style 4-pin connector for power input
Console Cable: CAB-CONSOLE-M12=	• Console Cable 6 ft with M12 and DB9F for IE3500H Switch

Torque Specifications

The torque specifications for Cisco IE3500 Heavy Duty Series Switches are below.

Table 4: Cisco IE3500H torque specs

Alarm, Console, Ethernet ports (M12 Connectors)	• 4.5 to 7.0 in-lbs (0.5 to 0.8 Nm)
M12 Connector Dust Cap (Alarm, Console, Ethernet ports)	• 3.5 in-lbs (0.4 Nm)
Power Supply Connector (Mini-Change)	• 10 in-lbs (1.13 Nm)
SD Card Access Door Captive Screws	• 16 to 19.5 in-lbs (1.8 to 2.2Nm)

SFP Gland	• Adapter body: 13 to 17 in-lbs (1.5 to 1.9 Nm) • Gland nut: 15 to 22 in-lbs (1.7 to 2.4 Nm)

Alarm Ratings

The alarm ratings for the Cisco IE3500 Heavy Duty Series Switches are below.

Table 5: Cisco IE3500H Alarm Ratings

Alarm Ratings	Specification
Alarm	One alarm output relay using an M12 A Coded 5 Pin connector (Max. rated: 30 Vdc @ 1A / 60 Vdc @ 0.5A)