Summit X650 Series

The Summit X650 series switch is a purpose-built top-of-rack switch designed for emerging 10 Gigabit Ethernet-enabled servers deployed in enterprise data centers. Summit X650 helps optimize new server deployments while providing a seamless migration path from existing Gigabit Ethernet-based servers to 10 Gigabit Ethernet-based high-performance servers to start the transition to the new virtualized environment.

Summit X650 provides high density for 10 Gigabit Ethernet in a small 1RU form factor for up to 32 ports in one system and 192 ports in a stacked system. Summit X650 offers two advanced 10 Gigabit Ethernet technologies: 10GBASE-T and SFP+ to accommodate the needs for both copper twisted pair cable and optical fiber-based 10 Gigabit Ethernet.

With its versatile design, Summit X650 provides high density Layer 2/3 switching with low latency cut-through switching and IPv4 and IPv6 unicast and multicast routing to enable enterprise aggregation and core backbone deployment in AC-powered and DC-powered environments.

Summit X650 simplifies network operation with the ExtremeXOS modular OS, used amongst Extreme Networks Ethernet switches. The ExtremeXOS operating system provides high availability and simplicity with one OS everywhere in the network.

Target Applications

- Top-of-rack switch for servers in enterprise data centers
- High-performance 10 GbE core switch for a small network
- High-performance 10 GbE aggregation switch in a traditional three-tiered network
- An ideal choice for 10 GbE Carrier Ethernet access and PON OLT aggregation
- Interconnect switch providing low latency connections for High Performance Cluster Computing (HPCC)

Summit® X650 Series—The ultimate top-of-rack 10 Gigabit Ethernet switch.

High-Performance Switching and Routing

- 24-port 10 Gigabit Ethernet non-blocking switching in 1 Rack Unit (RU) form factor with standard option to provide 40 Gbps SummitStack™ stacking and 4-port Gigabit SFP ports
- Optional 8-port 10 Gigabit Ethernet module to provide 80 Gbps uplinks and 40 Gbps SummitStack
- Optional 4-port 40 Gigabit Ethernet module to provide 160 Gbps uplinks and SummitStack-V160 or SummitStack-V320
- Optional 256 Gbps stacking for up to 192 10 Gigabit Ethernet ports in one logically integrated unit, or optional SummitStack-V long-reach stacking via 10 GbE ports
- Optional 512 Gbps stacking for connecting two Summit X650 switches to provide 48 non-blocking 10 Gigabit Ethernet ports

Versatile Architecture

- ExtremeXOS® Operating System—a highly available, secure, open and extensible network foundation
- 10 Gigabit Ethernet over UTP cable and SFP+ for fiber and passive copper direct host attach installation
- Dual Speed support on 10 Gigabit Ethernet and Gigabit Ethernet on 10GBASE-T and SFP+ ports providing smooth migration from Gigabit Ethernet to 10 Gigabit Ethernet

High Availability

- ExtremeXOS modular OS for highly available network operation
- Extends high availability across switches with Multi-Switch Link Aggregation (M-LAG)
- Carrier-grade redundant networking protocol including Ethernet Automatic Protection Switching (EAPS)
- Internal redundant AC/DC power supply and field replaceable fan tray

Comprehensive Security

- Robust MAC and IP security framework
- Threat detection and response with CLEAR-Flow Security Rules Engine
- Common Criteria EAL3+ Certification

Make Your Network Mobile

High-Performance Switching and Routing

Summit X650 offers intelligent switching and routing with exceptional high-performance stacking technology for next generation enterprise data centers—as well as dedicated 10 Gigabit Ethernet uplink capabilities powered by the ExtremeXOS modular OS. With its low packet forwarding latency, Summit X650 helps enhance the data center and the HPCC environment.

10 Gigabit Ethernet Switching

Summit X650 offers 24-port 10 Gigabit Ethernet non-blocking switching with IEEE 802.3an standard-based 10GBASE-T interfaces or 10GBASE-X SFP+ interfaces. Summit X650 is capable of Layer 2 and Layer 3 forwarding at 363 million packets per second forwarding rate in a small 1RU form factor, enabling the next generation high-performance server deployment in data centers.

With its flexible architecture provided by the Versatile Interface Modules (VIMs), you can configure Summit X650 to best suit your network needs (see Figure 1).

SummitStack Support

Summit X650 supports compatible SummitStack solutions available in the popular Summit X250e, X450e, X450a, X460 and X480 series switches. Support for SummitStack offers a great migration path from gigabit-enabled servers to high-performance 10 gigabit-enabled servers. You can configure two SummitStack 40G stacking ports to provide ease of management for gigabit and 10 gigabit mixed stacking. SummitStack is provided through the standard VIM1-SummitStack module installed by default.

10 Gigabit Optimized Stacking Support

For higher density 10 Gigabit Ethernet requirements now or in the future, Summit X650 provides a 10 gigabit optimized stacking solution. Summit X650 offers an optional SummitStack256 module which provides up to 256 Gbps full duplex stacking bandwidth. With the SummitStack256 solution, Summit X650 can provide 256 Gbps stacking bandwidth optimized for high-density 10 Gigabit Ethernet switching and provides up to 192 10 Gigabit Ethernet ports with only 8RU of height in a fully redundant configuration. Summit X650 also offers an optional 48-port 10 Gigabit Ethernet non-blocking configuration by stacking two Summit X650 switches together with an optional VIM1-SummitStack512 module.

SummitStack-V–Flexible Stacking Over 10 Gigabit Ethernet

SummitStack-V capability utilizes 10 GbE ports as stacking ports, enabling the use of standard cabling and optics technologies used for 10 GbE such as XFP, SFP+, 10GBASE-T and XENPAK. SummitStack-V provides long-distance stacking connectivity of up to 40 km while reducing the cable complexity of implementing a stacking solution. SummitStack-V enabled 10 GbE ports must be physically direct-connected. SummitStack-V is compatible with Summit X450e, X450a, X460, X480, X650 and X670/X670V switches running the same version of ExtremeXOS.

SummitStack-V80, V160, & V320 – Flexible Stacking Over 40 Gigabit Ethernet

SummitStack-V80, V160, & V320 capability utilizes 40 GbE ports as stacking ports, enabling the use of standard cabling and optics technologies used for 40 GbE such as QSFP+. SummitStack- V80, V160, & V320 enabled 40 GbE ports must be physically direct-connected. SummitStack- V80, V160, & V320 is compatible with Summit X460, X480, X650 and X670/X670V switches running the same version of ExtremeXOS.

Dedicated Uplinks at 160 Gbps

Summit X650 can support 4 ports of 40 Gigabit Ethernet by installing the optional VIM3-40G4X. These ports can be used 40 GbE data ports or broken out into 4 ports each of 10 GbE using a QSFP+ to SFP+ breakout cable. These ports can also be used for SummitStack V80, V160, or V320.

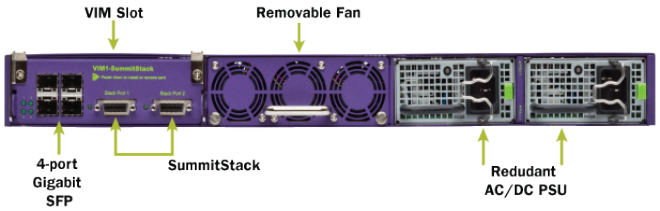
Summit X650 can also support an additional 8-ports of 10 Gigabit Ethernet by installing the optional VIM-10G8X module which offers 8-port 10 Gigabit Ethernet SFP+ ports as well as SummitStack 40G ports. With this option, you can maximize the number of interfaces for servers up to 24 ports while using the dedicated 8-port 10 Gigabit Ethernet for uplink connectivity. The optional VIM1-10G8X provides ideal bandwidth to the backbone by offering 80 Gbps aggregated bandwidth. With this 8-port 10 Gigabit Ethernet SFP+ module, Summit X650 can support up to 32 ports of 10 Gigabit Ethernet in a 1RU form factor. This option provides 3:1 oversubscription from front ports (total 24 ports) to uplink ports (total 8 ports) and maximizes server port density.

VIM Options	VIM1-SummitStack (default option)	VIM1-10G8X	VIM1-SummitStack256	VIM1-SummitStack512	VIM3-40G4X
Summit X650-24t	24 x 10GBASE-T SummitStack (shared with the last two 10GBASE-T ports) 4 x 1000BASE-X (SFP) 2 x SummitStack (shared with port 23 and 24 10GBASE-T front panel ports)	24 x 10GBASE-T 8 x 10GBASE-X (SFP+) 2 x SummitStack	24 x 10GBASE-T SummitStack256	24 x 10GBASE-T SummitStack512	24 x 10GBASE-T 4 x 40GBASE-X (QSFP+)
Summit X650-24x	24 x 10GBASE-X (SFP+) 4 x 1000BASE-X (SFP) 2 x SummitStack (shared with port 23 and 24 10GBASE-T front panel ports)	24 x 10GBASE-X (SFP+) 8 x 10GBASE-X (SFP+) 2 x SummitStack	24 x 10GBASE-X (SFP+) SummitStack256	24 x 10GBASE-X (SFP+) SummitStack512	24 x 10GBASE-X (SFP+) 4 x 40GBASE-X (QSFP+)

Figure 1: Summit X650 Port Configurations and Options

Accessories

Summit X650 Options: Summit X650 provides highly flexible modular hardware design, and offers customized configurations for your network requirements.



Versatile Interface Modules

VIM1-SummitStack

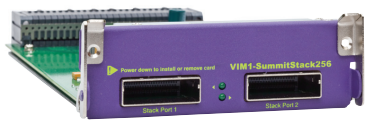
Default option for Summit X650 switches. VIM1-SummitStack provides two SummitStack ports and four Gigabit Ethernet SFP ports. SummitStack ports are shared with the last two 10 Gigabit Ethernet ports in the front panel.

VIM1-10G8X

Option module for high-speed backbone connectivity. VIM1-10G8X provides eight ports of 10 Gigabit Ethernet SFP+ and SummitStack ports. With this option, SummitStack ports are dedicated and not shared with any other port in the switch.

VIM1-SummitStack256

Option module for high-speed stacking. VIM1-SummitStack256 provides SummitStack256 ports. SummitStack256 provides up to 256 Gbps of stacking bandwidth for up to eight Summit X650 switches in a stack.



VIM1-SummitStack512

Option module for high-speed stacking. VIM1-SummitStack512 provides SummitStack512 ports. SummitStack512 provides up to 512 Gbps of stacking bandwidth for up to two Summit X650 switches in a stack and supports 48-port 10 Gigabit Ethernet non-blocking switching.

VIM3-40G4X

Option module for high-speed backbone connectivity. VIM3-40G4X provides 4 ports of 40GBASE-X QSFP+. Each 40GBASE-X QSFP+ port can be used as 40GbE or broken out into 4 ports of 10GBASE-X SFP+ using a fanout cable. 2 of the ports can be used for SummitStack-V80 or V160 and all 4 ports can be used for SummitStack-V320.

Accessories

Power Supply and Fan Tray

Summit X650 AC and DC PSU

The Summit X650 switch does not include a power supply. Summit X650 has two unpopulated power supply slots and can take up to two power supplies in a redundant configuration.

A minimum of one power supply is required for operation.

Summit X650 Fan Tray

Summit X650 switch comes with one fan tray which is field replaceable. A fan tray can be ordered separately as a spare, and in case of fan failure, the fan tray can be replaced by the customer.

Supported Protocols and Standards

A list of supported protocols and standards is available on the Extreme Networks website at: http://www.extremenetworks.com/go/xos

Technical Specifications

Summit X650

General Specifications

Performance

- 488 Gbps aggregated switch bandwidth, 363 Mpps forwarding rate (with VIM1-SummitStack)
- 680 Gbps aggregated switch bandwidth, 506 Mpps forwarding rate (with VIM1-10G8X)
- 736 Gbps aggregated switch bandwidth, 548 Mpps forwarding rate (with VIM1-SummitStack256)
- 800 Gbps aggregated switch bandwidth, 596 Mpps forwarding rate (with VIM3-40G4X)
- 992 Gbps aggregated switch bandwidth, 738 Mpps forwarding rate (with VIM1-SummitStack512)
- 9216 Byte maximum packet size (Jumbo Frame)
- Store-and-Forward and Cut-Through switching support
- Less than 2 micro second latency (64-byte packet)
- 128 load sharing trunks, up to 8 members per trunk
- 4,094 VLANs (Port, Protocol, IEEE 802.1Q)
- 2,048 ingress and 512 egress ACL rules per 12-port block

Forwarding Tables

- Layer 2/MAC Addresses: 32K
- IPv4 Host Addresses: 6K
- IPv4 LPM Entries: 12K
- IPv6 Host Addresses: 3K
- IPv6 LPM Entries: 6K

CPU, Memory

- 64-bit MIPS Processor Dual Core, 1 GHz clock
- 1GB ECC DRAM
- 256GB Compact Flash
- USB port for external USB flash

QoS, Rate Limiting

- 2,048 ingress bandwidth meters/12-port block
- Ingress and egress bandwidth policing/rate limiting per flow/ACL
- 8 QoS egress queues/port
- Egress bandwidth rate shaping per egress queue and per port
- Rate Limiting Granularity: 64 Kbps

LED Indicators

- Per port status LED including power status
- System Status LEDs: management, fan and power

External Ports with VIM1-SummitStack

- 24-port 10GBASE-T (1G/10G dual speed[1]) RJ45, 4-port 1000BASE-X SFP, 2-port SummitStack[2] (Summit X650-24t)
- 24 port 10GBASE-X SFP+ (1G/10G dual speed[1]), 4-port 1000BASE-X SFP, 2-port SummitStack[2] (Summit X650-24x)
- 1-port RS-232c Serial (control port)
- 1 10/100/1000BASE-T out-of-band management port

External Ports with VIM1-10G8X

- 24-port 10GBASE-T (1G/10G dual speed[1]) RJ45, 8-port 10GBASE-X SFP+ (1G/10G dual speed), 2-port SummitStack (Summit X650-24t)
- 32-port 10GBASE-X SFP+ (1G/10G dual speed[1]), 2-port SummitStack (Summit X650-24x with VIM1-SummitStack)
- 1-port RS-232c Serial (control port)
- 1 10/100/1000BASE-T out-of-band management port

External Ports with VIM3-40G4X

- 24-port 10GBASE-T (1G/10G dual speed1) RJ45, 4-port 40GBASE-X QSFP+, 2-port SummitStack (Summit X650-24t)
- 24-port 10GBASE-X SFP+ (1G/10G dual
- speed1), 4-port 40GBASE-X QSFP+,2-port SummitStack (Summit X650-24x with VIM1-SummitStack)
- 1-port RS-232c Serial (control port)
- 1 10/100/1000BASE-T out-of-band management port

Option Slot

- Slot for Versatile Interface Module 1 (VIM1) or Versatile Interface Module 3 (VIM3)

Power Supply Support

- Summit X650 AC PSU

Physical Specifications

Summit X650

- Height: 1.73 Inches/4.4 cm
- Width: 17.4 Inches/44.1 cm
- Depth: 26 Inches/65.5 cm
- Weight:
  Summit X650-24t: 25.6 lbs/11.6 kg
  Summit X650-24x: 22.3 lbs/10.1 kg

VIM1-SummitStack

- Height: 1.7 Inches/4.3 cm
- Width: 5.2 Inches/13.2 cm
- Depth: 9.9 Inches/25.2 cm
- Weight: 1.46 lbs/0.66 kg

VIM1-10G8X

- Height: 1.7 Inches/4.3 cm
- Width: 5.2 Inches/13.2 cm
- Depth: 9.9 Inches/25.2 cm
- Weight: 2.0 lbs/0.91 kg

VIM1-SummitStack256

- Height: 1.7 Inches/4.3 cm
- Width: 5.2 Inches/13.2 cm
- Depth: 9.9 Inches/25.2 cm
- Weight: 2.0 lbs/0.91 kg

VIM1-SummitStack512

- Height: 1.7 Inches/4.3 cm
- Width: 5.2 Inches/13.2 cm
- Depth: 9.9 Inches/25.2 cm
- Weight: 2.0 lbs/0.91 kg

VIM3-40G4X

- Height: 1.7 Inches/4.3 cm
- Width: 5.2 Inches/13.2 cm
- Depth: 9.9 Inches/25.2 cm
- Weight: 3.46 lb (1.57 kg)

Summit X650 FAN module

- Height: 1.65 Inches/4.2 cm
- Width: 4.8 Inches/12.3 cm
- Depth: 6.0 Inches/15.3 cm
- Weight: 0.45 lbs/0.99 kg

Operating Specifications

- Operating Temperature Range:
  0° C to 40° C (32° F to 104° F)
- Operating Humidity: 10% to 93% relative humidity, non-condensing
- Operating Altitude: 0-3,000 meters (9,850 feet)
- Operational Shock (Half Sine):
  30 m/s2 (3 g), 11ms, 60 Shocks
- Operational Random Vibration:
  3-500 MHz @ 1.5g rms

Storage & Transportation Conditions (Packaged)

- Transportation Temperature: -40° C to 70° C (-40° F to 158° F)
- Storage and Transportation Humidity:
  10% to 95% RH, non-condensing
- Packaged Shock (Half Sine): 180 m/s2 (18 g), 6ms, 600 shocks
- Packaged Sine Vibration: 5-62 Hz @ Velocity 5mm/s, 62-500 Hz @ 0.2G
- Packaged Random Vibration:
  5-20 Hz @ 1.0 ASD w/-3dB/oct. from 20-200 Hz
- 14 drops min on sides & corners @ 42" (<15 kg box)

Power: Summit X650-24t (Manufacturing part number 800246-10)

Summit X650-24t with VIM1-SummitStack Module

[AC PSU]

- Nominal Input Ratings: 100 – 240V~, 50/60Hz, 8.0A
- Input Current: 6.89A @ 100V~ (lowline) 2.91A @ 240V~ (highline)
- Heat Dissipation: 689W (2,351 BTU/h)
- Power Consumption: 689W (2,351 BTU/h)

[DC PSU]

- Nominal Input Ratings: 48 – 60V, 24.0A
- Input Current: 12.85A @ 48V~ (lowline) 10.55A @ 60V~ (highline)
- Heat Dissipation: 617W (2,105 BTH/h)
- Power Consumption: 617W (2,105 BTH/h)

Summit X650-24t with VIM1-10G8X Module

[AC PSU]

- Nominal Input Ratings: 100 – 240V~, 50/60Hz, 8.0A
- Input Current: 7.8A @ 100V~ (lowline) 3.78A @ 240V~ (highline)
- Heat Dissipation: 780W (2,661 BTU/h)
- Power Consumption: 780W (2,661 BTU/h)

[DC PSU]

- Nominal Input Ratings: 48 – 60V, 24.0A
- Input Current: 14.61A @ 48V~ (lowline) 12.31A @ 60V~ (highline)
- Heat Dissipation: 701W (2,393 BTU/h)
- Power Consumption: 701W (2,393 BTU/h)

[1] Excludes port #23 and port #24
[2] SummitStack ports on VIM1-SummitStack are shared with the last two 10 Gigabit Ethernet port on front panel (port #23 and port #24)

Technical Specifications

Summit X650-24t with VIM1-SummitStack512 Module

[AC PSU]

- Nominal Input Ratings: 100 – 240V~, 50/60Hz, 8.0A
- Input Current: 7.98A @ 100V~ (lowline) 3.80A @ 240V~ (highline)
- Heat Dissipation: 798W (2,723 BTU/h)
- Power Consumption: 798W (2,723 BTU/h)

[DC PSU]

- Nominal Input Ratings: 48 – 60V, 24.0A
- Input Current: 14.75A @ 48V~ (lowline) 12.5A @ 60V~ (highline)
- Heat Dissipation: 708W (2,416 BTU/h)
- Power Consumption: 708W (2,416 BTU/h)

Power: Summit X650-24t (Manufacturing part number 800320-10)

Summit X650-24t with VIM1-SummitStack Module

[AC PSU]

- Nominal Input Ratings: 100 – 240V~, 50/60Hz, 8.0A
- Input Current: 4.63A @ 100V~ (lowline) 1.6A @ 240V~ (highline)
- Heat Dissipation: 463W (1,580 BTU/h)
- Power Consumption: 463W (1,580 BTU/h)

[DC PSU]

- Nominal Input Ratings: 48 – 60V, 24.0A
- Input Current: 8.7A @ 48V~ (lowline) 7.1A @ 60V~ (highline)
- Heat Dissipation: 418W (1,426 BTU/h)
- Power Consumption: 418W (1,426 BTU/h)

Summit X650-24t with VIM1-10G8X Module

[AC PSU]

- Nominal Input Ratings: 100 – 240V~, 50/60Hz, 8.0A
- Input Current: 5.52A @ 100V~ (lowline) 2.5A @ 240V~ (highline)
- Heat Dissipation: 552W (1,884 BTU/h)
- Power Consumption: 552W (1,884 BTU/h)

[DC PSU]

- Nominal Input Ratings: 48 – 60V, 24.0A
- Input Current: 10.42A @ 48V~ (lowline) 8.8A @ 60V~ (highline)
- Heat Dissipation: 500W (1,706 BTU/h)
- Power Consumption: 500W (1,706 BTU/h)

Summit X650-24t with VIM3-40G4X Module

[AC PSU]

- Nominal Input Ratings: 100 – 240V~, 50/60Hz, 4.75A
- Input Current: 6.2A @ 100V~ (lowline) 2.6A @ 240V~ (highline)
- Heat Dissipation: 615 W (2,099BTU/h)
- Power Consumption: 615 W (2,099 BTU/h)

[DC PSU]

- Nominal Input Ratings: 48 – 60V, 9.0A
- Input Current: 12.7 @ 48V~ (lowline) 9.95 A @ 60V~ (highline)
- Heat Dissipation: 612W (2,088 BTU/h)
- Power Consumption: 612W (2,088 BTU/h)

Summit X650-24t with VIM1-SummitStack512 Module

[AC PSU]

- Nominal Input Ratings: 100 – 240V~, 50/60Hz, 8.0A
- Input Current: 5.65A @ 100V~ (lowline) 2.7A @ 240V~ (highline)
- Heat Dissipation: 565W (1,928 BTU/h)
- Power Consumption: 565W (1,928 BTU/h)

[DC PSU]

- Nominal Input Ratings: 48 – 60V, 24.0A
- Input Current: 10.44A @ 48V~ (lowline) 8.8A @ 60V~ (highline)
- Heat Dissipation: 501W (1,709 BTU/h)
- Power Consumption: 501W (1,709 BTU/h)

Power: Summit X650-24x (All manufacturing part numbers)

Summit X650-24x with VIM1-SummitStack

[AC PSU]

- Nominal Input Ratings: 100 – 240V~, 50/60Hz, 4.75A
- Input Current: 2.9A @ 100V~ (lowline) 1.2 A @ 240V~ (highline)
- Heat Dissipation: 291 W (992 BTU/h)
- Power Consumption: 291 W (992 BTU/h)

[DC PSU]

- Nominal Input Ratings: 48 – 60V, 9.0A
- Input Current: 5.9A @ 48V~ (lowline) 4.8A @ 60V~ (highline)
- Heat Dissipation: 287 W (979 BTU/h)
- Power Consumption: 287 W (979 BTU/h)

Summit X650-24x with VIM1-10G8X Module

[AC PSU]

- Nominal Input Ratings: 100 – 240V~, 50/60Hz, 4.75A
- Input Current: 3.7A @ 100V~ (lowline) 1.5A @ 240V~ (highline)
- Heat Dissipation: 371 W (1,402 BTU/h)
- Power Consumption: 371 W (1,402 BTU/h)

[DC PSU]

- Nominal Input Ratings: 48 – 60V, 9.0A
- Input Current: 7.5 @ 48V~ (lowline) 6.1 A @ 60V~ (highline)
- Heat Dissipation: 364W (1,242 BTU/h)
- Power Consumption: 364W (1,242 BTU/h)

Summit X650-24x with VIM3-40G4X Module

[AC PSU]

- Nominal Input Ratings: 100 – 240V~, 50/60Hz, 4.75A
- Input Current: 3.7A @ 100V~ (lowline) 1.5A @ 240V~ (highline)
- Heat Dissipation: 371 W (1,402 BTU/h)
- Power Consumption: 371 W (1,402 BTU/h)

[DC PSU]

- Nominal Input Ratings: 48 – 60V, 9.0A
- Input Current: 7.5 @ 48V~ (lowline) 6.1 A @ 60V~ (highline)
- Heat Dissipation: 364W (1,242 BTU/h)
- Power Consumption: 364W (1,242 BTU/h)

Summit X650-24x with VIM1-SummitStack512 Module

[AC PSU]

- Nominal Input Ratings: 100 – 240V~, 50/60Hz, 4.75A
- Input Current: 3.8A @ 100V~ (lowline) 1.6A @ 240V~ (highline)
- Heat Dissipation: 383W (1,307 BTU/h)
- Power Consumption: 383W (1,307 BTU/h)

[DC PSU]

- Nominal Input Ratings: 48 – 60V, 9.0A
- Input Current: 7.7A @ 48V~ (lowline) 6.2A @ 60V~ (highline)
- Heat Dissipation: 372 W (1,269 BTU/h)
- Power Consumption: 372 W (1,269 BTU/h)

Power Supply Units

Summit X650 AC PSU

Dimensions and Weight

Summit X650 AC PSU

- Height: 1.57 Inches/4.0 cm
- Width: 3.2 Inches/8.1 cm
- Depth: 12.6 Inches/32.0 cm
- Weight: 3.0 lbs/1.4 kg

Power

- Voltage input range: 90 to 264 V
- Nominal input ratings: 100 to 240 V, 50/60Hz, 10 A
- Nominal input current @ full loads: 12 A @ 90 V (low-line) 5 A @ 230 V (high-line)
- Maximum in-rush current: 100 A
- Efficiency: 80% with 60% to 100% load
- Line frequency range: 47 to 63 Hz
- Power supply input socket: IEC 320 C14
- Power cord input plug: IEC 320 C13
- Output: 12 V, 70 A max, 840 Watts, 3.3 V, 6 A max, 19.8 Watts

Summit X650 DC PSU

Dimensions and Weight

Summit X650 DC PSU

- Height: 1.57 Inches/4.0 cm
- Width: 3.2 Inches/8.1 cm
- Depth: 12.6 Inches/32.0 cm
- Weight: 3.0 lbs/1.4 kg

Power

- Voltage input range: -48 to -60 VDC
- Nominal input ratings: -39 to -72 VDC
- Nominal input current @ full loads: 26 A @ 40 V, 22 A @ 48 V, 15 A @ 72 V
- Maximum in-rush current: 18A
- Efficiency: >80% typical loads
- Minimum wire size 12 AWG (3.3 mm2) copper stranded
- Output: 12 V, 70 A max, 840 Watts, 3.3 V, 6 A max, 19.8 Watts

All Summit X650 Series Switches

Regulatory/Safety

North American Safety of ITE

- UL 60950-1 1st Ed., Listed Device (U.S.)
- CSA 22.2#60950-1-03 1st Ed. (Canada)
- Complies with FCC 21CFR 1040.10 (U.S. Laser Safety)
- CDRH Letter of Approval (U.S. FDA Approval)

European Safety of ITE

- EN60950-1:2006
- EN 60825-1+A2:2001 (Lasers Safety)
- TUV-R GS Mark by German Notified Body
- 2006/95/EC Low Voltage Directive

International Safety of ITE

- CB Report & Certificate per IEC 60950-1:2006 + National Differences
- AS/NZS 60950-1 (Australia/New Zealand)

EMI/EMC Standards

North America EMC for ITE

- FCC CFR 47 part 15 Class A (U.S.A.)
- ICES-003 Class A (Canada)

European EMC Standards

- EN 55022:2006 Class A
- EN 55024:A2-2003 Class A includes IEC 61000-4-2, 3, 4, 5, 6, 11
- EN 61000-3-2,8-2006 (Harmonics)
- EN 61000-3-3 1995+A2:2005 (Flicker)
- ETSI EN 300 386 v1.3.3, 2005-04 (EMC Telecommunications)
- 2004/108/EC EMC Directive

International EMC Certifications

- CISPR 22: 2006 Ed 5.2, Class A (International Emissions)
- CISPR 24:A2:2003 Class A (International Immunity)
- EC/EN 61000-4-2:2001 Electrostatic Discharge, 8kV Contact, 15 kV Air, Criteria A
- EC/EN 61000-4-3:2006 Radiated Immunity 10V/m, Criteria A
- EC/EN 61000-4-4:2005 Transient Burst, 1 kV, Criteria A
- IEC/EN 61000-4-5:2005 Surge, 2 kV L-L, 2 kV L-G, Level 3, Criteria A
- IEC/EN 61000-4-6:2005 Conducted Immunity, 0.15-80 MHz, 10V/m unmod. RMS, Criteria A
- EC/EN 61000-4-11:2004 Power Dips & Interruptions, >30%, 25 periods, Criteria C

Country Specific

- VCCI Class A (Japan Emissions)
- ACMA (C-Tick) (Australia Emissions)
- CCC Mark
- KCC Mark EMC Approval (Korea)

Telecom Standards

- EN/ETSI 300 386:2001 (EMC Telecommunications)
- EN/ETSI 300 019 (Environmental for Telecommunications)
- MEF9 and MEF14 certified for EPL, EVPL and ELAN
- NEBS Level 3 compliant to portions of GR-1089 Issue 4 & GR-63 Issue 3 as defined in SR3580 with exception to filter requirement

IEEE 802.3 Media Access Standards

- IEEE 802.3ab 1000BASE-T
- IEEE 802.3z 1000BASE-X
- IEEE 802.3ae 10GBASE-X
- IEEE 802.3an 10GBASE-T

Environmental Standards

- EN/ETSI 300 019-2-1 v2.1.2 (2000-09) – Class 1.2 Storage
- EN/ETSI 300 019-2-2 v2.1.2 (1999-09) – Class 2.3 Transportation
- EN/ETSI 300 019-2-3 v2.1.2 (2003-04) – Class 3.1e Operational
- EN/ETSI 300 753 (1997-10) – Acoustic Noise
- ASTM D3580 Random Vibration Unpackaged 1.5G

Security

- Common Criteria EAL3+

Warranty

- Ltd. 1-year on Hardware
- 90-days on Software
- For warranty details, visit www.extremenetworks.com/go/warranty

Ordering Information

Part Number	Name	Description
17001B	Summit X650-24t	24 10GBASE-T, VIM slot populated with 1 VIM-SummitStack (2 SummitStack stacking ports and 4100/1000BASE-X SFP ports), ExtremeXOS Advanced Edge License, unpopulated dual PSU power slot
17002B	Summit X650-24x	24 10GBASE-X SFP+, VIM slot populated with 1 VIM1-SummitStack (2 SummitStack stacking ports and 4 100/1000BASE-X SFP ports), ExtremeXOS Advanced Edge License, unpopulated dual PSU power slot
17010	Summit X650 Series Core License	ExtremeXOS Core License, Summit X650 series
11011	Direct Attach Feature Pack	Direct Attach Feature Pack for Summit X450a/X460/X480, Summit X650 and BlackDiamond 8800
17012B	VIM1-10G8X	VIM1-10G8X, 8 10GBASE-X SFP+ ports, 2 SummitStack stacking ports
17013	VIM1-SummitStack256	VIM1-SummitStack256, 2 x 128G stacking ports for 256 Gbps stacking up to eight Summit X650 switches
17014	VIM1-SummitStack512	VIM1-SummitStack512, 4 x 128G stacking ports for 512 Gbps cross connecting two Summit X650 switches
17121	VIM3-40G4X	VIM3-40G4X, 4 40GBASE-X QSFP+ ports
10914	Summit X650 AC PSU	AC Power Supply module for Summit X650 series switches
10915	Summit X650 DC PSU	DC Power Supply module for Summit X650 series switches
10916	Summit X480/X650 Fan module	Fan Module for Summit X480 and Summit X650 series switches, spare
10319	QSFP+ SR4 module	40 Gigabit Ethernet QSFP+ SR4 optical module, MPO connector, 100m link length
10301	10GBASE-SR SFP+	10GBASE-SR SFP+, 850nm, LC Connector, transmission length of up to 300m on MMF
10302	10GBASE-LR SFP+	10GBASE-LR SFP+, 1310nm, LC Connector, transmission length of up to 10km on SMF
10303	SFP+ LRM Module	10 Gigabit Ethernet SFP+ module, 1310nm, legacy MMF 220m link, LC connector
10309	10GBASE-ER SFP+	10GBASE-ER SFP+, 1550nm, LC connector, transmission length of up to 40km on SMF
10051	SX SFP	1000BASE-SX SFP, LC Connector
10052	LX SFP	1000BASE-LX SFP, LC Connector
10071	SX SFP 10 Pack	SX-SFP 10 Pack
10072	LX SFP 10 Pack	LX-SFP 10 Pack
10053	ZX SFP	1000BASE-ZX SFP, Extra Long Distance SMF 70 km/21 dB Budget, LC Connector
10064	LX100 SFP	1000BASE-LX100 SFP, Extra Long Distance SMF 100 km/30dB Budget, LC connector
10065	10/100/1000BASE-T SFP	10/100/1000BASE-T SFP module, Category 5 cable 100m link, RJ45-connector
10056	1000BX SFP BX-D	1000BASE-BX-D SFP, SMF (1490 nm TX/1310 nm RX Wavelength)

Ordering Information

Part Number	Name	Description
10057	1000BX SFP BX-U	1000BASE-BX-U SFP, SMF (1310-nm TX/1490-nm RX Wavelength)
10051H	1000BASE-SX SFP, Hi	1000BASE-SX SFP, MMF 220 & 550 meters, LC connector, Industrial Temp
10053H	1000BASE-ZX SFP, Hi	1000BASE-ZX SFP, SMF 70km, LC connector, Industrial Temp
10071H	1000BASE-SX SFP 10 Pack, Hi	1000BASE-SX SFP 10 Pack, Industrial Temp
10072H	1000BASE-LX SFP 10 Pack, Hi	1000BASE-LX SFP 10 Pack, Industrial Temp
10311	QSFP+ passive copper cable, 0.5M	QSFP+ passive copper cable, 0.5M
10312	QSFP+ passive copper cable, 1.0M	QSFP+ passive copper cable, 1.0M
10313	QSFP+ passive copper cable, 3.0M	QSFP+ passive copper cable, 3.0M
10323	QSFP+ passive copper cable, 5.0M	QSFP+ passive copper cable, 5.0M
10315	QSFP+ active fiber cable, 10M	QSFP+ active fiber cable, 10M
10316	20m QSFP+ Active Optical Cable	QSFP+ active fiber cable, 20M
10318	QSFP+ active fiber cable, 100M	QSFP+ active fiber cable, 100M
10321	QSFP+ - 4xSFP+ fan-out cbl, 3m	QSFP+ to 4 x SFP+ fan-out copper cable, 3m
10322	QSFP+ - 4xSFP+ fan-out cbl, 5m	QSFP+ to 4 x SFP+ fan-out copper cable, 5m
10304	10GBASE-CR SFP+ 1m	10GBASE-CR SFP+ pre-terminated twin-ax copper cable with link lengths of 1m
10305	10GBASE-CR SFP+ 3m	10GBASE-CR SFP+ pre-terminated twin-ax copper cable with link lengths of 3m
10306	10GBASE-CR SFP+ 5m	10GBASE-CR SFP+ pre-terminated twin-ax copper cable with link lengths of 5m
10307	10GBASE-CR SFP+ 10m	10GBASE-CR SFP+ pre-terminated twin-ax copper cable with link lengths of 10m
16106	Stacking Cable, 20G, 0.5M	SummitStack/UniStack™ Stacking Cable, 0.5M
16107	Stacking Cable, 20G, 1.5M	SummitStack/UniStack Stacking Cable, 1.5M
16108	Stacking Cable, 20G, 3.0M	SummitStack/UniStack Stacking Cable, 3.0M
17021	Stacking Cable 128G, 0.5M	SummitStack256/512 Stacking Cable, 0.5M
17022	Stacking Cable 128G, 1.0M	SummitStack256/512 Stacking Cable, 1.0M
17023	Stacking Cable 128G, 3.0M	SummitStack256/512 Stacking Cable, 3.0M
17026	Stacking Cable 128G to 64G, 1.0M	Conversion cable for SummitStack256 and SummitStack128, 1.0M

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