

# Summit X460-G2 Series

SCALABLE ADVANCED AGGREGATION SWITCH WITH EXTREMEXOS MODULAR OPERATING SYSTEM

## PERFORMANCE

- 48-port or 28-port GbE models
- 4 ports of SFP+ 10GbE or 4 ports of SFP 1GbE on front faceplate
- All configurations Non-blocking
- Copper, Fiber, and PoE-Plus models
- Optional two-port 10 GbE fiber and copper options to provide additional 10Gbps streams of uplink bandwidth
- Optional two-port 40 GbE to provide 80 Gbps uplinks or SummitStack-V160 stacking
- Optional SummitStack™ 40 Gbps stacking

## FORM FACTOR

- 1 RU w/ 1 expansion slot for additional interface ports and 1 expansion slot for timing options

## FEATURES

- Front-to-Back or Back-to-Front airflow
- SyncE G.8232 and IEEE 1588 PTP Timing
- 850W of PoE-Plus budget with 1 PSU
- 1668W of PoE-Plus budget with 2 PSUs
- Y.1731 OAM Measurements in hardware for accuracy



The Summit® X460-G2 series is based on Extreme Networks® revolutionary ExtremeXOS®, a highly resilient OS that provides continuous uptime, manageability and operational efficiency. Each switch offers the same high-performance, non-blocking hardware technology, in the Extreme Networks tradition of simplifying network deployments through the use of common hardware and software throughout the network.

The Summit X460-G2 switches are effective campus edge switches that support Energy Efficient Ethernet (EEE - IEEE 802.3az) with IEEE 802.3at PoE-plus and can also serve as aggregation switches for traditional enterprise networks. The Summit X460-G2 series is also an option for DSLAM or CMTS aggregation, or for active Ethernet access.

The Summit X460-G2 can also be used as a top-of-rack switch for many data center environments with features such as high-density Gigabit Ethernet for concentrated data center environments; XNV™ (ExtremeXOS Network Virtualization) for centralized network-based Virtual Machine (VM) inventory, VM location history and VM provisioning; Direct Attach™ to offload VM switching from servers, thereby improving performance; high-capacity Layer 2/Layer 3 scalability for highly virtualized data centers; and intra-rack and cross-rack stacking with industry-leading flexibility.

## Comprehensive Security Management

- User policy and host integrity enforcement, and identity management
- Universal Port Dynamic Security Profiles to provide fine granular security policies in the network
- Threat detection and response instrumentation to react to network intrusion with CLEAR-Flow Security Rules Engine
- Denial of Service (DoS) protection and IP security against man-in-the-middle and DoS attacks to harden the network infrastructure

## Flexible Port Configuration

Summit X460-G2 offers flexible port configurations. For Summit X460-G2 24 port copper models with 10Gb uplinks with four dedicated Gigabit Ethernet fiber ports and four shared Gigabit Ethernet fiber ports, the switch can have up to 8 fiber GbE ports, while still providing 20 Gigabit Ethernet copper ports (PoE-plus or non-PoE). The Summit X460-G2 24 port copper models with 1Gb uplinks can provide up to 12 SFP ports with 20 Gigabit Ethernet ports or eight SFP ports with 24 copper GbE ports.

All models come equipped with either 4 ports of SFP+ 10 GbE or 4 ports of SFP 1GbE resident on the faceplate of each model. Through an optional VIM slot, Summit X460-G2 switches can be equipped with an additional 2 ports of 10 GbE for a total of six 10 Gigabit Ethernet ports on the 10Gb uplink models.

As another option, each unit can be equipped with 2 ports of QSFP+ 40 Gigabit Ethernet for uplinks or stacking.

## High-Performance Stacking

Up to eight Summit X460-G2 switches can be stacked using three different methods of stacking: SummitStack, SummitStack-V, and SummitStack-V160.

### SUMMITSTACK — STACKING USING COPPER CX4 CONNECTIONS

The Summit X460-G2 supports SummitStack by using the Summit X460-G2-VIM-2ss module, which offers high-speed 40 Gbps stacking performance and provides compatibility with the Summit X440, X460, X460-G2 and X480 stackable switches running the same version of ExtremeXOS.

### SUMMITSTACK-V — FLEXIBLE STACKING OVER 10GbE

ExtremeXOS supports the SummitStack-V capability using 2 of the native 10 GbE ports on the faceplate as stacking ports, enabling the use of standard cabling and optics technologies used for 10 GbE SFP+, SummitStack-V provides long-distance 40 Gbps stacking connectivity of up to 40 km while reducing the cable complexity of implementing a stacking solution. SummitStack-V is compatible with Summit X440, X460, X460-G2, X480, X670, X670V, X670-G2 and X770 switches running the same version of ExtremeXOS. SummitStack-V enabled 10 GbE ports must be physically direct-connected.

**Note:** Stacking will NOT be supported on the 10GbE fiber VIM and the 10GbE copper VIM with initial X460-G2 shipments.

**Note:** SummitStack-V is NOT supported on the 1GbE (SFP) front panel faceplate ports of non-10Gb X460-G2 models.

### SUMMITSTACK-V160 — FLEXIBLE STACKING OVER 40GbE

The Summit X460-G2 also supports high-speed 160 Gbps stacking, which is ideal for demanding applications where a high volume of traffic traverses through the stacking links, yet bandwidth is not compromised through stacking.

SummitStack-V160 can support passive copper cable (up to 3m), active multi-mode fiber cable (up to 100m), and QSFP+ optical transceivers for 40 GbE up to 10km. With SummitStack-V160, the Summit X460-G2 provides a flexible stacking solution inside the data center or central office to create a virtualized switching infrastructure across rows of racks. SummitStack-V160 is compatible with Summit X460-G2, X480, X670V, X670-G2 and X770 switches running the same version of ExtremeXOS.

## Intelligent Switching and MPLS/H-VPLS Support

Summit X460-G2 supports sophisticated and intelligent Layer 2 switching, as well as Layer 3 IPv4/IPv6 routing including policy-based switching/routing, Provider Bridges, bidirectional ingress and egress Access Control Lists, and bandwidth control by 8 Kbps granularity both for ingress and egress.

To provide scalable network architectures used mainly for Carrier Ethernet network deployment, Summit X460-G2 supports MPLS LSP-based Layer 3 forwarding and Hierarchical VPLS (H-VPLS) for transparent LAN services. With H-VPLS, transparent Layer 3 networks can be extended throughout the Layer 3 network cloud by using a VPLS tunnel between the regional transparent LAN services typically built by Provider Bridges (IEEE 802.1ad) technology

## IEEE 802.3at PoE-plus

IEEE 802.3af Power over Ethernet has been widely used in the campus enterprise edge network for Ethernet-powered devices such as wireless access points, Voice over IP phones, and security cameras. Ethernet port extenders such as Extreme Networks ReachNXT™ 100-8t can also utilize PoE, making installation and management easier and reducing maintenance costs. The newer IEEE 802.3at PoE-plus standard expands upon Power over Ethernet by increasing the power limit up to 30 watts, and by standardizing power negotiation by using LLDP. Summit X460-G2 supports IEEE 802.3at PoE-plus and supports standards-compliant PoE devices today and into the future.

## 1588 Precision Time Protocol (PTP)

Summit X460-G2 offers Boundary Clock (BC), Transparent Clock (TC), and Ordinary Clock (OC) for synchronizing phase and frequency and allowing the network and the connected devices to be synchronized down to microseconds of accuracy over Ethernet connection.

## Audio Video Bridging (AVB)

The X460-G2 series supports IEEE 802.1 Audio Video Bridging to enable reliable, real-time audio/video transmission over Ethernet. AVB technology delivers the quality of service required for today's high-definition and time-sensitive multimedia streams.

## Ordering Notes

The X460-G2 base switches do not ship with fan trays or power supplies. The fan tray and power supplies must be ordered separately as well as any of the optional VIMS. There is only one optional VIM slot on each X460-G2 switch. The optional Timing Module has a separate dedicated slot on the back of the X460-G2 switch.

# Specifications

## PERFORMANCE/SCALE

SWITCH MODEL	MAXIMUM ACTIVE GBE PORTS	MAXIMUM ACTIVE 10GBE PORTS	MAXIMUM ACTIVE 40GBE PORTS	AGGREGATED SWITCH BANDWIDTH	FRAME FORWARDING RATE
Summit X460-G2-24t-10GE4	28	6	2	296 Gbps	220.2 Mpps
Summit X460-G2-48t-10GE4	48	6	2	336 Gbps	250 Mpps
Summit X460-G2-24x-10GE4	28	6	2	296 Gbps	220.2 Mpps
Summit X460-G2-48x-10GE4	48	6	2	336 Gbps	250 Mpps
Summit X460-G2-24p-10GE4	28	6	2	296 Gbps	220.2 Mpps
Summit X460-G2-48p-10GE4	48	6	2	336 Gbps	250 Mpps
Summit X460-G2-24t-GE4	28	2	2	220 Gbps	163.7 Mpps
Summit X460-G2-48t-GE4	48	2	2	260 Gbps	193.4 Mpps
Summit X460-G2-24p-GE4	28	2	2	220 Gbps	163.7 Mpps
Summit X460-G2-48p-GE4	48	2	2	260 Gbps	193.4 Mpps

- Less than 4 microsecond latency (64-byte)
- Layer 2/MAC Addresses: 98K
- IPv4 LPM Entries: 12K
- IPv6 LPM Entries: 6K
- 4096 VLAN/VMANs
- 9216 Byte Max Packet Size (Jumbo Frame)
- 128 load sharing trunks, up to 32 members per trunk
- 4,096 ingress bandwidth meters
- 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: 8 Kbps

## EXTERNAL PORTS

SWITCH HARDWARE	PORTS
Summit X460-G2-24t-10GE4	<ul style="list-style-type: none"> <li>• 24 x 10/100/1000BASE-T (RJ-45) - 4 ports are combo ports</li> <li>• 8 x 100/1000BASE-X (SFP) unpopulated ports - 4 ports are combo ports</li> <li>• 4 x 10GBASE-X SFP+ (unpopulated ports)</li> <li>• 1 x Serial (console port RJ-45)</li> <li>• 1 x 10/100BASE-T out-of-band management port</li> <li>• 1 x USB port for external USB flash</li> </ul>
Summit X460-G2-48t-10GE4	<ul style="list-style-type: none"> <li>• 48 x 10/100/1000BASE-T (RJ-45)</li> <li>• 4 x 10GBASE-X SFP+ (unpopulated ports)</li> <li>• 1 x Serial (console port RJ-45)</li> <li>• 1 x 10/100BASE-T out-of-band management port</li> <li>• 1 x USB port for external USB flash</li> </ul>
Summit X460-G2-24x-10GE4	<ul style="list-style-type: none"> <li>• 24 x 100/1000BASE-X (SFP) unpopulated ports - 4 ports are combo ports</li> <li>• 8 x 10/100/1000BASE-T (RJ-45) - 4 ports are combo ports</li> <li>• 4 x 10GBASE-X SFP+ (unpopulated ports)</li> <li>• 1 x Serial (console port RJ-45)</li> <li>• 1 x 10/100BASE-T out-of-band management port</li> <li>• 1 x USB port for external USB flash</li> </ul>

SWITCH HARDWARE	PORTS
<b>Summit X460-G2-48x-10GE4</b>	<ul style="list-style-type: none"> <li>• 48 x 100/1000BASE-X (SFP) unpopulated ports</li> <li>• 4 x 10GBASE-X SFP+ (unpopulated ports)</li> <li>• 1 x Serial (console port RJ-45)</li> <li>• 1 x 10/100BASE-T out-of-band management port</li> <li>• 1 x USB port for external USB flash</li> </ul>
<b>Summit X460-G2-24p-10GE4</b>	<ul style="list-style-type: none"> <li>• 24 x 10/100/1000BASE-T PoE-Plus - 4 ports are combo ports</li> <li>• 8 x 100/1000BASE-X (SFP) unpopulated ports - 4 ports are combo ports</li> <li>• 4 x 10GBASE-X SFP+ (unpopulated ports)</li> <li>• 1 x Serial (console port RJ-45)</li> <li>• 1 x 10/100BASE-T out-of-band management port</li> <li>• 1 x USB port for external USB flash</li> </ul>
<b>Summit X460-G2-48p-10GE4</b>	<ul style="list-style-type: none"> <li>• 48 x 10/100/1000BASE-T PoE-Plus</li> <li>• 4 x 10GBASE-X SFP+ (unpopulated ports)</li> <li>• 1 x Serial (console port RJ-45)</li> <li>• 1 x 10/100BASE-T out-of-band management port</li> <li>• 1 x USB port for external USB flash</li> </ul>
<b>Summit X460-G2-24t-GE4</b>	<ul style="list-style-type: none"> <li>• 24 x 10/100/1000BASE-T (RJ-45) - 4 ports are combo ports</li> <li>• 8 x 100/1000BASE-X (SFP) unpopulated ports - 4 ports are combo ports</li> <li>• 4 1GBASE-X SFP (unpopulated ports)</li> <li>• 1 x Serial (console port RJ-45)</li> <li>• 1 x 10/100BASE-T out-of-band management port</li> <li>• 1 x USB port for external USB flash</li> </ul>
<b>Summit X460-G2-48t-GE4</b>	<ul style="list-style-type: none"> <li>• 48 x 10/100/1000BASE-T (RJ-45)</li> <li>• 4 x 1GBASE-X SFP (unpopulated ports)</li> <li>• 1 x Serial (console port RJ-45)</li> <li>• 1 x 10/100BASE-T out-of-band management port</li> <li>• 1 x USB port for external USB flash</li> </ul>
<b>Summit X460-G2-24p-GE4</b>	<ul style="list-style-type: none"> <li>• 24 x 10/100/1000BASE-T PoE-Plus - 4 ports are combo ports</li> <li>• 8 x 100/1000BASE-X (SFP) unpopulated ports - 4 ports are combo ports</li> <li>• 4 1GBASE-X SFP (unpopulated ports)</li> <li>• 1 x Serial (console port RJ-45)</li> <li>• 1 x 10/100BASE-T out-of-band management port</li> <li>• 1 x USB port for external USB flash</li> </ul>
<b>Summit X460-G2-48p-GE4</b>	<ul style="list-style-type: none"> <li>• 48 x 10/100/1000BASE-T PoE-Plus</li> <li>• 4 x 1GBASE-X SFP (unpopulated ports)</li> <li>• 1 x Serial (console port RJ-45)</li> <li>• 1 x 10/100BASE-T out-of-band management port</li> <li>• 1 x USB port for external USB flash</li> </ul>
<b>Summit X460-G2 VIM-2x</b>	<ul style="list-style-type: none"> <li>• 2 x 10GBASE-X SFP+ (unpopulated ports)</li> </ul>
<b>Summit X460-G2 VIM-2t</b>	<ul style="list-style-type: none"> <li>• 2 x 10GBASE-T Ports</li> </ul>
<b>Summit X460-G2 VIM-2ss</b>	<ul style="list-style-type: none"> <li>• 2 x Summit Stack (CX4) Ports</li> </ul>
<b>Summit X460-G2 VIM-2q</b>	<ul style="list-style-type: none"> <li>• 2 x 40GBASE-X QSFP+ (unpopulated ports)</li> </ul>
<b>Summit X460-G2 TM-CLK</b>	<ul style="list-style-type: none"> <li>• Clock Module for SyncE and 1588 with 2 mini-BNC connectors for 10MHz and 1PPS signals</li> </ul>

## PHYSICAL

SWITCH MODEL	WEIGHT	PHYSICAL DIMENSION
Summit X460-G2-24t-10GE4	12.9 lb (5.85 kg)	Height: 1 RU / 1.73 inches (4.4 cm) Width: 17.4 inches (44.1 cm) Depth: 17.0 inches (43.2 cm)
Summit X460-G2-48t-10GE4	13.3 lb (6.03 kg)	
Summit X460-G2-24x-10GE4	13.1 lb (5.94 kg)	
Summit X460-G2-48x-10GE4	14.1 lb (6.4 kg)	
Summit X460-G2-24t-GE4	12.9 lb (5.85 kg)	
Summit X460-G2-48t-GE4	13.3 lb (6.03 kg)	
Summit X460-G2-24p-10GE4	14.6 lb (6.62 kg)	Height: 1 RU / 1.73 inches (4.4 cm) Width: 17.4 inches (44.1 cm) Depth: 19.1 inches (48.5 cm)
Summit X460-G2-48p-10GE4	15.2 lb (6.9 kg)	
Summit X460-G2-24p-GE4	14.6 lb (6.62 kg)	
Summit X460-G2-48p-GE4	15.2 lb (6.9 kg)	
Summit X460-G2 VIM-2x	0.57 lb (0.26 kg)	Height: 1.4 inches (3.55 cm) Width: 3.4 inches (8.6 cm) Depth: 5.5 inches (13.9 cm)
Summit X460-G2 VIM-2t	0.57 lb (0.26 kg)	Height: 1.4 inches (3.55 cm) Width: 3.4 inches (8.6 cm) Depth: 5.5 inches (13.9 cm)
Summit X460-G2 VIM-2ss	0.57 lb (0.26 kg)	Height: 1.4 inches (3.55 cm) Width: 3.4 inches (8.6 cm) Depth: 5.5 inches (13.9 cm)
Summit X460-G2 VIM-2q	0.57 lb (0.26 kg)	Height: 1.4 inches (3.55 cm) Width: 3.4 inches (8.6 cm) Depth: 5.5 inches (13.9 cm)
Summit X460-G2 TM-CLK	0.19 lb (0.08 kg)	Height: 1.4 inches (3.55 cm) Width: 0.9 inches (2.29 cm) Depth: 6.3 inches (16.0 cm)
Summit X460-G2 Front-to-Back fan module	1.0 lb (0.46 kg)	Height: 1.59 inches (4.04 cm) Width: 4.8 inches (12.2 cm) Depth: 6.2 inches (15.75 cm)
Summit X460-G2 Back-to-Front fan module	1.0 lb (0.46 kg)	Height: 1.59 inches (4.04 cm) Width: 4.8 inches (12.2 cm) Depth: 6.2 inches (15.75 cm)

NOTE: Switch weights include installed fan module. They do not include installed VIM2 modules or PSUs.

\* Please refer to the Summit Family Switches Hardware Installation Guide for packaged weight and dimensions.

## CPU/MEMORY

- 64-bit MIPS Processor, 1 GHz clock
- 1GB ECC DDR3 DRAM
- 4GB eMMC Flash
- 4MB packet buffer

## LED INDICATORS

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

## POWER SUPPLY UNITS (EACH HAS FRONT-TO-BACK AND BACK-TO-FRONT MODELS)

	300W AC PSU	300 DC PSU	715W AC PSU	1100W AC PSU
Dimensions	Height 27 mm (1.06 inches) Width 78 mm (3.09 inches) Depth 277 mm (10.9 inches)	Height 27 mm (1.06 inches) Width 78 mm (3.09 inches) Depth 277 mm (10.9 inches)	Height 40 mm (1.56 inches) Width 82.5 mm (3.25 inches) Depth 287 mm (11.3 inches)	Height 40 mm (1.56 inches) Width 82.5 mm (3.25 inches) Depth 287 mm (11.3 inches)
Voltage Input Range	85-264 VAC	-40 to -72 VDC	85-264 VAC	85-264 VAC
Line Frequency Range	47 to 63 Hz	n/a	47 to 63 Hz	47 to 63 Hz
Power Supply Input Socket	IEC 320 C14	n/a	IEC 320 C16	IEC 320 C16
Power Cord Input Plug	IEC 320 C13	n/a	IEC 320 C15	IEC 320 C15
Operating Temperature	0 deg C to 50 deg C normal operation	0 deg C to 50 deg C normal operation	0 deg C to 50 deg C normal operation	0 deg C to 50 deg C normal operation

## POE POWER BUDGET

SWITCH MODEL	1 PSU OF 715W	1 PSU OF 1100W	2 PSUS OF 715W	1 PSU OF 715W AND 1 PSU OF 1100W	2 PSUS OF 1100W
Summit X460-G2-24p-10GE4	500 W	850 W	1031 W	1350 W	1668 W
Summit X460-G2-48p-10GE4	500 W	850 W	1031 W	1350 W	1668 W
Summit X460-G2-24p-GE4	500 W	850 W	1031 W	1350 W	1668 W
Summit X460-G2-48p-GE4	500 W	850 W	1031 W	1350 W	1668 W
Summit X460-G2-24p-10GE4	16 ports @ 30W 24 ports @ 15.4W	24 ports @ 30W 24 ports @ 15.4W	24 ports @ 30W 24 ports @ 15.4W	24 ports @ 30W 24 ports @ 15.4W	24 ports @ 30W 24 ports @ 15.4W
Summit X460-G2-48p-10GE4	16 ports @ 30W 32 ports @ 15.4W	28 ports @ 30W 48 ports @ 15.4W	34 ports @ 30W 48 ports @ 15.4W	45 ports @ 30W 48 ports @ 15.4W	48 ports @ 30W 48 ports @ 15.4W
Summit X460-G2-24p-GE4	16 ports @ 30W 24 ports @ 15.4W	24 ports @ 30W 24 ports @ 15.4W	24 ports @ 30W 24 ports @ 15.4W	24 ports @ 30W 24 ports @ 15.4W	24 ports @ 30W 24 ports @ 15.4W
Summit X460-G2-48p-GE4	16 ports @ 30W 32 ports @ 15.4W	28 ports @ 30W 48 ports @ 15.4W	34 ports @ 30W 48 ports @ 15.4W	45 ports @ 30W 48 ports @ 15.4W	48 ports @ 30W 48 ports @ 15.4W

## POWER SUPPLY UNITS (EACH HAS FRONT-TO-BACK AND BACK-TO-FRONT MODELS)

SWITCH MODEL	MINIMUM HEAT DISSIPATION	MINIMUM POWER CONSUMPTION	MAXIMUM HEAT DISSIPATION	MAXIMUM POWER CONSUMPTION
Summit X460-G2-24t-10GE4	229 BTU/hr	67 W	427 BTU/hr	125 W
Summit X460-G2-24p-10GE4	260 BTU/hr	76 W	1475 BTU/hr	204 W
Summit X460-G2-48t-10GE4	250 BTU/hr	73 W	427 BTU/hr	125 W
Summit X460-G2-48p-10GE4	287 BTU/hr	84 W	1645 BTU/hr	334 W
Summit X460-G2-24x-10GE4	209 BTU/hr	61 W	427 BTU/hr	125 W
Summit X460-G2-48x-10GE4	202 BTU/hr	59 W	427 BTU/hr	125 W
Summit X460-G2-24t-GE4	215 BTU/hr	63 W	427 BTU/hr	125 W
Summit X460-G2-24p-GE4	250 BTU/hr	73 W	1475 BTU/hr	204 W
Summit X460-G2-48t-GE4	243 BTU/hr	71 W	427 BTU/hr	127 W
Summit X460-G2-48p-GE4	284 BTU/hr	83 W	1645 BTU/hr	334 W

## ENVIRONMENTAL SPECIFICATIONS

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

## OPERATING CONDITIONS

- Temp: 0° C to 50° C (32° F to 122° F)
- Humidity: 10% to 95% relative humidity, non-condensing
- Altitude: 0 to 3,000 meters (9,850 feet)
- Shock (half sine): 30 m/s<sup>2</sup> (3 G), 11 ms, 60 shocks
- Random vibration: 3 to 500 Hz at 1.5 G rms

## PACKAGING AND STORAGE SPECIFICATIONS

- Temp: -40° C to 70° C (-40° F to 158° F)
- Humidity: 10% to 95% relative humidity, non-condensing
- Packaged Shock (half sine): 180 m/s<sup>2</sup> (18 G), 6 ms, 600 shocks
- Packaged Vibration: 5 to 62 Hz at velocity 5 mm/s, 62 to 500 Hz at 0.2 G
- Packaged Random Vibration: 5 to 20 Hz at 1.0 ASD w/-3 dB/oct. from 20 to 200 Hz
- Packaged Drop Height: 14 drops minimum on sides and corners at 42 inches (<15 kg box)

## REGULATORY AND SAFETY

### North American ITE

- UL 60950-1 2nd Ed., Listed Device (U.S.)
- CSA 22.2 #60950-1-03 2nd Ed. (Canada)
- Complies with FCC 21CFR 1040.10 (U.S. Laser Safety)
- CDRH Letter of Approval (US FDA Approval)

### European ITE

- EN 60950-1:2007 2nd Ed.
- EN 60825-1+A2:2001 (Lasers Safety)
- TUV-R GS Mark by German Notified Body
- 2006/95/EC Low Voltage Directive

### International ITE

- CB Report & Certificate per IEC 60950-1 2nd Ed. + National Differences
- AS/NZX 60950-1 (Australia /New Zealand)

## EMI/EMC STANDARDS

### North American EMC for ITE

- FCC CFR 47 part 15 Class A (USA)
- ICES-003 Class A (Canada)

## European EMC Standards

- EN 55022:2006+A1:2007 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 2008 (Flicker)
- ETSI EN 300 386 v1.4.1, 2008-04 (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)
- IEC 61000-4-2:2008/EN 61000-4-2:2009 Electrostatic Discharge, 8kV Contact, 15 kV Air, Criteria A
- IEC 61000-4-3:2008/EN 61000-4-3:2006+A1:2008 Radiated Immunity 10V/m, Criteria A
- IEC 61000-4-4:2004 am1 ed.2./EN 61000-4-4:2004/A1:2010 Transient Burst, 1 kV, Criteria A
- IEC 61000-4-5:2005 /EN 61000-4-5:2006 Surge, 2 kV L-L, 2 kV L-G, Level 3, Criteria A
- IEC 61000-4-6:2008/EN 61000-4-6:2009 Conducted Immunity, 0.15-80 MHz, 10V/m unmod. RMS, Criteria A
- IEC/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

- ETSI EN 300 386:2001 (EMC Telecommunications)
- ETSI EN 300 019 (Environmental for Telecommunications)
- NEBS Level 3 compliant to portions of GR-1089 Issue 4 & GR-63 Issue 3 as defined in SR3580 with exception to filter requirement
- CE 2.0 Compliant

## IEEE 802.3 MEDIA ACCESS STANDARDS

- IEEE 802.3ab 1000BASE-T
- IEEE 802.3z 1000BASE-X
- IEEE 802.3ae 10GBASE-X
- IEEE 802.3at PoE Plus
- IEEE 802.3az (EEE)



## FAN AND ACOUSTIC NOISE

SWITCH MODEL	ACOUSTIC INFORMATION	
Summit X460-G2-24t-10GE4 Summit X460-G2-24t-GE4	Dual 300W AC or DC PS with Front to Back (FB) Air Flow	
	Bystander Sound Pressure*	Declared Sound Power (LWAd)**
	49.1 dB(A), 0C to 45C 54.9 dB(A), 50C	6.0 bels, 0C to 45C 6.6 bels @ 50C
	Dual 300W AC or DC PS with Back to Front (BF) Air Flow	
Bystander Sound Pressure*	Declared Sound Power (LWAd)**	
48.9 dB(A), 0C to 35C 59.5 dB(A), 45C 65.6 dB(A), 50C	5.9 bels, 0C to 35C 7.2 bels, 45C 7.8 bels, 50C	
Summit X460-G2-48t-10GE4 Summit X460-G2-48t-GE4	Dual 300W AC or DC PS with Front to Back (FB) Air Flow	
	Bystander Sound Pressure*	Declared Sound Power (LWAd)**
	47.6 dB(A), 0C to 45C 64.5 dB(A), 50C	5.9 bels, 0C to 45C 7.7 bels, 50C
	Dual 300W AC or DC PS with Back to Front (BF) Air Flow	
Bystander Sound Pressure*	Declared Sound Power (LWAd)**	
47.7 dB(A), 0C to 35C 58.7 dB(A), 45C 65.3 dB(A), 50C	5.9 bels, 0C to 35C 7.2 bels, 45C 7.8 bels, 50C	
Summit X460-G2-48p-10GE4 Summit X460-G2-48p-GE4	Dual 715W or 1100W AC PS with Front to Back (FB) Air Flow	
	Bystander Sound Pressure*	Declared Sound Power (LWAd)**
	52.2 dB(A), 0C to 45C 64.3 dB(A), 50C	6.9 bels, 0C to 45C 7.6 bels, 50C
	Dual 715W or 1100W AC PS with Back to Front (BF) Air Flow	
Bystander Sound Pressure*	Declared Sound Power (LWAd)**	
50.9 dB(A), 0C to 31C 64.2 dB(A), 35C 70.8 dB(A), 50C	7.2 bels, 0C to 31C 7.6 bels, 35C 7.9 bels 50C	
Summit X460-G2-24p-10GE4 Summit X460-G2-24p-GE4	Dual 715W or 1100W AC PS with Front to Back (FB) Air Flow	
	Bystander Sound Pressure*	Declared Sound Power (LWAd)**
	52.2 dB(A), 0C to 45C 61.8 dB(A), 50C	7.3 bels, 0C to 45C 7.4 bels, 50C
	Dual 715W or 1100W AC PS with Back to Front (BF) Air Flow	
Bystander Sound Pressure*	Declared Sound Power (LWAd)**	
50.8 dB(A), 0C to 35C 69.8 dB(A), 50C	7.3 bels, 0C to 35C 8.1 bels, 50C	
Summit X460-G2-24x-10GE4	Dual 300W AC or DC PS with Front to Back (FB) Air Flow	
	Bystander Sound Pressure*	Declared Sound Power (LWAd)**
	48.8 dB(A), 0C to 45C 61.9 dB(A), 50C	6.0 bels, 0C to 45C 7.5 bels, 50C
	Dual 300W AC or DC PS with Front to Back (FB) Air Flow	
Bystander Sound Pressure*	Declared Sound Power (LWAd)**	
48.8 dB(A), 0C to 35C 58.7 dB(A), 45C 66.7 dB(A), 50C	6.0 bels, 0C to 35C 6.9 bels, 45C 7.8 bels, 50C	
Summit X460-G2-48x-10GE4	Dual 300W AC or DC PS with Front to Back (FB) Air Flow	
	Bystander Sound Pressure*	Declared Sound Power (LWAd)**
	48.9 dB(A), 0C to 45C 60.5 dB(A) @ 50C	6.0 bels, 0C to 45C 7.4 bels, 50C
	Dual 300W AC or DC PS with Back to Front (BF) Air Flow	
Bystander Sound Pressure*	Declared Sound Power (LWAd)**	
48.8 dB(A), 0C to 35C 57.5 dB(A), 45C 66.1 dB(A), 50C	6.0 bels, 0C to 35C 6.9 bels, 45C 7.8 bels, 50C	

\* Bystander Sound Pressure is presented for comparison to other products measured using Bystander Sound Pressure.

\*\*Declared Sound Power is presented in accordance with ISO-7779:2010(E), ISO 9296:2010 per ETSI/EN 300 753:2012-01

## Accessories

### SUMMIT X460-G2 POWER SUPPLIES

All Summit X460-G2 series switches are sold a la carte so power supplies and fans must be ordered separately. If redundancy or higher power Power-over-Ethernet plus capability is required, an additional power supply can be installed in the system.

Each power supply has a front-to-back model and an equivalent back-to-front model for air flow control.

Summit 300W AC PSU	Summit 300W AC PSU is compatible with Summit X460-G2-24t/48t/24x/48x switches.
Summit 300W DC PSU	Summit 300W DC PSU is compatible with Summit X460-G2-24t/48t/24x/48x switches.
Summit 715W PoE AC PSU	Summit 715W PoE AC PSU is compatible with Summit X460-G2-24p/48p switches and provides 500 watts of PoE-plus power budget per one supply. When two PSUs are installed, the total PoE-plus power budget becomes 1031 watts.
Summit 1100W PoE AC PSU	Summit 1100W PoE AC PSU is compatible with Summit X460-G2-24p/48p switches and provides 850 watts of PoE-plus power budget per one supply. When two PSUs are installed, the total PoE-plus power budget becomes 1668 watts.

### Summit X460-G2 Optional Modules

Summit X460-G2 series switches have two slots, VIM and Timing, to support optional modules that support 10 Gigabit Ethernet, 40Gigabit Ethernet, stacking and timing modules. The VIM slot supports a two-port SFP+ 10 Gigabit Ethernet module, a two-port 10GBase-T Gigabit Ethernet module, a two-port SummitStack module, or a two-port QSFP+ 40 Gigabit Ethernet module. The Timing slot supports a timing module for SyncE and 1588PTP.

VIM MODULES	TIMING MODULES
Summit X460-G2 VIM-2x	Summit X460-G2 TM-CLK
Summit X460-G2 VIM-2t	
Summit X460-G2 VIM-2ss	
Summit X460-G2 VIM-2q	

#### SUMMIT X460-G2 VIM-2X

2-port 10 Gigabit Ethernet module - provides two SFP+ ports. These two SFP+ ports can support both 10 Gigabit Ethernet SFP+ transceivers and Gigabit Ethernet transceivers.

#### SUMMIT X460-G2 VIM-2T

2-port 10 Gigabit Ethernet module, provides two 10GBase-T copper ports.

#### SUMMIT X460-G2 VIM-2SS

SummitStack module has two SummitStack stacking ports, and provides a 40 Gigabit stacking solution. This stacking module offers compatibility with other Extreme Networks stackable switches, which are Summit X440, Summit X460, and Summit X480.

## SUMMIT X460-G2 VIM-2Q

2-port 40 Gigabit Ethernet module – provides 2 fully functional QSFP+ ports for uplinks or can be used for SummitStack-V160 providing a 160 Gigabit stacking solution.

## SUMMIT X460-G2 TM-CLK

Module required for supporting G.8232 Synchronous Ethernet (SyncE) and ITU 1588 Precision Time Protocol (PTP) – available on all Summit X460-G2

## Warranty

- Ltd. Lifetime with eAHR-2
- For warranty details, visit <http://www.extremenetworks.com/go/warranty>

Ordered Empty



**POWER SUPPLIES, FAN TRAY, TIMING MODULES AND VIMS ARE ORDERED SEPARATELY**

Shipped Empty with blank panels for 1 PSU slot, VIM slot & Timing Module slot



Optional: Timing Module for SyncE and 1588 PTP ordered separately



Optional: VIM Cards ordered separately

Required: Fan Tray with Air Flow Direction ordered separately

Optional: Redundant/Additive Power Supply with Air Flow Direction ordered separately

Required: First Power Supply with Air Flow Direction ordered separately

## Ordering Informaiton

NOTE: Power Supplies and fan tray MUST be ordered separately. They are NOT INCLUDED in the base switch model

PART NUMBER	NAME	DESCRIPTION
16701	X460-G2-24t-10GE4-Base-Unit	24 10/100/1000BASE-T, 8 100/1000BASE-X unpopulated SFP (4 SFP ports shared with 10/100/1000BASE-T ports), 4 1000/10GBaseX unpopulated SFP+ ports, Rear VIM Slot (unpopulated), Rear Timing Slot (unpopulated), 2 unpopulated PSU slots, fan module slot (unpopulated)
16702	X460-G2-48t-10GE4-Base-Unit	48 10/100/1000BASE-T, 4 1000/10GBaseX unpopulated SFP+ ports, Rear VIM Slot (unpopulated), Rear Timing Slot (unpopulated), 2 unpopulated PSU slots, fan module slot (unpopulated)
16703	X460-G2-24p-10GE4-Base-Unit	24 10/100/1000BASE-T PoE-plus, 8 100/1000BASE-X unpopulated SFP (4 SFP ports shared with 10/100/1000BASE-T ports), 4 1000/10GBaseX unpopulated SFP+ ports, Rear VIM Slot (unpopulated), Rear Timing Slot (unpopulated), 2 unpopulated PSU slots, fan module slot (unpopulated)
16704	X460-G2-48p-10GE4-Base-Unit	48 10/100/1000BASE-T PoE-plus, 4 1000/10GBaseX unpopulated SFP+ ports, Rear VIM Slot (unpopulated), Rear Timing Slot (unpopulated), 2 unpopulated PSU slots, fan module slot (unpopulated)
16705	X460-G2-24x-10GE4-Base-Unit	24 100/1000BASE-X unpopulated SFP, 8 10/100/1000BASE-T (4 10/100/1000BASE-T ports shared with SFP ports), 4 1000/10GBaseX unpopulated SFP+ ports, Rear VIM Slot (unpopulated), Rear Timing Slot (unpopulated), 2 unpopulated PSU slots, fan module slot (unpopulated)
16706	X460-G2-48x-10GE4-Base-Unit	48 100/1000BASE-X unpopulated SFP, 4 1000/10GBaseX unpopulated SFP+ ports, Rear VIM Slot (unpopulated), Rear Timing Slot (unpopulated), 2 unpopulated PSU slots, fan module slot (unpopulated)
16716	X460-G2-24t-GE4-Base-Unit	24 10/100/1000BASE-T, 8 100/1000BASE-X unpopulated SFP (4 SFP ports shared with 10/100/1000BASE-T ports), 4 1GBase-X unpopulated SFP ports, Rear VIM Slot (unpopulated), Rear Timing Slot (unpopulated), 2 unpopulated PSU slots, fan module slot (unpopulated)
16717	X460-G2-48t-GE4-Base-Unit	48 10/100/1000BASE-T, 4 1GBaseX unpopulated SFP ports, Rear VIM Slot (unpopulated), Rear Timing Slot (unpopulated), 2 unpopulated PSU slots, fan module slot (unpopulated)
16718	X460-G2-24p-GE4-Base-Unit	24 10/100/1000BASE-T PoE-plus, 8 100/1000BASE-X unpopulated SFP (4 SFP ports shared with 10/100/1000BASE-T ports), 4 1GBaseX unpopulated SFP ports, Rear VIM Slot (unpopulated), Rear Timing Slot (unpopulated), 2 unpopulated PSU slots, fan module slot (unpopulated)
16719	X460-G2-48p-GE4-Base-Unit	48 10/100/1000BASE-T PoE-plus, 4 1GBaseX, Rear VIM Slot (unpopulated), Rear Timing Slot (unpopulated), 2 unpopulated PSU slots, fan module slot (unpopulated)
16710	Summit X460-G2 VIM-2q	Optional Virtual Interface Module for the rear of the X460-G2 providing 2 40GBASE-X ports unpopulated QSFP+
16711	Summit X460-G2 VIM-2x	Optional Virtual Interface Module for the rear of the X460-G2 providing 2 1000/10GBASE-X ports unpopulated SFP+
16712	Summit X460-G2 VIM-2t	Optional Virtual Interface Module for the rear of the X460-G2 providing 2 10GBASE-T ports
16713	Summit X460-G2 VIM-2ss	Optional Virtual Interface Module for the rear of the X460-G2 providing 2 ports of Extreme's SummitStack
16715	Summit X460-G2 TM-CLK	Optional Timing Module for the rear of the X460-G2 providing the hardware for SyncE and 1588 PTP clocking with 2 ports of mini-BNC connectors for clocking outputs
16421	Summit X460 Advanced Edge Lic	ExtremeXOS Advanced Edge License for Summit X460 series switches
16422	Summit X460 Core License from Edge Lic	ExtremeXOS Advanced Core License upgrade from Edge License for Summit X460 series switches
16423	Summit X460 Core License from Advanced Edge	ExtremeXOS Advanced Core License upgrade from Advanced Edge License for Summit X460 series switches
16424	Summit X460 MPLS feature pack	ExtremeXOS MPLS Feature Pack for Summit X460 series switches
11011	Direct Attach Feature Pack	Direct Attach Feature Pack
16755	Summit X460-G2 Network Timing Feature Pack	Summit X460-G2 Network Timing Feature Pack
16425	Summit X460 OpenFlow FeaturePack	ExtremeXOS SDN - OpenFlow Feature Pack for Summit X460 series switches
16426	X460 Multimedia(AVB) Feature Pck	ExtremeXOS Multimedia Service (Audio Video Bridging) Feature Pack for Summit X460 series switches
10328	Summit 480/460-G2 3rd Party Optics Lic	ExtremeXOS 3rd Party Optics (40G and 100G) Feature-Pack for Summit X480 and X460-G2
10941	Summit 1100W PoE AC PSU FB	PoE 1100 Watt AC Power Supply module for Summit X460-G2 and X450-G2 series switches with Front-to-Back airflow
10942	Summit 1100W PoE AC PSU BF	PoE 1100 Watt AC Power Supply module for Summit X460-G2 and X450-G2 series switches with Back-to-Front airflow
10951	Summit 715W AC PSU FB	715W AC Power Supply Module - front to back airflow
10952	Summit 715W AC PSU BF	715W AC Power Supply Module - back to front airflow
10930A	Summit 300W AC PSU XT	300W AC Power Supply module for Summit X460 & E4G-400 Series Switches - Extended Temperature Range from -10 to +50 degrees Celsius - front to back airflow

PART NUMBER	NAME	DESCRIPTION
10943	Summit 300W AC PSU BF	300W AC Power Supply Module - back to front airflow
10933	Summit 300W +24V/-48V DC PSU	300W +24V / -48V DC Power Supply Module for the X460 and the E4G-400 platforms - front to back airflow
10944	Summit 300W DC PSU BF	300W DC Power Supply Module - back to front airflow
10945	Summit X460-G2 fan module FB	Front-to-back airflow fan module for Summit X460-G2 series switches
10946	Summit X460-G2 fan module BF	Back-to-front airflow fan module for Summit X460-G2 series switches
10319	QSFP+ SR4 module	40 Gigabit Ethernet QSFP+ SR4 optical module, MPO connector, 100m link length
10320	QSFP+ 40GBASE-LR4	40 Gigabit Ethernet QSFP+ LR4 optical module, LC connectors, 10km SMF 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
10309	10GBASE-ER SFP+	10GBASE-ER SFP+, 1550nm, LC connector, transmission length of up to 40km on SMF
10303	SFP+ LRM Module	10 Gigabit Ethernet SFP+ module, 1310nm, legacy MMF 220m link, LC connector
10056H	1000BASE-BX-D BiDi SFP, Hi	1000BASE-BX-D SFP, 1490-nm TX/1310-nm RX wavelength, Industrial Temp
10057H	1000BASE-BX-U BiDi SFP, Hi	1000BASE-BX-U SFP, 1310-nm TX/1490-nm RX wavelength, Industrial Temp
10060H	100FX/1000LX SFP, Hi	Dual-speed 100 FX / 1000 LX SFP, LC connector, Industrial Temp
10063H	100BASE-FX SFP (1G elec), Hi	100BASE-FX SFP module, MMF 2km link, LC-connector for Fast Ethernet SFP Port, 1G electrical data rate, Industrial Temp
10064H	1000BASE-LX100 SFP, Hi	1000BASE-LX SFP, Extra long distance SMF 100 km/30 dB budget, LC connector, Industrial Temp
10070H	10/100/1000BASE-T SFP, Hi	10/100/1000BASE-T SFP module, CAT5 cable 100m link, RJ45-connector for Giga Bit Ethernet SFP Port, Industrial Temp
10058	100BASE-BX-D SFP	100M SFP, 100BASE-BX-D, SMF (1550nm TX/1310nm RX wavelength), 100 Mbps bidirectional
10059	100BASE-BX-U SFP	100M SFP, 100BASE-BX-U, SMF (1310nm TX/1550nm RX wavelength), 100 Mbps bidirectional
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
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
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
16106	Stacking Cable, 0.5M	SummitStack/UniStack™ Stacking Cable, 0.5M
16107	Stacking Cable, 1.5M	SummitStack/UniStack Stacking Cable, 1.5M
16108	Stacking Cable, 3.0M	SummitStack/UniStack Stacking Cable, 3.0M
16105	Stacking Cable, 5.0M	SummitStack Stacking Cable, 5.0M

\* = data networking, not stacking



<http://www.extremenetworks.com/contact> / Phone +1-408-579-2800

©2014 Extreme Networks, Inc. All rights reserved. Extreme Networks and the Extreme Networks logo are trademarks or registered trademarks of Extreme Networks, Inc. in the United States and/or other countries. All other names are the property of their respective owners. For additional information on Extreme Networks Trademarks please see <http://www.extremenetworks.com/company/legal/trademarks/>. Specifications and product availability are subject to change without notice. 8904-1014