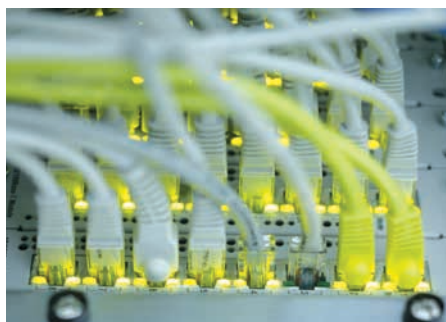# Eaton 5SC UPS
## 500/750/1000/1500/2200/3000VA

5SC is available in convenient compact form factors

Short depth format for easy integration in small cabinets

**Ideal for protecting:**
- Rack or Tower servers
- NAS, Network equipments
- ATMs, Ticket machines, Kiosks

## Affordable protection for servers and networking systems

### Manageability

- The LCD interface provides clear status of the UPS key parameters such as input and output voltage, load and battery level, and estimated runtime. Essential configuration capabilities are also offered for output voltage, audible alarm and sensitivity.

- The 5SC offers USB and serial connectivity. USB port is HID compliant for automatic integration into Windows, Mac OS and Linux.

- A slot for an optional communication card (including SNMP/ Web card or relay contact card) is available on rack and R/T models. Eaton's Intelligent Power® Software Suite insures compatibility with all major OS including virtualization software.

### Reliability

- Pure sinewave output: When operating in battery mode the 5SC provides a high quality output signal for any sensitive equipment connected, such as active PFC (power factor corrected) servers.

- Buck and Boost operation corrects a wide range of input voltage variations through continuous regulation, without the use of batteries.

- Stronger, longer battery life: Eaton ABM® battery management technology uses an innovative three-stage charging system that extends battery life by up to 50%.

### Flexibility

- Rack models are designed to fit into short depth wall enclosures down to 500mm, 2 post racks or to be wall mounted.

- R/T models authorizes either tower or rack installation - pedestals and rail kits are included with all models at no extra charge.

- Tower models small size for easy integration even with space constraints (kiosks, cash machines, ticket machines etc.) and up to nine outlets for better flexibility!

- Easy battery replacement from front panel to extend UPS life.

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# Eaton 5SC
## 500/750/1000/1500/2200/3000VA

**1** LCD interface
**2** Panel for batteries replacement
**3** USB port + Serial port



5SC 1500 Rack

**4** 8 IEC 10A (+1 IEC 16A
Socket for 2200/3000VA models)
**5** Communication card slot
(Rack and R/T models only)
**6** ROO/RPO terminal
(Rack and R/T models only)

| Technical specifications | 500 | 750 | 1000 | 1500 | 2200 | 3000 |
|---|---|---|---|---|---|---|
| Rating (VA/W) | 500VA/350W | 750VA/525W | 1000VA/700W | 1500VA/1050W | 2200VA/1980W | 3000VA/2700W |
| Format | Tower | Tower | Tower or Rack 2U | Tower or Rack 2U | R/T 2U | R/T 2U |
| **Electrical characteristics** | | | | | | |
| Technology | Line interactive High Frequency (Sinewave, Booster, Fader) | | | | | |
| Input voltage range without using batteries | 184 to 276 V | | | | | |
| Output voltage and frequency | 230V (-10/+6 %) (Adjustable to 220/230/240 V), 50/60 Hz ± 1Hz (Autosensing) | | | | | |
| **Connections** | | | | | | |
| Input | 1 IEC C14 (10A) | | | | 1 IEC C20 (16A) | |
| Outputs for Tower models | 4 IEC C13 (10A) | 6 IEC C13 (10A) | 8 IEC C13 (10A) | | | |
| Outputs for Rack or R/T models | | | 8 IEC C13 (10A) | | 8 IEC C13 (10A) + 1 IEC C19 (16A) | |
| **Batteries** | | | | | | |
| Typical backup times @50 and 70% load* | 13/9 | 13/9 | 12/8 | 13/8 | 7/4 | 10/6 |
| Battery management | ABM, automatic battery test, deep discharge protection | | | | | |
| **Communication** | | | | | | |
| Communication ports | 1 USB port + RS232 serial port (USB and RS232 cannot be used simultaneously)<br>ROO/RPO + card slot (Rack and R/T models) for Network-MS card or Relay-MS card | | | | | |
| **Operating conditions, standards and approvals** | | | | | | |
| Operating temperature | 0 to 35°C (tower models), 0 to 40°C (Rack and R/T models) | | | | | |
| Noise level | <40dB (tower models), <45dB (Rack and R/T models) | | | | | |
| Safety | IEC/EN 62040-1, UL1778 | | | | | |
| EMC | IEC/EN 62040-2 | | | | | |
| Approvals | CE /CB report (TUV), cTUVus | | | | | |
| **Dimensions H x W x D in mm/ Weight** | | | | | | |
| Dimensions for Tower models | 210 x 150 x 240 mm | 210 x 150 x 340 mm | 210 x 150 x 340 mm | 210 x 150 x 410 mm | | |
| Dimensions for Rack and R/T models | | | 86.2 x 440 x 405 mm | 86.2 x 440 x 405 mm | 86.2 x 441 x 522 mm | 86.2 x 441 x 647 mm |
| Weight for Tower models | 6.6kg | 10.4kg | 11.1kg | 15.2kg | | |
| Weight for Rack and R/T models | | | 15kg | 17.8kg | 26.5kg | 35.3kg |
| **Customer service and support** | | | | | | |
| Warranty | 2 years | | | | | |

* Runtimes are shown @ 0.7 power factor. Backup duration is approximate and may vary with equipment, configuration, battery age, temperature, etc.

| Parts numbers* | 500 | 750 | 1000 | 1500 | 2200 | 3000 |
|---|---|---|---|---|---|---|
| 5SC Tower models | 5SC500i | 5SC750i | 5SC1000i | 5SC1500i | | |
| 5SC Rack and R/T models | | | 5SC1000IR | 5SC1500IR | 5SC2200IRT | 5SC3000IRT |

In the interests of continuous product improvement all specifications are subject to change without notice.

# APR48-ES Energy Saver Rectifier

The **Eaton® APR48-ES Energy Saver Rectifier** is designed for communications network operators who are striving to cut energy costs across the network, and/or to meet aggressive carbon footprint reduction targets.

Operating with well over 96% efficiency, it produces at least 50% less waste energy than most other modern rectifiers, and with potentially greater savings over older infrastructure.

The 2kW Energy Saver Rectifier is the ideal module size for powering access applications within a telecom network such as cellular base stations, ADSL equipment, and fibre nodes.

This rectifier features intelligent digital signal processing for enhanced control, producing peak efficiency in excess of 96% for typical operating loads, while also maintaining a very high minimum operating efficiency of 95 to 96%, over a very wide range of loads (from 20% to 100% of the 2kW capacity).

Achieving very high energy saving efficiency levels is further ensured as the Energy Saver Rectifier also operates with Load Based Rectifier Shutdown (LBRS) which automatically ensures the rectifiers are operating in their optimal efficiency band for maximum system efficiency.

The high power density, short depth and flexible mounting options makes the Energy Saver Rectifier well suited to limited space applications such as ETSI and road side cabinets.

The Energy Saver Rectifier is fully compatible with existing Eaton 3G systems and it is one of the easiest rectifiers to use, with a simple plug-and-go insertion. It operates under a wide range of AC power conditions and in temperatures at up to 70°C (158°F).

## Features

- 2000W output power
- Energy saving efficiency greater than 96%
- Wide efficiency curve
- Industry leading power density
- Fast on-line expansion of rectifiers (hot-swap)
- Simple 'plug and go' insert
- Unity power factor
- Digital signal processing for enhanced control
- Wide AC supply conditions
- Wide output voltage range
- Constant power output
- Compliance with international standards

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An Eaton Green Product

# Technical Specifications

## Input

| | |
|---|---|
| AC Supply | 120V/208-240V, 50/60Hz (nominal) |
| | 185-275V full output power up to 50°C [122°F] |
| | 90-185V reduced output power |
| Power Factor | >0.99 (50 – 100% output current) |
| Efficiency | >96% peak |
| | >95% (20 – 100% output power) |

## Output

| | |
|---|---|
| DC Output Voltage Range | 43 – 57.5V |
| DC Output (maximum) | 2000W @ 48V |

## Environmental

| | |
|---|---|
| Operating Temperature Range | -40°C – +70°C [-40°F – +158°F] Output power derates above 50°C [122°F] |
| Cooling | Temperature controlled, variable speed, high reliability fan <50dBA ambient temperature 25°C |

## Mechanical

| | |
|---|---|
| Dimensions H,W,D | 3U: 133mm [5.25"], 42mm [1.65"], 266mm [10.45"] overall |
| Weight | 1.7kg [3.7 lb] |

## Certifications

| | |
|---|---|
| North America | UL, FCC Verification, CSA, IC |
| Europe | CE |
| Australia / New Zealand | C-tick |

In the interests of continual product improvement all specifications are subject to change without notice. Performance ratings are valid with all other variables at Nominal.

**RoHS COMPLIANT**

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Email: dc.info@eaton.com
Internet: www.eaton.com/telecompower

# RM3-400 Series Rectifier Magazine



## Features

- 48V or 24V
- 19-inch relay rack or cabinet mounting
- Compact 1U height, 150A output
- Suitable for Enterprise and Access 3G power rectifiers including the Energy Saver Rectifier
- Independent AC input to each rectifier
- Compliance with international standards



The Eaton RM3-400 rectifier magazine is a versatile and compact 1U high, 19-inch module designed to UL specifications. Its can accommodate both the Enterprise and Access series of Eaton 3G and Energy Saver (ES) rectifiers and can be configured for up to 3 rectifiers or, 2 rectifiers and a system controller.

It has an output capacity of up to 150A (actual output is dependent on the rectifier model) however, the front-to-back airflow allows two RM3 magazines to be stacked for higher capacity solutions.

The DC output is via a field wiring termination box to provide an easily accessed connection (take-off) point for flexible cables.

Independent AC supply to each rectifier position is via either plug & cord sets or IEC plugs where country and voltage specific sets are available upon request.

The RM3-400 series is suitable for both cabinet and relay rack mounting. The mounting brackets can be moved along the chassis to provide a wide range of mounting position options.

The RM3-400 series is an ideal solution to supply front end power to customer equipment or as a building block for integrated systems in custom applications.

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# Technical Specifications

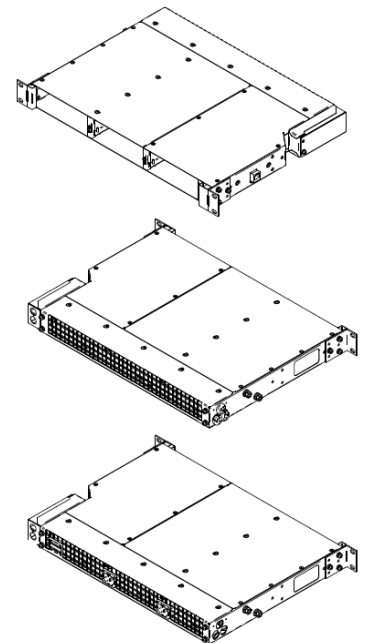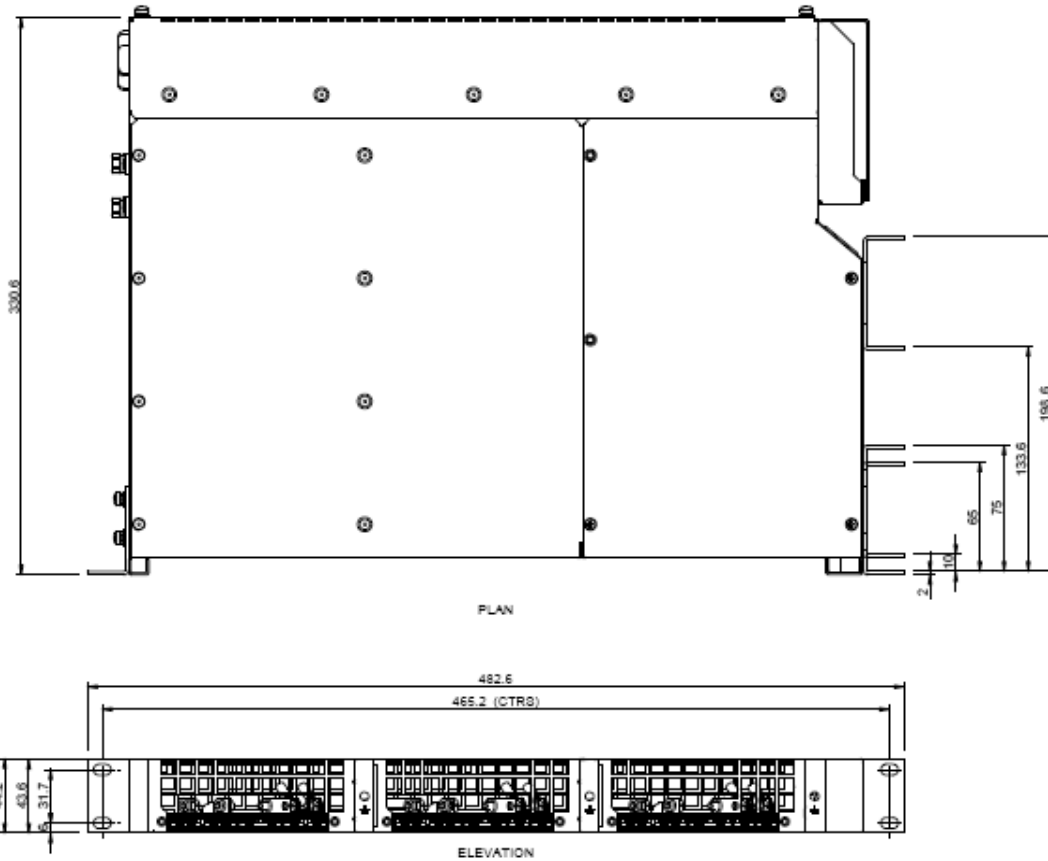## Brief Technical Specifications

| | |
|---|---|
| AC Supply | 1Ø or 2Ø via individual cord sets |
| DC Output | 24V: up to 150A<br>48V: up to 125A (dependent on rectifiers fitted)<br>Interconnecting busbars with flexible cable take-off (field wireable). |
| Dimensions H,W,D | Standard: 1U, 19", 335mm [13.2 "]*<br><br>*Additional clear space is required for exhaust air. |
| Weight | 3.9kg [8.6lb] including AC cable sets. |
| Rectifier Configurations | 3 x EPR48-3G / APR48-3G / APR24-3G / APR48-ES<br>2 x EPR48-3G / APR48-3G / APR24-3G / APR48-ES plus system controller |
| Options | Rectifier cover for unused rectifier positions (RM3B-A01)<br>AC cord sets - country/voltage specific<br>23" mounting brackets |
| Versions | RM3-400 series (3 rectifiers, no system controller)<br>RM3-410 series (2 rectifiers, SC100 system controller)<br>RM3-420 series (2 rectifiers, SC200 system controller) |

## Certifications

All products comply with international standards. Contact your local Eaton DC representative for details on the specific product versions available with these safety and EMC approvals:

| | |
|---|---|
| Europe | CE |
| North America | UL (recognized) |

In the interests of continual product improvement all specifications are subject to change without notice.

RoHS COMPLIANT

PLAN

330.6

482.6

465.2 (CTRS)

ELEVATION

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Email: dc.info@eaton.com
Internet: www.eaton.com/telecompower

# DH-IPC-HFW1530S-S6

## 5MP Entry IR Fixed-focal Bullet Network Camera

- 5MP 1/2.7" CMOS image sensor, low luminance, and high definition image.
- Outputs max. 5MP (2880 × 1620) @20 fps and supports 2688 × 1520 (2688 × 1520) @25/30 fps.
- H.265 codec, high compression rate, and ultra-low bit rate.
- Built-in IR LED, and the max. illumination distance is 30 m.
- ROI, SMART H.264 +/H.265+, flexible coding, applicable to various bandwidth and storage environments.
- Rotation mode, DWDR, 3D NR, HLC, BLC, digital watermarking, applicable to various monitoring scenes.
- Abnormality detection: Motion detection, video tampering, audio detection, network disconnection, IP conflict, and illegal access.
- Built-in MIC.
- 12 V DC/PoE power supply.
- IP67 protection.

| 5Mp | Smart Codec | Motion Detection | Smart Illumination | Image Flip | IP67 |
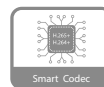
## Series Overview

With features of simple installation, easy operation, and high performance-cost ratio, Dahua Entry series network camera is applicable to small and medium-sized scenes, such as homes/residences, small-sized retail stores, and other small and medium-sized enterprises.

## Functions

### Smart H.265+ & Smart H.264+

With advanced scene-adaptive rate control algorithm, Dahua smart encoding technology realizes the higher encoding efficiency than H.265 and H.264, provides high-quality video, and reduces the cost of storage and transmission.

### Motion Detection

When moving objects appear in the monitoring image, Dahua Motion Detection (General) technology triggers alarm or records.

### Smart Illumination

Dahua Smart Illumination technology can display image in the environment of low illuminance or completely dark environment. According to the distance of the targets, the camera adjusts Illuminations intensity automatically to display the details of the moving target.

### Image Flip

For narrow and long scenes, Dahua image flip technology flips the image by 90°/180°/270° to realize better surveillance in rotation mode.

### Cyber Security

Dahua network cameras employ a series of security technologies, including security authentication and authorization, access control protocols, trusted protection, encrypted transmission and encrypted storage. These technologies improve the camera's defense against external cyber threats and prevent malicious programs from comprising the device.

### Protection (IP67, wide voltage)

IP67: The camera passes a series of strict test on dust and soak. It has dust-proof function, and the enclosure can works normal after soaking in 1 m deep water for 30 minutes.
Wide voltage: The camera allows ±30% (for some power supplies) input voltage tolerance (wide voltage range), and it is widely applied to outdoor environment with instable voltage.

## Technical Specification

### Camera

| | |
|---|---|
| Image Sensor | 1/2.7" CMOS |
| Max. Resolution | 2880 (H) × 1620 (V) |
| ROM | 16 MB |
| RAM | 128 MB |
| Scanning System | Progressive |
| Electronic Shutter Speed | Auto/Manual 1/3 s–1/100,000 s |
| Min. Illumination | 0.03 Lux@F2.0 (Color, 30 IRE)<br>0.003 Lux@F2.0 (B/W, 30 IRE)<br>0 Lux (Illuminator on) |
| S/N Ratio | > 56 dB |
| Illumination Distance | 30 m (98.43 ft) (IR) |
| Illuminator On/Off Control | Auto/Manual |
| Illuminator Number | 1 (IR LED) |
| Pan/Tilt/Rotation Range | Pan: 0°–360°<br>Tilt: 0°–90°<br>Rotation: 0°–360° |

### Lens

| | |
|---|---|
| Lens Type | Fixed-focal |
| Lens Mount | M12 |
| Focal Length | 2.8 mm; 3.6 mm |
| Max. Aperture | 2.8 mm: F2.0<br>3.6 mm: F2.0 |
| Field of View | 2.8 mm: Horizontal: 106°; Vertical: 56°; Diagonal: 125°<br>3.6 mm: Horizontal: 92°; Vertical: 48°; Diagonal: 109° |
| Iris Control | Fixed |
| Close Focus Distance | 2.8 mm: 0.8 m (2.62 ft)<br>3.6 mm: 1.3 m (4.27 ft) |

| DORI Distance | Lens | Detect | Observe | Recognize | Identify |
|---|---|---|---|---|---|
| | 2.8 mm | 56.0 m (183.73 ft) | 22.4 m (73.49 ft) | 11.2 m (36.75 ft) | 5.6 m (18.37 ft) |
| | 3.6 mm | 76.0 m (249.34 ft) | 30.4 m (99.74 ft) | 15.2 m (49.87 ft) | 7.6 m (24.93 ft) |

### Video

| | |
|---|---|
| Video Compression | H.265; H.264; H.264B; MJPEG (only supported by the sub stream) |
| Smart Codec | Smart H.265+; Smart H.264+ |
| Video Frame Rate | Main stream:<br>2880 × 1620 (1 fps–20 fps)<br>2688 × 1520 (1 fps–25/30 fps)<br>Sub stream:<br>704 × 576 (1 fps–25 fps)<br>704 × 480 (1 fps–30 fps)<br>*The values above are the max. frame rates of each stream; for multiple streams, the values will be subjected to the total encoding capacity. |
| Stream Capability | 2 streams |
| Resolution | 2880 × 1620 (2880 × 1620); 2688 × 1520 (2688 × 1520); 2560 × 1440(2560 × 1440); 3M (2048 × 1536); 2304 × 1296 (2304 × 1296); 1080p (1920 × 1080); 1.3M (1280 × 960); 720p (1280 × 720); D1 (704 × 576/704 × 480); VGA (640 × 480); CIF (352 × 288/352 × 240) |

| | |
|---|---|
| Bit Rate Control | CBR/VBR |
| Video Bit Rate | H.264: 32 kbps–6144 kbps<br>H.265: 12 kbps–6144 kbps |
| Day/Night | Auto(ICR)/Color/B/W |
| BLC | Yes |
| HLC | Yes |
| WDR | DWDR |
| White Balance | Auto; natural; street lamp; outdoor; manual; regional custom |
| Gain Control | Auto; manual |
| Noise Reduction | 3D NR |
| Motion Detection | OFF/ON (4 areas, rectangular) |
| Region of Interest (RoI) | Yes (4 areas) |
| Smart Illumination | Yes |
| Image Rotation | 0°/90°/180°/270° (Support 90°/270° with 2688 × 1520 resolution and lower) |
| Mirror | Yes |
| Privacy Masking | 4 areas |

### Audio

| | |
|---|---|
| Built-in MIC | Yes |
| Audio Compression | G.711a; G.711Mu; G.726; PCM |

### Alarm

| | |
|---|---|
| Alarm Event | Network disconnection; IP conflict; illegal access; motion detection; video tampering; audio detection; security exception |

### Network

| | |
|---|---|
| Network Port | RJ-45 (10/100 Base-T) |
| SDK and API | Yes |
| Cyber Security | Video encryption; configuration encryption; Digest; WSSE; account lockout; security logs; generation and importing of X.509 certification; HTTPS; trusted boot; trusted execution; trusted upgrade |
| Network Protocol | IPv4; IPv6; HTTP; TCP; UDP; ARP; RTP; RTSP; SMTP; FTP; DHCP; DNS; DDNS; NTP; Multicast |
| Interoperability | ONVIF (Profile S/Profile T); CGI; P2P; Genetec; Milestone |
| User/Host | 6 (Total bandwidth: 48 M) |
| Storage | FTP |
| Browser | IE<br>Chrome<br>Firefox |
| Management Software | Smart PSS; DSS; DMSS |
| Mobile Client | IOS; Android |

### Certification

| | |
|---|---|
| Certifications | CE-LVD: EN62368-1<br>CE-EMC: Electromagnetic Compatibility Directive 2014/30/EU<br>FCC: 47 CFR FCC Part 15, Subpart B |

## Power

| | |
|---|---|
| Power Supply | 12V DC/PoE (802.3af) |
| Power Consumption | Basic: 1.9W (12V DC); 2.3W (PoE)<br>Max. (ICR + H.265 + max. resolution + main stream +<br>DWDR + IR intensity): 3.9W (12V DC); 4.5W (PoE) |

## Environment

| | |
|---|---|
| Operating Temperature | −40°C to +60°C (−40°F to +140°F) |
| Operating Humidity | ≤95% |
| Storage Temperature | −40°C to +60°C (−40°F to +140°F) |
| Protection | IP67 |

## Structure

| | |
|---|---|
| Casing | Metal |
| Product Dimensions | 162.1 mm × Φ70.1 mm (6.38" × Φ2.76") |
| Net Weight | 0.32 kg (0.71 lb) |
| Gross Weight | 0.45 kg (0.99 lb) |
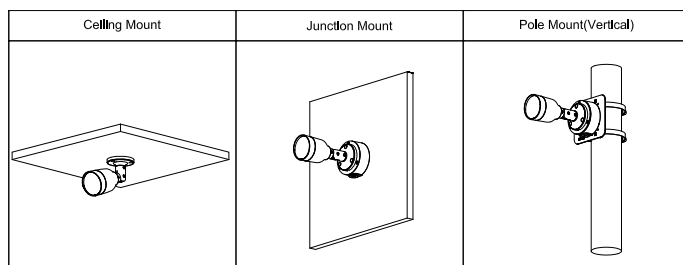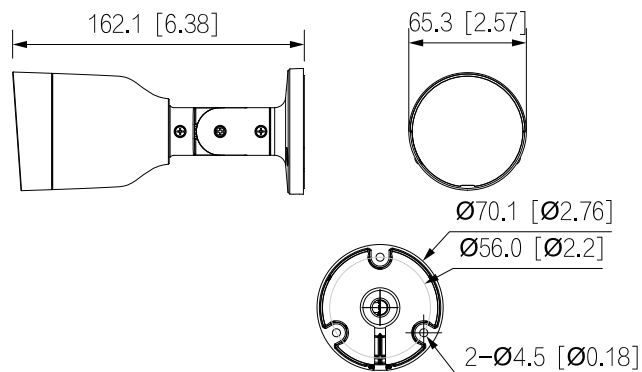
## Ordering Information

| Type | Model | Description |
|---|---|---|
| 5MP Camera | DH-IPC-HFW1530S-S6 | 5MP Entry IR Fixed-focal Bullet Network Camera |
| Accessories (optional) | PFA134 | Junction Box |
| | PFA130-E | IP66 Junction Box |
| | PFA152-E | Pole Mount Bracket |
| | PFM321D | 12V DC 1A Power Adapter |
| | PFM900-E | Integrated Mount Tester |

## Accessories

### Optional:



PFA134
Junction Box

PFA130-E
IP66 Junction Box

PFA152-E
Pole Mount Bracket

PFM321D
12V DC 1A Power Adapter

PFM900-E
Integrated Mount Tester



Ceiling Mount | Junction Mount | Pole Mount(Vertical)

## Dimensions (mm[inch])



162.1 [6.38]

65.3 [2.57]

Ø70.1 [Ø2.76]
Ø56.0 [Ø2.2]

2−Ø4.5 [Ø0.18]

# HPE Aruba Networking 2930F Switch Series



### Key features

- Layer 3 switch series with VSF stacking, static, RIP and Access OSPF Routing, Dynamic Segmentation, ACLs, and robust QoS

- Supports advanced security and network management via ClearPass Policy Manager, and HPE Aruba Networking Central

- Convenient built-in 1GbE or 10GbE uplinks and up to 740 W PoE+

- Software defined ready with REST APIs and OpenFlow support

- Simple deployment with Zero Touch Provisioning

## Product overview

The HPE Aruba Networking 2930F Switch Series is designed for customers creating smart digital workplaces that are optimized for mobile users with an integrated wired and wireless approach. These convenient Layer 3 network switches include built-in uplinks and PoE power and are simple to deploy and manage with advanced security and network management tools like ClearPass Policy Manager, and cloud-based HPE Aruba Networking Central.

A powerful HPE Aruba Networking ProVision ASIC delivers performance , robust feature support and value with programmability for the latest applications. Stacking with Virtual Switching Framework (VSF) provides simplicity and scalability. The 2930F supports built-in 1GbE or 10GbE uplinks, PoE+, Access OSPF routing, Dynamic Segmentation, robust QoS, RIP routing, and IPv6 with no software licensing required.

The HPE Aruba Networking 2930F Switch Series provides a convenient and cost-effective access switch solution that can be quickly set up with Zero Touch Provisioning. The robust Layer 3 feature set includes a limited lifetime warranty.

## Enhanced capabilities

### Unified wired and wireless support

- Supports unified wired and wireless policies using ClearPass Policy Manager

- Switch auto-configuration automatically configures switch for different settings such as VLAN, CoS, PoE max. power, and PoE priority when an HPE Aruba Networking access point is detected

- User Role defines a set of switch-based policies in areas such as security, authentication, and QoS. A user role can be assigned to a group of users or devices, using switch-based local user role or download from ClearPass

- For improved network simplicity and security, Dynamic Segmentation automatically enforces user, device and application-aware policies on HPE Aruba Networking wired and wireless networks. Automated device profiling, role-based access control, and Layer 7 firewall features deliver enhanced visibility and performance for a better overall experience for both IT and end users alike

- Dynamic Segmentation provides a secure tunnel that transports network traffic on a per-port or per-user role basis to an HPE Aruba Networking Controller. In a per-user role Tunnel Node, users are authenticated by the ClearPass Policy Manager which directs traffic to be tunneled to an HPE Aruba Networking controller or switch locally

- Static IP visibility allows ClearPass to do accounting for clients with a static IP address

## Software-defined networks
Supports multiple programmatic interfaces, including REST APIs and Openflow 1.0 and 1.3, to enable automation of network operations, monitoring, and troubleshooting

## Quality of Service (QoS)
- Traffic prioritization (IEEE 802.1p) for classification into eight priority levels mapped to eight queues

- Layer 4 prioritization based on TCP/UDP port numbers

- Class of Service (CoS) sets the IEEE 802.1p priority tag based on IP address, IP Type of Service (ToS), Layer 3 protocol, TCP/UDP port number, source port, and DiffServ

- Rate limiting sets per-port ingress enforced maximums and per-port, per-queue minimums

- Large buffers provide graceful congestion management

- Unknown Unicast Rate Limiting throttles unicast packets with unknown destination addresses and limits flooding on the VLAN

## Connectivity
- Convenient built-in 10 Gbps Ethernet (4 x SFP+) uplinks available on select models

- 12 port fanless model with built-in power supply includes 12 x 1 Gbps Ethernet PoE+ ports and four built-in uplinks (2 x SFP+ and 2 x 1GBASE-T)

- Auto-MDIX provides automatic adjustments for straight-through or crossover cables on all 10/100 and 10/100/1000 ports

- IEEE 802.3at Power over Ethernet (PoE+) provides up to 30 W per port that allows support of the latest PoE+-capable devices such as IP phones, wireless access points, and security cameras, as well as any IEEE 802.3af-compliant end device; eliminates the cost of additional electrical cabling and circuits that would otherwise be necessary in IP phone and WLAN deployments

- Support for pre-standard PoE detects and provides power to pre-standard PoE devices

- IPv6
  - IPv6 host enables switches to be managed in an IPv6 network
  - Dual stack (IPv4 and IPv6) transitions from IPv4 to IPv6, supporting connectivity for both protocols
  - MLD snooping forwards IPv6 multicast traffic to the appropriate interface
  - IPv6 ACL/QoS supports ACL and QoS for IPv6 network traffic
  - IPv6 routing supports static and RIPng protocols
  - Security provides RA guard, DHCPv6 protection, dynamic IPv6 lockdown, and ND snooping

## Performance and efficiency
- Energy-efficient design
  - 80 PLUS Silver Certified power supply increases power efficiency and savings
  - Energy-efficient Ethernet (EEE) support reduces power consumption in accordance with IEEE 802.3az

- Designed with the latest HPE Aruba Networking Provision ASIC, providing very low latency, increased packet buffering, and adaptive power consumption

- Selectable queue configurations allows for increased performance by selecting the number of queues and associated memory buffering that best meet the requirements of the network applications

- Stacking Topology
  - Virtual Switching Framework (VSF) front plane stacking creates one virtual resilient switch from up to eight* switches
  - Ring topology—Supports up to eight member stack
  - Virtualized switching provides simplified management as the switches act as a single chassis when stacked

## Convergence
- IP multicast snooping and data-driven IGMP automatically prevents flooding of IP multicast traffic

- LLDP-MED (Media Endpoint Discovery) defines a standard extension of LLDP that stores values for parameters such as QoS and VLAN to automatically configure network devices such as IP phones

- IEEE 802.1AB Link Layer Discovery Protocol (LLDP) facilitates easy mapping using network management applications with LLDP automated device discovery protocol

- PoE and PoE+ allocations support multiple methods (automatic, IEEE 802.3at dynamic, LLDP-MED fine grain, IEEE 802.3af device class, or user-specified) to allocate and manage PoE/PoE+ power for more efficient energy savings

- Local MAC Authentication assigns attributes such as VLAN and QoS using a locally configured profile that can be a list of MAC prefixes

- IP multicast routing includes PIM Sparse and Dense modes to route IP multicast traffic (limited to 16 interfaces)

- Protocol Independent Multicast for IPv6 supports one-to-many and many-to-many media casting use cases such as IPTV over IPv6 networks

## Resiliency and high availability

- IEEE 802.1s Multiple Spanning Tree provides high link availability by allowing Multiple Spanning Trees; provides legacy support for IEEE 802.1d and IEEE 802.1w

- Virtual Router Redundancy Protocol (VRRP) allows groups of two routers to dynamically back each other up to create highly available routed environments for IPv4 and IPv6 networks (limited to 128 VRs)

- IEEE 802.3ad link aggregation control protocol (LACP) and port trunking support up to 60 static or dynamic trunks active across a stack, with each trunk having up to eight links (ports) per static trunk; and offer support for trunking across stack members

- SmartLink provides easy-to-configure link redundancy of active and standby links

## Simplified configuration and management

- HPE Aruba Networking Central cloud-based management platform offers a simple, secure and cost-effective way to manage switches

- Zero Touch Provisioning (ZTP) simplifies installation of the switch infrastructure using HPE Aruba Networking Activate or a DHCP-based process with AirWave and HPE Aruba Networking Network Management

- Built-in programmable and easy-to-use REST API interface provides configuration automation for campus networks

- SNMPv1, v2, and v3 provide complete support of SNMP; provide full support of industry-standard Management Information Base (MIB) plus private extensions; SNMPv3 supports increased security using encryption

## Manageability

- Dual flash images provide independent primary and secondary operating system files for backup while upgrading

- Friendly port names allow assignment of descriptive names to ports

- Find-Fix-Inform feature finds and fixes common network problems automatically, then informs administrator

- Supports multiple configuration files to be stored to a flash image

- RMON, XRMON, and sFlow provide advanced monitoring and reporting capabilities for statistics, history, alarms, and events

- Troubleshooting ingress and egress port monitoring enable more efficient network problem solving

- Unidirectional link detection (UDLD) monitors the link between two switches and blocks the ports on both ends of the link if the link goes down at any point between the two devices

- IP SLA for Voice monitors quality of voice traffic using the UDP Jitter and UDP Jitter for VoIP tests

## Layer 2 switching

- IEEE 802.1ad Q-in-Q increases the scalability of an Ethernet network by providing a hierarchical structure; connects multiple LANs on a high-speed campus or metro network

- VLAN support and tagging support IEEE 802.1Q (4,094 VLAN IDs) and 2K VLANs simultaneously

- Jumbo packet support improves the performance of large data transfers; supports frame size of up to 9,220 bytes

- IEEE 802.1v protocol VLANs isolate select non-IPv4 protocols automatically into their own VLANs

- Rapid Per-VLAN Spanning Tree (RPVST+) allows each VLAN to build a separate spanning tree to improve link bandwidth usage; is compatible with PVST+

- GVRP and MVRP allows automatic learning and dynamic assignment of VLANs

- VxLAN encapsulation (tunneling) protocol for overlay network that enables a more scalable virtual network deployment

## Layer 3 services

- DHCP server centralizes and reduces the cost of IPv4 address management

## Layer 3 routing

- Static IP routing provides manually configured routing; includes ECMP capability

- 256 static and 10,000 RIP routes facilitate segregation of user data, without adding external hardware

- Routing Information Protocol (RIP) provides RIPv1, RIPv2, and RIPng routing

- Access OSPF

  – Provides OSPFv2 and OSPFv3 protocols for routing between access and the next layer on the LAN. Only one OSPF area and zp to 8 interfaces are supported.

- Policy-based routing uses a classifier to select traffic that can be forwarded based on policy set by the network administrator (limited to 16 next hop routes)

## Security

- Control Plane Policing sets rate limit on control protocols to protect CPU overload from DOS attacks

- Multiple user authentication methods

  – Uses an IEEE 802.1X supplicant on the client in conjunction with a RADIUS server to authenticate in accordance with industry standards

  – Supports web-based authentication

  – Supports MAC-based client authentication

- Authentication flexibility

  – Multiple IEEE 802.1X users per port provides authentication of multiple devices on a single port; prevents a user from "piggybacking" on another user's IEEE 802.1X authentication

  – Concurrent IEEE 802.1X, Web, and MAC authentication schemes per port switch port will accept up to 32 sessions of IEEE 802.1X, Web, and MAC authentications

- TPM-based Security

  – Includes a Trusted Platform Module (TPM) for secure hardware-based generation and storage of cryptographic keys that can be used for a variety of authentication purposes

- Access control lists (ACLs) provide IP Layer 3 filtering based on source/destination IP address/subnet and source/destination TCP/UDP port number

- Source-port filtering allows only specified ports to communicate with each other

- RADIUS/TACACS+ eases switch management security administration by using a password authentication server

- Secure shell encrypts all transmitted data for secure remote CLI access over IP networks

- Secure Sockets Layer (SSL) encrypts all HTTP traffic, allowing secure access to the browser-based management GUI in the switch

- Port security allows access only to specified MAC addresses, which can be learned or specified by the administrator

- Radius over TLS (RadSec) allows users to use a more secure and reliable mode of communications between switch and radius servers over unsecure networks

- MAC address lockout prevents particular configured MAC addresses from connecting to the network

- Secure FTP allows secure file transfer to and from the switch; protects against unwanted file downloads or unauthorized copying of a switch configuration file

- Switch management logon security helps secure switch CLI logon by optionally requiring either RADIUS or TACACS+ authentication

- Custom banner displays security policy when users log in to the switch

- STP BPDU port protection blocks Bridge Protocol Data Units (BPDUs) on ports that do not require BPDUs, preventing forged BPDU attacks

- DHCP protection blocks DHCP packets from unauthorized DHCP servers, preventing denial-of-service attacks

- Dynamic ARP protection blocks ARP broadcasts from unauthorized hosts, preventing eavesdropping or theft of network data

- STP root guard protects the root bridge from malicious attacks or configuration mistakes

- Identity-driven ACL enables implementation of a highly granular and flexible access security policy and VLAN assignment specific to each authenticated network user

- Per-port broadcast throttling configures broadcast control selectively on heavy traffic port uplinks

- Private VLAN provides network security by restricting peer-to-peer communication to prevent a variety of malicious attacks; typically a switch port can only communicate with other ports in the same community and/or an uplink port, regardless of VLAN ID or destination MAC address

- Open Authentication Role simplifies first-time deployment of AAA in brownfield deployments by allowing full network access for failed clients and provides instant connectivity as soon as a client is plugged-in

- Critical Authentication Role ensures that important infrastructure devices such as IP phones are allowed network access even in the absence of a RADIUS server

- MAC Pinning allows non-chatty legacy devices to stay authenticated by pinning client MAC addresses to the port until the clients logoff or get disconnected

- Enrollment over Secure Transport (EST) enhances the switch PKI infrastructure with a simpler, scalable and more secure method of certificate provisioning, re-enrollment and renewal

### Monitor and diagnostics
Digital optical monitoring of SFP+ and 1000BASE-T transceivers allows detailed monitoring of the transceiver settings and parameters

### Customer first, customer last support
When your network is important to your business, then your business needs the backing of HPE Aruba Networking Support Services. Partner with HPE Aruba Networking product experts to increase your team productivity, keep pace with technology advances, software releases, and obtain break-fix support.

HPE Aruba Networking Foundational Care support services include priority access to Technical Assistance Center(TAC) engineers 24x7x365, flexible hardware and onsite support options, and total coverage for HPE Aruba Networking products. HPE Aruba Networking switches with assigned Central subscriptions benefit with option for additional hardware support only.

HPE Aruba Networking Pro Care adds fast access to senior TAC engineers, who are assigned as a single point of contact for case management, reducing the time spent addressing and resolving issues.

For complete details on Foundational Care and Pro Care Care, please visit: https://www.arubanetworks.com/supportservices/

### Warranty, services and support
- Limited Lifetime Warranty, see https://www.arubanetworks.com/support-services/product-warranties/ for warranty and support information included with your product purchase

- For Software Releases and Documentation, refer to https://asp.arubanetworks.com/downloads

- For support and services information, visit https://www.arubanetworks.com/support-services/arubacare/

# Technical specifications

| | HPE Aruba Networking 2930F 24G 4SFP+ Switch (JL253A) | HPE Aruba Networking 2930F 48G 4SFP+ Switch (JL254A) | HPE Aruba Networking 2930F 24G PoE+ 4SFP+ Switch (JL255A) |
|---|---|---|---|
| **I/O ports and slots** | | | |
| | 24 RJ-45 autosensing 10/100/1000 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T); Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T:full only<br>4 SFP+ 1/10GbE ports; PHY-less | 48 RJ-45 autosensing 10/100/1000 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T); Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only<br>4 SFP+ 1/10GbE ports; PHY-less | 24 RJ-45 autosensing 10/100/1000 PoE+ ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3at PoE+); Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only<br>4 SFP+ 1/10GbE ports; PHY-less |
| **Additional ports and slots** | | | |
| | 1 dual-personality (RJ-45 or USB micro-B) serial console port | 1 dual-personality (RJ-45 or USB micro-B) serial console port | 1 dual-personality (RJ-45 or USB micro-B) serial console port |
| **Physical characteristics** | | | |
| Dimensions | 17.42 (w) x 7.88 (d) x 1.73 (h) in (44.25 x 20.02 x 4.39 cm) (1U height) | 17.42 (w) x 9.7 (d) x 1.73 (h) in (44.25 x 24.63 x 4.39 cm) (1U height) | 17.42 (w) x 11.98 (d) x 1.73 (h) in (44.25 x 30.42 x 4.39 cm) (1U height) |
| Weight | 5.31 lb (2.41 kg) | 6.83 lb (3.10 kg) | 8.6 lb (3.9 kg) |
| **Memory and processor** | | | |
| | Dual Core ARM® Cortex A9 @ 1016 MHz, 1 GB DDR3 SDRAM; Packet buffer size: 12.38 MB 4.5MB Ingress/7.875MB Egress, 4 GB eMMC | Dual Core ARM Cortex A9 @ 1016 MHz, 1 GB DDR3 SDRAM; Packet buffer size: 12.38 MB 4.5MB Ingress/7.875MB Egress, 4 GB eMMC | Dual Core ARM Cortex A9 @ 1016 MHz, 1 GB DDR3 SDRAM; Packet buffer size: 12.38 MB 4.5MB Ingress/7.785 Egress, 4 GB eMMC |
| **Performance** | | | |
| | IPv6 Ready Certified | IPv6 Ready Certified | IPv6 Ready Certified |
| 1,000 Mb latency | < 3.8 µs (64-byte packets) | < 3.8 µs (64-byte packets) | < 3.8 µs (64-byte packets) |
| 10 Gbps latency | < 2.9 µs (64-byte packets) | < 2.9 µs (64-byte packets) | < 2.9 µs (64-byte packets) |
| Throughput | up to 95.2 Mpps | up to 112.0 Mpps | up to 95.2 Mpps |
| Switching capacity | 128 Gbps | 176 Gbps | 128 Gbps |
| Routing table size | 2,000 IPv4, 1,000 IPv6 in hardware, 200 OSPF, 256 Static, 10,000 RIP | 2,000 IPv4, 1,000 IPv6 in hardware, 200 OSPF, 256 Static, 10,000 RIP | 2,000 IPv4, 1,000 IPv6 in hardware, 200 OSPF, 256 Static, 10,000 RIP |
| MAC address table size | 32,768 entries | 32,768 entries | 32,768 entries |

# Technical specifications

| | HPE Aruba Networking 2930F 24G 4SFP+ Switch (JL253A) | HPE Aruba Networking 2930F 48G 4SFP+ Switch (JL254A) | HPE Aruba Networking 2930F 24G PoE+ 4SFP+ Switch (JL255A) |
|---|---|---|---|
| **Environment** | | | |
| Operating temperature | 32°F to 113°F (0°C to 45°C); up to 5,000 Feet, 0°C to 40°C (32°F to 104°F) up to 10,000 Feet | 32°F to 113°F (0°C to 45°C); up to 5,000 Feet, 0°C to 40°C (32°F to 104°F) up to 10,000 Feet | 32°F to 113°F (0°C to 45°C); up to 5,000 Feet, 0°C to 40°C (32°F to 104°F) up to 10,000 Feet |
| Operating relative humidity | 15% to 95% @ 104°F (40°C), noncondensing | 15% to 95% @ 104°F (40°C), noncondensing | 15% to 95% @ 104°F (40°C), noncondensing |
| Non-operating/storage temperature | -40°F to 158°F (-40°C to 70°C); up to 15,000 Feet | -40°F to 158°F (-40°C to 70°C); up to 15,000 Feet | -40°F to 158°F (-40°C to 70°C); up to 15,000 Feet |
| Non-operating/storage relative humidity | 15% to 95% @ 149°F (65°C), noncondensing | 15% to 95% @ 149°F (65°C), noncondensing | 15% to 95% @ 149°F (65°C) |
| Acoustic (power and pressure) in decibals | Power: 49.7 dB, Pressure: 37.1 dB | Power: 54.1 dB, Pressure: 40.2 dB | Power: 54.1 dB, Pressure: 40.6 dB |
| Airflow direction | Side-to-side | Side-to-side | Side-to-side |
| **Electrical characteristics** | | | |
| Frequency | 50/60 Hz | 50/60 Hz | 50/60 Hz |
| Power efficiency certifications | | | 80plus.org certification: Silver |
| Maximum heat dissipation | 100.0 BTU/hr (105.5 kj/hr) | 157.2 BTU/hr (165.8 kj/hr) | 258.0 BTU/hr (272.2 kj/hr) |
| Voltage | 100 - 127 / 200 - 240 VAC, rated | 100 - 127 / 200 - 240 VAC, rated | 100 - 127 / 200 - 240 VAC, rated |
| Current | 0.6/0.4 A | 0.9/0.6 A | 4.9/2.4 A |
| Maximum power rating | 29.3 W | 46.6 W | 445 W |
| Idle power | 19.5 W | 32.7 W | 36.8 W |
| PoE power | | | 370 W PoE+ |
| Notes | Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated. | Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated. | Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated. |
| **Safety** | | | |
| | UL 60950-1: 2nd Edition; UL 62368-1: 2nd Edition; EN 60950-1:2006 +A11:2009 +A1:2010 +A12:2011+A2:2013; EN 62368-1: 2nd Edition; IEC 60950-1:2005 +A1:2009 +A2:2013; CSA 22.2 No. 60950-1-07 2nd; IEC-62368-1: 2nd Edition; EN 60825-1:2014 / IEC 60825-1: 2014 Class 1 | UL 60950-1: 2nd Edition; UL 62368-1: 2nd Edition; EN 60950-1:2006 +A11:2009 +A1:2010 +A12:2011+A2:2013; EN 62368-1: 2nd Edition; IEC 60950-1:2005 +A1:2009 +A2:2013; CSA 22.2 No. 60950-1-07 2nd; IEC-62368-1: 2nd Edition; EN 60825-1:2014 / IEC 60825-1: 2014 Class 1 | UL 60950-1: 2nd Edition; UL 62368-1: 2nd Edition; EN 60950-1:2006 +A11:2009 +A1:2010 +A12:2011+A2:2013; EN 62368-1: 2nd Edition; IEC 60950-1:2005 +A1:2009 +A2:2013; CSA 22.2 No. 60950-1-07 2nd; IEC-62368-1: 2nd Edition; EN 60825-1:2014 / IEC 60825-1: 2014 Class 1 |

# Technical specifications

| | HPE Aruba Networking 2930F 24G 4SFP+ Switch (JL253A) | HPE Aruba Networking 2930F 48G 4SFP+ Switch (JL254A) | HPE Aruba Networking 2930F 24G PoE+ 4SFP+ Switch (JL255A) |
|---|---|---|---|
| **Emissions** | | | |
| | EN 55032:2012/CISPR 32 Class A; FCC CFR 47 Part 15 Class A; VCCI Class A; ICES-003 Class A; CNS 13438 | EN 55032:2012/CISPR 32 Class A; FCC CFR 47 Part 15 Class A; VCCI Class A; ICES-003 Class A; CNS 13438 | EN 55032:2012/CISPR 32 Class A; FCC CFR 47 Part 15 Class A; VCCI Class A; ICES-003 Class A; CNS 13438 |
| **Immunity** | | | |
| Generic | EN 55024:2010/CISPR 24 | EN 55024:2010/CISPR 24 | EN 55024:2010/CISPR 24 |
| ESD | IEC 61000-4-2 | IEC 61000-4-2 | IEC 61000-4-2 |
| Radiated | IEC 61000-4-3 | IEC 61000-4-3 | IEC 61000-4-3 |
| EFT/Burst | IEC 61000-4-4 | IEC 61000-4-4 | IEC 61000-4-4 |
| Surge | IEC 61000-4-5 | IEC 61000-4-5 | IEC 61000-4-5 |
| Conducted | IEC 61000-4-6 | IEC 61000-4-6 | IEC 61000-4-6 |
| Power frequency magnetic field | IEC 61000-4-8 | IEC 61000-4-8 | IEC 61000-4-8 |
| Voltage dips and Interruptions | IEC 61000-4-11 | IEC 61000-4-11 | IEC 61000-4-11 |
| Harmonics | IEC/EN 61000-3-2 | IEC/EN 61000-3-2 | IEC/EN 61000-3-2 |
| Flicker | IEC/EN 61000-3-3 | IEC/EN 61000-3-3 | IEC/EN 61000-3-3 |
| **Management** | | | |
| | HPE Aruba Networking Central; HPE Aruba Networking AirWave Network Management; IMC – Intelligent Management Center; Command-line interface; Web browser; Configuration menu; SNMP manager; Telnet; RMON1; FTP | HPE Aruba Networking Central; HPE Aruba Networking AirWave Network Management; IMC – Intelligent Management Center; Command-line interface; Web browser; Configuration menu; SNMP manager; Telnet; RMON1; FTP | HPE Aruba Networking Central; HPE Aruba Networking AirWave Network Management; IMC – Intelligent Management Center; Command-line interface; Web browser; Configuration menu; SNMP manager; Telnet; RMON1; FTP |

# Technical specifications

| | HPE Aruba Networking 2930F 48G PoE+ 4SFP+ Switch (JL256A) | HPE Aruba Networking 2930F 8G PoE+ 2SFP+ Switch (JL258A) | HPE Aruba Networking 2930F 24G 4SFP Switch (JL259A) |
|---|---|---|---|
| **I/O ports and slots** | | | |
| | 48 RJ-45 autosensing 10/100/1000 PoE+ ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3at PoE+); Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only 4 SFP+ 1/10GbE ports; PHY-less | 8 RJ-45 autosensing 10/100/1000 PoE+ ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3at PoE+); Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only 2 SFP+ 1/10GbE ports; PHY-less | 24 RJ-45 autosensing 10/100/1000 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T); Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only 4 SFP |
| **Additional ports and slots** | | | |
| | 1 dual-personality (RJ-45 or USB micro-B) serial console port | 1 dual-personality (RJ-45 or USB micro-B) serial console port | 1 dual-personality (RJ-45 or USB micro-B) serial console port |
| **Physical characteristics** | | | |
| Dimensions | 17.42 (w) x 11.98 (d) x 1.73 (h) in (44.25 x 30.42 x 4.39 cm) (1U height) | 10 (w) x 10 (d) x 1.73 (h) in (25.4 x 25.4 x 4.39 cm) (1U height) | 17.42 (w) x 7.88 (d) x 1.73 (h) in (44.25 x 20.02 x 4.39 cm) (1U height) |
| Weight | 9.83 lb (4.46 kg) | 4.41 lb (2.0 kg) | 5.31 lb (2.41 kg) |
| **Memory and processor** | | | |
| | Dual Core ARM Cortex A9 @ 1016 MHz, 1 GB DDR3 SDRAM; Packet buffer size: 12.38 MB 4.5MB Ingress/7.875MB Egress, 4 GB eMMC | Dual Core ARM Cortex A9 @ 1016 MHz, 1 GB DDR3 SDRAM; Packet buffer size: 12.38 MB 4.5MB Ingress/7.785 Egress, 4 GB eMMC | Dual Core ARM Cortex A9 @ 1016 MHz, 1 GB DDR3 SDRAM; Packet buffer size: 12.38 MB 4.5MB Ingress/7.875MB Egress, 4 GB eMMC |
| **Performance** | | | |
| | IPv6 Ready Certified | IPv6 Ready Certified | IPv6 Ready Certified |
| 1,000 Mb latency | < 3.8 μs (64-byte packets) | < 3.8 μs (64-byte packets) | < 3.8 μs (64-byte packets) |
| 10 Gbps latency | < 2.9 μs (64-byte packets) | < 2.9 μs (64-byte packets) | |
| Throughput | up to 112.0 Mpps | up to 41.7 Mpps | up to 41.7 Mpps |
| Switching capacity | 176 Gbps | 56 Gbps | 56 Gbps |
| Routing table size | 2,000 IPv4, 1,000 IPv6 in hardware, 200 OSPF, 256 Static, 10,000 RIP | 2,000 IPv4, 1,000 IPv6 in hardware, 200 OSPF, 256 Static, 10,000 RIP | 2,000 IPv4, 1,000 IPv6 in hardware, 200 OSPF, 256 Static, 10,000 RIP |
| MAC address table size | 32,768 entries | 32,768 entries | 32,768 entries |
| **Environment** | | | |
| Operating temperature | 32°F to 113°F (0°C to 45°C); up to 5,000 Feet, 0°C to 40°C (32°F to 104°F) up to 10,000 Feet | 32°F to 113°F (0°C to 45°C); up to 5,000 Feet, 0°C to 40°C (32°F to 104°F) up to 10,000 Feet | 32°F to 113°F (0°C to 45°C); up to 5,000 Feet, 0°C to 40°C (32°F to 104°F) up to 10,000 Feet |
| Operating relative humidity | 15% to 95% @ 104°F (40°C), noncondensing | 15% to 95% @ 104°F (40°C), noncondensing | 15% to 95% @ 104°F (40°C), noncondensing |
| Non-operating/storage temperature | -40°F to 158°F (-40°C to 70°C); up to 15,000 Feet | -40°F to 158°F (-40°C to 70°C); up to 15,000 Feet | -40°F to 158°F (-40°C to 70°C); up to 15,000 Feet |
| Non-operating/storage relative humidity | 15% to 95% @ 149°F (65°C) | 15% to 95% @ 149°F (65°C) | 15% to 95% @ 149°F (65°C), noncondensing |
| Acoustic | Power: 55.7 dB, Pressure: 41.7 dB | Power: 0 dB, Pressure: 0 dB Fanless | Power: 49.7 dB, Pressure: 37.1 dB |
| Airflow direction | Side-to-side | | Side-to-side |

# Technical specifications

| | HPE Aruba Networking 2930F 48G PoE+ 4SFP+ Switch (JL256A) | HPE Aruba Networking 2930F 8G PoE+ 2SFP+ Switch (JL258A) | HPE Aruba Networking 2930F 24G 4SFP Switch (JL259A) |
|---|---|---|---|
| **Electrical characteristics** | | | |
| Frequency | 50/60 Hz | 50/60 Hz | 50/60 Hz |
| Power efficiency certifications | 80plus.org certification: Silver | DoE VI certification | |
| Maximum heat dissipation | 293.0 BTU/hr (309.1 kj/hr) | 58.6 BTU/hr (61.8 kj/hr) | 100.0 BTU/hr (105.5 kj/hr) |
| Voltage | 100 - 127 / 200 - 240 VAC, rated | 90 - 264 VAC, rated | 100 - 127 / 200 - 240 VAC, rated |
| Current | 5.1/2.5 A | 2.6 A | 0.6/0.4 A |
| Maximum power rating | 459 W | 155 W | 29.3 W |
| Idle power | 48.6 W | 20 W | 19.5 W |
| PoE power | 370 W PoE+ | 125 W PoE+ | |
| Notes | Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated. | Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated. | Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated. |
| **Safety** | | | |
| | UL 60950-1: 2nd Edition; UL 62368-1: 2nd Edition; EN 60950-1:2006 +A11:2009 +A1:2010 +A12:2011+A2:2013; EN 62368-1: 2nd Edition; IEC 60950-1:2005 +A1:2009 +A2:2013; CSA 22.2 No. 60950-1-07 2nd; IEC-62368-1: 2nd Edition; EN 60825-1:2014 / IEC 60825-1:2014 Class 1 | UL 60950-1: 2nd Edition; UL 62368-1: 2nd Edition; EN 60950-1:2006 +A11:2009 +A1:2010 +A12:2011+A2:2013; EN 62368-1: 2nd Edition; IEC 60950-1:2005 +A1:2009 +A2:2013; CSA 22.2 No. 60950-1-07 2nd; IEC-62368-1: 2nd Edition; EN 60825-1:2014 / IEC 60825-1:2014 Class 1 | UL 60950-1: 2nd Edition; UL 62368-1: 2nd Edition; EN 60950-1:2006 +A11:2009 +A1:2010 +A12:2011+A2:2013; EN 62368-1: 2nd Edition; IEC 60950-1:2005 +A1:2009 +A2:2013; CSA 22.2 No. 60950-1-07 2nd; IEC-62368-1: 2nd Edition; EN 60825-1:2014 / IEC 60825-1:2014 Class 1 |
| **Emissions** | | | |
| | EN 55032:2012/CISPR 32 Class A; FCC CFR 47 Part 15 Class A; VCCI Class A; ICES-003 Class A; CNS 13438 | EN 55032:2012/CISPR 32 Class A; FCC CFR 47 Part 15 Class A; VCCI Class A; ICES-003 Class A; CNS 13438 | EN 55032:2012/CISPR 32 Class A; FCC CFR 47 Part 15 Class A; VCCI Class A; ICES-003 Class A; CNS 13438 |
| **Immunity** | | | |
| Generic | EN 55024:2010/CISPR 24 | EN 55024:2010/CISPR 24 | EN 55024:2010/CISPR 24 |
| ESD | IEC 61000-4-2 | IEC 61000-4-2 | IEC 61000-4-2 |
| Radiated | IEC 61000-4-3 | IEC 61000-4-3 | IEC 61000-4-3 |
| EFT/Burst | IEC 61000-4-4 | IEC 61000-4-4 | IEC 61000-4-4 |
| Surge | IEC 61000-4-5 | IEC 61000-4-5 | IEC 61000-4-5 |
| Conducted | IEC 61000-4-6 | IEC 61000-4-6 | IEC 61000-4-6 |
| Power frequency magnetic field | IEC 61000-4-8 | IEC 61000-4-8 | IEC 61000-4-8 |

# Technical specifications

| | HPE Aruba Networking 2930F 48G PoE+ 4SFP+ Switch (JL256A) | HPE Aruba Networking 2930F 8G PoE+ 2SFP+ Switch (JL258A) | HPE Aruba Networking 2930F 24G 4SFP Switch (JL259A) |
|---|---|---|---|
| **Immunity** | | | |
| Voltage dips and interruptions | IEC 61000-4-11 | IEC 61000-4-11 | IEC 61000-4-11 |
| Harmonics | IEC/EN 61000-3-2 | IEC/EN 61000-3-2 | IEC/EN 61000-3-2 |
| Flicker | IEC/EN 61000-3-3 | IEC/EN 61000-3-3 | IEC/EN 61000-3-3 |
| **Management** | | | |
| | HPE Aruba Networking Central; HPE Aruba Networking AirWave Network Management; IMC – Intelligent Management Center; Command-line interface; Web browser; Configuration menu; SNMP manager; Telnet; RMON1; FTP | HPE Aruba Networking Central; HPE Aruba Networking AirWave Network Management; IMC – Intelligent Management Center; Command-line interface; Web browser; Configuration menu; SNMP manager; Telnet; RMON1; FTP | HPE Aruba Networking Central; HPE Aruba Networking AirWave Network Management; IMC – Intelligent Management Center; Command-line interface; Web browser; Configuration menu; SNMP manager; Telnet; RMON1; FTP |

# Technical specifications

| | HPE Aruba Networking 2930F 48G 4SFP Switch (JL260A) | HPE Aruba Networking 2930F 24G PoE+ 4SFP Switch (JL261A) | HPE Aruba Networking 2930F 48G PoE+ 4SFP Switch (JL262A) |
|---|---|---|---|
| **I/O ports and slots** | | | |
| | 48 RJ-45 autosensing 10/100/1000 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T); Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only<br>4 SFP | 24 RJ-45 autosensing 10/100/1000 PoE+ ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3at PoE+); Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only<br>4 SFP | 48 RJ-45 autosensing 10/100/1000 PoE+ ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3at PoE+); Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only<br>4 SFP |
| **Additional ports and slots** | | | |
| | 1 dual-personality (RJ-45 or USB micro-B) serial console port | 1 dual-personality (RJ-45 or USB micro-B) serial console port | 1 dual-personality (RJ-45 or USB micro-B) serial console port |
| **Physical characteristics** | | | |
| Dimensions | 17.42 (w) x 9.7 (d) x 1.73 (h) in (44.25 x 24.63 x 4.39 cm) (1U height) | 17.42 (w) x 11.98 (d) x 1.73 (h) in (44.25 x 30.42 x 4.39 cm) (1U height) | 17.42 (w) x 11.98 (d) x 1.73 (h) in (44.25 x 30.42 x 4.39 cm) (1U height) |
| Weight | 6.83 lb (3.10 kg) | 8.6 lb (3.9 kg) | 9.83 lb (4.46 kg) |
| **Memory and processor** | | | |
| | Dual Core ARM Cortex A9 @ 1016 MHz, 1 GB DDR3 SDRAM; Packet buffer size: 12.38 MB 4.5MB Ingress/7.875MB Egress, 4 GB eMMC | Dual Core ARM Cortex A9 @ 1016 MHz, 1 GB DDR3 SDRAM; Packet buffer size: 12.38 MB 4.5MB Ingress/7.785 Egress, 4 GB eMMC | Dual Core ARM Cortex A9 @ 1016 MHz, 1 GB DDR3 SDRAM; Packet buffer size: 12.38 MB 4.5MB Ingress/7.875MB Egress, 4 GB eMMC |
| **Performance** | | | |
| | IPv6 Ready Certified | IPv6 Ready Certified | IPv6 Ready Certified |
| 1,000 Mb latency | < 3.8 µs (64-byte packets) | < 3.8 µs (64-byte packets) | < 3.8 µs (64-byte packets) |
| Throughput | up to 77.4 Mpps | up to 41.7 Mpps | up to 77.4 Mpps |
| Switching capacity | 104 Gbps | 56 Gbps | 104 Gbps |
| Routing table size | 2,000 IPv4, 1,000 IPv6 in hardware, 200 OSPF, 256 Static, 10,000 RIP | 2,000 IPv4, 1,000 IPv6 in hardware, 200 OSPF, 256 Static, 10,000 RIP | 2,000 IPv4, 1,000 IPv6 in hardware, 200 OSPF, 256 Static, 10,000 RIP |
| MAC address table size | 32,768 entries | 32,768 entries | 32,768 entries |
| **Environment** | | | |
| Operating temperature | 32°F to 113°F (0°C to 45°C); up to 5,000 Feet, 0°C to 40°C (32°F to 104°F) up to 10,000 Feet | 32°F to 113°F (0°C to 45°C); up to 5,000 Feet, 0°C to 40°C (32°F to 104°F) up to 10,000 Feet | 32°F to 113°F (0°C to 45°C); up to 5,000 Feet, 0°C to 40°C (32°F to 104°F) up to 10,000 Feet |
| Operating relative humidity | 15% to 95% @ 104°F (40°C), noncondensing | 15% to 95% @ 104°F (40°C), noncondensing | 15% to 95% @ 104°F (40°C), noncondensing |
| Non-operating/storage temperature | -40°F to 158°F (-40°C to 70°C); up to 15,000 Feet | -40°F to 158°F (-40°C to 70°C); up to 15,000 Feet | -40°F to 158°F (-40°C to 70°C); up to 15,000 Feet |
| Non-operating/storage relative humidity | 15% to 95% @ 149°F (65°C), noncondensing | 15% to 95% @ 149°F (65°C) | 15% to 95% @ 149°F (65°C) |
| Acoustic | Power: 54.1 dB, Pressure: 40.2 dB | Power: 54.1 dB, Pressure: 40.6 dB | Power: 55.7 dB, Pressure: 41.7 dB |
| Airflow direction | Side-to-side | Side-to-side | Side-to-side |

# Technical specifications

| | HPE Aruba Networking 2930F 48G 4SFP Switch (JL260A) | HPE Aruba Networking 2930F 24G PoE+ 4SFP Switch (JL261A) | HPE Aruba Networking 2930F 48G PoE+ 4SFP Switch (JL262A) |
|---|---|---|---|
| **Electrical characteristics** | | | |
| Frequency | 50/60 Hz | 50/60 Hz | 50/60 Hz |
| Power efficiency certifications | | 80plus.org certification: Silver | 80plus.org certification: Silver |
| Maximum heat dissipation | 100.0 BTU/hr (105.5 kj/hr) | 258.0 BTU/hr (272.2 kj/hr) | 293.0 BTU/hr (309.1 kj/hr) |
| Voltage | 100 - 127 / 200 - 240 VAC, rated | 100 - 127 / 200 - 240 VAC, rated | 100 - 127 / 200 - 240 VAC, rated |
| Current | 0.9/0.6 A | 4.9/2.4 A | 5.1/2.5 A |
| Maximum power rating | 46.6 W | 445 W | 459 W |
| Idle power | 32.7 W | 36.8 W | 48.6 W |
| PoE power | | 370 W PoE+ | 370 W PoE+ |
| Notes | Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated. | Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated. | Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated. |
| **Safety** | | | |
| | UL 60950-1: 2nd Edition; UL 62368-1: 2nd Edition; EN 60950-1:2006 +A11:2009 +A1:2010 +A12:2011+A2:2013; EN 62368-1: 2nd Edition; IEC 60950-1:2005 +A1:2009 +A2:2013; CSA 22.2 No. 60950-1-07 2nd; IEC-62368-1: 2nd Edition; EN 60825-1:2014 / IEC 60825-1:2014 Class 1 | UL 60950-1: 2nd Edition; UL 62368-1: 2nd Edition; EN 60950-1:2006 +A11:2009 +A1:2010 +A12:2011+A2:2013; EN 62368-1: 2nd Edition; IEC 60950-1:2005 +A1:2009 +A2:2013; CSA 22.2 No. 60950-1-07 2nd; IEC-62368-1: 2nd Edition; EN 60825-1:2014 / IEC 60825-1:2014 Class 1 | UL 60950-1: 2nd Edition; UL 62368-1: 2nd Edition; EN 60950-1:2006 +A11:2009 +A1:2010 +A12:2011+A2:2013; EN 62368-1: 2nd Edition; IEC 60950-1:2005 +A1:2009 +A2:2013; CSA 22.2 No. 60950-1-07 2nd; IEC-62368-1: 2nd Edition; EN 60825-1:2014 / IEC 60825-1:2014 Class 1 |
| **Emissions** | | | |
| | EN 55032:2012/CISPR 32 Class A; FCC CFR 47 Part 15 Class A; VCCI Class A; ICES-003 Class A; CNS 13438 | EN 55032:2012/CISPR 32 Class A; FCC CFR 47 Part 15 Class A; VCCI Class A; ICES-003 Class A; CNS 13438 | EN 55032:2012/CISPR 32 Class A; FCC CFR 47 Part 15 Class A; VCCI Class A; ICES-003 Class A; CNS 13438 |
| **Immunity** | | | |
| Generic | EN 55024:2010/CISPR 24 | EN 55024:2010/CISPR 24 | EN 55024:2010/CISPR 24 |
| ESD | IEC 61000-4-2 | IEC 61000-4-2 | IEC 61000-4-2 |
| Radiated | IEC 61000-4-3 | IEC 61000-4-3 | IEC 61000-4-3 |
| EFT/burst | IEC 61000-4-4 | IEC 61000-4-4 | IEC 61000-4-4 |
| Surge | IEC 61000-4-5 | IEC 61000-4-5 | IEC 61000-4-5 |
| Conducted | IEC 61000-4-6 | IEC 61000-4-6 | IEC 61000-4-6 |
| Power frequency magnetic field | IEC 61000-4-8 | IEC 61000-4-8 | IEC 61000-4-8 |

# Technical specifications

| | HPE Aruba Networking 2930F 48G 4SFP Switch (JL260A) | HPE Aruba Networking 2930F 24G PoE+ 4SFP Switch (JL261A) | HPE Aruba Networking 2930F 48G PoE+ 4SFP Switch (JL262A) |
|---|---|---|---|
| **Immunity** | | | |
| Voltage dips and interruptions | IEC 61000-4-11 | IEC 61000-4-11 | IEC 61000-4-11 |
| Harmonics | IEC/EN 61000-3-2 | IEC/EN 61000-3-2 | IEC/EN 61000-3-2 |
| Flicker | IEC/EN 61000-3-3 | IEC/EN 61000-3-3 | IEC/EN 61000-3-3 |
| **Management** | | | |
| | HPE Aruba Networking Central; HPE Aruba Networking AirWave Network Management; IMC – Intelligent Management Center; Command-line interface; Web browser; Configuration menu; SNMP manager; Telnet; RMON1; FTP | HPE Aruba Networking Central; HPE Aruba Networking AirWave Network Management; IMC – Intelligent Management Center; Command-line interface; Web browser; Configuration menu; SNMP manager; Telnet; RMON1; FTP | HPE Aruba Networking Central; HPE Aruba Networking AirWave Network Management; IMC – Intelligent Management Center; Command-line interface; Web browser; Configuration menu; SNMP manager; Telnet; RMON1; FTP |

# Technical specifications

| | HPE Aruba Networking 2930F 48G PoE+ 4SFP 740W Switch (JL557A) | HPE Aruba Networking 2930F 48G PoE+ 4SFP+ 740W Switch (JL558A) | HPE Aruba Networking 2930F 12G PoE+ 2G/2SFP+ Switch (JL693A) |
|---|---|---|---|
| **I/O ports and slots** | | | |
| | 48 RJ-45 autosensing 10/100/1000 PoE+ ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3at PoE+); Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only<br>4 SFP | 48 RJ-45 autosensing 10/100/1000 PoE+ ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3at PoE+); Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only<br>4 SFP+ 1/10GbE ports; PHY-less | 12 RJ-45 autosensing 10/100/1000 PoE+ ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3at PoE+); Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only<br>2 RJ-45 autosensing 10/100/1000 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T); Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only<br>2 SFP+ 1/10GbE ports; PHY-less |
| **Additional ports and slots** | | | |
| | 1 dual-personality (RJ-45 or USB micro-B) serial console port | 1 dual-personality (RJ-45 or USB micro-B) serial console port | 1 dual-personality (RJ-45 or USB micro-B) serial console port |
| **Physical characteristics** | | | |
| Dimensions | 17.42 (w) x 12.77 (d) x 1.73 (h) in (44.25 x 32.42 x 4.39 cm) (1U height) | 17.42 (w) x 12.77 (d) x 1.73 (h) in (44.25 x 32.42 x 4.39 cm) (1U height) | 10 (w) x 10 (d) x 1.73 (h) in (25.4 x 25.4 x 4.39 cm) (1U height) |
| Weight | 10.56 lb (4.79 kg) | 10.56 lb (4.79 kg) | 4.85 lb (2.2kg) |
| **Memory and processor** | | | |
| | Dual Core ARM Cortex A9 @ 1016 MHz, 1 GB DDR3 SDRAM; Packet buffer size: 12.38 MB 4.5 MB Ingress/7.785 Egress, 4 GB eMMC | Dual Core ARM Cortex A9 @ 1016 MHz, 1 GB DDR3 SDRAM; Packet buffer size: 12.38 MB 4.5 MB Ingress/7.785 Egress, 4 GB eMMC | Dual Core ARM Cortex A9 @ 1016 MHz, 1 GB DDR3 SDRAM; Packet buffer size: 12.38 MB 4.5MB Ingress/7.785MB Egress, 4 GB eMMC |
| **Performance** | | | |
| 1,000 Mb Latency | < 3.8 µs (64-byte packets) | < 3.8 µs (64-byte packets) | < 3.8 µs (64-byte packets) |
| 10 Gbps latency | | < 2.9 µs (64-byte packets) | < 2.9 µs (64-byte packets) |
| Throughput | up to 77.4 Mpps | up to 112.0 Mpps | up to 41.7 Mpps |
| Switching capacity | 104 Gbps | 176 Gbps | 68 Gbps |
| Routing table size | 2,000 IPv4, 1,000 IPv6 in hardware, 200 OSPF, 256 Static, 10,000 RIP | 2,000 IPv4, 1,000 IPv6 in hardware, 200 OSPF, 256 Static, 10,000 RIP | 2,000 IPv4, 1,000 IPv6 in hardware, 200 OSPF, 256 Static, 10,000 RIP |
| MAC address table size | 32,768 entries | 32,768 entries | 32,768 entries |
| **Environment** | | | |
| Operating temperature | 32°F to 113°F (0°C to 45°C); up to 5,000 Feet, 0°C to 40°C (32°F to 104°F) up to 10,000 Feet | 32°F to 113°F (0°C to 45°C); up to 5,000 Feet, 0°C to 40°C (32°F to 104°F) up to 10,000 Feet | 32°F to 113°F (0°C to 45°C); up to 5,000 Feet, 0°C to 40°C (32°F to 104°F) up to 10,000 Feet |
| Operating relative humidity | 15% to 95% @ 104°F (40°C), noncondensing | 15% to 95% @ 104°F (40°C), noncondensing | 15% to 95% @ 104°F (40°C), noncondensing |
| Non-operating/storage temperature | -40°F to 158°F (-40°C to 70°C); up to 15,000 Feet | -40°F to 158°F (-40°C to 70°C); up to 15,000 Feet | -40°F to 158°F (-40°C to 70°C); up to 15,000 Feet |

# Technical specifications

| | HPE Aruba Networking 2930F 48G PoE+ 4SFP 740W Switch (JL557A) | HPE Aruba Networking 2930F 48G PoE+ 4SFP+ 740W Switch (JL558A) | HPE Aruba Networking 2930F 12G PoE+ 2G/2SFP+ Switch (JL693A) |
|---|---|---|---|
| **Environment** | | | |
| Non-operating/storage relative humidity | 15% to 95% @ 149°F (65°C) | 15% to 95% @ 149°F (65°C) | 15% to 95% @ 149°F (65°C) |
| Acoustic | Power: 55.1 dB, Pressure: 41.1 dB | Power: 55.1 dB, Pressure: 41.1 dB | Power: 0 dB, Pressure: 0 dB Fanless |
| Airflow direction | Side-to-side | Side-to-side | |
| **Electrical characteristics** | | | |
| Frequency | 50/60 Hz | 50/60 Hz | 50/60 Hz |
| Power efficiency certifications | 80plus.org certification: Gold | 80plus.org certification: Gold | DoE VI certification |
| Maximum heat dissipation | 420.9 BTU/hr (444.1 kJ/hr) | 420.9 BTU/hr (444.1 kJ/hr) | 68.2 BTU/hr |
| Voltage | 100 - 127/200 - 240 VAC, rated | 100 - 127/200 - 240 VAC, rated | 90 - 264 VAC, rated |
| Current | 9.2/4.9 A | 9.2/4.9 A | 1.7 A |
| Maximum power rating | 980 W | 980 W | 170 W |
| Idle power | 49.9 W | 49.9 W | 20 W |
| PoE power | 740 W PoE+ | 740 W PoE+ | 139 W PoE+ |
| Notes | Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated. | Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated. | Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated. |
| **Safety** | | | |
| | UL 60950-1: 2nd Edition; UL 62368-1: 2nd Edition; EN 60950-1:2006 +A11:2009 +A1:2010 +A12:2011+A2:2013; EN 62368-1: 2nd Edition; IEC 60950-1:2005 +A1:2009 +A2:2013; CSA 22.2 No. 60950-1-07 2nd; IEC-62368-1: 2nd Edition; EN 60825- 1:2014 / IEC 60825-1:2014 Class 1 | UL 60950-1: 2nd Edition; UL 62368-1: 2nd Edition; EN 60950-1:2006 +A11:2009 +A1:2010 +A12:2011+A2:2013; EN 62368-1: 2nd Edition; IEC 60950-1:2005 +A1:2009 +A2:2013; CSA 22.2 No. 60950-1-07 2nd; IEC-62368-1: 2nd Edition; EN 60825- 1:2014 / IEC 60825-1:2014 Class 1 | UL/CUL 60950-1: 2nd Edition; UL/CUL 63268 -1:2014; UL 62368-1: 2nd Edition; EN 60950-1:2006 +A11:2009 +A1:2010 +A12:2011+A2:2013; EN 62368-1: 2014; IEC-62368-1: 2nd Edition; IEC 60950- 1:2005 +A1:2009 +A2:2013; IEC 62368-1:2014; IEC-62368-1: 2nd Edition; EN 60825-1:2014 / IEC 60825-1:2014 Class 1 |
| **Emissions** | | | |
| | EN 55032:2012/CISPR 32 Class A; FCC CFR 47 Part 15 Class A; VCCI Class A; ICES-003 Class A; CNS 13438 | EN 55032:2012/CISPR 32 Class A; FCC CFR 47 Part 15 Class A; VCCI Class A; ICES-003 Class A; CNS 13438 | EN 55032:2012/CISPR 32 Class A; FCC CFR 47 Part 15 Class A; VCCI Class A; ICES-003 Class A; CNS 13438 |

# Technical specifications

| | HPE Aruba Networking 2930F 48G PoE+ 4SFP 740W Switch (JL557A) | HPE Aruba Networking 2930F 48G PoE+ 4SFP+ 740W Switch (JL558A) | HPE Aruba Networking 2930F 12G PoE+ 2G/2SFP+ Switch (JL693A) |
|---|---|---|---|
| **Immunity** | | | |
| Generic | EN 55024:2010/CISPR 24 | EN 55024:2010/CISPR 24 | EN 55024:2010/CISPR 24 |
| ESD | IEC 61000-4-2 | IEC 61000-4-2 | IEC 61000-4-2 |
| Radiated | IEC 61000-4-3 | IEC 61000-4-3 | IEC 61000-4-3 |
| EFT/burst | IEC 61000-4-4 | IEC 61000-4-4 | IEC 61000-4-4 |
| Surge | IEC 61000-4-5 | IEC 61000-4-5 | IEC 61000-4-5 |
| Conducted | IEC 61000-4-6 | IEC 61000-4-6 | IEC 61000-4-6 |
| Power frequency magnetic field | IEC 61000-4-8 | IEC 61000-4-8 | IEC 61000-4-8 |
| Voltage dips and interruptions | IEC 61000-4-11 | IEC 61000-4-11 | IEC 61000-4-11 |
| Harmonics | IEC/EN 61000-3-2 | IEC/EN 61000-3-2 | IEC/EN 61000-3-2 |
| Flicker | IEC/EN 61000-3-3 | IEC/EN 61000-3-3 | IEC/EN 61000-3-3 |
| **Management** | | | |
| | HPE Aruba Networking Central; HPE Aruba Networking AirWave Network Management; IMC – Intelligent Management Center; Command-line interface; Web browser; Configuration menu; SNMP manager; Telnet; RMON1; FTP | HPE Aruba Networking Central; HPE Aruba Networking AirWave Network Management; IMC – Intelligent Management Center; Command-line interface; Web browser; Configuration menu; SNMP manager; Telnet; RMON1; FTP | HPE Aruba Networking Central; HPE Aruba Networking AirWave Network Management; IMC – Intelligent Management Center; Command-line interface; Web browser; Configuration menu; SNMP manager; Telnet; RMON1; FTP |

# Standards and protocols (applies to all products in series)

**Denial of service protection**
• CPU DoS Protection

**Device management**
• RFC 1155 Structure and Management Information (SMIv1)

• RFC 1157 SNMPv1/v2c

• RFC 1591 DNS (client)

• RFC 1901 (Community based SNMPv2)

• RFC 1901-1907 SNMPv2c, SMIv2 and Revised MIB-II

• RFC 1908 (SNMPv1/v2 Coexistence)

• RFC 2576 (Coexistence between SNMPv1, v2, v3)

• RFC 2578-2580 SMIv2

• RFC 2579 (SMIv2 Text Conventions)

• RFC 2580 (SMIv2 Conformance)

• RFC 2819 (RMON groups Alarm, Event, History, and Statistics only)

• RFC 3416 (SNMP Protocol Operations v2)

• RFC 3417 (SNMP Transport Mappings)

• HTML and Telnet management

• HTTP, SSHv1, and Telnet

• Multiple Configuration Files

• Multiple Software Images

• SNMPv3 and RMON RFC support

• SSHv1/SSHv2 Secure Shell

• TACACS/TACACS+

• Web UI

**General protocols**
• IEEE 802.1ad Q-in-Q

• IEEE 802.1AX-2008 Link Aggregation

• IEEE 802.1d MAC Bridges

• IEEE 802.1p Priority

• IEEE 802.1Q VLANs

• IEEE 802.1s Multiple Spanning Trees

• IEEE 802.3ad Link Aggregation Control Protocol (LACP)

• IEEE 802.3af Power over Ethernet

• IEEE 802.3at PoE+

• IEEE 802.3az Energy Efficient Ethernet

• IEEE 802.3x Flow Control

• RFC 768 UDP

• RFC 783 TFTP Protocol (revision 2)

• RFC 792 ICMP

• RFC 793 TCP

• RFC 826 ARP

• RFC 854 TELNET

• RFC 868 Time Protocol

• RFC 951 BOOTP

• RFC 1058 RIPv1

• RFC 1256 ICMP Router Discovery Protocol (IRDP)

• RFC 1350 TFTP Protocol (revision 2)

• IEEE 802.1v VLAN classification by Protocol and Port

• RFC 1519 CIDR IEEE 802.1w Rapid Reconfiguration of Spanning Tree

• RFC 1542 BOOTP Extensions IEEE 802.3ab 1000BASE-T

• RFC 1918 Address Allocation for Private Internet

• RFC 2030 Simple Network Time Protocol (SNTP) v4

• RFC 2131 DHCP

• RFC 2236 IGMP Snooping

• RFC 2453 RIPv2

• RFC 2865 Remote Authentication Dial In User Service (RADIUS)

• RFC 2866 RADIUS Accounting

• FC 3046 DHCP Relay Agent Information Option

• RFC 3411 An Architecture for Describing Simple Network Management Protocol (SNMP) Management Frameworks

• RFC 3412 Message Processing and Dispatching for the Simple Network Management Protocol (SNMP)

• RFC 3413 Simple Network Management Protocol (SNMP) Applications

• RFC 3414 User-based Security Model (USM) for version 3 of the Simple Network Management Protocol (SNMPv3)

• RFC 3415 View-based Access Control Model (VACM) for the Simple Network Management Protocol (SNMP)

• RFC 3416 Protocol Operations for SNMP

• RFC 3417 Transport Mappings for the Simple Network Management Protocol (SNMP)

• RFC 3418 Management Information Base (MIB) for the Simple Network Management Protocol (SNMP)

• RFC 3575 IANA Considerations for RADIUS

• RFC 3576 Ext to RADIUS (CoA only)

• RFC 4541 Considerations for Internet Group Management Protocol (IGMP) and Multicast Listener Discovery (MLD) Snooping Switches

• RFC 4675 RADIUS VLAN & Priority

• RFC 4861 Neighbor Discovery for IP version 6 (IPv6)

• RFC 4862 IPv6 Stateless Address Autoconfiguration

• RFC 5905 Network Time Protocol Version 4: Protocol and Algorithms Specification

• UDLD (Uni-directional Link Detection)

**IP multicast**
• RFC 1112 IGMP

• RFC 2236 IGMPv2

• RFC 2710 Multicast Listener Discovery (MLD) for IPv6

• RFC 3376 IGMPv3

• RFC 4541 Considerations for Internet Group Management Protocol (IGMP) and Multicast Listener Discovery (MLD) Snooping Switches

## IPv6

- RFC 1981 IPv6 Path MTU Discovery
- RFC 2080 RIPng for IPv6
- Protocol Applicability Statement
- RFC 2082 RIP-2 MD5
- RFC 2460 IPv6 Specification
- RFC 2464 Transmission of IPv6 over Ethernet Networks
- RFC 2710 Multicast Listener Discovery (MLD) for IPv6
- RFC 2925 Definitions of Managed Objects for Remote Ping, Traceroute, and Lookup Operations (Ping only)
- RFC 2925 Remote Operations MIB (Ping only)
- RFC 3019 MLDv1 MIB
- RFC 3315 DHCPv6 (client and relay)
- RFC 3484 Default Address Selection for IPv6
- RFC 3513 IPv6 Addressing Architecture
- RFC 3596 DNS Extension for IPv6
- RFC 3810 MLDv2 for IPv6
- RFC 4022 MIB for TCP
- RFC 4113 MIB for UDP
- RFC 4251 SSHv6 Architecture
- RFC 4252 SSHv6 Authentication
- RFC 4253 SSHv6 Transport Layer
- RFC 4254 SSHv6 Connection
- RFC 4291 IP Version 6 Addressing Architecture
- RFC 4293 MIB for IP
- RFC 4419 Key Exchange for SSH
- RFC 4443 ICMPv6
- RFC 4541 IGMP & MLD Snooping Switch
- RFC 4861 IPv6 Neighbor Discovery
- RFC 4862 IPv6 Stateless Address Auto-configuration
- RFC 5095 Deprecation of Type 0 Routing Headers in IPv6
- RFC 6620 FCFS SAVI
- draft-ietf-savi-mix

## MIBs

- IEEE 802.1ap (MSTP and STP MIB's only)
- IEEE 8021-Bridge-MIB (2008)
- IEEE 8021-Q-Bridge-MIB (2008)
- RFC 1155 Structure & ID of Management Information for TCP/IP Internets
- RFC 1156 (TCP/IP MIB)
- RFC 1157 A Simple Network Management Protocol (SNMP)
- RFC 1213 MIB II
- RFC 1493 Bridge MIB
- RFC 1724 RIPv2 MIB
- RFC 2021 RMONv2 MIB
- RFC 2578 Structure of Management Information Version 2 (SMIv2)
- RFC 2579 Textual Conventions for SMIv2
- RFC 2580 Conformance Statements for SMIv2
- RFC 2613 SMON MIB
- RFC 2618 RADIUS Client MIB
- RFC 2620 RADIUS Accounting MIB
- RFC 2665 Ethernet-Like-MIB
- RFC 2668 802.3 MAU MIB
- RFC 2674 802.1p and IEEE 802.1Q Bridge MIB
- RFC 2737 Entity MIB (version 2)
- RFC 2819 RMON MIB
- RFC 2863 The Interfaces Group MIB
- RFC 2925 Ping MIB
- RFC 2932 IP (Multicast Routing MIB)
- RFC 2933 IGMP MIB
- RFC 3414 SNMP-User based-SM MIB
- RFC 3415 SNMP-View based-ACM MIB
- RFC 3417 Simple Network Management Protocol (SNMP) over IEEE 802 Networks
- RFC 3418 MIB for SNMPv3
- RFC 4292 IP Forwarding Table MIB
- RFC 4836 Managed Objects for 802.3 Medium Attachment Units (MAU)

## Network management

- IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
- RFC 1155 Structure of Management Information
- RFC 1157 SNMPv1
- RFC 2021 Remote Network Monitoring Management Information Base version 2 using SMIv2
- RFC 2576 Coexistence between SNMP versions
- RFC 2578 Structure of Management Information Version 2 (SMIv2)
- RFC 2579 Textual Conventions for SMIv2
- RFC 2580 Conformance Statements for SMIv2
- RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm), and 9 (events)
- RFC 2819 Remote Network Monitoring Management Information Base
- RFC 2856 Textual Conventions for Additional High Capacity Data Types
- RFC 2925 Definitions of Managed Objects for Remote Ping, Traceroute, and Lookup Operationsn Applications
- RFC 3164 BSD syslog Protocol
- RFC 3176 sFlow
- RFC 3411 SNMP Management Frameworks
- RFC 3412 Message Processing and Dispatching for the Simple Network Management Protocol (SNMP)
- RFC 3413 Simple Network Management Protocol (SNMP) Applications
- RFC 3414 User-based Security Model (USM) for version 3 of the Simple Network Management Protocol (SNMPv3)
- RFC 3415 View-based Access Control Model (VACM) for the Simple Network Management Protocol (SNMP)

- RFC 3418 Management Information Base (MIB) for the Simple Network Management Protocol (SNMP)

- RFC 5424 Syslog Protocol

- ANSI/TIA-1057 LLDP Media Endpoint Discovery (LLDP-MED)

- SNMPv1/v2c/v3 XRMON

**QoS/CoS**
- IEEE 802.1p (CoS)

- RFC 2474 DiffServ Precedence, including 8 queues/port

- RFC 2475 DiffServ Architecture

- RFC 2597 DiffServ Assured Forwarding (AF)

- RFC 2598 DiffServ Expedited Forwarding (EF)

- Ingress Rate Limiting

**Security**
- IEEE 802.1X Port Based Network Access Control

- RFC 1321 The MD5 Message-Digest Algorithm

- RFC 1334 PPP Authentication Protocols (PAP)

- RFC 1492 An Access Control Protocol, Sometimes Called TACACS

- RFC 1492 TACACS+

- RFC 1994 PPP Challenge Handshake Authentication Protocol (CHAP)

- RFC 2082 RIP-2 MD5 Authentication

- RFC 2104 Keyed-Hashing for Message Authentication

- RFC 2138 RADIUS Authentication

- RFC 2139 RADIUS Accounting

- RFC 2246 Transport Layer Security (TLS)

- RFC 2548 Microsoft® Vendor-specific RADIUS Attributes

- RFC 2618 RADIUS Authentication Client MIB

- RFC 2620 RADIUS Accounting Client MIB

- RFC 2698 A Two Rate Three Color Marker

- RFC 2716 PPP EAP TLS Authentication Protocol

- RFC 2818 HTTP Over TLS

- RFC 2865 RADIUS (client only)

- RFC 2865 RADIUS Authentication

- RFC 2866 RADIUS Accounting

- RFC 2867 RADIUS Accounting Modifications for Tunnel Protocol Support

- RFC 2868 RADIUS Attributes for Tunnel Protocol Support

- RFC 2869 RADIUS Extensions

- RFC 2882 NAS Requirements: Extended RADIUS Practices

- RFC 3162 RADIUS and IPv6

- RFC 3576 Dynamic Authorization Extensions to RADIUS

- RFC 3579 RADIUS Support For Extensible Authentication Protocol (EAP)

- RFC 3580 IEEE 802.1X RADIUS

- RFC 3580 IEEE 802.1X Remote Authentication Dial In User Service (RADIUS) Usage Guidelines

- RFC 4576 RADIUS Attributes Access Control Lists (ACLs)

- draft-grant-tacacs-02 (TACACS)

- Guest VLAN for 802.1X

- MAC Authentication

- MAC Lockdown

- MAC Lockout

- Port Security

- RFC Secure Sockets Layer (SSL)

- SSHv2 Secure Shell

- Web Authentication

- RFC 7030 Enrollment over Secure Transport

- RFC 6614 Transport Layer Security (TLS) Encryption over Radius (RadSec)

## HPE Aruba Networking 2930F switches and accessories

### Switch models
- HPE Aruba Networking 2930F 24G 4SFP Switch (JL259A)

- HPE Aruba Networking 2930F 48G 4SFP Switch (JL260A)

- HPE Aruba Networking 2930F 24G PoE+ 4SFP Switch (JL261A)

- HPE Aruba Networking 2930F 48G PoE+ 4SFP Switch (JL262A)

- HPE Aruba Networking 2930F 24G 4SFP+ Switch (JL253A)

- HPE Aruba Networking 2930F 48G 4SFP+ Switch (JL254A)

- HPE Aruba Networking 2930F 24G PoE+ 4SFP+ Switch (JL255A)

- HPE Aruba Networking 2930F 48G PoE+ 4SFP+ Switch (JL256A)

- HPE Aruba Networking 2930F 8G PoE+ 2SFP+ Switch (JL258A)

- HPE Aruba Networking 2930F 12G PoE+ 2G/2SFP+ Switch (JL693A)

- HPE Aruba Networking 2930F 48G PoE+ 4SFP 740W Switch (JL557A)

- HPE Aruba Networking 2930F 48G PoE+ 4SFP+ 740W Switch (JL558A)

### Transceivers
- HPE Aruba Networking 100M SFP LC FX 2km MMF XCVR (J9054D)

- HPE Aruba Networking 1G SFP LC SX 500m MMF XCVR (J4858D)

- HPE Aruba Networking 1G SFP LC LX 10km SMF XCVR (J4859D)

- HPE Aruba Networking 1G SFP LC LH 70km SMF XCVR (J4860D)

- HPE Aruba Networking 1G SFP RJ45 T 100m Cat5e XCVR (J8177D)

- HPE Aruba Networking 10G SFP+ LC SR 300m MMF XCVR (J9150D)

- HPE Aruba Networking 10G SFP+ LC LR 10km SMF XCVR (J9151E)

- HPE Aruba Networking 10G SFP+ LC ER 40km SMF XCVR (J9153D)

- HPE Aruba Networking 10G SFP+ to SFP+ 1m DAC Cable (J9281D)

- HPE Aruba Networking 10G SFP+ to SFP+ 3m DAC Cable (J9283D)

- HPE Aruba Networking 10G SR SFP+ LC 400m OM4 C-XCVR (S2P30A)

- HPE Aruba Networking 10G LR SFP+ LC 10km SMF C-XCVR (S2P31A)

- HPE Aruba Networking 10G ER SFP+ LC 40km SMF C-XCVR (S2P32A)

Note: 2930F Series Switches do not support the use of 10G LRM, nor 7M 10G DAC

### Cables
- HPE Aruba Networking X2C2 RJ45 to DB9 Console Cable (JL448A)

### Mounting kit (for 24 and 48 port models)
- HPE X410 1U Universal 4-post Rack Mounting Kit (J9583A)

- HPE Aruba Networking X414 1U Universal 4-post Rack Mounting Kit (J9583B)

### Accessories for 8 port PoE+ model (JL258A)
- HPE Aruba Networking 2930F 8-port Cable Guard (JL311A)

- HPE Aruba Networking 2930F 8-port Power Shelf (JL312A)

### HPE Aruba Networking Central Foundational licenses
- HPE Aruba Networking Central Switch 6200/29xx Foundational 1 year Subscription E-STU (Q9Y73AAE)

- HPE Aruba Networking Central Switch 6200/29xx Foundational 3 year Subscription E-STU (Q9Y74AAE)

- HPE Aruba Networking Central Switch 6200/29xx Foundational 5 year Subscription E-STU (Q9Y75AAE)

- HPE Aruba Networking Central Switch 6200/29xx Foundational 7 year Subscription E-STU (Q9Y76AAE)

- HPE Aruba Networking Central Switch 6200/29xx Foundational 10 year Subscription E-STU (Q9Y77AAE)

- HPE Aruba Networking Central 25xx/6100/8 to 12 port Switch Foundational 1 year Subscription E-STU (Q9Y68AAE)

- HPE Aruba Networking Central 25xx/6100/8 to 12 port Switch Foundational 3 year Subscription E-STU (Q9Y69AAE)

- HPE Aruba Networking Central 25xx/6100/8 to 12 port Switch Foundational 5 year Subscription E-STU (Q9Y70AAE)

- HPE Aruba Networking Central 25xx/6100/8 to 12 port Switch Foundational 7 year Subscription E-STU (Q9Y71AAE)

- HPE Aruba Networking Central 25xx/6100/8 to 12 port Switch Foundational 10 year Subscription E-STU (Q9Y72AAE)

- HPE Aruba Networking Central On-Premises 62xx or 29xx Switch Foundational 1 year Subscription E-STU (R6U78AAE)

- HPE Aruba Networking Central On-Premises 62xx or 29xx Switch Foundational 3 year Subscription E-STU (R6U79AAE)

- HPE Aruba Networking Central On-Premises 62xx or 29xx Switch Foundational 5 year Subscription E-STU (R6U80AAE)

- HPE Aruba Networking Central On-Premises 62xx or 29xx Switch Foundational 7 year Subscription E-STU (R6U81AAE)

- HPE Aruba Networking Central On-Premises 62xx or 29xx Switch Foundational 10 year Subscription E-STU (R6U82AAE)

- HPE Aruba Networking Central On-Premises 25xx/6100/8 to 12 port Switch Foundational 1 year Subscription E-STU (R6U73AAE)

- HPE Aruba Networking Central On-Premises 25xx/6100/8 to 12 port Switch Foundational 3 year Subscription E-STU (R6U74AAE)

- HPE Aruba Networking Central On-Premises 25xx/6100/8 to 12 port Switch Foundational 5 year Subscription E-STU (R6U75AAE)

- HPE Aruba Networking Central On-Premises 25xx/6100/8 to 12 port Switch Foundational 7 year Subscription E-STU (R6U76AAE)

- HPE Aruba Networking Central On-Premises 25xx/6100/8 to 12 port Switch Foundational 10 year Subscription E-STU (R6U77AAE)

For details and complete listing of HPE Aruba Networking Central licensing options, please refer to the HPE Aruba Networking Central Data Sheet.

## Support

- JL259A: 4 Hour Onsite 3 Year (H1XL5E)

- JL260A: 4 Hour Onsite 3 Year (H1ZJ5E)

- JL261A: 4 Hour Onsite 3 Year (H1YE9E)

- JL262A: 4 Hour Onsite 3 Year (H2AC9E)

- JL253A: 4 Hour Onsite 3 Year (H1XV7E)

- JL254A: 4 Hour Onsite 3 Year (H1ZT7E)

- JL255A: 4 Hour Onsite 3 Year (H1YQ1E)

- JL256A: 4 Hour Onsite 3 Year (H2AN1E)

- JL258A: 4 Hour Onsite 3 Year (H2BG5E)

- JL693A: 4 Hour Onsite 3 Year (HP7Y1E)

- JL557A: 4 Hour Onsite 3 Year (H9NY2E)

- JL558A: 4 Hour Onsite 3 Year (H9PH3E)

For HPE Aruba Networking Central hardware only support, 24x7 TAC support, and many other support options, go to Support Services Central SKU lookup tool.

**Make the right purchase decision.
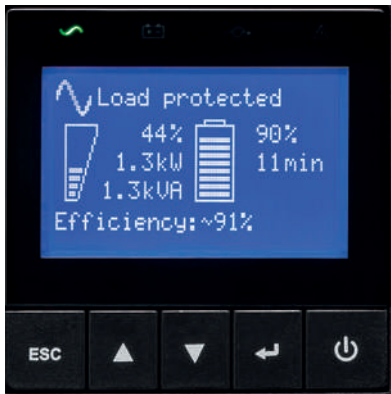Contact our presales specialists.**

Contact us

Visit **ArubaNetworks.com**

DS_HPEANW2930FSwitchSeries_RVK_052524   a00137057ENW

**Hewlett Packard
Enterprise**

# Eaton 9SX UPS

## 700/1000/1500/2000/3000 VA



9SX Rack & Tower models



9SX graphical LCD

**Advanced protection for:**

- IT, Networking, Storage and Telecom
- Infrastucture, Industrial and Medical



**Online double conversion UPS**
**Successor of Eaton 9130 UPS**

### Performance and Availability

- Double-conversion topology. The Eaton 9SX constantly monitors power conditions and regulates voltage and frequency.
- The internal bypass allows service continuity in case of internal fault, a maintenance bypass is also available (as option) for easy replacement of the UPS without powering down critical systems.
- With a 0.9 power factor the 9SX delivers 28% more power than UPS in its class. It powers more servers than other UPSs with equivalent VA ratings and lower power factors.
- Stronger, longer battery life: Eaton ABM® battery management technology uses an innovative three-stage charging technique that extends battery life by up to 50%. 9SX also provides recommended replacement date for batteries.

### Manageability

- The new graphical LCD provides clear information on the UPS's status and measurements on a single screen. Enhanced configuration capabilities are also available.
- The 9SX can meter energy consumption. kWh values can be monitored using the LCD or Eaton's Intelligent Power® Software.
- Load segment control enables prioritised shutdowns of nonessential equipment to maximise battery runtime for critical devices.
- 9SX offers Serial, USB connectivity, plus an extra slot for an optional communication card. Eaton's Intelligent Power® Software seamlessly integrates with leading virtualisation environments and cloud orchestrations tools.

### Flexibility

- One platform, two factors, dozens of choices. Up to 3000 VA of UPS power is packed into only 2U of rack space. The tower option is about the size of a modern, compact PC.
- More runtime can be added with up to 4 external hot-swappable battery modules, able to run systems for hours if necessary. The additional battery modules are automatically recognized by the UPS.



*Powering Business Worldwide*

# Eaton 9SX UPS

**1** Remote Power Off connector (configurable)

**2** Slot for Management card

**3** External battery module (EBM) connector with automatic detection (RJ11)

**4** Relay output

**5** USB and serial ports

**6** Input/Ouput connections

## Technical specifications

| | 700 VA | 1000 VA | 1500 VA | 2000 VA | 3000 VA | |
|---|---|---|---|---|---|---|
| Rating (VA/W) | 700 VA/630W | 1000 VA/900W | 1500 VA/1350W | 2000 VA/1800W | 3000 VA/2700W | |
| Format | Tower | Tower or Rack 2U | | | | |
| **Electrical characteristics** | | | | | | |
| Technology | On-line double-conversion with Power Factor Correction (PFC) system | | | | | |
| Nominal voltage | 200/208/220/230/240V | | | | | |
| Input voltage range | 190-276V without derating (up to 120-276V with derating) | | | 200-276V without derating (up to 140-276V with derating) | | |
| Input frequency range/THDI | 40-70Hz, 50/60Hz autoselection, frequency converter mode | | | | | |
| **Connections** | | | | | | |
| Input | 1 IEC C14 (10A) | 1 IEC C14 (10A) | 1 IEC C14 (10A) | 1 IEC C14 (10A) | 1 IEC C20 (16A) | |
| Outputs | 6 IEC C13 (10A) sockets | 6 IEC C13 (10A) sockets | 6 IEC C13 (10A) sockets | 8 IEC C13 (10A) sockets | 8 IEC C13 (10A) sockets + 1 IEC C19 (16A) socket | |
| Switched Outlet Group | 2 outlet groups | | | | | |
| **Batteries** | | | | | | |
| Typical backup times* (minutes)/load | 300W | 500W | 800W | 1200W | 1800W | 2500W |
| 9SX 700 | 14 | 7.5 | | | | |
| 9SX 1000 | 24 | 14 | 7 | | | |
| 9SX 1000 + 1 EBM/+ 4 EBM | 90/320 | 56/200 | 33/120 | | | |
| 9SX 1500 | 39 | 23 | 12 | 7 | | |
| 9SX 1500 + 1 EBM/+4 EBM | 142/520 | 85/310 | 50/179 | 31/115 | | |
| 9SX 2000 (Tower) | 62 | 36 | 22 | 13 | 7 | |
| 9SX 2000 (Tower) + 1 EBM/+4 EBM | 280/1050 | 165/620 | 100/390 | 65/250 | 40/160 | |
| 9SX 2000 (Rack) | 42 | 25 | 14 | 8 | 4,5 | |
| 9SX 2000 (Rack) + 1 EBM/+4 EBM | 210/800 | 120/480 | 72/270 | 45/175 | 30/118 | |
| 9SX 3000 (Tower) | 78 | 45 | 29 | 17 | 10 | 6 |
| 9SX 3000 (Tower) + 1 EBM/+4 EBM | 290/1100 | 175/630 | 108/421 | 68/255 | 45/168 | 30/112 |
| 9SX 3000 (Rack) | 57 | 33 | 20 | 12 | 7 | 4 |
| 9SX 3000 (Rack) + 1 EBM/+4 EBM | 220/820 | 125/490 | 77/280 | 50/180 | 32/121 | 22/81 |
| Battery management | ABM® and Temperature compensated charging method (user selectable), automatic battery test, deep discharge protection, automatic recognition of external battery units. | | | | | |
| **Communication** | | | | | | |
| Communication ports | 1 USB port + 1 serial RS232 port + 1 mini-terminal block for Remote Power Off + 1 mini-terminal block for Output relay | | | | | |
| Communication slot | 1 slot for Network-M2, Network-MS, ModBus-MS or Relay-MS cards | | | | | |
| **Operating conditions, standards and approvals** | | | | | | |
| Operating temperature | 0 to 40°C | | | | | |
| Typical noise level | 40dB | 41dB | 43dB | 45dB | 45dB | |
| Safety | IEC/EN 62040-1, UL 1778, CSA 22.2 | | | | | |
| EMC | IEC/EN 62040 -2 , FCC Class B, CISPR22 Class B | | | | | |
| Approvals & marking | CE /CB report (TUV) / cULus / EAC / RCM / BIS (Tower models only) / KCC (Tower models only) | | | | | |
| **Dimensions H x W x D in mm/Weight** | | | | | | |
| UPS | 252x160x357/11.5kg | Tower: 252x160x387/14.8kg Rack: 86.5x438x438/15.7kg | Tower: 252x160x437/18.5kg Rack: 86.5x438x438/18.4kg | Tower: 346x214x412/33.3kg Rack: 86.5x438x608/26.5kg | Tower: 346x214x412/33.4kg Rack: 86.5x438x608/26.5kg | |
| EBM | | Tower: 252x160x387/19kg Rack: 86.5x438x438/22.2kg | Tower: 252x160x387/24.5kg Rack: 86.5x438x438/27.4kg | Tower: 346x214x412/48.7kg Rack: 86.5x438x608/40.5kg | Tower: 346x214x412/48.7kg Rack: 86.5x438x608/40.5kg | |
| **Customer service and support** | | | | | | |
| Warranty | 2 years | | | | | |

* Backup times are approximate and may vary with equipment, configuration, battery age, temperature, etc.

| Parts numbers | 9SX 700 VA | 9SX 1000 VA | 9SX 1500 VA | 9SX 2000 VA | 9SX 3000 VA |
|---|---|---|---|---|---|
| UPS Tower | 9SX700I | 9SX1000I | 9SX1500I | 9SX2000I | 9SX3000I |
| UPS Rack 2U | – | 9SX1000IR | 9SX1500IR | 9SX2000IR | 9SX3000IR |
| EBM Tower | – | 9SXEBM36T | 9SXEBM48T | 9SXEBM96T | 9SXEBM96T |
| EBM Rack 2U | – | 9SXEBM36R | 9SXEBM48R | 9SXEBM72R | 9SXEBM72R |
| 2m battery connection cable (Tower only) | – | EBMCBL36T | EBMCBL48T | EBMCBL96T | EBMCBL96T |

**EATON**

Powering Business Worldwide

# Eaton 9E UPS
## 1kVA/2kVA/3kVA/6kVA/10kVA/15kVA/20kVA



**Eaton 9E range**



**LCD display for clear information on the UPS' status and measurements**

### Advanced protection for:

- Infrastucture
- Industrial and Medical IT
- Networking
- Storage
- Telecom



**Essential Online UPS**

### Reliability and performance

- The Eaton 9E constantly monitors power conditions and regulates voltage and frequency due to the online double conversion topology.
- Power more servers than most similar UPSs due to a 0.8 power factor.
- Trust a leading manufacturer with decades of experience and high quality standards: CE compliance certified by external agency (CB report from the TUV).

### Manageability

- Get clear information on the UPS' status and measurements (load level, battery level, input/output voltage and frequency) on a single screen with the new LCD interface.
- Easily communicate with the UPS through USB, RS232 serial or over the network with the optional network card (Network-M2). Relay cards or ModBus cards are also available.
- Eaton 9E is compatible with Eaton IPM Editions Software which permits to integrate all major operating systems, leading virtualisation environments and cloud orchestrations tools.

### Flexibility

- The internal bypass allows service continuity in case of an internal fault. A maintenance bypass is also available as standard for easy maintenance of the UPS without powering down critical systems.
- Make your installation more flexible with a combo input (3:1 and 1:1) on the 10kVA, 15kVA, and 20kVA.
- Extend runtime as you like by adding up to 4 external battery modules (EBM). For extra-long runtime, XL models with internal supercharger are also available at 3kVA, 10kVA and 20kVA.



**EAT·N**

*Powering Business Worldwide*

# Eaton 9E UPS

1 LCD Interface:
Clear information on UPS status and measurements
2 1 USB port + 1 serial port
3 Slot for management card

4 Input/Ouput connections
5 External battery module (EBM) connection
6 Casters

Eaton 9E, front view

Eaton 9E, rear view

| TECHNICAL SPECIFICATIONS | 1KVA | 2KVA | 3KVA/3KVA XL | 6KVA 1:1 | 10KVA 1:1 AND 3:1 | 15KVA 1:1 AND 3:1 | 20KVA 1:1 AND 3:1 |
|---|---|---|---|---|---|---|---|
| Rating (VA/W) | 1kVA/0.8kW | 2kVA/1.6kW | 3kVA/2.4kW | 6kVA/4.8kW | 10kVA/8kW | 15kVA/12kW | 20kVA/16kW |
| Format | Tower | | | | | | |
| **Electrical Characteristics** | | | | | | | |
| Technology | Online double conversion | | | | | | |
| Input voltage | 208/220/230/240V | | | 220/230/240V | | | |
| Input voltage range without using batteries | 176-300V without derating (up to 100-300V with derating) | | | 176-276V without derating (up to 110-276V with derating) | | | |
| Output voltage/THDU | 208V*/220V/230V/240V ±1%, THDU: <2% | | | 220V/230V/240V ±2 %, THDU<3% | | | |
| Input frequency range | 40Hz-70Hz, 50/60 Hz autoselection | | | 45Hz-66Hz, 50/60Hz autoselection | | | |
| Efficiency | Up to 91% in Online mode | | | Up to 93% in Online mode, 97% in ECO mode | | | |
| Overload capacity | 105%-130% : 60s, 130%-150% : 10s, >150% : ≥ 300ms | | | 105%-110% : 5min, 110%-130% : 1min, 130%-150% : 10s, >150% : 100ms | | | |
| **Connections** | | | | | | | |
| Input | IEC C14 | IEC C14 | IEC C20 | Terminal block | | | |
| Outputs | 4 x IEC C13 | 6 x IEC C13 | 6 x IEC C13 + 1 x IEC C19 | Terminal block | | | |
| **Typical backup times at 50% and 75% load**** | | | | | | | |
| 9E | 12/5 min | 16/10 min | 13/7 min | 20/12 min | 15 min | 16 min | 15/9 min |
| 9E + 1 EBM | | 79/48 min | 49/32 min | 75/47 min | 60/36 min | 38/26 min | 27/19 min |
| 9E + 4 EBM | | 243/173 min | 173/110 min | 222/140 min | 170/110 min | 117/76 min | 82/54 min |
| **Communication** | | | | | | | |
| Communication ports | 1 USB port + 1 RS232 serial port (USB and RS232 ports cannot be used simultaneously) | | | | | | |
| Communication slot | 1 slot for Network M2, ModBus-MS or Relay-MS cards | | | | | | |
| Software | Eaton IPM Editions Software | | | | | | |
| **Operating conditions, Standards and Approvals** | | | | | | | |
| Operating temperature | 0 to 40°C | | | | | | |
| Noise level | <37 dB @ typical load | | | <55dB @ typical load | | | |
| Safety | IEC/EN 62040-1 | | | | | | |
| EMC, Performance | IEC/EN 62040-2 | | | | | | |
| Approvals | CE, CB report (TUV) / EAC | | | | | | |
| **Dimensions D x H x W / Weight** | | | | | | | |
| UPS Dimensions (mm) | 356 x 228 x 144 | 399 x 330 x 190 | 399 x 330 x 190 | 612.9 x 708.5 x262.4 | 612.9 x 708.5 x262.4 | 706 x 815.5 x 350 | 706 x 815.5 x 350 |
| UPS Weight (kg) | 9.5 | 22.4 | 24.2 | 68 | 85.4 | 145.3 | 159.9 |
| EBM dimensions (mm) | - | 399 x 330 x 190 | 399 x 330 x 190 | 579.4 x 708.5 x 262.4 | 579.4 x 708.5 x 262.4 | 579.4 x 708.5 x 262.4 | 579.4 x 708.5 x 262.4 |
| EBM weight (kg) | - | 35.8 | 35.8 | 105.5 | 132 | 132 | 132 |
| UPS with supercharger (and no batteries) dimensions (mm) | - | - | 399 x 330 x 190 | - | 612.9 x 708.5 x 262.4 | - | 706 x 815.5 x 350 |
| UPS with supercharger (and no batteries) weight (kg) | - | - | 7.9 | - | 28.9 | - | 47.8 |
| **Customer Service & Support** | | | | | | | |
| Warranty | 2 years | 2 years | 2 years | 1 year | 1 year | 1 year | 1 year |

* 10% derating @ 208V.

** Backup times are approximate and may vary with equipment, configuration, battery age, temperature, etc.

| PART NUMBERS | 1KVA | 2KVA | 3KVA/3KVA XL | 6KVA 1:1 | 10KVA 1:1 and 3:1 | 15KVA 1:1 and 3:1 | 20KVA 1:1 and 3:1 |
|---|---|---|---|---|---|---|---|
| UPS | 9E1000I | 9E2000I | 9E3000I | 9E6Ki | 9E10Ki | 9E15Ki | 9E20Ki |
| EBM | - | 9EEBM72 | 9EEBM72 | 9EEBM180 | 9EEBM240 | 9EEBM480 | 9EEBM480 |
| UPS with supercharger (and no batteries) | - | - | 9E3000IXL | - | 9E10KiXL | - | 9E20KiXL |
| Options | Network-M2, ModBus-MS or Relay-MS cards | | | | | | |

In the interests of continuous product improvement, all specifications are subject to change without notice.

**F·T·N**

Powering Business Worldwide

milestone | Husky IVO

# Husky IVO 350R
## Freedom to scale up with existing IT infrastructure

**5** YEARS WARRANTY

| Throughput | Local storage |
|---|---|
| Up to 360 Mbit/s | Up to 32 TB |

The Husky IVO 350 Rack is the ideal "first rack server" product for those who aim to start small in their video installation — yet want the flexibility to grow within their existing IT infrastructure.

## Easy & flexible setup

With an easy setup and flexibility in your XProtect® VMS, this unit is a great fit to get you started in your video installation.

- Seamless setup with the Husky Assistant in a few simple steps
- Windows and XProtect VMS optimization according to your needs
- Choose any version of XProtect VMS for your installation
- Extended camera compatibility — connect more than 10,000 devices to your XProtect VMS

## Peace of mind – now and long into the future

Your video installation should not only be easy and flexible to set up, but also to manage and run – without extra costs or complexity. With the Husky IVO 350R, you get our standard five-year warranty, with seamless single-point support through Milestone and all the benefits of using XProtect as your VMS.

- Single point of contact for the support of both the VMS and the appliances
- Possibility for onsite support interventions for hardware repairs and replacement

## Key features

- Rack-mount unit – ideal for those with an existing IT infrastructure
- Up to 32TB raw video storage
- Software RAID for increased uptime

## Recommended usage

- Up to 50 channels (Based on the following video stream: 1080p, 30 FPS, 5-8 Mbit/s/channel, with video motion detection recording)
- Local live view/playback possible for up to 4 channels through XProtect Smart Client, without affecting the overall performance
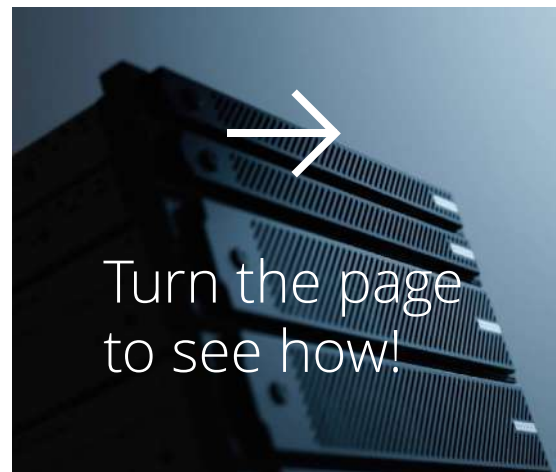
## Turn the page to see how!

## Hardware information

**Form Factor**
Rack Mounted 1U

**CPU**
Intel® Core™ i3-9100

**GPU**
Integrated Intel® UHD Graphics 630
(Intel® Quick Sync Video)

**RAM**
16GB DDR4

**Operating system (OS)**
Windows 10 IoT Enterprise SAC

**VMS/OS Storage**
1 x 256GB (M.2 PCIe NVMe)

**Number of hard-drives**
2 x 3.5" (external accessible)

**Raw storage (gross)**
4/8/16/24/32 TB (Dell Enterprise Grade 24/7 Drives)

**RAID Controller & Support**
Intel® Rapid Storage Controller – RAID 0,1 (Software RAID)

**Display ports**
2 x USB 3.1 Type C / iGFX Display Port
USB-C to VGA Video Adapter included

**Network interface**
1x 1GbE (RJ45)
1x 1/2.5 /5/10 GbE (RJ45)

**Available PCIe slots**
One PCI Express® x16 Gen 3 double width slot full height
One PCI Express® x8 Gen 3 slot full height
One PCI Express® x4 Gen 3 slot full height

**Archiving to external NAS**
Yes, through LAN port

**Credential and Key encription**
Trusted Platform Module (TPM) 2.0

**Redundant Power Supply**
No

**Remote management**
No

## General information

**Hardware warranty**
5 years full system warranty (incl. HDD)
Onsite support next business day[1]

**Dimensions**
42.8 x 482.0 x 577.6 (mm) (without bezel)
1.68" x 18.98" x 22.74" (without bezel)

**Weight**
8.74 kg (min)
19.27 lb (min)

**Power input**
100~240V, 50/60 Hz

**Max. power consumption**
550W up to 94% efficient (Platinum) non-redundant hot pluggable

**BTU Rating**
1,875 BTU/h (max. theoretical)

**Protection**
OVP (over voltage), OCP (over current), OTP (over temp), SCP (short circuit)



### Husky IVO 350R

## Environmental

This unit is intended for stationary server room and office use, according to the conditions stated below.

**Operating temperature**
10°- 45° C / 50° - 113° F

**Storage temperature**
-40° - 65° C / -40° - 149° F

**Humidity**
10 – 85% relative humidity (non-condensing)

## Regulatory

**Safety & emission standards**
CE (class A), UKCA, FCC, RCM, UL, Mexico (NOM), VCCI

**Trade compliance**
NDAA Compliant

## Ordering information

| HE-350R-4TB | Husky IVO 350 Rack mount, Win10, 4TB | 2 bays x 2TB |
|---|---|---|
| HE-350R-8TB | Husky IVO 350 Rack mount, Win10, 8TB | 2 bays x 4TB |
| HE-350R-16TB | Husky IVO 350 Rack mount, Win10, 16TB | 2 bays x 8TB |
| HE-350R-24TB | Husky IVO 350 Rack mount, Win10, 24TB | 2 bays x 12TB |
| HE-350R-32TB | Husky IVO 350 Rack mount, Win10, 32TB | 2 bays x 16TB |
| HA-RR-3930 | Slide Rack Rail kit for Husky IVO 350R | n/a |

**XProtect VMS software**
Milestone Husky appliances are preloaded with Milestone XProtect VMS, which means that they can be used with any XProtect VMS variants. The required VMS licenses are purchased separately. The units can also be used with XProtect Essential+ with up to 8 cameras for free.

[1] Onsite intervention dispatched following Milestone's support processes – hardware Service Tag information accuracy required. Subject to regional availability, dependent on Dell Technologies support network.

Milestone reserves the right to correct errors and typos in these data sheets. For the latest version of this document, always check our website.