

CRFI VNF1700000001

Crystal Rink

Tues Feb 28 2017

1:30 PM EDT

Page 1

Please find our recommendation below:

We at Horizon, based on the info provided in the CRFI, have put together the enclosed product data packet for your review. Please review and contact David Stephens (dstephens@horizonis.com) with any questions or concerns you may have.

NVR:

We recommend an A series server by ExacqVision. The ExacqVision Servers are industry specific, can handle all 91 cameras, included redundant power supply and failover options and boast industry leading data transfer rates. Please see enclosed data sheets for more detail.

CAMERAS:

We realize there are many choices for cameras in today's marketplace. We at Horizon have developed trusted partnerships with several manufacturers. Innotech has been a reliable and standout product for us. Boasting 4MP image quality, Sony Sensors and extreme low light capability this camera is a true workhorse. Indoor and outdoor models are available. Please see enclosed data sheets for more detail.

POE SWITCHES:

We believe in the reliability and workmanship that HP provides. These switches have enough backbone to manage your camera network easily and are in our opinion the most trusted and affordable switches on the market today. Please see enclosed data sheets for more detail.

WIRELESS TRANSMISSION:

Since there is no data available at the poles we would recommend a product such as Ubiquiti. The NANOBEAM Technology has enough power and bandwidth to transmit 4 cameras from each pole back to the main building and head end. Video and data loss are nearly nonexistent making for a very reliable wireless connection between 2 points. Please see enclosed data sheet for more details.

02/28/17 12:18:21
Purchasing Division

CRFI VNF1700000001

Crystal Rink

Tues Feb 28 2017

1:30 PM EDT

Page 2

SURGE PROTCTION:

Best practice suggests that we use surge protection on cameras any time we leave a building structure. We have enclosed 2 data sheets suggesting 2 products from Nitek that will fit the bill.

EXISTING WIRING:

It is not truly necessary to replace the existing wiring. With a product such as the Nitek EL1500C we can use the existing coax for you IP cameras and save the cost of implementing and installing all new infrastructures. These products allow data and IP transmission over coax cable and they are transparent to your network. Rack mount versions available as well. Please see enclosed data sheet for more info.

Additional Notes:

The enclosed items along with our labor, manufacturer warranties (3 years) and industry leading products will ensure a reliable and working security camera system for many years. Please see our qualification statement enclosed in this CRFI to detail our experience and references. Thank you for the opportunity to respond to this CRFI

Addendum acknowledgement enclosed.

Thank you,

David J Stephens

Horizon Information Services

dstephens@horizonis.com

304-860-0419

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.: VNF1700000001

Instructions: Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

Acknowledgment: I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

Addendum Numbers Received:

(Check the box next to each addendum received)

- | | |
|--|--|
| <input checked="" type="checkbox"/> Addendum No. 1 | <input type="checkbox"/> Addendum No. 6 |
| <input type="checkbox"/> Addendum No. 2 | <input type="checkbox"/> Addendum No. 7 |
| <input type="checkbox"/> Addendum No. 3 | <input type="checkbox"/> Addendum No. 8 |
| <input type="checkbox"/> Addendum No. 4 | <input type="checkbox"/> Addendum No. 9 |
| <input type="checkbox"/> Addendum No. 5 | <input type="checkbox"/> Addendum No. 10 |

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

Horizon Information Services
Company
[Signature]
Authorized Signature
2/27/17
Date

NOTE: This addendum acknowledgment should be submitted with the bid to expedite document processing.
Revised 6/8/2012



Purchasing Division
 2019 Washington Street East
 Post Office Box 50130
 Charleston, WV 25305-0130

State of West Virginia
 Request for Information
 21 – Info Technology

Proc Folder: 299117

Doc Description: ADDENDUM 1 REQUEST FOR INFORMATION-DIGITAL CAMERA/DVR SYSTEM

Proc Type: Request for Information

Date Issued	Solicitation Closes	Solicitation No	Version
2017-02-23	2017-02-28 13:30:00	CRFI 0613 VNF1700000001	2

FOR INFORMATION CONTACT THE BUYER

Crystal Rink
 (304) 558-2402
 crystal.g.rink@wv.gov

Signature X

FEN #

251891381

DATE

2/27/17

All offers subject to all terms and conditions contained in this solicitation

ADDITIONAL INFORMATION:

THE WEST VIRGINIA VETERANS NURSING FACILITY IS ISSUING THIS REQUEST FOR INFORMATION FOR THE PURPOSE OF GATHERING INFORMATION TO DEVELOP PROCUREMENT SPECIFICATIONS BY IDENTIFYING VIABLE NETWORK INFRASTRUCTURES, CUSTOMER SERVICE AND SUPPORT REQUIREMENTS, AND SECURITY NEEDS, AS WELL AS OTHER RELATED CAPABILITIES THAT BEST FIT THE WEST VIRGINIA NURSING FACILITY NEEDS FOR A REPLACEMENT OF AND INSTALLATION OF NEW CAMERA AND DVR SYSTEM. INFORMATION PROVIDED WILL ASSIST THE AGENCY IN DEVELOPING SPECIFICATIONS AND WILL ASSIST IN THE PROCUREMENT PROCESS.

INVOICE TO		SHIP TO	
DIVISION OF VETERANS AFFAIRS 1 FREEDOMS WAY		DIVISION OF VETERANS AFFAIRS 1 FREEDOMS WAY	
CLARKSBURG	WV26301	CLARKSBURG	WV 26301
US		US	

Line	Comm Ln Desc	Qty	Unit Issue
1	Digital Camera	92.00000	EA

Comm Code	Manufacturer	Specification	Model #
46171610			

Extended Description :

We would like to replace existing cameras with new digital cameras. There is also a need for several new cameras to be installed. These cameras would cover the Parking lot, Administration Area, Business Office, Additional Doors, Stairways, etc. See Specs for more detail.

INVOICE TO		SHIP TO	
DIVISION OF VETERANS AFFAIRS 1 FREEDOMS WAY		DIVISION OF VETERANS AFFAIRS 1 FREEDOMS WAY	
CLARKSBURG	WV26301	CLARKSBURG	WV 26301
US		US	

Line	Comm Ln Desc	Qty	Unit Issue
2	DVR System	3.00000	EA

Comm Code	Manufacturer	Specification	Model #
52161545			

Extended Description :

The DVR System shall be compatible with the camera system. It shall store the videos for a minimum of 6 months.

INVOICE TO		SHIP TO	
DIVISION OF VETERANS AFFAIRS 1 FREEDOMS WAY		DIVISION OF VETERANS AFFAIRS 1 FREEDOMS WAY	
CLARKSBURG	WV26301	CLARKSBURG	WV 26301
US		US	

Line	Comm Ln Desc	Qty	Unit Issue
3	Installation of Cameras and DVR	0.00000	

Comm Code	Manufacturer	Specification	Model #
46171610			

Extended Description :
Installation of all equipment in working order.

SCHEDULE OF EVENTS		
--------------------	--	--

Line	Event	Event Date
1	VENDOR QUESTION DEADLINE	2017-02-17

VNF1700000001	Document Phase Draft	Document Description ADDENDUM 1 REQUEST FOR INFORMATION-DIGITAL CAMERA/DVR SYSTEM	Page 4 of 4
---------------	--------------------------------	---	------------------------------

ADDITIONAL TERMS AND CONDITIONS

See attached document(s) for additional Terms and Conditions

SOLICITATION NUMBER: CRFI VNF1700000001

Addendum Number: 1

The purpose of this addendum is to modify the solicitation identified as ("Solicitation") to reflect the change(s) identified and described below.

Applicable Addendum Category:

- Modify bid opening date and time
- Modify specifications of product or service being sought
- Attachment of vendor questions and responses
- Attachment of pre-bid sign-in sheet
- Correction of error
- Other

Description of Modification to Solicitation:

1. To provide answers to vendor questions

Additional Documentation: Documentation related to this Addendum (if any) has been included herewith as Attachment A and is specifically incorporated herein by reference.

Terms and Conditions:

1. All provisions of the Solicitation and other addenda not modified herein shall remain in full force and effect.
2. Vendor should acknowledge receipt of all addenda issued for this Solicitation by completing an Addendum Acknowledgment, a copy of which is included herewith. Failure to acknowledge addenda may result in bid disqualification. The addendum acknowledgement should be submitted with the bid to expedite document processing.

ATTACHMENT A

CRFI VNF1700000001
Addendum 1
Questions from Vendors
Security Cameras/DVR's

Q1. Who is responsible for "carefully considering camera placement so as not to interfere with patient privacy?"

A1. Facility will be the final say as to where cameras will be placed. However, we would like to have Vendor Recommendations. There will be none in Patients rooms or showers/bathrooms.

Q2. Can you clarify: Show more crisp and detailed pictures?

A2. We are wanting a camera/DVR that will provide clarity in picture that will be permissible in a courtroom sitting for evidence.

Q3. Is 6 months storage a hard requirement even though this may require an additional storage array?

A3. No, we have decided that we would only like to store footage up to 30 days.

Q4. Who is providing the network POE switches?

A4. The awarded vendor will provide these.

Q5. Do you need a client station? If so, how many do you need?

A5. Yes, we will need one (1) Client Station at the Server

Q6. Do you need monitors? If so, Sizes? Quantity?

A6. Yes, at least three (3). Sizes would be at Vendor Recommendation.

Q7. Are we using existing cabling infrastructure or pulling new CAT6 Cable?

A7. No, we are going from Analog to IP so new cable would have to be run at Vendors expense.

Q8. Is Surge Suppression required for the outdoor cameras?

A8. Yes

Q9. Is 3 NVR's a hard spec or if we can do it in less units is that acceptable?

A9. No, it is not a hard spec. WV VNF is looking for Vendor Recommendations.

Q10. Who is responsible for removing the existing analog cameras and where do they need to go once removed?

A10. The awarded vendor would be responsible for removing all cameras and cable. The cameras would need to be taken to the WV Surplus Property Charleston, WV

Q11. Are there any PTZ requirements for the outdoor cameras?

A11. We are looking for Vendor Recommendations on this.

Q12. Your prints do not show parking lot cameras as mentioned. Where do they go and if they are on poles outside is there power and data at those locations?

A12. There are two (2) poles in the parking lot. There would need to be four (4) cameras on each pole. Yes, there is power at each pole. No, there is no data. We would like to have wireless.

Q13. Can we visit the site for a walkthrough before the bid is due?

A13. Yes, there will be a mandatory walkthrough after an RFQ is submitted. This date will be announced.

Q14. Have you determined frame rates per second as a particular spec or are you leaving that up to the vendor to accommodate the 60 day requirement?

A14. WV VNF is looking for vendor recommendation on this.

Q15. What are the mounting details for the 91 different cameras locations?

A15. Surface, Hard Surface, Drop Ceiling, Electrical Box, Wall, Pendant Drop, Inside Corner, Outside Corner, Pole, and parapet would all be an option. The surfaces vary throughout the facility.

Q16. Clear picture with more details. What is the resolution and recording parameters requested?

A16. 1080p HDTV 1920 X 1080 2.1 mp would be the least we would like to see. However, we are not locked into this. We are open for vendor recommendations.

Q17. Do you want RAD Storage?

A17. Yes, but has to be external hard drive

Q18. Do you want a failover system?

A18. Yes

Q19. Do you want redundant power supplies and CPU in your recorder?

A19. Yes

Q20. Are 3 DVR's the maximum allowed?

A20. No, we are looking for Vendor recommendations on this.

Q21. Do you have any dark fiber we can use between data closets to build out the camera network?

A21. No, Vendor would have to provide and install this.

Q22. Is the Vendor to pull in all new yellow CAT 6 Cable for all 91 cameras?

A22: Yes

Q23. Does the vendor have space in all data closets to rack our network gear?

A23. Yes

Q24. How many rack "U" spaces do you have open?

A24. Four (4) on each rack and there is additional room for another rack.

Q25. Do you have consent power?

A25. Yes, however there is no data

Q26. Are there low voltage conduits back to the building we can us?

A26. Yes

Q27. Are there going to be PTZ in the parking lot for the guards to use and then add four fixed cameras per pole to get adequate coverage of the parking lot?

A27. There will be no PTZ. There are two (2) poles in the lot for four (4) cameras each.

Q28. Will Monitors be wall mount or ceiling mount?

A28. Wall Mount

Q29. Does the vendor need to provide the PC's to run the guard command room?

A29. No there will be no licensing or software for Client Station

Q30. The request calls for Digital cameras and DVR's. Typically, a digital camera is referred to as an IP Camera that is on a local network and the footage would be recorded on an NVR not a DVR. An NVR can be sized to accommodate numerous IP cameras on the network, therefore, only one NVR is normally needed. Can you clarify what you would like information on?

A30. NVR and IP Cameras

Q31. The description of "digital camera" is extremely vague. Assuming these are IP cameras, these can be domes, PTZ's, fixed, etc...As well as, numerous options for Mega Pixels from 1 MP to 20MP. Can you clarify what you are looking for?

A31. WV VNF is looking for Vendor Recommendations for this.

Q32. How many Client users and PC's will need to use the system?

A32. To be determined at the time of installation. These will be at different security levels.

Q33. Will you need to view video on a mobile tablet or smartphone while off site?

A33. Yes, Both

Q34. Will you be looking for a maintenance Contract for support and troubleshooting?

A34. Maybe at a later date

Q35. Are there any special requirements for the installation contractor?

A35. West Virginia Cares

Q36. What are you looking for in the RFI packet?

A36. Vendor recommendations on NVRs and IP Cameras with installation.

Q37. Is there a proposed completion date?

A37. Not yet

Q38. Will you be asking for product or system demonstrations prior to putting out specifications?

A38. Possibly



Purchasing Division
 2019 Washington Street East
 Post Office Box 50130
 Charleston, WV 25305-0130

State of West Virginia
 Request for Information
 21 - Info Technology

Proc Folder: 299117

Doc Description: REQUEST FOR INFORMATION-DIGITAL CAMERA/DVR SYSTEM

Proc Type: Request for Information

Date Issued	Solicitation Closes	Solicitation No	Version
2017-02-06	2017-02-28 13:30:00	CRFI 0613 VNF1700000001	1

FOR INFORMATION CONTACT THE BUYER

Crystal Rink
 (304) 558-2402
 crystal.g.rink@wv.gov

Signature X

FEIN #

251891381

DATE

2/27/17

All offers subject to all terms and conditions contained in this solicitation

ADDITIONAL INFORMATION:

THE WEST VIRGINIA VETERANS NURSING FACILITY IS ISSUING THIS REQUEST FOR INFORMATION FOR THE PURPOSE OF GATHERING INFORMATION TO DEVELOP PROCUREMENT SPECIFICATIONS BY IDENTIFYING VIABLE NETWORK INFRASTRUCTURES, CUSTOMER SERVICE AND SUPPORT REQUIREMENTS, AND SECURITY NEEDS, AS WELL AS OTHER RELATED CAPABILITIES THAT BEST FIT THE WEST VIRGINIA NURSING FACILITY NEEDS FOR A REPLACEMENT OF AND INSTALLATION OF NEW CAMERA AND DVR SYSTEM. INFORMATION PROVIDED WILL ASSIST THE AGENCY IN DEVELOPING SPECIFICATIONS AND WILL ASSIST IN THE PROCUREMENT PROCESS.

INVOICE TO		SHIP TO	
DIVISION OF VETERANS AFFAIRS 1 FREEDOMS WAY		DIVISION OF VETERANS AFFAIRS 1 FREEDOMS WAY	
CLARKSBURG	WV26301	CLARKSBURG	WV 26301
US		US	

Line	Comm Ln Desc	Qty	Unit Issue
1	Digital Camera	92.00000	EA

Comm Code	Manufacturer	Specification	Model #
46171610			

Extended Description :

We would like to replace existing cameras with new digital cameras. There is also a need for several new cameras to be installed. These cameras would cover the Parking lot, Administration Area, Business Office, Additional Doors, Stairways, etc. See Specs for more detail.

INVOICE TO		SHIP TO	
DIVISION OF VETERANS AFFAIRS 1 FREEDOMS WAY		DIVISION OF VETERANS AFFAIRS 1 FREEDOMS WAY	
CLARKSBURG	WV26301	CLARKSBURG	WV 26301
US		US	

Line	Comm Ln Desc	Qty	Unit Issue
2	DVR System	3.00000	EA

Comm Code	Manufacturer	Specification	Model #
52161545			

Extended Description :

The DVR System shall be compatible with the camera system. It shall store the videos for a minimum of 6 months.

INVOICE TO		SHIP TO	
DIVISION OF VETERANS AFFAIRS 1 FREEDOMS WAY		DIVISION OF VETERANS AFFAIRS 1 FREEDOMS WAY	
CLARKSBURG	WV26301	CLARKSBURG	WV 26301
US		US	

Line	Comm Ln Desc	Qty	Unit Issue
3	Installation of Cameras and DVR		

Comm Code	Manufacturer	Specification	Model #
46171610			

Extended Description :
Installation of all equipment in working order.

SCHEDULE OF EVENTS		
Line	Event	Event Date
1	VENDOR QUESTION DEADLINE	2017-02-17

VNF1700000001	Document Phase Draft	Document Description REQUEST FOR INFORMATION-DIGITAL CAMERA/DVR SYSTEM	Page 4 of 4
---------------	--------------------------------	---	------------------------------

ADDITIONAL TERMS AND CONDITIONS

See attached document(s) for additional Terms and Conditions



1659 East Sutter Road
Glenshaw PA 15116
Voice 412-487-7071
Fax 412-487-7072

Contractor Qualifications Statement

A. Organization

1. Horizon Information Services is a Corporation and became Incorporated in 2001 in the State of Pennsylvania. Horizon has been in business for 15 Years, Installing, Commissioning, and Servicing the following systems;

- a. Structured Data Cabling
- b. Fiber Optic Cabling
- c. Telephone and Voice Mail Systems
- d. CATV and Video Distribution Systems
- e. Intercom and Paging Systems
- f. Professional Sound Systems
- g. Audio Visual Systems
- h. Card Access and Security Systems
- i. Health Care Communications Systems
- j. AMX SchoolView A/V Systems

2. Relevant Projects

- a. Pine Richland High School - \$1.7 Million.
Two architect requested change orders to date.
Completed date 12/12. Horizon is a prime contractor and we are installing all of the communication systems for the project. Horizon is responsible for structured cabling, audio visual, and security systems design. Architect is Eckles Architecture.
- b. Montour Sports Complex - \$224,000. Horizon is the prime communications contractor for the new construction project. Project consists of providing arena style seating sound and HD Video system, and ancillary room audio visual systems including natatorium and weight/fitness rooms. Architect is Apostolou Associates.
- c. Mount Lebanon School District Theaters - \$434,000. Audio Visual Systems. No change orders to date, Small Theater Completed in March, 2013. Main Theater is still under construction. First Bose RoomMatch Complete System Designed, Specified in Pa. Horizon was the first company to do this and is the Prime Contractor for the AV Systems for this project. Architect is Celli-Flynn.
- d. California University Convocation Center - \$600,000.
We have had \$200,000 in architect requested change orders. Completion was Sept/Oct 2011. Horizon was a subcontractor to AI Electric, providing a complete installation of the Data Cabling and Security Systems. L.R. Kimball is the architect.

- e. Mansfield University Performing Arts. - \$314,000. Currently under construction. Horizon is a sub contractor to GR Noto Electric and we are providing a complete installation of the theater audio visual system. Eckles Architecture is the architect.
- f. Mt. Union University Performing Arts. - \$395,000. Currently under construction. Horizon is a sub contractor to Hilscher Clarke Electric and we are providing a complete installation of the theater audio visual system. Westlake, Reed, Leskosky is the consultant.

B. References

1. Project and End User References

PPG Industries

Gary Hyek

One PPG Place

Pittsburgh, Pa 15272

412-434-3809

Corporate wide AV Contractor for Audio Visual Conference Room Control Systems in multiple facilities including CEO Board Room.

Siemens Industry

Kevin Minster

500 Hunt Valley

New Kensington, Pa 15068

412-339-9264

New data/voice cabling in new facility, fiber and copper backbone, and Audio Visual Conference Room Control Systems.

Harrisburg University and Bedford Springs Hotel

Reynolds Construction Management

3300 North Third Street

Harrisburg, PA 17110

John Reichart (Harrisburg University) and Jim Paschke (Bedford Springs Hotel)

814-624-0400

Sound, Audio Visual, VOICE/ DATA CAT 6 cabling, Fiber Optic, CATV, CCTV, and Access Control

Completed 2009 (Harrisburg University), 2007 (Bedford Springs Hotel)

California University of Pennsylvania

250 University Avenue

California, PA 15419

Kerry Clipper

724-938-4239

A-1 Electric (Prime Contractor)

Mark Smith-A1 Electric

724-969-0901

3. **Current Bonding Co.: International Fidelity Insurance Co. through Seubert & Associates, 1010 Ohio River Blvd. Pittsburgh, PA 15202, Tel. 412 734 4900. Bonding limit is \$4,000,000 per job and \$8,000,000 aggregate.**

Former Bonding Co.: Colonial Surety Co., Montvale, NJ 07645. Tel: 201 573 8788.

Current Insurance Co.: Westfield Insurance through Seubert and Associates, 1010 Ohio River Blvd., Pittsburgh, PA 15202. Tel. 412 734 4900.

Former Insurance Co.: Erie Insurance through Slagel Insurance, 4489 Mount Royal Blvd, Allison Park, PA Tel. 412 487 7660.

Horizon

Information Services

www.HorizonIS.com

VOICE & DATA



- Fiber Optics
- RCDD Licensed
- Structured Cable Installs
- Wireless Networks
- Network Hardware
- ISP/OSP

HEALTH CARE FACILITIES



- Nurse Call
- Patient Wandering
- Wireless Nurse Call
- Pagers and Wireless Phones
- Centralized Code Blue
- Infant Abduction

PROFESSIONAL SOUND



- Auditoriums
- Gymnasiums
- Houses of Worship
- Multipurpose Rooms
- Stadium Venues
- Theaters

SECURITY & SURVEILLANCE



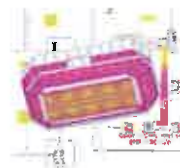
- CCTV
- Access Control
- IP & Analog Cameras
- Digital Video Recorders
- Intrusion Detection
- Asset Tracking

AUDIO/VISUAL



- Video Projection
- HDTV LCD & Plasma
- Touch-Panel Control
- Audio Conferencing
- Video Conferencing
- Digital Signage

DESIGN BUILD & PLANNING



- A&E Consulting
- Specification Writing
- Certified RCDD Design
- Project Management
- Auto-Cad Drawings
- EASE Design

SCHOOL COMMUNICATIONS



- Intercom
- Public Address
- Analog and Digital Clocks
- Telephone & Voice Mail
- CATV Distribution
- Media Management

SERVICE & INSTALLATION



- BICSI Certified Techs/Installers
- Factory Trained Technicians
- Network Testing & Certifications
- 24 hr. Health Care Service
- Maintenance Agreements
- Wireless Site Surveys

Providing solutions for your information needs.

Women Owned Business (WBE)

PITTSBURGH: 1659 East Sutter Road • Glenshaw, PA 15116 • Office: 412-487-7071 • Fax: 412-487-7072



Manufacturers List

- ACCUTECH:** Infant Protection & Patient Wandering
- ADC:** Voice & Data Cabling and Connectivity Solutions
- ALLEN & HEATH:** Mixing Consoles
- AMERICAN DYNAMICS:** Analog & IP Cameras and Video Management
- AMX:** Touch-Panel Control and Automation
- ATLAS SOUND:** Speakers, Horns, Racks & Cabinets and Sound Masking
- AUDIX:** Vocal, Instrument and Wireless Microphone Systems
- AURALEX ACOUSTICS:** Acoustical Treatment Products
- AVIOM:** Personal Ear Monitoring Systems
- AXIS COMMUNICATIONS:** Network Cameras and IP Network Solutions
- BELDEN:** Voice & Data Cabling and Connectivity Solutions
- BLONDER-TONGUE:** Broadband CATV Equipment
- BOSCH:** Video Surveillance Products
- BOSE:** Professional Sound
- BSS:** Professional Audio Signal Processing Equipment
- CHAUVET LIGHTING:** LED Lighting & Controllers
- CLEARONE:** Audio Conferencing Systems
- COBALT:** Digital Signage
- COMMSCOPE:** Voice & Data Cabling and Connectivity Solutions
- COMMUNITY:** Loudspeakers
- COUNTRYMAN:** Ear and Headset Microphones
- CRESTRON:** Control and Automation Systems
- CROWN AUDIO:** Amplifiers, Microphones, DSP
- DA-LITE:** Projection Screens and Presentation Products
- DBX:** Signal Processing Equipment
- DRAPER:** Projection Screens and Presentation Products
- EAW:** Professional and Commercial Loudspeakers
- ELATION LIGHTING:** Intelligent and LED Fixtures
- ELECTRO-VOICE:** Commercial & House of Worship Pro-Sound Loudspeakers
- EXTRON:** Computer-Video Interfaces, Switchers and Distribution Amplifiers
- FSR:** Professional Grade Audio/Visual Switchers and Distribution Amplifiers
- GANZ:** CCTV Video Devices and Network Video Solutions
- HERITAGE MEDCALL:** Wired and Wireless Emergency Call and Nurse Call Systems
- HITACHI:** Interactive Whiteboards
- HSA:** Roll Top Desks & Podiums
- HUBBELL:** Voice & Data Cabling and Connectivity Solutions
- JBL PROFESSIONAL:** Loudspeakers
- JERON ELECTRONIC SYSTEMS:** Nurse Call, Emergency Call, Digital Intercom and School Intercom
- KANTECH:** Access Control, Card Readers and Network Communications
- KRAMER:** Audio/Video Switchers, Routers and Amplifiers
- LEVITON:** Voice & Data Cabling and Stage Lighting Systems
- LG:** LCD & Plasma Displays
- LISTEN TECHNOLOGIES:** Assistive Listening and Tour Group Systems
- LOWELL:** Racks, Power Distribution/Conditioning and Audio Products
- MAGIC BOX:** Digital Signage and Video Messaging Systems
- MIDDLE ATLANTIC:** Equipment Racks and Enclosures
- MITSUBISHI:** Projectors, LCD & Plasma Displays
- NEC:** Business Telephone Systems
- NEC:** Projectors, LCD & Plasma Displays
- ONSSI:** Intelligent IP Video Surveillance
- PANASONIC:** Projectors, LCD & Plasma Displays
- PANASONIC SECURITY:** Video Surveillance
- PEAVEY (Architectural Acoustics):** Loudspeakers, Mixer/Amplifiers
- PELCO:** Video Surveillance Products
- PIVOT 3:** Video Storage
- POLAR FOCUS:** Audio Rigging Equipment
- PREMIER MOUNTS:** Flat Panel & Projector Mounts
- PRESONUS:** Mixers, DSP, Recording Systems
- PRIMEX WIRELESS:** GPS Wireless Clock Systems
- PRO CO:** Cables, Interface Devices and Plate-Works
- QSC:** Amplifiers, Digital Signal Processing and Professional Loudspeakers
- QUAM:** Speakers, Sound Masking and Volume Controls
- RADIO DESIGN LABS:** Professional Audio, Video and Control Modules
- RANE:** Professional Audio Products, Digital Signal Processors and Mixers
- RAPCO-HORIZON:** Audio Cables, Snakes, Metalwork
- RENKUS-HEINZ:** Professional Loudspeakers
- ROLAND SYSTEMS GROUP:** Digital Mixing Consoles & Video Production Equipment
- ROLLS:** Audio Mixers, Amplifiers and Signal Processors
- SAMSUNG:** LCD & Plasma Displays
- SANYO:** Projectors and LCD & Plasma Displays
- SAPLING:** Digital and Analog Wireless Clocks
- SCHOOLVIEW:** K-12 Campus-wide A/V Distribution
- SENNHEISER:** Microphones, Tour Guide and Conferencing Systems
- SHURE:** Microphones, Mixers and Ear Monitoring Systems
- SYSTEMS TECHNOLOGIES:** Wireless Nurse Call and Emergency Call Systems
- TASCAM:** A/V Mixers, CD/DVD Duplicators and Combination Recorders
- TEACHLOGIC:** Infrared Wireless Audio Enhancement Products
- TELEX:** Wireless Microphones, Assisted Listening and Intercom Products
- TERADON:** Educational Technology, Video Access and Control
- TOA:** Amplifiers, Loudspeakers, Mixers and Mixer/Amplifiers
- VADDIO:** Cameras and Camera Control Solutions
- VALCOM:** District, School, Classroom and Campus-wide Intercom Systems
- VBRICK:** IP Video Streaming Live
- VERSUS:** Staff Locating and Patient Flow Systems
- WILLIAMS SOUND:** Hearing Assistance Product

ADDITIONAL PRODUCTS ARE AVAILABLE AT HORIZON INFORMATION SERVICES, INC. PLEASE CALL.

Horizon

Information Services

1659 East Sutter Road
Glenshaw, PA 15116
horizonis.com

Technology Communications

Voice & Data - Sound & Communications - Design & Integration

phone: (412) 487-7071 toll-free: (800) 464-4707 fax: (412) 487-7072

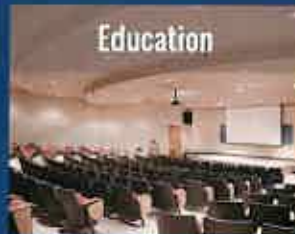


Audiovisual Solutions

- Digital Signage
- Touch-Panel Control
- Audio Teleconferencing
- Video Walls/Projection
- Video Conferencing
- Video Mixing/Broadcasting



House of Worship



Education



Sound Reinforcement

- Professional Sound
- Design & Installation
- Acoustical Control
- Intercom & Paging
- Assistive Listening
- Sound Masking



Healthcare Communications

- Nurse Call
- Emergency Call
- Centralized Code Blue
- Patient Wandering
- Management Reporting
- Pagers/Mobile Devices



Voice & Data

- Structured Cabling
- Fiber Installation
- Certified Testing
- BICSI Certified
- RCDD Licensed
- Wireless Networks
- ISP/O5P

Surveillance & Security

- Access Control
- Intrusion Detection
- IP & Analog CCTV
- Asset Tracking
- ADA Area of Rescue
- Emergency Intercom



Service

service@horizonis.com



Design / Build



Consulting



Contact Us

sales@horizonis.com



ACCUTECH

Infant Protection, Patient Wandering

ADVIDIA

IP Cameras

AIPHONE

Intercoms and Entry Security

AKG

Vocal, Instrument, Wireless Microphones

ALLEN & HEATH

Mixing Consoles: Studio, Broadcast, PA

AMX-SCHOOLVIEW

K-12 Classroom Technology Integration

ATLAS SOUND

Sound Masking, Equipment Racks

AUDIX

Vocal, Instrument, Wireless Microphones

AURALEX ACOUSTICS

Acoustical Treatment, Sound Absorption

AVIOM

Personal Monitor Mixing Systems

AXIS COMMUNICATIONS

Digital Video Products

BELDEN

Copper, Coaxial, Fiber Optic

BERK-TEK

Cabling, Connectivity

BLACKMAGIC

Video Mixing & Broadcasting

BLONDER-TONGUE

Encoders, Modulators, RF Amplifiers

BOSCH

Access Control, Monitoring, CCTV

BOSE

Professional Loudspeakers

BSS

Audio Signal Processing, Touch-Panel Control

CHATSWORTH

Racks, Cabinets, Cable Management

CHAUVET LIGHTING

LED Lighting, Controllers

CLEARONE

Audio Conferencing, Web Conferencing

CODE BLUE

Exterior Emergency Intercom

COMMSCOPE - SYSTIMAX

Copper, Coaxial, Fiber Optic

COMMUNITY

Loudspeakers, All Weather/All Purpose

COOPER B-LINE

Cabinets & Electronic Enclosures, Cable Tray

CORNING

Copper, Coaxial, Fiber Optic

COUNTRYMAN

Ear-Set, Head Worn Microphones

CRESTRON

Touch-Panel: Control, Automation

CROWN AUDIO

Audio Products, Amplifiers

DA-LITE

Projection Screens, Presentation Products

DANLEY

Professional Loudspeakers

DBX

Digital Signal Processing

DMP

Access Control, Intrusion Detection

DENON

A/V Media Components

DRAPER

Projection Screens, Presentation Products

DUKANE/CAREHAWK

K-12 Intercom, Safety Communications

EAW

Professional Loudspeakers

ELECTRO-VOICE

Professional Loudspeakers

ENGENIUS

Cordless DURAFON Handsets

EXACQ TECHNOLOGIES

Video Management, Surveillance, Security

EXTRON

A/V Components, Computer-Video Interfaces

FIRETIDE

Wireless Infrastructure Mesh Network

FLUID MESH NETWORKS

Wireless Infrastructure Mesh Network

FSR

A/V, Switchers, Distribution Amps

GANZ

CCTV Video, Network Solutions

GENERAL CABLE

Copper, Coaxial, Fiber Optic

GREAT LAKES

Equipment Racks, Enclosures

HALL RESEARCH TECHNOLOGIES

A/V Switching & Extension

HERITAGE MEDCALL

Wireless Emergency Call

HITACHI

Video Projectors

HUBBELL

Copper, Coaxial, Fiber Optic

IDENTICARD

Integrated Security Solutions

JBL PROFESSIONAL

Professional Loudspeakers

JERON

Nurse Call, Digital Intercom

KRAMER

A/V Switchers, Routers, Amplifiers

LEVITON

Copper, Coaxial, Fiber Optic

LEVITON LIGHTING

Stage Lighting Products

LISTEN TECHNOLOGIES

Assisted Listening Systems

LOWELL

Equipment Racks, Audio Products

MAGIC BOX

Digital Signage, Video Messaging

MIDDLE ATLANTIC

Racks, Enclosures, Cable Management

MOHAWK

Copper, Coaxial, Fiber Optic

ONSSI

Intelligent IP Video Surveillance

PANASONIC SECURITY

Digital Video Products

PANDUIT

Networking Products

PEAVEY

Loudspeakers, Mixer/Amplifiers

PELCO

Video Surveillance Products

PIVOT3

Video Surveillance Storage

POLAR FOCUS

Loudspeaker Rigging Hardware

PREMIER MOUNTS

Flat Panel, Projector Mounts

PRESONUS

Mixing Consoles, DSP, Recording Systems

PRIMEX WIRELESS

GPS Wireless Clocks

QSC

Amplifiers, DSP, Loudspeakers

QUAM

Speakers, Sound Masking, Volume Controls

RANE

Audio Products, DSP, Mixers

RENKUS-HEINZ

Professional Loudspeakers

SAPLING

Wireless Clocks

SENNHEISER

Microphones, Conferencing Systems

SHURE

Wired, Wireless Microphones

SONY SECURITY

IP Based Cameras

SOUNDCRAFT

Mixing Consoles: Studio, Broadcast, PA

SUPERIOR ESSEX

Copper, Coaxial, Fiber Optic

S2 SECURITY

Security Management, Access Control

TASCAM

Mixers, Audio Recorders

TE CONNECTIVITY

Copper, Coaxial, Fiber Optic

TELEX

Wired, Wireless Intercom

TOA

Amplifiers, DSP, Mixer/Amplifiers

VADDIO

Pan Tilt Zoom Camera Control

VALCOM

K-12 School Intercom

VBRICK

IP Video Streaming

VIDEO INSIGHT

Video Management Software

WEST PENN WIRE

Copper, Coaxial, Fiber Optic

WILLIAMS SOUND

Assisted Listening Systems

XIRRUS

Wireless Network Solution

exacq

From Tyco Security Products

exacqVision A-Series

Proven, Versatile IP
Network Video Recorders



• Proven Performance

- Continuously record up to 550 Mbps of video for high concentration of high definition analog and IP cameras
- Stream up to 1,800 frames/second of live/recorded video to local/web/mobile clients
- Stream live/recorded video up to 100 simultaneous PC clients
- Optional quad NICs for fastest archiving or mass client performance

• Designed Video Server Reliability

- Minimize system boot time and failure risk with a high reliability solid-state operating system drive
- Continuous duty hard drives optimized for reduced vibration and heat
- Uninterrupted operation and video preservation in event of one drive failure via optional 4U RAID5
- Protects against single power failure with optional 4U redundant power supplies
- Monitors hardware health in exacqVision client with email/text notifications

• Capacity for Mainstream Recording

- Record up to 64 IP cameras per video server
- Includes 4 IP camera licenses
- Store up to 32TB of video
- Expandable to over 1.6PB with S-Series networked storage
- Compatible with thousands of IP camera models

• Hosted Certified Software Applications (CSA)

- Install CSAs such as video analytics, access control, POS software on recorder
- Save money and rack space with single video security server
- Tested by Exacq to ensure compatibility

• 3-Year Warranty

- Constantly increase VMS features with regular software updates
- Includes a 3-year hardware warranty
- 3 years of unlimited software updates included

• Powerful Video Management System (VMS) Software

- Pre-loaded with exacqVision Professional software (standard)
 - EasyConnet automatically finds, addresses and connects IP cameras
 - Two-way audio
 - Conduct investigations on recorded video, audio and data with thumbnail or timeline search
 - Bookmark important video for long-term retention
- Easily license additional IP cameras and change out cameras
- View video anywhere (standard)
 - Unlimited Windows/Linux/Mac PC clients
 - Live and recorded video from any browser
 - Live and recorded video from most tablets and smartphones

SETTINGS	2U SERVER	4U SERVER	DESKTOP SERVER
Maximum IP Cameras	64	64	64
Included IP Licenses	4	4	4
SERVER	2U SERVER	4U SERVER	DESKTOP SERVER
Pre-Loaded VMS Software	Professional (standard), Enterprise (optional)	Professional (standard), Enterprise (optional)	Professional (standard), Enterprise (optional)
Typical Video Storage Rate (Mbps)	300 Mbps (Windows) 450 Mbps (Linux)	350 Mbps (Windows) 550 Mbps (Linux)	250 Mbps (Windows) 300 Mbps (Linux)
Local Client Display Rate (FPS)	CPU - Standard/i5/i7 Windows - 480/1100/1800 Linux - 600/1000/1200	CPU - Standard/i5/i7 Windows - 480/1100/1800 Linux - 600/1000/1200	CPU - Standard/i5/i7 Windows - 480/1100/1800 Linux - 600/1000/1200
Maximum Hard Drives	3	8	2
Maximum Storage	12 TB	32 TB (RAID 5 Optional)	8 TB
Monitor Output	1 DVI-I + 1 HDMI + 1 DisplayPort, max 2 simultaneous monitors	1 DVI-I + 1 HDMI + 1 DisplayPort, max 2 simultaneous monitors	1 DVI-I + 1 HDMI + 1 DisplayPort, max 2 simultaneous monitors
Operating System	Windows 7 64-bit, Windows 2012 R2 (Optional) Ubuntu Linux 12.04	Windows 7 64-bit, Windows 2012 R2 (Optional) Ubuntu Linux 12.04	Windows 7 64-bit, Windows 2012 R2 (Optional) Ubuntu Linux 12.04
CPU	Gen 4 Intel Core i3, Intel Core i5 or i7 (Optional)	Gen 4 Intel Core i3, Intel Core i5 or i7 (Optional)	Gen 4 Intel Core i3, Intel Core i5 or i7 (Optional)
RAM	4 GB, 8 GB, 12 GB (Optional)	4 GB, 8 GB, 12 GB (Optional)	4 GB, 8 GB, 12 GB (Optional)
NIC	2, 4 (Optional)	2, 4 (Optional)	2, 4 (Optional)
USB	6 x USB 2.0, 2 x USB 3.0	6 x USB 2.0, 2 x USB 3.0	6 x USB 2.0, 2 x USB 3.0
DVD	Included	Included	Included
Audio Outputs	1	1	1
Keyboard & Mouse	Included	Included	Included
GENERAL	2U SERVER	4U SERVER	DESKTOP SERVER
Dimensions	21.25" x 16.75" x 3.5" 54.7 x 42.6 x 8.9 cm	28" x 16.75" x 7" 71.2 x 42.6 x 17.8 cm	15.675" x 13" x 5.375" 39.7 x 33.1 x 14.6 cm
Weight	27 - 31 lbs. 12.3 - 14.1 kg	44 - 60 lbs. 20 - 27.3 kg	18.5 - 22 lbs. 8.4 - 10 kg
Regulatory	CE, FCC, cULus, UL Listed	CE, FCC, cULus, UL Listed	CE, FCC, cULus, UL Listed
Power Supply	Single	Single (Dual Optional)	Single
Operating Temperature	40° - 95° F 4.5° - 35° C	40° - 95° F 4.5° - 35° C	40° - 95° F 4.5° - 35° C

Related Products



exacqVision VMS Software



Exacq Mobile App



exacqVision
E-Series Encoders



exacqVision A-Series
hybrid NVR



exacqVision Surveillance
Keyboard

WWW.EXACQ.COM

EXCA234IP4SM3

innotech
MANUFACTURERS OF INNOVATIVE SECURITY PRODUCTS



4 Megapixel - HD Plus IR Outdoor Vandal Dome IP Camera with Motorized Optical Zoom & SmartMonitor™ Video Output

4 Megapixel Imaging Sensor, Day/Night, Smart IR LEDs with 20 meter IR Range, 2.8 - 12 mm Motorized Optical Zoom Lens with Autofocus & SmartMonitor™ Video Output. Also features H.264/H.265 & MJPEG Multi Streaming, Edge Recording with Micro SD Card Slot, Corridor Mode, WDR, 3DNR, ICR Cut Filter, PoE, Audio, BNC Video Service Output, Latest ONVIF, IP66 Rated.

Unique **SmartMonitor™** Video Output lets you display the camera on any Innotech SmartConnect™ Enabled Device.

FEATURES

- ✓ 4 Megapixel Imaging Sensor - ultra high definition resolution
- ✓ 2.8 - 12mm motorized zoom lens with autofocus
- ✓ Up to 4MP @ 15fps, up to 3MP @ 20fps, up to 2MP @ 30fps
- ✓ Smart IR LEDs with 20 meter IR range
- ✓ Edge recording with Micro SD card slot for local video archiving (Max 64GB)
- ✓ Latest High Efficiency H.265 video compression plus H.264 & MJPEG
- ✓ Wide Dynamic Range & 3D Noise Reduction
- ✓ IP66 Ingress Protection rated
- ✓ Connect to network recorder **PLUS** display on Public Monitor *without any additional equipment*
- ✓ Unique **SmartMonitor™** video output lets you display the camera on any Innotech SmartConnect™ Enabled Device

SPECIFICATIONS

Resolution	4 MP Imaging Sensor (2560 x 1536) Ultra High Definition
Video Compression	H.264 / H.265 / MJPEG
Resolution / fps	4MP @ 15fps / 3MP @ 20fps / 2MP @ 30fps
Bit Rate (CBR / VBR)	Video Stream: 4096Kb - 12800Kb / Audio Stream: 128Kb - 640Kb
Maximum Mounting Height	15m (49.21 ft) @ 12.0MP @ 15fps
Lens	2.8 - 12mm Motorized Optical Zoom Lens with Autofocus
SmartMonitor™ BNC Analog Video Output	YES
IR LED / Range	10 Smart IR LEDs / 20 meters
Corridor Mode	YES, 9:16 Aspect Ratio for Narrow Galleys / Hallways / View
Video Service Output	BNC
ONVIF Compliance	Latest ONVIF
Edge Recording	Micro SD Card Slot, Max 64GB (SD Card Not Included)
Operating Temperature	30°C to +60°C (-22°F to +140°F)
Power	PoE / 12VDC / 3W (IR LED OFF) / 5W (IR LED ON)
Dimensions / Weight	130mm (W) x 112mm (H) / 900g

ACCESSORIES



AM17
Mount Adapter



AM22
Back Box



FOEM-70W
8CH PoE Switch



POE1600-16CH
16CH PoE Switch



EXNVR
Professional NVR

innotech

1500 West Copans Road, Ste A-11
Pompano Beach, FL 33064

954-792-2818

sales@innotechsecurity.com

www.innotechsecurity.com

EXCA100IP4



4 Megapixel - HD Plus IR Indoor/Outdoor IP Dome Camera

4 Megapixel Imaging Sensor, Day/Night, Superflux Smart IR LED, 3.6mm Lens, Multiple-Streaming, Edge Recording with Micro SD Card Slot, Corridor Mode, D-WDR, 3DNR, PoE, Audio, BNC Video Service Output, Latest ONVIF, IP65 Rated.

FEATURES

- ✓ 4 Megapixel Imaging Sensor - ultra high definition resolution
- ✓ Wide Angle 3.6mm lens
- ✓ Up to 4MP @ 15fps, up to 3MP @ 20fps, up to 2MP @ 30fps
- ✓ Superflux Smart IR LED with 7 meter IR range
- ✓ Edge recording with Micro SD card slot for local video archiving (Max 64GB)
- ✓ H.264 & MJPEG video compression
- ✓ Corridor Mode (9:16 Aspect Ratio), ideal for narrow aisle or hallway views
- ✓ Wide Dynamic Range & 3D Noise Reduction
- ✓ IP65 Ingress Protection Rated
- ✓ Latest ONVIF Compliant

SPECIFICATIONS

Resolution	4 MP Imaging Sensor (2688 x 1520) Ultra High Definition
Video Compression	H.264 High / Main / Baseline & MJPEG
Resolution / fps	4MP @ 15fps / 3MP @ 20fps / 2MP @ 30fps
Bit Rate (CBR / VBR)	Main Stream:500KB-1200KB / Sub Stream:100KB-600KB
Minimum Illumination	0 lux IR On 0.05 lux Color
Lens	3.6mm
Field of View (FOV)	75°
IR LED / Range	1 Superflux IR LED / 7 meters
Corridor Mode	YES, 9:16 Aspect Ratio for Narrow Aisle View
Video Service Output	BNC
ONVIF Compliance	Latest ONVIF
Edge Recording	Micro SD Card Slot, Max 64GB (SD Card Not Included)
Operating Temperature	-20°C to +55°C (-4°F to +131°F)
Power	PoE / 12 VDC / 2.5W (IR LED OFF) / 5W (IR LED ON)
Dimensions / Weight	100mm (W) x 53mm (H) / 400g

ACCESSORIES



POE800-70W
8CH POE Switch



POE1600-130W
16CH POE Switch



EXNVR
Professional NVR



HP 1910 Switch Series



Key features

- Customized operation using intuitive Web interface
- Layer 3 static routing with 32 routes for network segmentation and expansion
- Access control lists for granular security control
- Spanning Tree: STP, RSTP, and MSTP
- Lifetime warranty

All models support rack mounting or desktop operation. Customizable features include basic Layer 2 features like VLANs and link aggregation, as well as advanced features such as Layer 3 static routing, IPv6, ACLs, and Spanning Tree Protocols. The switches come with a lifetime warranty covering the unit, fans, and power supplies, as well as 24x7 phone support for the first three years of ownership.

Product overview

The HP 1910 Switch Series consists of advanced smart-managed fixed-configuration Gigabit and Fast Ethernet switches designed for small businesses in an easy-to-administer solution. By utilizing the latest design in silicon technology, this series is one of the most power efficient in the market.

The series has 13 switches: eight Gigabit Ethernet and five Fast Ethernet models. The 8-, 16-, 24-, and 48-port 10/100/1000 models are equipped with additional Gigabit SFP ports for fiber connectivity; in addition to non-PoE models, the 8- and 24-port Gigabit Ethernet models are available with PoE (at two different levels) or without PoE. The 10/100 models are available with 8, 24 and 48 ports, and come with two additional combination uplink ports. The 8- and 24-port Fast Ethernet models are available with or without PoE.

The HP 1910 Switch Series provides a great value, and includes features to satisfy even the most advanced small business network.

Features and benefits

Management

- **Simple Web management**
allows for easy management of the switch—even by nontechnical users—through an intuitive Web GUI; supports HTTP and HTTP Secure (HTTPS)
- **Single IP management**
enables management of up to four HP 1910 devices using a single Web interface; simplifies management of multiple devices
- **Secure Web GUI**
provides a secure, easy-to-use graphical interface for configuring the module via HTTPS
- **SNMPv1, v2c, and v3**
facilitates management of the switch, as the device can be discovered and monitored from an SNMP management station
- **Complete session logging**
provides detailed information for problem identification and resolution
- **Dual flash images**
provides independent primary and secondary operating system files for backup while upgrading
- **Port mirroring**
enables traffic on a port to be simultaneously sent to a network analyzer for monitoring
- **Management security**
restricts access to critical configuration commands; offers multiple privilege levels with password protection; ACLs provide telnet and SNMP access; local and remote syslog capabilities allow logging of all access
- **Network Time Protocol (NTP)**
synchronizes timekeeping among distributed time servers and clients; keeps timekeeping consistent among all clock-dependent devices within the network so that the devices can provide diverse applications based on the consistent time
- **IEEE 802.1AB Link Layer Discovery Protocol (LLDP)**
advertises and receives management information from adjacent devices on a network, facilitating easy mapping by network management applications
- **Limited CLI**
enables users to quickly deploy and troubleshoot devices in the network
- **RMON**
provides advanced monitoring and reporting capabilities for statistics, history, alarms, and events
- **Default DHCP client mode**
allows the switch to be directly connected to a network, enabling plug-and-play operation; in absence of a DHCP server on the network, the switch will fall back to a unique static address determined by the switch's MAC address

Quality of Service (QoS)

- **Broadcast control**
allows limitation of broadcast traffic rate to cut down on unwanted network broadcast traffic
- **Rate limiting**
sets per-port ingress enforced maximums and per-port, per-queue minimums
- **Traffic prioritization**
provides time-sensitive packets (like VoIP and video) with priority over other traffic based on DSCP or IEEE 802.1p classification; packets are mapped to four hardware queues for more effective throughput

Connectivity

- **IPv6**
 - **IPv6 host**
enables switches to be managed and deployed at the IPv6 network's edge
 - **IPv6 routing**
supports IPv6 static routes
 - **MLD snooping**
forwards IPv6 multicast traffic to the appropriate interface, preventing traffic flooding
 - **IPv6 ACL/QoS**
supports ACL and QoS for IPv6 network traffic
- **Auto-MDI/MDIX**
adjusts automatically for straight-through or crossover cables on all 10/100/1000 ports
- **IEEE 802.3X flow control**
provides a flow throttling mechanism propagated through the network to prevent packet loss at a congested node
- **IEEE 802.3af Power over Ethernet (PoE) ready**
provides up to 15.4 W per port to power standards-compliant IP phones, wireless LAN access points, Web cameras, and more (for PoE models)
- **IEEE 802.3at Power over Ethernet (PoE+)**
provides up to 30 W per port, which 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 (Note: applies to all PoE models, except the two 24G-PoE models, which support a pre-standard implementation of PoE+)
- **Packet storm protection**
protects against broadcast, multicast, or unicast storms with user-defined thresholds
- **Cable diagnostics**
detects cable issues remotely using a browser-based tool

Security

- **Advanced access control lists (ACLs)**
enables network traffic filtering and enhances network control using MAC- and IP-based ACLs; time-based ACLs allow for greater flexibility with managing network access
- **Secure Sockets Layer (SSL)**
encrypts all HTTP traffic, allowing secure access to the browser-based management GUI in the switch
- **IEEE 802.1X and RADIUS network logins**
controls port-based access for authentication and accountability
- **Automatic VLAN assignment**
assigns users automatically to the appropriate VLAN based on their identity, location and time of day
- **STP BPDU port protection**
blocks Bridge Protocol Data Units (BPDUs) on ports that do not require BPDUs, preventing forged BPDU attacks
- **STP root guard**
protects the root bridge from malicious attacks or configuration mistakes
- **Automatic denial-of-service protection**
monitors for malicious attacks and protects the network by blocking the attacks
- **Management password**
provides security so that only authorized access to the Web browser interface is allowed

Performance

- **Half-/full-duplex auto-negotiating capability on every port**
doubles the throughput of every port
- **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
- **IGMP snooping**
improves network performance through multicast filtering, instead of flooding traffic to all ports
- **Fiber uplink**
provides greater distance connectivity using Gigabit Ethernet fiber uplinks

Layer 2 switching

- **VLAN support and tagging**
supports IEEE 802.1Q (4,094 VLAN IDs) and 256 VLANs simultaneously
- **Spanning Tree Protocol (STP)**
supports standard IEEE 802.1D STP, IEEE 802.1w Rapid Spanning Tree Protocol (RSTP) for faster convergence, and IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)

- **BPDU filtering**
drops BPDU packets when STP is enabled globally but disabled on a specific port
- **Jumbo frame support**
supports up to 10 kilobyte frame size to improve the performance of large data transfers

Layer 3 services

- **Address Resolution Protocol (ARP)**
determines the MAC address of another IP host in the same subnet; supports static ARPs; gratuitous ARP allows detection of duplicate IP addresses; proxy ARP allows normal ARP operation between subnets or when subnets are separated by a Layer 2 network
- **DHCP relay**
simplifies management of DHCP addresses in networks with multiple subnets

Layer 3 routing

- **NEW Static IPv4/IPv6 routing**
provides basic routing (supporting up to 32 static routes and 8 virtual VLAN interfaces); allows manual routing configuration

Resiliency and high availability

- **Available redundant power supply**
provides additional PoE of up to 740 W for high-power applications like HP Gigabit Ethernet IntelliJack switches; the HP RPS1600 Redundant Power System (JG136A), which is sold separately, is for use with the 1910-24G-PoE (365W) switch model only
- **Link aggregation**
groups together multiple ports (up to a maximum of two ports) automatically using Link Aggregation Control Protocol (LACP), or manually, to form an ultra-high-bandwidth connection to the network backbone; helps prevent traffic bottlenecks

Convergence

- **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
- **PoE allocations**
supports multiple methods (automatic, IEEE 802.3af class, LLDP-MED, or user-specified) to allocate PoE power for more efficient energy savings
- **Auto voice VLAN**
recognizes IP phones and automatically assigns voice traffic to dedicated VLAN for IP phones

Additional information

- **Green Initiative support**
provides support for RoHS and WEEE regulations

- **Green IT and power**
improves energy efficiency through the use of the latest advances in silicon development; shuts off unused ports and utilizes variable-speed fans, reducing energy costs




Warranty and support

- **Lifetime Warranty 2.0**
advance hardware replacement for as long as you own the product with next-business-day delivery (available in most countries)†
- **Electronic and telephone support (for Lifetime Warranty 2.0)**
limited 24x7 telephone support is available from HP for the first 3 years; limited electronic and business hours telephone support is available from HP for the entire warranty period; to reach our support centers, refer to www.hp.com/networking/contact-support; for details on the duration of support provided with your product purchase, refer to www.hp.com/networking/warrantysummary

†HP warranty includes repair or replacement of hardware for as long as you own the product, with next business day advance replacement (available in most countries). The disk drive included with HP AllianceOne Advanced Services and Services z1 Modules, HP Threat Management Services z1 Module, HP AllianceOne Extended z1 Module with Riverbed Steelhead, HP MSM765 z1 Mobility Controller and HP Survivable Branch Communication z1 Module powered by Microsoft® Lync has a five-year hardware warranty. For details, refer to the Software license and hardware warranty statements at www.hp.com/networking/warranty.

HP 1910 Switch Series

Specifications

	 HP 1910-486 Switch (JE009A)	 HP 1910-246-PoE (365W) Switch (JE007A)	 HP 1910-246-PoE (170W) Switch (JE008A)
Ports	<p>48 RJ-45 auto-negotiating 10/100/1000 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T)</p> <p>4 SFP 1000 Mbps ports</p> <p>1 RJ-45 console port to access limited CLI port</p> <p>Supports a maximum of 48 autosensing 10/100/1000 ports plus 4 1000BASE-X SFP ports, or a combination</p>	<p>24 RJ-45 auto-negotiating 10/100/1000 PoE ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3af PoE)</p> <p>4 SFP 1000 Mbps ports</p> <p>1 RJ-45 console port to access limited CLI port</p> <p>Supports a maximum of 24 autosensing 10/100/1000 ports plus 4 1000BASE-X SFP ports, or a combination</p>	<p>24 RJ-45 auto-negotiating 10/100/1000 PoE ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3af PoE)</p> <p>4 SFP 1000 Mbps ports</p> <p>1 RJ-45 console port to access limited CLI port</p> <p>Supports a maximum of 24 autosensing 10/100/1000 ports plus 4 1000BASE-X SFP ports, or a combination</p>
Physical characteristics	17.4(w) x 10.24(d) x 1.7(h) in (44.2 x 26.01 x 4.32 cm) (1U height)	17.4(w) x 16.54(d) x 1.7(h) in (44.2 x 42.01 x 4.32 cm) (1U height)	17.4(w) x 16.54(d) x 1.7(h) in (44.2 x 42.01 x 4.32 cm) (1U height)
Weight	6.8 lb (3.08 kg)	6.8 lb (3.08 kg)	6.8 lb (3.08 kg)
Memory and processor	ARM @ 333 MHz, 128 MB flash, 128 MB RAM; packet buffer size: 512 KB	ARM @ 333 MHz, 128 MB flash, 128 MB RAM; packet buffer size: 512 KB	ARM @ 333 MHz, 128 MB flash, 128 MB RAM; packet buffer size: 512 KB
Mounting	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included)	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included)	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included)
Performance			
100 Mb Latency	< 5 µs	< 5 µs	< 5 µs
1000 Mb Latency	< 5 µs	< 5 µs	< 5 µs
Throughput	up to 77.4 Mpps (64-byte packets)	up to 41.7 Mpps (64-byte packets)	up to 41.7 Mpps (64-byte packets)
Routing/Switching capacity	104 Gb/s	56 Gb/s	56 Gb/s
Routing table size	32 entries (IPv4), 32 entries (IPv6)	32 entries (IPv4), 32 entries (IPv6)	32 entries (IPv4), 32 entries (IPv6)
MAC address table size	8192 entries	8192 entries	8192 entries
Environment			
Operating temperature	32°F to 113°F (0°C to 45°C)	32°F to 113°F (0°C to 45°C)	32°F to 113°F (0°C to 45°C)
Operating relative humidity	10% to 90%, noncondensing	10% to 90%, noncondensing	10% to 90%, noncondensing
Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)
Nonoperating/Storage relative humidity	10% to 95%, noncondensing	10% to 95%, noncondensing	10% to 95%, noncondensing
Electrical characteristics			
Frequency	50/60 Hz	50/60 Hz	50/60 Hz
Voltage	100-240 VAC	100-240 VAC	100-240 VAC
Maximum power rating	59.8 W	523 W	255 W
PoE power		365 W	170 W
Notes	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. PoE power is the power supplied by the internal power supply. It is dependent on the type and quantity of power supplies and may be supplemented with the use of an external power supply (EPS).	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. PoE power is the power supplied by the internal power supply. It is dependent on the type and quantity of power supplies.
Safety	UL 60950; IEC 60950-1; EN 60950-1; CAN/CSA-C22.2 No. 60950-1-03	UL 60950; IEC 60950-1; EN 60950-1; CAN/CSA-C22.2 No. 60950-1-03	UL 60950; IEC 60950-1; EN 60950-1; CAN/CSA-C22.2 No. 60950-1-03
Emissions	FCC part 15 Class A; VCCI Class A; EN 55022 Class A; CISPR 22 Class A; EN 55024; EN 61000-3-2 2000, 61000-3-3; ICES-003 Class A	FCC part 15 Class A; VCCI Class A; EN 55022 Class A; CISPR 22 Class A; EN 55024; EN 61000-3-2 2000, 61000-3-3; ICES-003 Class A	FCC part 15 Class A; VCCI Class A; EN 55022 Class A; CISPR 22 Class A; EN 55024; EN 61000-3-2 2000, 61000-3-3; ICES-003 Class A
Management	IMC - Intelligent Management Center; limited command-line interface; Web browser; SNMP Manager; IEEE 802.3 Ethernet MIB	IMC - Intelligent Management Center; limited command-line interface; Web browser; SNMP Manager; IEEE 802.3 Ethernet MIB	IMC - Intelligent Management Center; limited command-line interface; Web browser; SNMP Manager; IEEE 802.3 Ethernet MIB
Notes	SFP ports and copper ports work simultaneously, independent of each other, to provide a total of 52 Gigabit Ethernet-capable ports.	SFP ports and copper ports can work simultaneously, independent of each other, to provide a total of 28 Gigabit Ethernet-capable ports.	SFP ports and copper ports work simultaneously, independent of each other, to provide a total of 28 Gigabit Ethernet-capable ports.
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (UV786E)	3-year, 4-hour onsite, 13x5 coverage for hardware (UV786E)	3-year, 4-hour onsite, 13x5 coverage for hardware (UV786E)



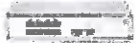
HP 1910 Switch Series

Specifications (continued)

HP 1910-48G Switch (JE009A)	HP 1910-24G-PoE (365W) Switch (JE007A)	HP 1910-24G-PoE (170W) Switch (JE006A)
<p>1-year, 24x7 software phone support, software updates (HR685E)</p> <p>Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.</p>	<p>1-year, 6 hour Call-To-Repair Onsite for hardware (HR686E)</p> <p>1-year, 24x7 software phone support, software updates (HR685E)</p> <p>Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.</p>	<p>1-year, 24x7 software phone support, software updates (HR685E)</p> <p>Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.</p>

HP 1910 Switch Series

Specifications (continued)

			
	HP 1910-24G Switch (J8006A)	HP 1910-16G Switch (J8005A)	HP 1910-8G Switch (J8348A)
Ports	<p>24 RJ-45 auto-negotiating 10/100/1000 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T)</p> <p>4 SFP 1000 Mbps ports</p> <p>1 RJ-45 console port to access limited CLI port</p> <p>Supports a maximum of 24 autosensing 10/100/1000 ports plus 4 1000BASE-X SFP ports, or a combination</p>	<p>16 RJ-45 auto-negotiating 10/100/1000 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T)</p> <p>4 SFP 1000 Mbps ports</p> <p>1 RJ-45 console port to access limited CLI port</p> <p>Supports a maximum of 16 autosensing 10/100/1000 ports plus 4 1000BASE-X SFP ports, or a combination</p>	<p>8 RJ-45 auto-negotiating 10/100/1000 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T)</p> <p>1 SFP 1000 Mbps port</p> <p>1 RJ-45 console port to access limited CLI port</p> <p>Supports a maximum of 8 autosensing 10/100/1000 ports plus 1 1000BASE-X SFP ports, or a combination</p>
Physical characteristics	17.4(w) x 6.3(d) x 1.7(h) in (44.2 x 16 x 4.32 cm) (1U height)	17.4(w) x 6.3(d) x 1.7(h) in (44.2 x 16 x 4.32 cm) (1U height)	8.27(w) x 8.27(d) x 1.72(h) in (21 x 21 x 4.36 cm) (1U height)
Weight	6.8 lb (3.08 kg)	6.8 lb (3.08 kg)	4.41 lb (2 kg)
Memory and processor	ARM @ 333 MHz, 128 MB flash, 128 MB RAM; packet buffer size: 512 KB	ARM @ 333 MHz, 128 MB flash, 128 MB RAM; packet buffer size: 512 KB	ARM @ 333 MHz, 128 MB flash, 128 MB RAM; packet buffer size: 512 KB
Mounting	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included)	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included)	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included)
Performance			
100 Mb Latency	< 5 µs	< 5 µs	< 5 µs
1000 Mb Latency	< 5 µs	< 5 µs	< 5 µs
Throughput	up to 41.7 Mpps (64-byte packets)	up to 29.8 Mpps (64-byte packets)	up to 13.4 Mpps (64-byte packets)
Routing/Switching capacity	56 Gb/s	40 Gb/s	18 Gb/s
Routing table size	32 entries (IPv4), 32 entries (IPv6)	32 entries (IPv4), 32 entries (IPv6)	32 entries (IPv4), 32 entries (IPv6)
MAC address table size	8192 entries	8192 entries	8192 entries
Environment			
Operating temperature	32°F to 113°F (0°C to 45°C)	32°F to 113°F (0°C to 45°C)	32°F to 113°F (0°C to 45°C)
Operating relative humidity	10% to 90%, noncondensing	10% to 90%, noncondensing	10% to 90%, noncondensing
Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)
Nonoperating/Storage relative humidity	10% to 95%, noncondensing	10% to 95%, noncondensing	10% to 95%, noncondensing
Electrical characteristics			
Frequency	50/60 Hz	50/60 Hz	50/60 Hz
Voltage	100-240 VAC	100-240 VAC	100-240 VAC
Maximum power rating	31.5 W	25.1 W	14.4 W
Notes	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.	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; IEC 60950-1; EN 60950-1; CAN/CSA-C22.2 No. 60950-1-03	UL 60950; IEC 60950-1; EN 60950-1; CAN/CSA-C22.2 No. 60950-1-03	UL 60950; IEC 60950-1; EN 60950-1; CAN/CSA-C22.2 No. 60950-1-03
Emissions	FCC part 15 Class A; VCCI Class A; EN 55022 Class A; CISPR 22 Class A; EN 55024; EN 61000-3-2 2000, 61000-3-3; ICES-003 Class A	FCC part 15 Class A; VCCI Class A; EN 55022 Class A; CISPR 22 Class A; EN 55024; EN 61000-3-2 2000, 61000-3-3; ICES-003 Class A	FCC part 15 Class A; VCCI Class A; EN 55022 Class A; CISPR 22 Class A; EN 55024; EN 61000-3-2 2000, 61000-3-3; ICES-003 Class A
Management	IMC - Intelligent Management Center; limited command-line interface; Web browser; SNMP Manager; IEEE 802.3 Ethernet MIB	IMC - Intelligent Management Center; limited command-line interface; Web browser; SNMP Manager; IEEE 802.3 Ethernet MIB	IMC - Intelligent Management Center; limited command-line interface; Web browser; SNMP Manager; IEEE 802.3 Ethernet MIB
Notes	SFP ports and copper ports can work simultaneously, independent of each other, to provide a total of 28 Gigabit Ethernet-capable ports.	SFP ports and copper ports can work simultaneously, independent of each other, to provide a total of 20 Gigabit Ethernet-capable ports.	SFP port and copper ports work simultaneously, independent of each other, to provide a total of 9 Gigabit Ethernet-capable ports.
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (UV786E)	3-year, 4-hour onsite, 13x5 coverage for hardware (UV786E)	Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.
	3-year, 4-hour onsite, 24x7 coverage for hardware (UW485E)	3-year, 4-hour onsite, 24x7 coverage for hardware (UW485E)	

HP 1910 Switch Series

Specifications (continued)

HP 1910-24G Switch (JE006A)	HP 1910-16G Switch (JE005A)	HP 1910-8G Switch (J6348A)
3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UW036E)	3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UW036E)	
3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UW488E)	3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UW488E)	
3-year, 24x7 SW phone support, software updates (UV807E)	3-year, 24x7 SW phone support, software updates (UV807E)	
3-year, 24x7 SW phone support, software updates (UV789E)	3-year, 24x7 SW phone support, software updates (UV789E)	
1-year, post-warranty, 4-hour onsite, 13x5 coverage for hardware (HR682E)	1-year, post-warranty, 4-hour onsite, 13x5 coverage for hardware (HR682E)	
1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware (HR683E)	1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware (HR683E)	
1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (HR684E)	1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (HR684E)	
Installation with minimum configuration, system-based pricing (UY901E)	Installation with minimum configuration, system-based pricing (UY901E)	
Installation with HP-provided configuration, system-based pricing (UY902E)	Installation with minimum configuration, system-based pricing (UW451E)	
4-year, 4-hour onsite, 13x5 coverage for hardware (UV787E)	Installation with HP-provided configuration, system-based pricing (UY902E)	
4-year, 4-hour onsite, 13x5 coverage for hardware (UV805E)	4-year, 4-hour onsite, 13x5 coverage for hardware (UV787E)	
4-year, 4-hour onsite, 24x7 coverage for hardware (UW034E)	4-year, 4-hour onsite, 13x5 coverage for hardware (UV805E)	
4-year, 4-hour onsite, 24x7 coverage for hardware (UW486E)	4-year, 4-hour onsite, 24x7 coverage for hardware (UW034E)	
4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW037E)	4-year, 4-hour onsite, 24x7 coverage for hardware (UW486E)	
4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW489E)	4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW037E)	
4-year, 24x7 SW phone support, software updates (UV790E)	4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW489E)	
4-year, 24x7 SW phone support, software updates (UV808E)	4-year, 24x7 SW phone support, software updates (UV790E)	
5-year, 4-hour onsite, 13x5 coverage for hardware (UV788E)	4-year, 24x7 SW phone support, software updates (UV808E)	
5-year, 4-hour onsite, 13x5 coverage for hardware (UV806E)	5-year, 4-hour onsite, 13x5 coverage for hardware (UV788E)	
5-year, 4-hour onsite, 24x7 coverage for hardware (UW035E)	5-year, 4-hour onsite, 13x5 coverage for hardware (UV806E)	
5-year, 4-hour onsite, 24x7 coverage for hardware (UW487E)	5-year, 4-hour onsite, 24x7 coverage for hardware (UW035E)	
5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW038E)	5-year, 4-hour onsite, 24x7 coverage for hardware (UW487E)	
5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW490E)	5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW038E)	
5-year, 24x7 SW phone support, software updates (UV791E)	5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW490E)	
5-year, 24x7 SW phone support, software updates (UV809E)	5-year, 24x7 SW phone support, software updates (UV791E)	
3 Yr 6 hr Call-to-Repair Onsite (UW491E)	5-year, 24x7 SW phone support, software updates (UV809E)	
3 Yr 6 hr Call-to-Repair Onsite (UW039E)	3 Yr 6 hr Call-to-Repair Onsite (UW491E)	
4 Yr 6 hr Call-to-Repair Onsite (UW492E)	3 Yr 6 hr Call-to-Repair Onsite (UW039E)	
4 Yr 6 hr Call-to-Repair Onsite (UW040E)	4 Yr 6 hr Call-to-Repair Onsite (UW492E)	
5 Yr 6 hr Call-to-Repair Onsite (UW493E)	4 Yr 6 hr Call-to-Repair Onsite (UW040E)	
5 Yr 6 hr Call-to-Repair Onsite (UW041E)	5 Yr 6 hr Call-to-Repair Onsite (UW493E)	
1-year, 6 hour Call-To-Repair Onsite for hardware (HR686E)	5 Yr 6 hr Call-to-Repair Onsite (UW041E)	
1-year, 24x7 software phone support, software updates (HR685E)	1-year, 6 hour Call-To-Repair Onsite for hardware (HR686E)	




HP 1910 Switch Series

Specifications (continued)

HP 1910-24G Switch (J6006A)	HP 1910-16G Switch (J6005A)	HP 1910-06 Switch (J6348A)
Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	1-year, 24x7 software phone support, software updates (HR685E)	
	Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	

HP 1910 Switch Series

Specifications (continued)

	 HP 1910-86-PoE+ (65W) Switch (J6349A)	 HP 1910-86-PoE+ (180W) Switch (J6350A)	 HP 1910-24 Switch (J6338A)
Ports	8 RJ-45 auto-negotiating 10/100/1000 PoE+ ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3af PoE, IEEE 802.3at) 1 SFP 1000 Mbps port 1 RJ-45 console port to access limited CLI port Supports a maximum of 8 autosensing 10/100/1000 ports plus 1 1000BASE-X SFP ports, or a combination	8 RJ-45 auto-negotiating 10/100/1000 PoE+ ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3af PoE, IEEE 802.3at) 1 SFP 1000 Mbps port 1 RJ-45 console port to access limited CLI port Supports a maximum of 8 autosensing 10/100/1000 ports plus 1 1000BASE-X SFP ports, or a combination	24 RJ-45 autosensing 10/100 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX); Duplex: half or full 2 SFP dual-personality 1000 Mbps ports (IEEE 802.3ab Type 1000BASE-T) 1 RJ-45 console port to access limited CLI port Supports a maximum of 24 autosensing 10/100 ports plus 2 1000BASE-X SFP ports, with optional module
Physical characteristics	10.24(w) x 11.81(d) x 1.72(h) in (26 x 30 x 4.36 cm) (1U height)	10.24(w) x 11.81(d) x 1.72(h) in (26 x 30 x 4.36 cm) (1U height)	17.32(w) x 6.81(d) x 1.73(h) in (44 x 17.3 x 4.4 cm) (1U height)
Weight	6.61 lb (3 kg)	6.61 lb (3 kg)	4.85 lb (2.2 kg)
Memory and processor	ARM @ 333 MHz, 128 MB flash, 128 MB RAM; packet buffer size: 512 KB	ARM @ 333 MHz, 128 MB flash, 128 MB RAM; packet buffer size: 512 KB	MIPS @ 500 MHz, 32 MB flash, 128 MB RAM; packet buffer size: 512 KB
Mounting	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included)	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included)	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included)
Performance			
100 Mb Latency	< 5 µs	< 5 µs	< 5 µs
1000 Mb Latency	< 5 µs	< 5 µs	< 5 µs
Throughput	up to 13.4 Mpps (64-byte packets)	up to 13.4 Mpps (64-byte packets)	up to 6.6 Mpps (64-byte packets)
Routing/Switching capacity	18 Gb/s	18 Gb/s	8.8 Gb/s
Routing table size	32 entries (IPv4), 32 entries (IPv6)	32 entries (IPv4), 32 entries (IPv6)	32 entries (IPv4), 32 entries (IPv6)
MAC address table size	8192 entries	8192 entries	8192 entries
Environment			
Operating temperature	32°F to 113°F (0°C to 45°C)	32°F to 113°F (0°C to 45°C)	32°F to 104°F (0°C to 40°C)
Operating relative humidity	10% to 90%, noncondensing	10% to 90%, noncondensing	10% to 90%, noncondensing
Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)
Nonoperating/Storage relative humidity	10% to 95%, noncondensing	10% to 95%, noncondensing	10% to 95%, noncondensing
Electrical characteristics			
Frequency	50/60 Hz	50/60 Hz	50/60 Hz
Voltage	100-240 VAC	100-240 VAC	100-240 VAC
Maximum power rating	93 W	228 W	12 W
PoE power	65 W	180 W	
Notes	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. PoE power is the power supplied by the internal power supply. It is dependent on the type and quantity of power supplies.	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. PoE power is the power supplied by the internal power supply. It is dependent on the type and quantity of power supplies.	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; IEC 60950-1; EN 60950-1; CAN/CSA-C22.2 No. 60950-1-03	UL 60950; IEC 60950-1; EN 60950-1; CAN/CSA-C22.2 No. 60950-1-03	IEC 60950-1; EN 60950-1; UL 60950-1 2nd Edition; CSA C22.2 No. 60950-1-07 2nd Edition
Emissions	FCC part 15 Class A; VCCI Class A; EN 55022 Class A; CISPR 22 Class A; EN 55024; EN 61000-3-2 2000, 61000-3-3; ICES-003 Class A	FCC part 15 Class A; VCCI Class A; EN 55022 Class A; CISPR 22 Class A; EN 55024; EN 61000-3-2 2000, 61000-3-3; ICES-003 Class A	FCC part 15 Class A; VCCI Class A; EN 55022 Class A; CISPR 22 Class A; EN 55024; EN 61000-3-2 2000, 61000-3-3; ICES-003 Class A
Management	IMC - Intelligent Management Center; limited command-line interface; Web browser; SNMP Manager; IEEE 802.3 Ethernet MIB	IMC - Intelligent Management Center; limited command-line interface; Web browser; SNMP Manager; IEEE 802.3 Ethernet MIB	IMC - Intelligent Management Center; limited command-line interface; Web browser; SNMP Manager; IEEE 802.3 Ethernet MIB
Notes	SFP port and copper ports work simultaneously, independent of each other, to provide a total of 9 Gigabit Ethernet-capable ports.	SFP port and copper ports work simultaneously, independent of each other, to provide a total of 9 Gigabit Ethernet-capable ports.	The HP 1910-24G Switch (J6006A) was formerly sold as the 3Com Baseline Plus 2928 (3CRBSG2893) and may ship with this product labeling. SFP ports and copper ports can work simultaneously, independent of each other, to provide a total of 28 Gigabit Ethernet-capable ports.

HP 1910 Switch Series

Specifications (continued)

	HP 1910-8G-PoE+ (65W) Switch (J6349A)	HP 1910-8G-PoE+ (100W) Switch (J6350A)	HP 1910-24 Switch (J6538A)
Services	Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

HP 1910 Switch Series

Specifications (continued)



HP 1910-8 Switch (J6536A)



HP 1910-48 Switch (J6540A)

	HP 1910-8 Switch (J6536A)	HP 1910-48 Switch (J6540A)
Ports	<p>8 RJ-45 autosensing 10/100 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX); Duplex: half or full</p> <p>2 SFP dual-personality 1000 Mbps ports (IEEE 802.3ab Type 1000BASE-T)</p> <p>1 RJ-45 console port to access limited CLI port</p> <p>Supports a maximum of 8 autosensing 10/100 ports plus 2 1000BASE-X SFP ports, or a combination</p>	<p>48 RJ-45 autosensing 10/100 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX); Duplex: half or full</p> <p>2 SFP 1000 Mbps ports</p> <p>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</p> <p>1 RJ-45 console port to access limited CLI port</p> <p>Supports a maximum of 48 autosensing 10/100 ports plus 2 1000BASE-X SFP ports plus 2 autosensing 10/100/1000 ports, or a combination</p>
Physical characteristics	<p>10.47(w) x 6.38(d) x 1.73(h) in (26.6 x 16.2 x 4.4 cm) (1U height)</p> <p>Weight: 2.2 lb (1 kg)</p>	<p>17.32(w) x 6.81(d) x 1.73(h) in (44 x 17.3 x 4.4 cm) (1U height)</p> <p>Weight: 5.07 lb (2.3 kg)</p>
Memory and processor	MIPS @ 500 MHz, 32 MB flash, 128 MB RAM; packet buffer size: 512 KB	MIPS @ 500 MHz, 32 MB flash, 128 MB RAM; packet buffer size: 1.5 MB
Mounting	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included)	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included)
Performance		
100 Mb Latency	< 5 µs	< 5 µs
1000 Mb Latency	< 5 µs	< 5 µs
Throughput	up to 4.2 Mpps (64-byte packets)	up to 13.1 Mpps (64-byte packets)
Routing/Switching capacity	5.6 Gb/s	17.6 Gb/s
Routing table size	32 entries (IPv4), 32 entries (IPv6)	32 entries (IPv4), 32 entries (IPv6)
MAC address table size	8192 entries	8192 entries
Environment		
Operating temperature	32°F to 104°F (0°C to 40°C)	32°F to 104°F (0°C to 40°C)
Operating relative humidity	10% to 90%, noncondensing	10% to 90%, noncondensing
Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)
Nonoperating/Storage relative humidity	10% to 95%, noncondensing	10% to 95%, noncondensing
Electrical characteristics		
Frequency	50/60 Hz	50/60 Hz
Voltage	100-240 VAC	100-240 VAC
Maximum power rating	8 W	22 W
Notes	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	IEC 60950-1; EN 60950-1; UL 60950-1 2nd Edition; CSA C22.2 No. 60950-1-07 2nd Edition	IEC 60950-1; EN 60950-1; UL 60950-1 2nd Edition; CSA C22.2 No. 60950-1-07 2nd Edition
Emissions	FCC part 15 Class A; VCCI Class A; EN 55022 Class A; CISPR 22 Class A; EN 55024; EN 61000-3-2 2000, 61000-3-3; ICES-003 Class A	FCC part 15 Class A; VCCI Class A; EN 55022 Class A; CISPR 22 Class A; EN 55024; EN 61000-3-2 2000, 61000-3-3; ICES-003 Class A
Management	IMC - Intelligent Management Center; limited command-line interface; Web browser; SNMP Manager; IEEE 802.3 Ethernet MIB	IMC - Intelligent Management Center; limited command-line interface; Web browser; SNMP Manager; IEEE 802.3 Ethernet MIB
Notes	The HP 1910-24G Switch (JE006A) was formerly sold as the 3Com Baseline Plus 2928 (3CRBSG2893) and may ship with this product labeling. SFP ports and copper ports can work simultaneously, independent of each other, to provide a total of 28 Gigabit Ethernet-capable ports.	The HP 1910-24G Switch (JE006A) was formerly sold as the 3Com Baseline Plus 2928 (3CRBSG2893) and may ship with this product labeling. SFP ports and copper ports can work simultaneously, independent of each other, to provide a total of 28 Gigabit Ethernet-capable ports.
Services	Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

HP 1910 Switch Series

Specifications (continued)



HP 1910-8-PoE+ Switch (J6537A)



HP 1910-24-PoE+ Switch (J6539A)

	HP 1910-8-PoE+ Switch (J6537A)	HP 1910-24-PoE+ Switch (J6539A)
Ports	<p>8 RJ-45 autosensing 10/100 PoE+ ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3at PoE+); Duplex: half or full</p> <p>2 SFP dual-personality 1000 Mbps ports (IEEE 802.3ab Type 1000BASE-T)</p> <p>1 RJ-45 console port to access limited CLI port</p> <p>Supports a maximum of 8 autosensing 10/100 ports plus 2 1000BASE-X SFP ports, or a combination</p>	<p>24 RJ-45 autosensing 10/100 PoE+ ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3at PoE+); Duplex: half or full</p> <p>2 SFP dual-personality 1000 Mbps ports (IEEE 802.3ab Type 1000BASE-T)</p> <p>1 RJ-45 console port to access limited CLI port</p> <p>Supports a maximum of 24 autosensing 10/100 ports plus 2 1000BASE-X SFP ports, or a combination</p>
Physical characteristics	<p>12.99(w) x 9.06(d) x 1.73(h) in (33 x 23 x 4.4 cm) (1U height)</p> <p>Weight: 4.63 lb (2.1 kg)</p>	<p>17.32(w) x 9.37(d) x 1.73(h) in (44 x 23.8 x 4.4 cm) (1U height)</p> <p>Weight: 7.28 lb (3.3 kg)</p>
Memory and processor	MIPS @ 500 MHz, 32 MB flash, 128 MB RAM; packet buffer size: 512 KB	MIPS @ 500 MHz, 32 MB flash, 128 MB RAM; packet buffer size: 512 KB
Mounting	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included)	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included)
Performance		
100 Mb Latency	< 5 µs	< 5 µs
1000 Mb Latency	< 5 µs	< 5 µs
Throughput	up to 4.2 Mpps (64-byte packets)	up to 6.6 Mpps (64-byte packets)
Routing/Switching capacity	5.6 Gb/s	8.8 Gb/s
Routing table size	32 entries (IPv4), 32 entries (IPv6)	32 entries (IPv4), 32 entries (IPv6)
MAC address table size	8192 entries	8192 entries
Environment		
Operating temperature	32°F to 104°F (0°C to 40°C)	32°F to 104°F (0°C to 40°C)
Operating relative humidity	10% to 90%, noncondensing	10% to 90%, noncondensing
Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)
Nonoperating/Storage relative humidity	10% to 95%, noncondensing	10% to 95%, noncondensing
Electrical characteristics		
Frequency	50/60 Hz	50/60 Hz
Voltage	100-240 VAC	100-240 VAC
Maximum power rating	90 W	220 W
PoE power	62 W	180 W
Notes	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. PoE power is the power supplied by the internal power supply. It is dependent on the type and quantity of power supplies and may be supplemented with the use of an external power supply (EPS).	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. PoE power is the power supplied by the internal power supply. It is dependent on the type and quantity of power supplies and may be supplemented with the use of an external power supply (EPS).
Safety	IEC 60950-1; EN 60950-1; UL 60950-1 2nd Edition; CSA C22.2 No. 60950-1-07 2nd Edition	IEC 60950-1; EN 60950-1; UL 60950-1 2nd Edition; CSA C22.2 No. 60950-1-07 2nd Edition
Emissions	FCC part 15 Class A; VCCI Class A; EN 55022 Class A; CISPR 22 Class A; EN 55024; EN 61000-3-2 2000, 61000-3-3; ICES-003 Class A	FCC part 15 Class A; VCCI Class A; EN 55022 Class A; CISPR 22 Class A; EN 55024; EN 61000-3-2 2000, 61000-3-3; ICES-003 Class A
Management	IMC - Intelligent Management Center; limited command-line interface; Web browser; SNMP Manager; IEEE 802.3 Ethernet MIB	IMC - Intelligent Management Center; limited command-line interface; Web browser; SNMP Manager; IEEE 802.3 Ethernet MIB
Notes	The HP 1910-24G Switch (J6006A) was formerly sold as the 3Com Baseline Plus 2928 (3CRBSG2893) and may ship with this product labeling. SFP ports and copper ports can work simultaneously, independent of each other, to provide a total of 28 Gigabit Ethernet-capable ports.	The HP 1910-24G Switch (J6006A) was formerly sold as the 3Com Baseline Plus 2928 (3CRBSG2893) and may ship with this product labeling. SFP ports and copper ports can work simultaneously, independent of each other, to provide a total of 28 Gigabit Ethernet-capable ports.
Services	Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

Standards and Protocols

(applies to all products in series)

Device management		RFC 2819 RMON	
General protocols	IEEE 802.1D MAC Bridges IEEE 802.1p Priority IEEE 802.1Q VLANs	IEEE 802.1s (MSTP) IEEE 802.1w Rapid Reconfiguration of Spanning Tree IEEE 802.3 Type 10BASE-T IEEE 802.3ab 1000BASE-T	IEEE 802.3ad Link Aggregation Control Protocol (LACP) IEEE 802.3i 10BASE-T IEEE 802.3x Flow Control IEEE 802.3z 1000BASE-X
MIBs	RFC 1213 MIB II RFC 1493 Bridge MIB RFC 2021 RMONv2 MIB RFC 2233 Interface MIB RFC 2233 Interfaces MIB RFC 2571 SNMP Framework MIB	RFC 2572 SNMP-MPD MIB RFC 2573 SNMP-Notification MIB RFC 2573 SNMP-Target MIB RFC 2613 SMON MIB RFC 2618 RADIUS Client MIB RFC 2620 RADIUS Accounting MIB RFC 2665 Ethernet-Like-MIB	RFC 2667 IP Tunnel MIB RFC 2668 802.3 MAU MIB RFC 2674 802.1p and IEEE 802.1Q Bridge MIB RFC 2737 Entity MIB (Version 2) RFC 3414 SNMP-User based-SM MIB RFC 3415 SNMP-View based-ACM MIB RFC 3418 MIB for SNMPv3
Network management		IEEE 802.1AB Link Layer Discovery Protocol (LLDP)	IEEE 802.1D (STP)
QoS/CoS		IEEE 802.1P (CoS)	
Security		IEEE 802.1X Port Based Network Access Control	

HP 1910 Switch Series accessories

Transceivers

HP X121 1G SFP LC SX Transceiver (J4858C)
HP X121 1G SFP LC LX Transceiver (J4859C)
HP X121 1G SFP RJ45 T Transceiver (J8177C)
HP X120 1G SFP LC SX Transceiver (JD118B)
HP X120 1G SFP LC LX Transceiver (JD119B)
HP X124 1G SFP LC SX Transceiver (JD493A)
HP X124 1G SFP LC LX Transceiver (JD494A)
HP X120 1G SFP RJ45 T Transceiver (JD089B)

Cables

HP 0.5 m Multimode OM3 LC/LC Optical Cable (AJ833A)
HP 1 m Multimode OM3 LC/LC Optical Cable (AJ834A)
HP 2 m Multimode OM3 LC/LC Optical Cable (AJ835A)
HP 5 m Multimode OM3 LC/LC Optical Cable (AJ836A)
HP 15 m Multimode OM3 LC/LC Optical Cable (AJ837A)
HP 30 m Multimode OM3 LC/LC Optical Cable (AJ838A)

HP 50 m Multimode OM3 LC/LC Optical Cable (AJ839A)
HP Premier Flex LC/LC Multi-mode OM4 2 fiber 1m Cable (QK732A)
HP Premier Flex LC/LC Multi-mode OM4 2 fiber 2m Cable (QK733A)
HP Premier Flex LC/LC Multi-mode OM4 2 fiber 5m Cable (QK734A)
HP Premier Flex LC/LC Multi-mode OM4 2 fiber 15m Cable (QK735A)
HP Premier Flex LC/LC Multi-mode OM4 2 fiber 30m Cable (QK736A)
HP Premier Flex LC/LC Multi-mode OM4 2 fiber 50m Cable (QK737A)



Products within this series have achieved sufficient scores in each of the rated criteria to achieve the Miercom Certified Green distinction Award. See the Specifications section of this series for more information.

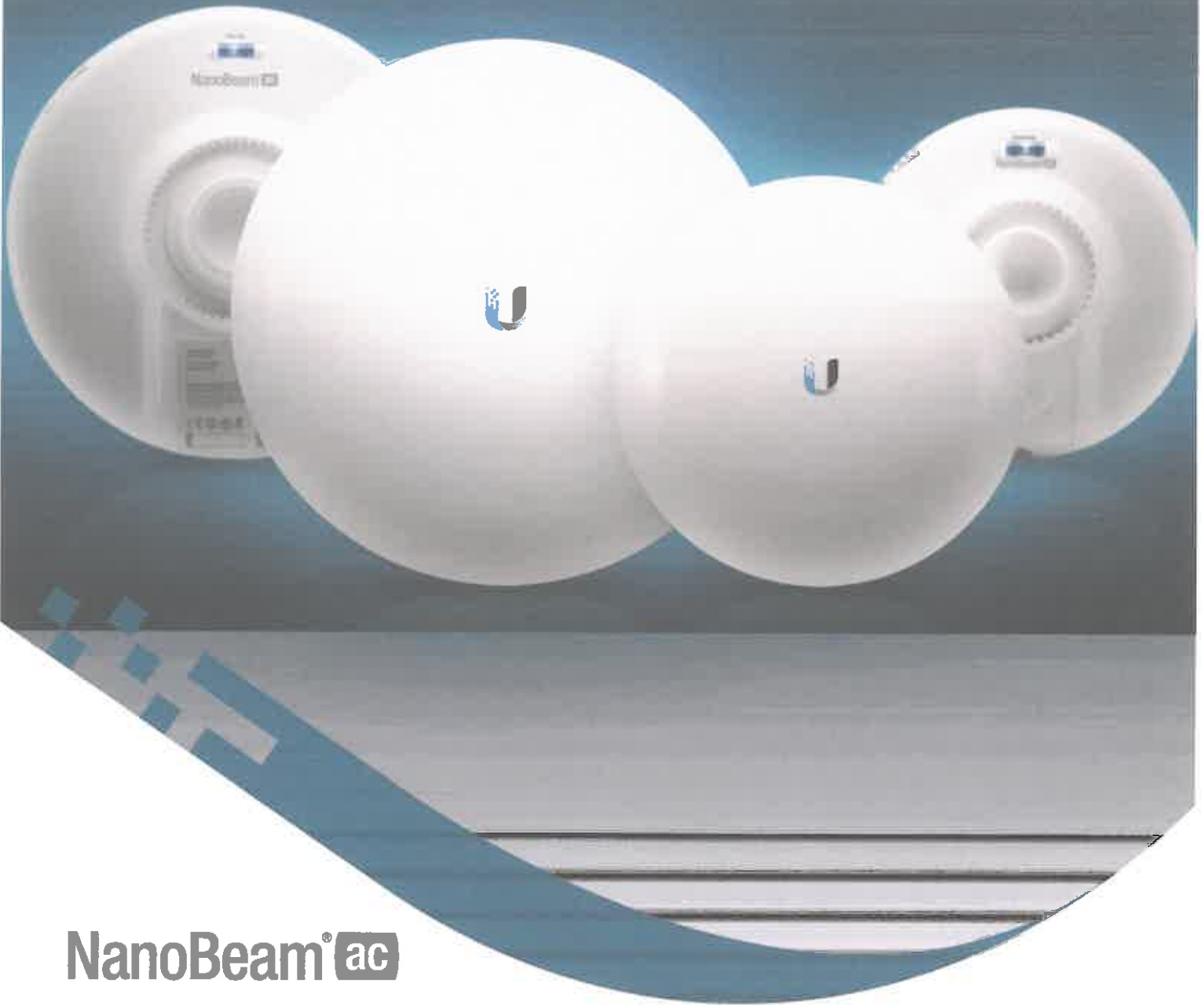
To learn more, visit hp.com/networking

© Copyright 2010–2013 Hewlett-Packard Development Company, L.P. The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Microsoft is a U.S. registered trademark of Microsoft Corporation.

4AA1-7808ENW, Created June 2010; Updated September 2013, Rev. 5





NanoBeam[®] ac

High-Performance airMAX[®] ac Bridge

Models: NBE-5AC-16, NBE-5AC-19

Uniform Beamwidth Maximizes Noise Immunity

Innovative Mechanical Design

High-Speed Processor for Superior Performance



Overview

Ubiquiti Networks launches the latest generation of airMAX® CPE (Customer Premises Equipment), the NanoBeam® ac.

Improved Noise Immunity

The NanoBeam ac directs RF energy in a tighter beamwidth. With the focus in one direction, the NanoBeam ac blocks or spatially filters out noise, so noise immunity is improved. This feature is especially important in an area crowded with other RF signals of the same or similar frequency.

Integrated Design

The radio and antenna are combined to create a more efficient and compact CPE. The NanoBeam ac gets maximum gain out of the smallest footprint.

Providing high performance and an innovative form factor, the NanoBeam ac is versatile and cost-effective to deploy.

Software



Sporting an all-new design for improved usability, airOS® v7 is the revolutionary operating system for Ubiquiti® airMAX ac products.

Powerful Wireless Features

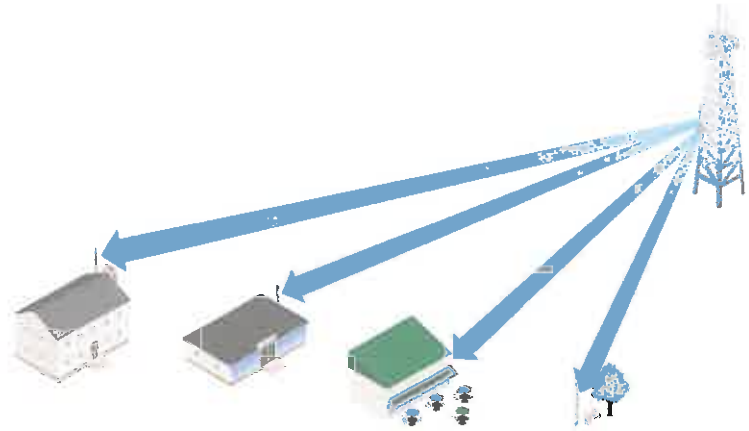
- airMAX ac Protocol Support
- Long-Range Point-to-Point (PtP) Link Mode
- Selectable Channel Width
 - PtP: 10/20/30/40/50/60/80 MHz
 - PtMP: 10/20/30/40 MHz
- Automatic Channel Selection
- Transmit Power Control: Automatic/Manual
- Automatic Distance Selection (ACK Timing)
- Strongest WPA2 Security

Usability Enhancements

- Dynamic Configuration Changes
- Instant Input Validation
- HTML5 Technology
- Optimization for Mobile Devices
- Detailed Device Statistics
- Diagnostic Tools, including Ethernet Cabling Test, RF Diagnostics, and airView® Spectrum Analyzer

Application Examples

PtMP Client Links



The NanoBeam ac used as a CPE device for each client in an airMAX PtMP network.

Wireless Client

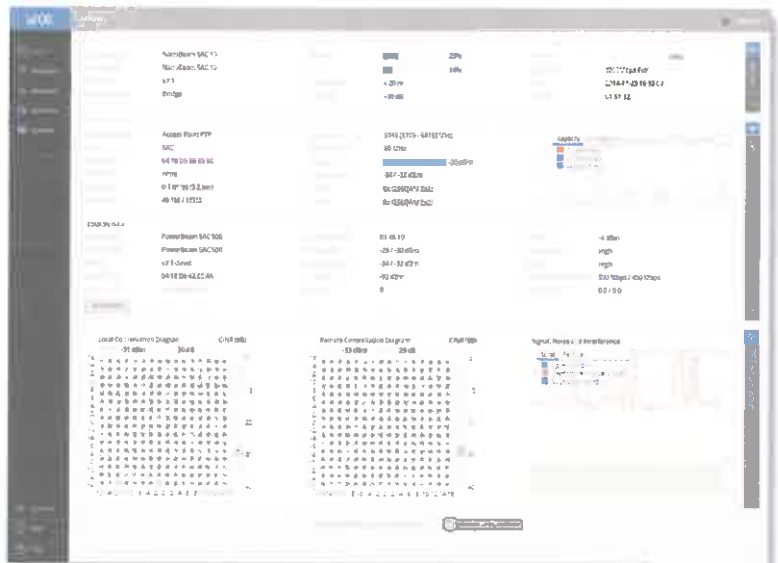


The NanoBeam ac as a powerful wireless client.

PtP Link



Use a NanoBeam ac on each side of a PtP link.



Advanced RF Analytics

airMAX ac devices feature a multi-radio architecture to power a revolutionary RF analytics engine.

An independent processor on the PCBA powers a second, dedicated radio, which persistently analyzes the full 5 GHz spectrum and every received symbol to provide you with the most advanced RF analytics in the industry.

Data from the spectrum analysis and RF performance monitoring is displayed on the *Main* tab and airView Spectrum Analyzer.

Real-Time Reporting

The *Main* tab displays the following RF information:

- Persistent RF Error Vector Magnitude (EVM) constellation diagrams
- Carrier to Interference-plus-Noise Ratio (CINR) histograms
- Signal-to-Noise Ratio (SNR) time series plots

Spectral Analysis

airView allows you to identify noise signatures and plan your networks to minimize noise interference. airView performs the following functions:

- Constantly monitors environmental noise
- Collects energy data points in real-time spectral views
- Helps optimize channel selection, network design, and wireless performance

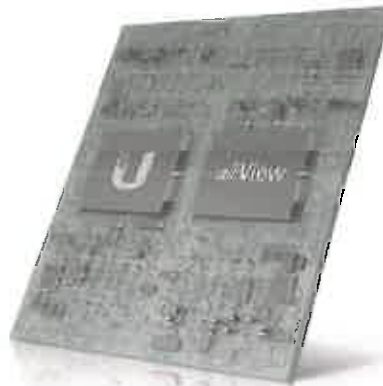
airView runs in the background without disabling the wireless link, so there is no disruption to the network.

In airView, there are three spectral views, each of which represents different data.

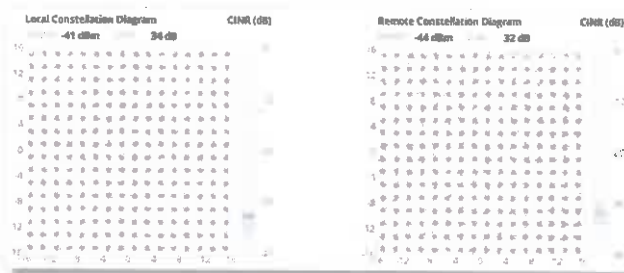
- **Waterfall** Aggregate energy collected for each frequency
- **Waveform** Aggregate energy collected
- **Ambient Noise Level** Background noise energy shown as a function of frequency

Available with a firmware upgrade to airOS v7.1, airView provides powerful spectrum analyzer functionality, eliminating the need to rent or purchase additional equipment for conducting site surveys.

Multi-Radio Architecture



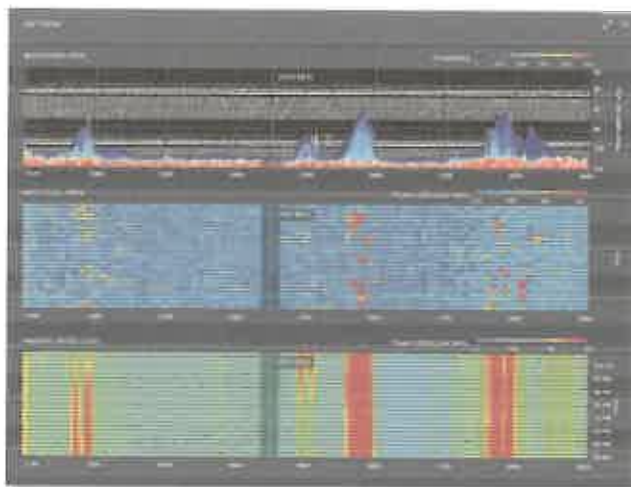
Constellation Diagrams and CINR Histograms



SNR Time Series Plots



Dedicated Spectral Analysis



Technology

airMAX ac

Unlike standard Wi-Fi protocol, Ubiquiti's Time Division Multiple Access (TDMA) airMAX protocol allows each client to send and receive data using pre-designated time slots scheduled by an intelligent AP controller.

This time slot method eliminates hidden node collisions and maximizes airtime efficiency, so airMAX technology provides performance improvements in latency, noise immunity, scalability, and throughput compared to other outdoor systems in its class.

Intelligent QoS Priority assigned to voice/video for seamless streaming.

Scalability High capacity and scalability.

Long Distance Capable of high-speed, carrier-class links.

Superior Performance

The next-generation airMAX ac technology boosts the advantages of our proprietary TDMA protocol.

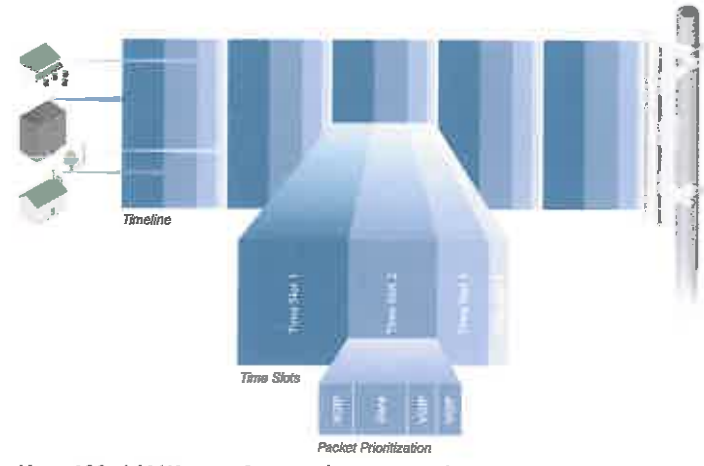
Ubiquiti's airMAX engine with custom IC dramatically improves TDMA latency and network scalability. The custom silicon provides hardware acceleration capabilities to the airMAX scheduler, to support the high data rates and dense modulation used in airMAX ac technology.

Throughput Breakthrough

airMAX ac supports high data rates, which require dense modulation: 256QAM – a significant increase from 64QAM, which is used in airMAX.

With their use of proprietary airMAX ac technology, airMAX ac products supports up to 450+ Mbps real TCP/IP throughput – up to triple the throughput of standard airMAX products.

airMAX ac TDMA Technology

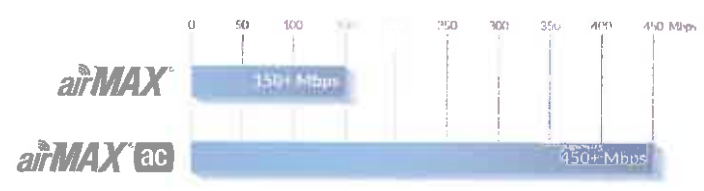


Up to 100 airMAX ac stations can be connected to an airMAX ac Sector; four airMAX ac stations are shown to illustrate the general concept.

airMAX Network Scalability



Superior Throughput Performance



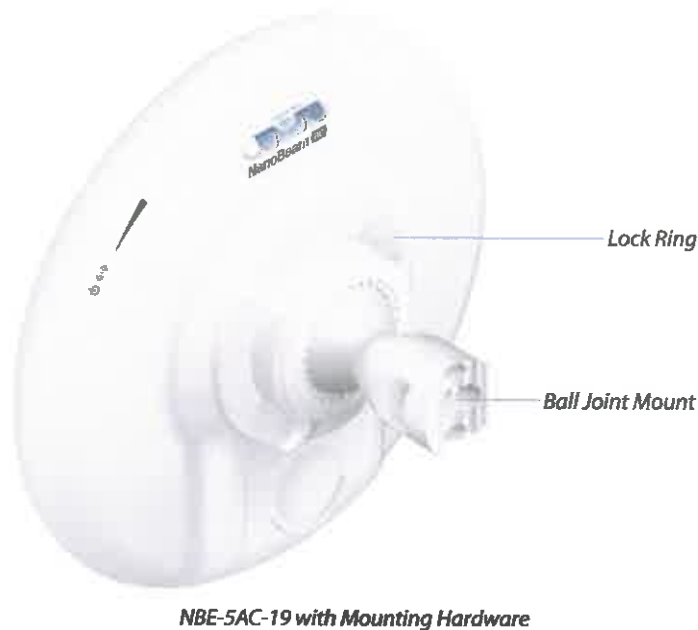
Hardware Overview

Innovative Mechanical Design

- **Efficient Footprint** The radio and antenna are combined into a single body that takes up minimal space.
- **Aesthetics** The NanoBeam ac is small enough to blend discreetly into the background at a customer's location.
- **Versatile Mounting** The NanoBeam ac can be mounted in almost any position needed for line of sight.

Ease of Installation

- **Quick Installation** No fasteners are required for pole-mounting, and a single wall fastener (not included) is required for wall-mounting.
- **Convenient Alignment** The NanoBeam ac pivots on its ball joint for easy aiming.



Models



NanoBeam^{ac}

Model	Frequency	Gain
NBE-5AC-16	5 GHz	16 dBi



NanoBeam^{ac}

Model	Frequency	Gain
NBE-5AC-19	5 GHz	19 dBi

IsoBeam Accessory



IsoBeam[™]

Model	NBE-5AC-16	NBE-5AC-19
ISO-BEAM-16	✓	
ISO-BEAM-19		✓

An RF isolator shield is available as an optional accessory to enhance signal isolation.



Installation Using the IsoBeam[™]

Mounting Accessories

NanoBeam® Wall Mount Kit

Model	NBE-SAC-16	NBE-SAC-19
NBE-WMK	✓	✓

A wall mount kit is available as an optional accessory to enhance stability for wall-mounting.



Installation Using the NanoBeam Wall Mount Kit

NanoBeam® Window Mount

Model	NBE-SAC-16	NBE-SAC-19
NBE-16-WM	✓	
NBE-19-WM		✓

A suction cup mount is available as an optional accessory to mount the NanoBeam on a window.



Installation Using the NanoBeam Window Mount

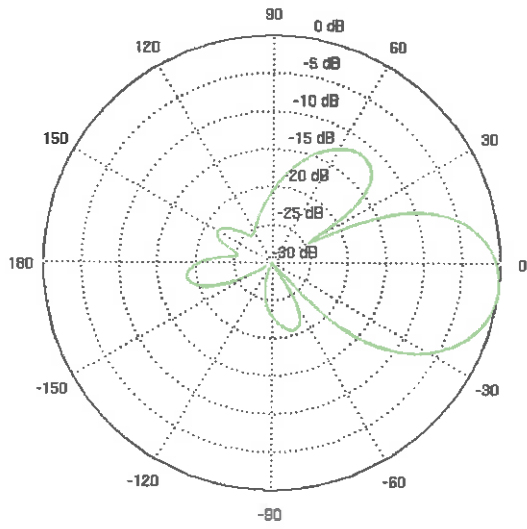
Specifications

NBE-SAC-16						
Dimensions	140 x 140 x 54 mm (5.51 x 5.51 x 2.13")					
Weight	0.320 kg (0.71 lb)					
Power Supply	24V, 0.5A Gigabit PoE					
Max. Power Consumption	6W					
Operating Frequency	Worldwide	USA: U-NII-1	USA: U-NII-2A	USA: U-NII-2C	USA: U-NII-3	
	5150 - 5875 MHz	5150 - 5250 MHz*	5250 - 5350 MHz*	5470 - 5725 MHz*	5725 - 5850 MHz*	
Gain	16 dBI					
Networking Interface	(1) 10/100/1000 Ethernet Port					
Processor Specs	Atheros MIPS 74Kc, 533 MHz					
Memory	64 MB DDR2, 8 MB Flash					
LEDs	(1) Power, (1) LAN, (4) WLAN					
Signal Strength LEDs	Software-Adjustable to Correspond to Custom RSSI Levels					
Max. VSWR	1.5:1					
Channel Sizes	PtP Mode			PtMP Mode		
	10/20/30/40/50/60/80 MHz			10/20/30/40 MHz		
Polarization	Dual Linear					
Enclosure	Outdoor UV Stabilized Plastic					
Mounting	Pole-Mount (Kit Included), Wall-Mount					
Wind Loading	21.4 N @ 200 km/h (4.8 lbf @ 125 mph)					
Wind Survivability	200 km/h (125 mph)					
ESD/EMP Protection	Air: ± 24 kV, Contact: ± 24 kV					
Operating Temperature	-40 to 70° C (-40 to 158° F)					
Operating Humidity	5 to 95% Noncondensing					
Wireless Approvals	FCC, IC, CE					
RoHS Compliance	Yes					
Salt Fog Test	IEC 68-2-11 (ASTM B117), Equivalent: MIL-STD-810 G Method 509.5					
Vibration Test	IEC 68-2-6					
Temperature Shock Test	IEC 68-2-14					
UV Test	IEC 68-2-5 at 40° C (104° F), Equivalent: ETS 300 019-1-4					
Wind-Driven Rain Test	ETS 300 019-1-4, Equivalent: MIL-STD-810 G Method 506.5					

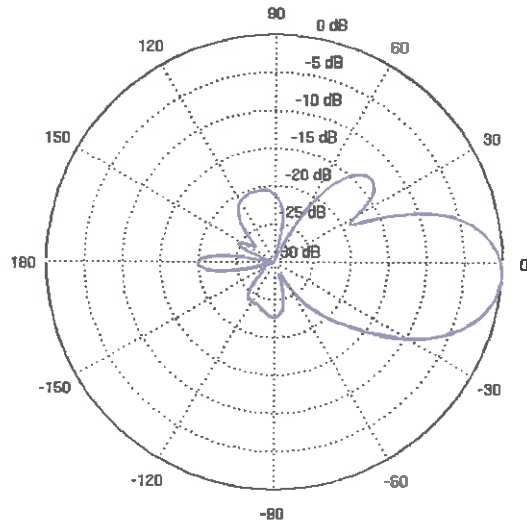
NBE-SAC-16 Output Power: 24 dBm							
TX Power Specifications				RX Power Specifications			
Modulation	Data Rate	Avg. TX	Tolerance	Modulation	Data Rate	Sensitivity	Tolerance
airMAX ac	1x BPSK (1/2)	24 dBm	± 2 dB	airMAX ac	1x BPSK (1/2)	-96 dBm	± 2 dB
	2x QPSK (1/2)	24 dBm	± 2 dB		2x QPSK (1/2)	-95 dBm	± 2 dB
	2x QPSK (3/4)	24 dBm	± 2 dB		2x QPSK (3/4)	-92 dBm	± 2 dB
	4x 16QAM (1/2)	24 dBm	± 2 dB		4x 16QAM (1/2)	-90 dBm	± 2 dB
	4x 16QAM (3/4)	24 dBm	± 2 dB		4x 16QAM (3/4)	-86 dBm	± 2 dB
	6x 64QAM (1/2)	23 dBm	± 2 dB		6x 64QAM (1/2)	-83 dBm	± 2 dB
	6x 64QAM (3/4)	22 dBm	± 2 dB		6x 64QAM (3/4)	-77 dBm	± 2 dB
	6x 64QAM (5/6)	21 dBm	± 2 dB		6x 64QAM (5/6)	-74 dBm	± 2 dB
8x 256QAM (3/4)	20 dBm	± 2 dB	8x 256QAM (3/4)	-69 dBm	± 2 dB		
8x 256QAM (5/6)	19 dBm	± 2 dB	8x 256QAM (5/6)	-65 dBm	± 2 dB		

* Some frequencies may require activation; visit: <https://www.ubnt.com/fcclabelrequest>

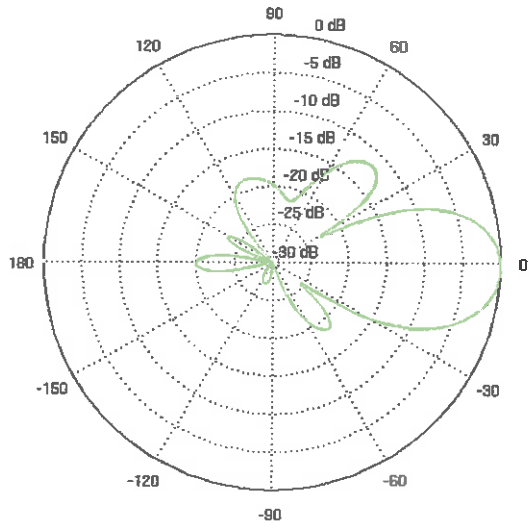
Vertical Azimuth



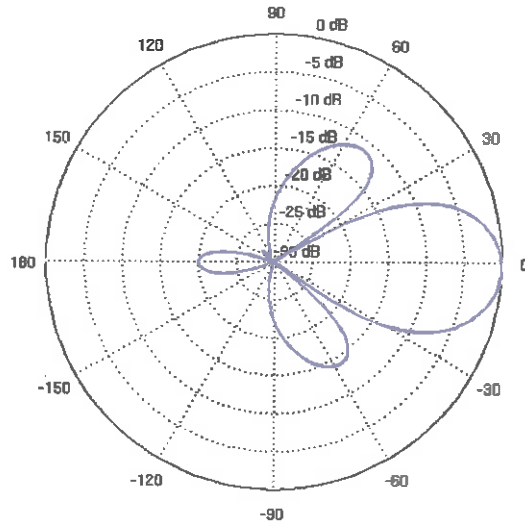
Vertical Elevation



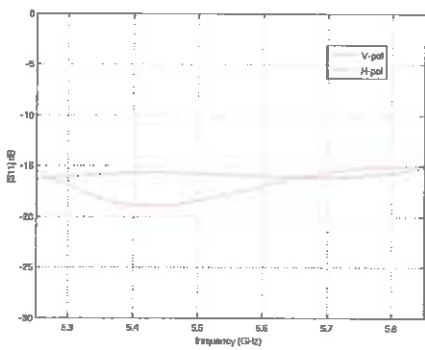
Horizontal Azimuth



Horizontal Elevation



Return Loss



Specifications

NBE-SAC-19

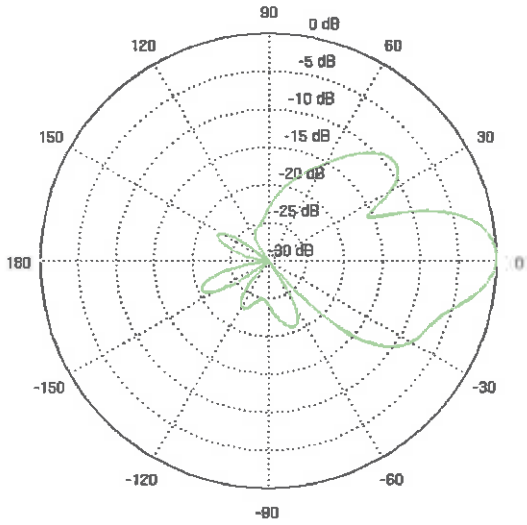
Dimensions	189 x 189 x 125 mm (7.44 x 7.44 x 4.92")				
Weight	0.530 kg (1.17 lb)				
Power Supply	24V, 0.5A Gigabit PoE				
Max. Power Consumption	8W				
Operating Frequency	Worldwide	USA: U-NII-1	USA: U-NII-2A	USA: U-NII-2C	USA: U-NII-3
	5150 - 5875 MHz	5150 - 5250 MHz*	5250 - 5350 MHz*	5470 - 5725 MHz*	5725 - 5850 MHz*
Gain	19 dBi				
Networking Interface	(1) 10/100/1000 Ethernet Port				
Processor Specs	Atheros MIPS 74Kc, 720 MHz				
Memory	128 MB DDR2, 8 MB Flash				
LEDs	(1) Power, (1) LAN, (4) WLAN				
Signal Strength LEDs	Software-Adjustable to Correspond to Custom RSSI Levels				
Max. VSWR	1.5:1				
Channel Sizes	PtP Mode		PtMP Mode		
	10/20/30/40/50/60/80 MHz		10/20/30/40 MHz		
Polarization	Dual Linear				
Enclosure	Outdoor UV Stabilized Plastic				
Mounting	Pole-Mount (Kit Included), Wall-Mount				
Wind Loading	45.4 N @ 200 km/h (10.2 lbf @ 125 mph)				
Wind Survivability	200 km/h (125 mph)				
ESD/EMP Protection	Air: ± 24 kV, Contact: ± 24 kV				
Operating Temperature	-40 to 70° C (-40 to 158° F)				
Operating Humidity	5 to 95% Noncondensing				
Wireless Approvals	FCC, IC, CE				
RoHS Compliance	Yes				
Salt Fog Test	IEC 68-2-11 (ASTM B117), Equivalent: MIL-STD-810 G Method 509.5				
Vibration Test	IEC 68-2-6				
Temperature Shock Test	IEC 68-2-14				
UV Test	IEC 68-2-5 at 40° C (104° F), Equivalent: ETS 300 019-1-4				
Wind-Driven Rain Test	ETS 300 019-1-4, Equivalent: MIL-STD-810 G Method 506.5				

NBE-SAC-19 Output Power: 26 dBm

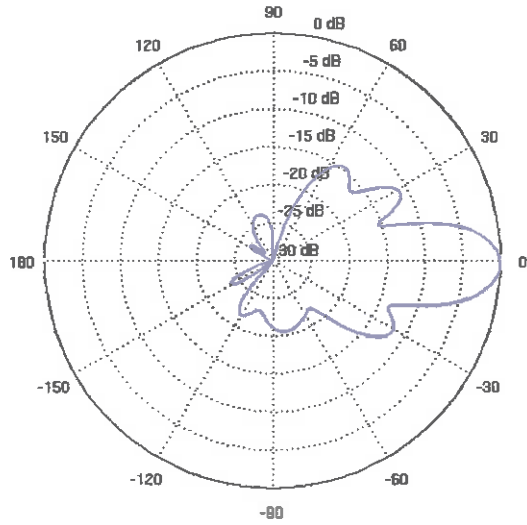
TX Power Specifications				RX Power Specifications			
Modulation	Data Rate	Avg. TX	Tolerance	Modulation	Data Rate	Sensitivity	Tolerance
airMAX ac	1x BPSK (½)	26 dBm	± 2 dB	airMAX ac	1x BPSK (½)	-96 dBm	± 2 dB
	2x QPSK (½)	26 dBm	± 2 dB		2x QPSK (½)	-95 dBm	± 2 dB
	2x QPSK (¾)	26 dBm	± 2 dB		2x QPSK (¾)	-92 dBm	± 2 dB
	4x 16QAM (½)	26 dBm	± 2 dB		4x 16QAM (½)	-90 dBm	± 2 dB
	4x 16QAM (¾)	26 dBm	± 2 dB		4x 16QAM (¾)	-86 dBm	± 2 dB
	6x 64QAM (½)	25 dBm	± 2 dB		6x 64QAM (½)	-83 dBm	± 2 dB
	6x 64QAM (¾)	25 dBm	± 2 dB		6x 64QAM (¾)	-77 dBm	± 2 dB
	6x 64QAM (9/16)	24 dBm	± 2 dB		6x 64QAM (9/16)	-74 dBm	± 2 dB
	8x 256QAM (¾)	22 dBm	± 2 dB		8x 256QAM (¾)	-69 dBm	± 2 dB
8x 256QAM (9/16)	22 dBm	± 2 dB	8x 256QAM (9/16)	-65 dBm	± 2 dB		

* Some frequencies may require activation; visit: <https://www.ubnt.com/fcclabelrequest>

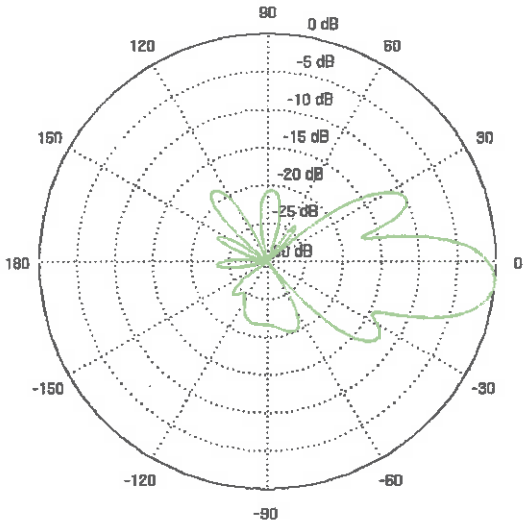
Vertical Azimuth



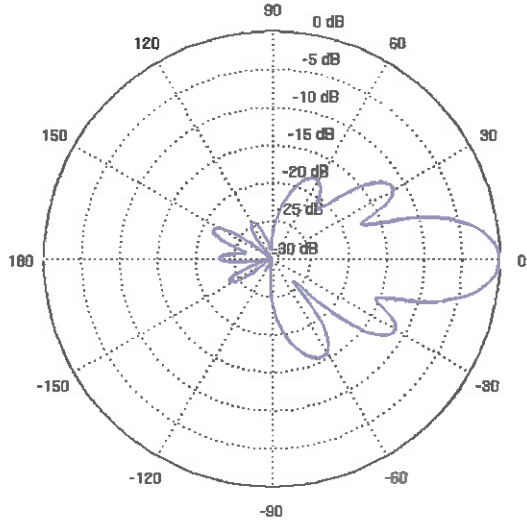
Vertical Elevation



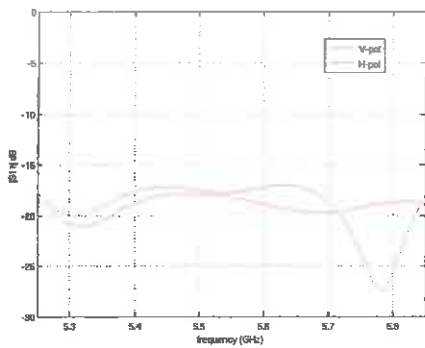
Horizontal Azimuth



Horizontal Elevation



Return Loss



www.ubnt.com

Specifications are subject to change. Ubiquiti products are sold with a limited warranty described at: www.ubnt.com/support/warranty
©2014-2017 Ubiquiti Networks, Inc. All rights reserved. Ubiquiti, Ubiquiti Networks, the Ubiquiti U logo, the Ubiquiti beam logo, airMAX, airOS, airView, and NanoBeam are trademarks or registered trademarks of Ubiquiti Networks, Inc. in the United States and in other countries. All other trademarks are the property of their respective owners.

IPPWR1

IP Camera Video & Surge Protector


09 03 10

PRODUCT SPECIFICATION

Description

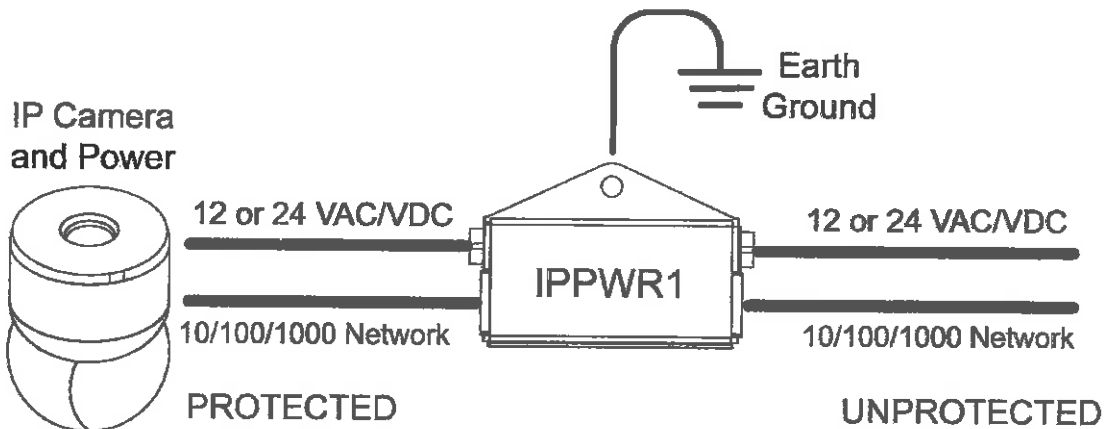
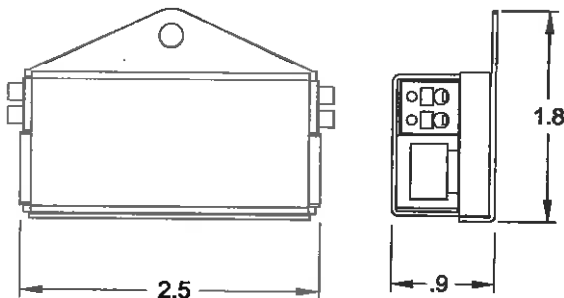
The IPPWR1 is a single channel, in-line, 10/100/1000 Ethernet surge protector for IP cameras. In addition to the network protection the IPPWR1 provides independent protection for 12 or 24 volt power which can be used with heaters, blowers or PTZ. The IPPWR1 is designed to provide surge protection for one 10/100/1000 Ethernet port. The unit has standard RJ45 jacks for easy connection and is ideal for small or restricted spaces. The IPPWR1 provides a heavy duty, single point ground connection and is easy to install in minutes.

Features

- Heavy duty single point ground
- 1 picosecond clamping time
- Lifetime warranty
- Separate power protection for 12 or 24 VAC/VDC
- Will pass PoE+ power
-  Made in the U.S.A.

Specifications

Size	0.9" H x 2.5" W x 1.8" D
Connection Network	Standard RJ45
Connection Power	Push-in terminals - rate @ 5 amps
Clamping	
12/24VAC/DC	30 Vrms
Data/PoE+ Ethernet	58 Vp-p
Transient Response Time	1 picosecond typ.
Peak Pulse Power Dissipation	3,000 W/pair (10/100us)
Impedance	50 or 75 Ohms
Temperature	-40C to +85C
Shipping Weight	1 lb



NITEK.

USA

5410 Newport Drive, # 24
Rolling Meadows, IL 60008
Phone: (847) 259-8900
Fax: (847) 259-1300
E-mail: info@nitek.net
WWW.NITEK.NET

EUROPE

De Schans 19-21 2a
8231 KA Lelystad
Tel: +31(0)320-230005
E-mail: info@nitek.nl
WWW.NITEK.NL

Description

The **IPPWR16** is designed to provide 16 channels of surge protection for network devices. It can be used with both PoE+ and non-PoE devices. The IPPWR16 is cost-effective and ideally suited for protecting multi-input devices such as a network switch, NVR, or groups of IP cameras or servers. The IPPWR16 is rack mountable in a standard 19" rack. It installs in minutes and provides a single easy access point for grounding.

Features

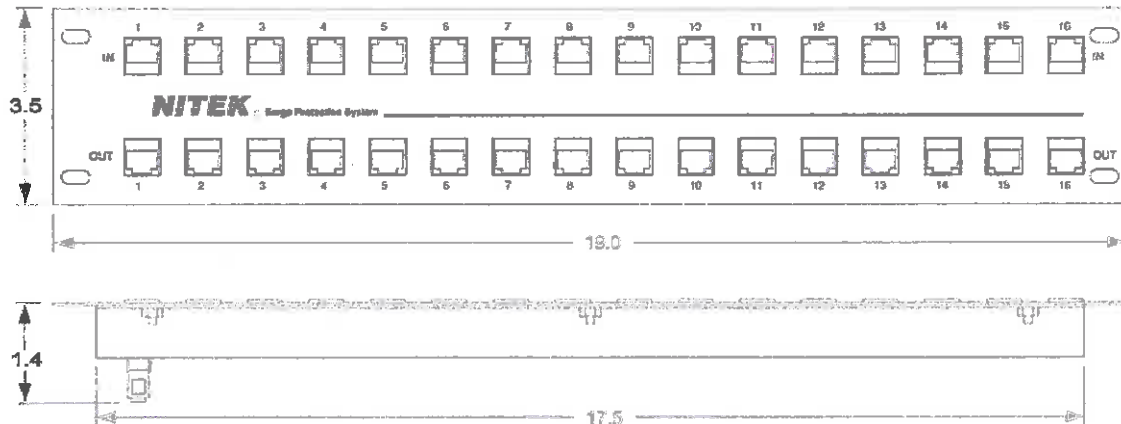
- Provides 16 channels of surge protection
- Works with PoE+ and non-PoE 10/100/1000 equipment
- Gigabit PoE+ power
- Fits standard 19" rack cabinets
- Easy to install

Specifications

Size	2 RU
Connection Method	Standard RJ45 (16 In - 16 Out)
Transient Response Time	1 picosecond typ.
Peak Pulse Power Dissipation	3,000 W/pair (10/100µs)
Clamping Voltage	58v (on all lines)
Network Type	10/100/1000 PoE+ or non-PoE
Temperature	-40°C to +85°C
Shipping Weight	



IPPWR16 Front Panel



IPPWR16 Bottom View



NITEK®

USA	5410 Newport Drive, # 24 Rolling Meadows, IL 60008 Phone: (847) 259-8900 Fax: (847) 259-1300 E-mail: info@nitek.net WWW.NITEK.NET	EUROPE	De Schans 19-21 2a 8231 KA Lelystad Tel: +31(0)320-230005 Fax: +31(0)320-282186 E-mail: info@nitek.nl WWW.NITEK.NL
-----	---	--------	--



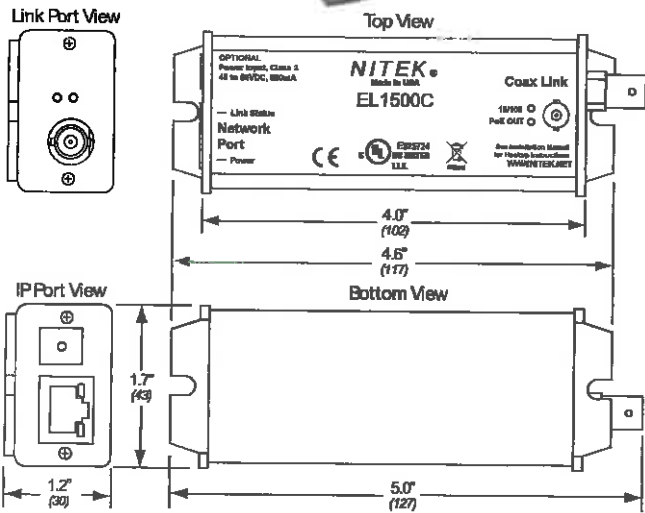
Description

The EL1500C is another component of the NITEK cutting edge EtherStretch line. This Environmentally Hardened Etherstretch solution allows for the utilization of existing cable infrastructure (coax or UTP) to transmit data from IP cameras and other network devices along with PoE power to operate these network devices over the wire for distances up to 500 meters or 1640 feet.

The EL1500C is a system containing a transmitter and a receiver unit that requires very little installation time and absolutely no set up or configuration. The system can quickly turn any ordinary RG59 coax cable into a high speed network communication and PoE path for distances up to 500 meters or 1640 feet.

The EL1500C is transparent to the network thus requiring no IP and MAC addressing. Simply connect your network devices to the networking ports of the transmitter and receiver along with existing cabling and the system begins communicating. LED indicators show the status and speed of network communications and PoE power.

NITEK EtherStretch EL1500C extends network communications to overcome cable distance limitations offering connections to devices in locations traditional networking does not allow. The EL1500C is ideal for retrofitting existing installations. The units are constructed of industrial grade RoHS compliant plated aluminum with a corrosion resistant finish making them very durable.

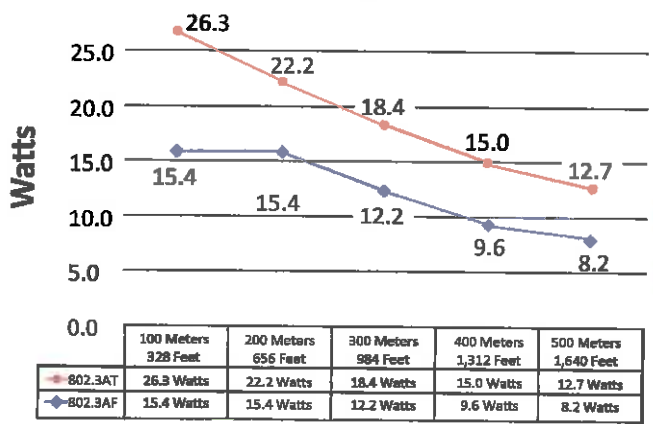


Features

- Environmentally hardened—meets NEMA TS-1/TS-2
- Transmits up to distances of 500 meters (1640 feet)
- Supports mega-pixel technology
- Fully transparent to the network
- Supports any network device, including IP cameras
- Supports 10/100 and PoE over RG59 cables
- Easy to install, no set up required
- LED indicators for network signals, link status and power
- Lifetime Warranty
- Optional power supply can insert PoE power for non-PoE switches
- Surge protected inputs
- Ground loop isolation
- Made in the U.S.A.

Patent Pending in USA
Euro Pat App 2779641

Available PoE Wattage At PoE Device



* Results charted were calculated using RG59U coaxial cable with a 20AWG center conductor and power sourcing equipment using IEEE 802.3AF standard with starting voltage of 48 volts DC and IEEE 802.3AT standard with starting voltage of 54 volts DC. PoE Switches with internal power and current limits may change individual results.



IEC/UL 60950-1

USA	5410 Newport Drive, # 24 Rolling Meadows, IL 60008 Phone: (847) 259-8900 Fax: (847) 259-1300 E-mail: info@nitek.net WWW.NITEK.NET	EUROPE	De Aar 89 8253 PN Dronten The Netherlands Tel: +31(0) 321 310 043 E-mail: info@nitekeurope.net WWW.NITEK.NET
-----	--	--------	---

TECHNICAL SPECIFICATION

Network Transmission Device

Network Port	RJ45 Connector
Link Port	BNC Coax Jack
Ethernet	100BASE-TX Full Duplex
Rating/Listing	
UL	IEC/UL 60950-1
NEMA TS-2	Temperature & Humidity NEMA 2.2.7
	Mechanical Vibration NEMA 2.2.8
	Mechanical Shock NEMA 2.2.9
	Operating Voltage NEMA 2.1.2
	Operating Frequency NEMA 2.1.3
	Transient Test NEMA 2.1.6 thru 2.1.8
System Latency	<1mS over 1000ft RG59
Operating Temperature	-40° to 75° C / -40° to 167° F
Dimensions	1.2" x 1.7" x 5.0" including tabs & BNC
Shipping Weight	2 lbs

Common Installation Types

