

Pillar
INNOVATIONS

RECEIVED

2020 AUG 24 PM 12: 39

WV PURCHASING
DIVISION

For review and consideration by

MOUNTAINEER
CHALLENGE
ACADEMY

Challe**NGe** Yourself. Cha**NGe** Your Life.

Prepared for:
Mountaineer Challenge Academy – Tara Lyle – tara.l.lyle@wv.gov
Submitted On: August 24th 2020
Solicitation #: CRFQ 0603 ADJ2100000016

104 Corporate Drive, Morgantown WV 26501

Phone: 304.983.8900 Fax: 304.983.8905

www.pillarinnovations.com

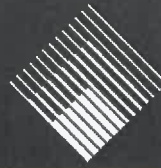
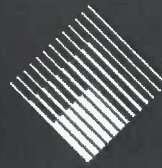


Table of Contents

Item

- 1.0 Overview
- 2.0 Resume
- 3.0 Bonding Capability
- 4.0 Umbrella Liability Policy
- 5.0 WV Contractors License
- 6.0 Safety
- 7.0 Proposal



Pillar
INNOVATIONS

1.0 Overview

Pillar Innovations is a diverse team of engineers, project leaders, PLC programmers, electricians, and technicians. Founded in 2007, our company is headquartered in Grantsville, Maryland, and has six sales and service facility locations throughout the states of West Virginia, Pennsylvania, Ohio, Indiana, and New Mexico. We are strategically positioned to provide fine-tuned attention in areas where we are most needed.

Services Include:

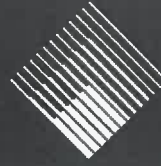
- Security & Access Control
- Machine Building
- Automation & Integration
- Mobility & IoT
- Electrical
- Instrumentation
- Fiber Optics
- Engineering
- Fire Protection
- And more...



104 Corporate Drive, Morgantown WV 26501

Phone: 304.983.8900 Fax: 304.983.8905

www.pillarinnovations.com



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INNOVATIONS

2.0 Resume

Access Control and Security Cameras

Ongoing Support and Maintenance For a Hospital Facility

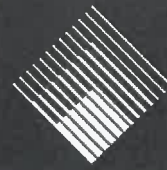
Assist Plant Operations with the maintenance and support for their existing 150+ cameras. Maintain (2) NVR servers with 140TB+ of storage including updates and security patches. Maintain dedicated camera network. Provide full support for existing Premisys access control system including server maintenance, panel firmware, moves, adds, and changes to the system. Provide installation service for all new construction projects. Maintain on-call availability for emergency problems and service calls. ICRA trained staff – NFPA 99

Manufacturing Plant Camera Upgrade and Installation

Design and install a full turn-key installation of a 70+ camera enterprise Avigilon Enterprise system. This installation included over 1000ft of rigid conduit along with switches and fiber installation. This project included both interior and exterior cameras in all types of environments.

Multi-Location Camera System

Design and install a multi-location camera system for a corporation including (9) NVR's, over 200TB of storage. Provide and install 110+ cameras and full turn-key installation.



Pillar
INNOVATIONS

3.0 Bonding Capability

\$20mil – for a single project

\$50mil – aggregate

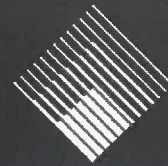
4.0 Umbrella Liability Policy

\$20mil

104 Corporate Drive, Morgantown WV 26501

Phone: 304.983.8900 Fax: 304.983.8905

www.pillarinnovations.com



5.0 WV Contractors License

CONTRACTOR LICENSE

Authorized by the
West Virginia Contractor Licensing Board

Number: WVCA2893

Classification:
ELECTRICAL
CONTRACTORS

PILLAR INNOVATIONS LLC
DBA PILLAR INNOVATIONS LLC
92 CORPORATE DR
MORGANTOWN, WV 26501

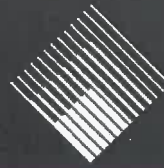
Date Issued	Expiration Date
March 13, 2020	August 13, 2023

Merlin Boyd
Authorized Company Signature

James A. ...
Chair, West Virginia Contractor Licensing Board

**WEST VIRGINIA
CONTRACTOR
LICENSING
BOARD**

This license, or a copy thereof, shall be posted in a conspicuous place at every construction site where work is being performed. This license number must appear in all advertisements, on all bid submissions and on all fully executed and binding contracts. This license cannot be assigned or transferred by licensee, issued under provisions of West Virginia Code, Chapter 21, Article 11.



6.0 Safety

Safety is a Core Value of Pillar Innovations. We promote a safe and healthy work place that protects people, material, and the environment. All employees are trained and required to abide by Pillar's Health, Safety, Security, and Environmental Obligations (HSSE) and other policies applicable to Pillar's work. Safety is a continuously evolving practice, and Pillar's policies, practices, and procedures are routinely reviewed to improve performance, reduce risks, and exceed safety standards.

Pillar Core Values:

INTEGRITY: No gain or benefit that justifies unethical conduct.

SAFETY: Working safety is a responsibility for every employee, every day. Each employee has the obligation and authority to stop an unsafe act.

ATTITUDE: We approach each day with a positive attitude for the benefit of our customers, coworkers, and community.

AMBITION: We continually pursue excellence with grit and determination.

CUSTOMER FOCUS: We contribute to our customers through responsiveness and innovative solutions.

ADAPTABILITY: While maintaining our values, we will adapt and innovate to overcome new challenges.

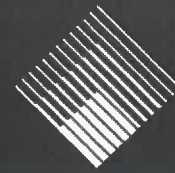
SUSTAINING THE COMPANY: We make responsible decisions today for the continued success of the company.

Each core value is an element, that when combined into a cohesive safety policy, provides a foundation for a safe and successful project.

All Pillar employees performing work on-site will wear appropriate Personal Protective Equipment (PPE) as necessary to comply with OSHA standards and to ensure safe completion of project tasks. Employees will check with their supervisor regarding any portion of their job and/or PPE that they are not familiar with. Safety Data Sheets (SDS), formerly called Material Safety Data Sheets, will be present on the job site at all time. The use of full body harnesses shall be required when working on elevated work > 4 feet. Pillar employees are expected to utilize proper judgment in their personal habits when they report to work each morning; they must be in fit condition to meet daily obligations.

Current TRIR (as of August 5th 2020)

0.89



7.0 Proposal

SUBMITTED TO:		JOB DESCRIPTION:	
Mountaineer Challenge Academy		Date:	August 24, 2020
305 Fayette Pike		Job:	Install Security Camera System
Montgomery, WV 25136		Location:	WV
Attn:	Tara Lyle	Quotation #:	Q702265R2
Phone:		Fax:	
		Email:	Tara.L.Lyle@wv.gov

We Hereby Submit specifications and estimates for the following:

Pillar Innovations is pleased to present this bid proposal for the Mountaineer Challenge Academy South. The bid proposal is for a Network Video Recorder (NVR) and supporting cameras in Maclin Hall and the Tech Center Buildings located at their new campus in Montgomery, WV.

Pillar Innovations to provide the following:

- Complete turnkey project, the cameras, digital video recorders, software, and hardware.
 - System will be tested and working properly at conclusion of this project. Pillar Innovations is responsible for all construction disciplines and associated cost within the specifications of this project.
- New Network Video Recorder (NVR) shall have the ability to be integrated with the existing Avigilon camera system installed at Mountaineer Challenge Academy North in Kingwood, WV.
- Pillar Innovations will supply, install, and connect additional cabling as required to provide a functioning NVR camera system by Avigilon as specified.
- Pillar Innovations will provide all applicable application software (Avigilon Control Center Client) and hardware.
- Pillar Innovations shall provide a complete NVR camera system ready for immediate operation upon acceptance.
- Pillar Innovations will provide system training on the system at the completion of the project.

****This bid proposal excludes integration into the existing Kingwood facility.**

System shall include the following as indicated on the plans as specified in the Construction Statement of Work Sections (1.0 - 11.0) and Construction Documents (A-E160R2 – BE163R2) as provided in this bid package.

**Any work outside of this scope will be at an additional cost. Access to all areas will be needed. Delays are not accounted for in this proposal and could result in additional charges. This proposal doesn't include any overtime, weekends, or holidays. The customer will be notified if Pillar encounters problems during installation that are above and beyond what is in this proposal.*

Pillar Innovations is available 7 days a week, 24 hours a day for emergency repairs and/or troubleshooting

Payment to be made as follows: TBD

TOTAL PRICE: \$349,849.92

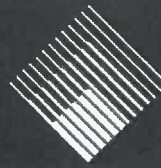
Note: Price quoted does not include any applicable tax due to contractor or owner.

All material is guaranteed to be as specified. All work is to be completed in a workmanlike manner according to standard practices. Any alteration or deviation from above specifications involving extra costs will be executed only upon written orders, and will become an extra charge over and above the estimate. Owner shall maintain insurance in customary amounts to cover the work. Our workers are fully covered by workmen's compensation insurance.

Contact Person: Bryan Monk

Authorized Signature: _____

Name - Title



Pillar
INNOVATIONS

Required Documents



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

State of West Virginia
 Request for Quotation
 09 - Construction

Proc Folder: 763901

Doc Description: CCTV Cameras and Install - Challenge Academy South

Proc Type: Central Purchase Order

Date Issued	Solicitation Closes	Solicitation No	Version
2020-08-05	2020-08-24 13:30:00	CRFQ 0803 ADJ2100000016	1

BID RECEIVING LOCATION

BID CLERK
 DEPARTMENT OF ADMINISTRATION
 PURCHASING DIVISION
 2019 WASHINGTON ST E
 CHARLESTON WV 25305
 US

VENDOR

Vendor Name, Address and Telephone Number:

Pillar Innovations
 92 Corporate Drive
 Grantsville MD 21536.
 (Corporate)

Pillar Innovations
 239 Carrier Way
 Scott Depot, WV 25360
 (Local)

FOR INFORMATION CONTACT THE BUYER

Tara Lyle
 (304) 558-2544
 tara.l.yle@wv.gov

Signature X

FEIN #

43-2114580

DATE

8/29/2020

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

Subcontractor List Submission (Construction Contracts Only)

Bidder's Name: Piller Innovations

Check this box if no subcontractors will perform more than \$25,000.00 of work to complete the project.

Subcontractor Name	License Number if Required by W. Va. Code § 21-11-1 et. seq.
N/A.	

Attach additional pages if necessary

DESIGNATED CONTACT: Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.

Chris Maust - Manager
(Name, Title)

104 Corporate Drive, Morgantown WV 26501
(Address)

304-983-8900 / 304-983-8905
(Phone Number) / (Fax Number)

Chris Maust @ Pillar Innovations.com.
(email address)

CERTIFICATION AND SIGNATURE: By signing below, or submitting documentation through wvOASIS, I certify that I have reviewed this Solicitation in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that I am authorized by the vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

Pillar Innovations
(Company)

Justin Stephens
(Authorized Signature) (Representative Name, Title)

Justin Stephens, VP of Operations
(Printed Name and Title of Authorized Representative)

8/24/2020
(Date)

304-983-8900, 304-983-8905
(Phone Number) (Fax Number)

REQUEST FOR QUOTATION
CRFQ ADJ21*16 - Security CCTV Camera System- Mountaineer Challenge Academy SOUTH

work complies with the Contract requirements. Vendor shall submit any warranty documents to the Agency project manager at final inspection.

Vendor shall provide a manufacturer's certified technician at final inspection to demonstrate and instruct agency personnel how to operate the security camera system.

13. FACILITIES ACCESS: Performance of Contract Services may require access cards and/or keys to gain entrance to Agency's facilities. If access cards and/or keys are required:

13.1. Vendor must identify principal service personnel which will be issued access cards and/or keys to perform service.

13.2. Vendor will be responsible for controlling cards and keys and will pay replacement fee if the cards or keys become lost or stolen.

13.3. Vendor shall notify Agency immediately of any lost, stolen, or missing card or key.

13.4. Vendor shall inform all staff of Agency's security protocol and procedures.

14. MISCELLANEOUS:

14.1. Contract Manager: During its performance of this Contract, Vendor must designate and maintain a primary contract manager responsible for overseeing Vendor's responsibilities under this Contract. The Contract manager must be available during normal business hours to address any customer service or other issues related to this Contract. Vendor should list its Contract manager and his or her contact information below.

Contract Manager: Chris Maust

Telephone Number: 240-221-2591 Mobile


Fax Number: 304-983-5900

Email Address: Chris.Maust@pillarinnovations.com

**Exhibit "A" Pricing Page
Security System-Camera**

Section	Description	Make and Model	Unit of Measure	Quantity	Unit Price	Extended Cost
15.1.1-15.1.11	Lump Sum Pricing for Cameras and Installation	As specified.	LS	1	\$0.00	0.00
TOTAL BID AMOUNT (INCLUDES SHIPPING CHARGES)						\$349,849.92

Vendor must identify Make and Model at time of submitting Bid Response. Vendor should provide Product Brochures indicating within the specifications that are equal prior to award.

Vendor Name: Pillar Innovations
 Address: 239 Carrier Way
Scott Depot WV 25560
 Phone No. 304-755-9501
 Email: info@pillarinnovations.com
 Authorized Signature: 
 Date: 8/24/2016

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

CONSTRUCTION CONTRACTS: Under W. Va. Code § 5-22-1(i), the contracting public entity shall not award a construction contract to any bidder that is known to be in default on any monetary obligation owed to the state or a political subdivision of the state, including, but not limited to, obligations related to payroll taxes, property taxes, sales and use taxes, fire service fees, or other fines or fees.

ALL CONTRACTS: Under W. Va. Code §5A-3-10a, no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

EXCEPTION: The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va. Code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

DEFINITIONS:

"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Employer default" means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

"Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceeds five percent of the total contract amount.

AFFIRMATION: By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (W. Va. Code §61-5-3) that: (1) for construction contracts, the vendor is not in default on any monetary obligation owed to the state or a political subdivision of the state, and (2) for all other contracts, that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

WITNESS THE FOLLOWING SIGNATURE:

Vendor's Name: Piller Innovations

Authorized Signature: [Signature] Date: 8/24/2020

State of West Virginia

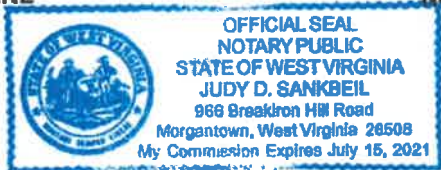
County of Monongalia, to-wit:

Taken, subscribed, and sworn to before me this 24 day of August, 2020

My Commission expires July 15, 2021

AFFIX SEAL HERE

NOTARY PUBLIC



[Signature]
Purchasing Affidavit (Revised 01/19/2018)



**State of West Virginia
DRUG FREE WORKPLACE CONFORMANCE AFFIDAVIT
West Virginia Code §21-1D-5**

STATE OF WEST VIRGINIA,

COUNTY OF Monongalia, TO-WIT:

I, Justin Stephens, after being first duly sworn, depose and state as follows:

1. I am an employee of Pillar Innovations, LLC; and,
(Company Name)
2. I do hereby attest that Pillar Innovations, LLC
(Company Name)

maintains a written plan for a drug-free workplace policy and that such plan and policy are in compliance with **West Virginia Code §21-1D**.

The above statements are sworn to under the penalty of perjury.

Printed Name: Justin Stephens
 Signature: Justin Stephens
 Title: UP of Operations
 Company Name: Pillar Innovations, LLC
 Date: 8/24/2020

Taken, subscribed and sworn to before me this 24 day of August, 2020.

By Commission expires July 15, 2021

(Seal)

Judy D. Sankbeil
 (Notary Public)





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

State of West Virginia
 Request for Quotation
 09 - Construction

Proc Folder: 763901

Doc Description: Addendum No. 1 CCTV Cameras and Install - MCA SOUTH

Proc Type: Central Purchase Order

Date Issued	Solicitation Closes	Solicitation No	Version
2020-08-10	2020-08-24 13:30:00	CRFQ 0603 ADJ2100000016	2

BID RECEIVING LOCATION

BID CLERK
 DEPARTMENT OF ADMINISTRATION
 PURCHASING DIVISION
 2019 WASHINGTON ST E
 CHARLESTON WV 25305
 US

VENDOR

Vendor Name, Address and Telephone Number:

Pillar Innovations
239 Carrier way
Scott Dept, WV 25560.

FOR INFORMATION CONTACT THE BUYER

Tara Lyle
 (304) 558-2544
 tara.l.lyle@wv.gov

Signature X

Justin Stephens

FEIN #

43-211 4580

DATE

8/24/20

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



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

State of West Virginia
 Request for Quotation
 09 - Construction

Proc Folder: 763901

Doc Description: Addendum No. 2 CCTV Cameras and Install - MCA SOUTH

Proc Type: Central Purchase Order

Date Issued	Solicitation Closes	Solicitation No	Version
2020-08-17	2020-08-24 13:30:00	CRFQ 0603 ADJ2100000016	3

BID RECEIVING LOCATION

BID CLERK
 DEPARTMENT OF ADMINISTRATION
 PURCHASING DIVISION
 2019 WASHINGTON ST E
 CHARLESTON WV 25305
 US

VENDOR

Vendor Name, Address and Telephone Number:

Pillar Innovations
239 Carrier way
Scott Depot WV 25560.

FOR INFORMATION CONTACT THE BUYER

Tara Lyle
 (304) 558-2544
 tara.l.yle@wv.gov

Signature X

FEIN #

43-2114580

DATE

8/24/20

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

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.: CRFQ ADJ2100000016

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 checked="" 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 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.

Pillar Innovations
Company


Authorized Signature

8-24-20
Date

NOTE: This addendum acknowledgment should be submitted with the bid to expedite document processing.

Agency _____
REQ.P.O# _____

BID BOND

KNOW ALL MEN BY THESE PRESENTS, That we, the undersigned, Pillar Innovations LLC
of Grantsville, Maryland, as Principal, and Fidelity & Deposit Company of MD
of Schaumburg, IL, a corporation organized and existing under the laws of the State of IL
with its principal office in the City of Schaumburg, as Surety, are held and firmly bound unto the State
of West Virginia, as Oblgee, in the penal sum of Five Percent of the total bid (\$ 5% of Total Bid) for the payment of which,
well and truly to be made, we jointly and severally bind ourselves, our heirs, administrators, executors, successors and assigns.

The Condition of the above obligation is such that whereas the Principal has submitted to the Purchasing Section of the
Department of Administration a certain bid or proposal, attached hereto and made a part hereof, to enter into a contract in writing for
CCTV Cameras and Install - Challenge Academy South

NOW THEREFORE,

(a) If said bid shall be rejected, or
(b) If said bid shall be accepted and the Principal shall enter into a contract in accordance with the bid or proposal
attached hereto and shall furnish any other bonds and insurance required by the bid or proposal, and shall in all other respects perform
the agreement created by the acceptance of said bid, then this obligation shall be null and void, otherwise this obligation shall remain in
full force and effect. It is expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no
event, exceed the penal amount of this obligation as herein stated.

The Surety, for the value received, hereby stipulates and agrees that the obligations of said Surety and its bond shall be in no
way impaired or affected by any extension of the time within which the Oblgee may accept such bid, and said Surety does hereby
waive notice of any such extension.

WITNESS, the following signatures and seals of Principal and Surety, executed and sealed by a proper officer of Principal and
Surety, or by Principal Individually if Principal is an individual, this 24th day of August, 20 20.

Principal Seal



Pillar Innovations, LLC
(Name of Principal)
By [Signature]
(Must be President, Vice President, or
Duly Authorized Agent)
President
(Title)

Surety Seal

Fidelity & Deposit Company of MD
(Name of Surety)
Kayla McCullough
Attorney-in-Fact

IMPORTANT – Surety executing bonds must be licensed in West Virginia to transact surety insurance, must affix its seal, and must attach a power of attorney with its seal affixed.

**ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND
POWER OF ATTORNEY**

KNOW ALL MEN BY THESE PRESENTS: That the ZURICH AMERICAN INSURANCE COMPANY, a corporation of the State of New York, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, a corporation of the State of Illinois, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND a corporation of the State of Illinois (herein collectively called the "Companies"), by **Robert D. Murray, Vice President**, in pursuance of authority granted by Article V, Section 8, of the By-Laws of said Companies, which are set forth on the reverse side hereof and are hereby certified to be in full force and effect on the date hereof, do hereby nominate, constitute, and appoint **Michael FETCHERO, Brian E. MCCLOSKEY, Marla K. MAYLES, Edward R. SEWARD, Lisa WINCHESTER, Shelley MCCABE, Kayla D. MCCULLOUGH, Chelsea L. MARTIN, Aaron N. SMITH, Letha LOMBARDI and Lori CELANO**, all of Cumberland, Maryland, EACH, its true and lawful agent and Attorney-in-Fact, to make, execute, seal and deliver, for, and on its behalf as surety, and as its act and deed: **any and all bonds and undertakings**, and the execution of such bonds or undertakings in pursuance of these presents, shall be as binding upon said Companies, as fully and amply, to all intents and purposes, as if they had been duly executed and acknowledged by the regularly elected officers of the ZURICH AMERICAN INSURANCE COMPANY at its office in New York, New York., the regularly elected officers of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at its office in Owings Mills, Maryland., and the regularly elected officers of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at its office in Owings Mills, Maryland., in their own proper persons.

The said Vice President does hereby certify that the extract set forth on the reverse side hereof is a true copy of Article V, Section 8, of the By-Laws of said Companies, and is now in force.

IN WITNESS WHEREOF, the said Vice-President has hereunto subscribed his/her names and affixed the Corporate Seals of the said ZURICH AMERICAN INSURANCE COMPANY, COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and FIDELITY AND DEPOSIT COMPANY OF MARYLAND, this 18th day of September, A.D. 2019.



ATTEST:
ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND

By: *Robert D. Murray*
Vice President

By: *Dawn E. Brown*
Secretary

**State of Maryland
County of Baltimore**

On this 18th day of September, A.D. 2019, before the subscriber, a Notary Public of the State of Maryland, duly commissioned and qualified, **Robert D. Murray, Vice President and Dawn E. Brown, Secretary** of the Companies, to me personally known to be the individuals and officers described in and who executed the preceding instrument, and acknowledged the execution of same, and being by me duly sworn, deposeth and saith, that he/she is the said officer of the Company aforesaid, and that the seals affixed to the preceding instrument are the Corporate Seals of said Companies, and that the said Corporate Seals and the signature as such officer were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporations.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my Official Seal the day and year first above written.



Constance A. Dunn, Notary Public
My Commission Expires: July 9, 2023

EXTRACT FROM BY-LAWS OF THE COMPANIES

"Article V, Section 8, Attorneys-in-Fact. The Chief Executive Officer, the President, or any Executive Vice President or Vice President may, by written instrument under the attested corporate seal, appoint attorneys-in-fact with authority to execute bonds, policies, recognizances, stipulations, undertakings, or other like instruments on behalf of the Company, and may authorize any officer or any such attorney-in-fact to affix the corporate seal thereto; and may with or without cause modify or revoke any such appointment or authority at any time."

CERTIFICATE

I, the undersigned, Vice President of the ZURICH AMERICAN INSURANCE COMPANY, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, do hereby certify that the foregoing Power of Attorney is still in full force and effect on the date of this certificate; and I do further certify that Article V, Section 8, of the By-Laws of the Companies is still in force.

This Power of Attorney and Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the ZURICH AMERICAN INSURANCE COMPANY at a meeting duly called and held on the 15th day of December 1998.

RESOLVED: "That the signature of the President or a Vice President and the attesting signature of a Secretary or an Assistant Secretary and the Seal of the Company may be affixed by facsimile on any Power of Attorney...Any such Power or any certificate thereof bearing such facsimile signature and seal shall be valid and binding on the Company."

This Power of Attorney and Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at a meeting duly called and held on the 5th day of May, 1994, and the following resolution of the Board of Directors of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at a meeting duly called and held on the 10th day of May, 1990.

RESOLVED: "That the facsimile or mechanically reproduced seal of the company and facsimile or mechanically reproduced signature of any Vice-President, Secretary, or Assistant Secretary of the Company, whether made heretofore or hereafter, wherever appearing upon a certified copy of any power of attorney issued by the Company, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seals of the said Companies, this 24th day of August, 2020.



Brian M. Hodges, Vice President

TO REPORT A CLAIM WITH REGARD TO A SURETY BOND, PLEASE SUBMIT A COMPLETE DESCRIPTION OF THE CLAIM INCLUDING THE PRINCIPAL ON THE BOND, THE BOND NUMBER, AND YOUR CONTACT INFORMATION TO:

Zurich Surety Claims
1299 Zurich Way
Schaumburg, IL 60196-1056
www.reportsclaims@zurichna.com
800-626-4577



ADDENDUM
Electronic Seals Approved for Surety Bonds

To ensure business continuity during the COVID-19 pandemic, Zurich American Insurance Company and its related companies authorize their Attorneys-in-Fact within all 50 U.S. States, territories and possessions, to affix an electronic seal to all bond documents as if it were a raised corporate seal.

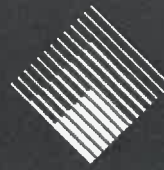
Effective this 2nd day of April, 2020.

Zurich American Insurance Company
Fidelity and Deposit Company of Maryland
Colonial American Insurance Company

A handwritten signature in black ink, appearing to be 'R. Murray', written over a horizontal line.

Robert D. Murray
Executive Vice President
Head of Surety



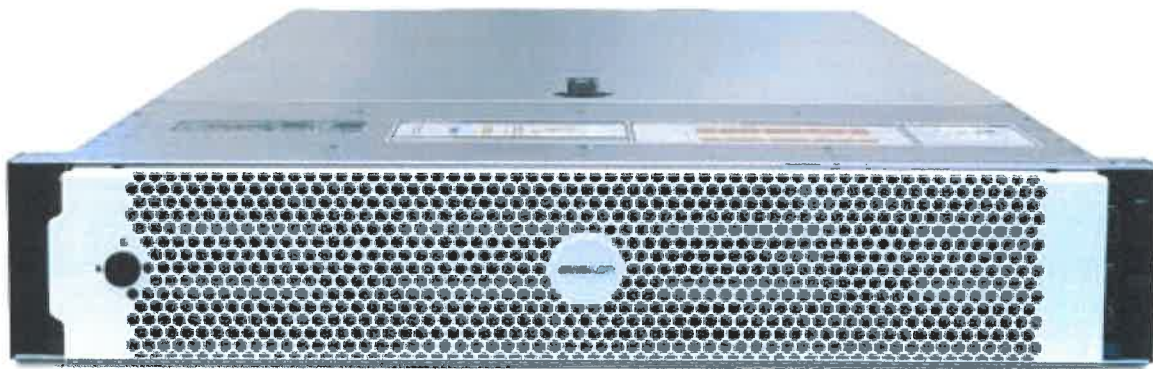


Pillar
INNOVATIONS

Specification Sheets

HD NVR4 Premium

Avigilon fourth generation HD Network Video Recorder Premium (NVR4) is our next generation of NVRs with the highest capacity, retention and throughput. It provides secure, reliable and scalable platforms for high performance end-to-end security solutions. Our network security recorders have Avigilon Control Center (ACC) and Avigilon Appearance Search™ technology preloaded and configured for plug-and-play network video recording and management of multi-megapixel IP cameras, up to our industry-leading 7K (30 megapixel) HD Pro.



The Avigilon HD NVR4 Premium is a 2U rack mountable recorder specifically manufactured for the Avigilon ecosystem with the flexibility to expand your surveillance system. It leverages the full power of Avigilon Control Center (ACC) and Appearance Search technology to deliver the highest available throughput, retention, and availability in the NVR4 line. The NVR4 Premium can be used individually or as a cluster of NVRs designed for IP video and video analytics metadata storage. It's backed by the Avigilon three-year warranty, extendable up to five years, which provides businesses with support and onsite parts replacement for continuous recording and retention of video while minimizing disruptions to security operations.

The HD NVR4 Premium is an out-of-the-box, ready to deploy video recording platform designed for single site surveillance or to be distributed across multiple remote sites.

KEY FEATURES

- Configured for and preloaded with ACC™ video management software
- Natively supports Avigilon Appearance Search technology
- Up to 2100 Mbps of total throughput – simultaneous recording, playback and live streaming
- Highly scalable and flexible capacity options — from 64TB to 192TB (72 TB to 252 TB raw) of recording for long-term video retention or high camera counts
- Hot-swappable components maintain video recording and playback operations even in the event of multiple simultaneous component failures
- Separate of operating system and video storage volumes to enable independent, non-disruptive maintenance
- An easy to access and maintain 2U rack mount chassis — includes a sliding rail kit and cable management system
- A three-year warranty with on-site parts replacement service

Specifications

SYSTEM	Video Management Software	Avigilon Control Center™ – compatible with Enterprise, Standard and Core editions		
	Network Video Streaming Performance*	Network Connection	10 GbE - with multiple network connections	
				1 GbE
		Recording Data Rate	Up to 1500 Mbps (max 1250 Mbps per connection)	Up to 600 Mbps
		Playback and Live Streaming	Up to 600 Mbps (while simultaneously recording video)	Up to 600 Mbps
		Recording Storage Capacity	Up to 180 TB raw, 157 TB effective (RAID 6), or 252 TB raw, 192 TB effective (RAID 60)	
		Hard Disk Drive Configuration	Video data — up to 18 x large form factor near-line SAS hard disk drives, hot-swappable, RAID 6 or RAID 60 Operating system — 2 x M.2 SSD drives, RAID 1	
		Network Interface	2 x 10 GbE SFP+ ports (transceivers not included) 2 x 1 GbE RJ-45 ports (1000Base-T)	
		Memory	32GB DDR4	
		Operating System	Microsoft Windows Server 2016	
		Processor	Intel® Xeon®	
		Video Outputs	VGA	
		Local Viewing	No	
		Out-of-band management	iDRAC9 Express	

* These performance figures are based on validation testing by Avigilon, using Avigilon Control Center software. For more information, contact Avigilon [Sales](#).

MECHANICAL	Form Factor	2U rack mount chassis	
	Dimensions (LxWxH)	with bezel	751.3 mm x 482 mm x 86.8 mm; 29.58" x 18.98" x 3.41"
		without bezel	737.5 mm x 482 mm x 86.8 mm; 29.04" x 18.98" x 3.41"
	Weight	46.3 kg (102 lbs) when fully populated with hard drives	

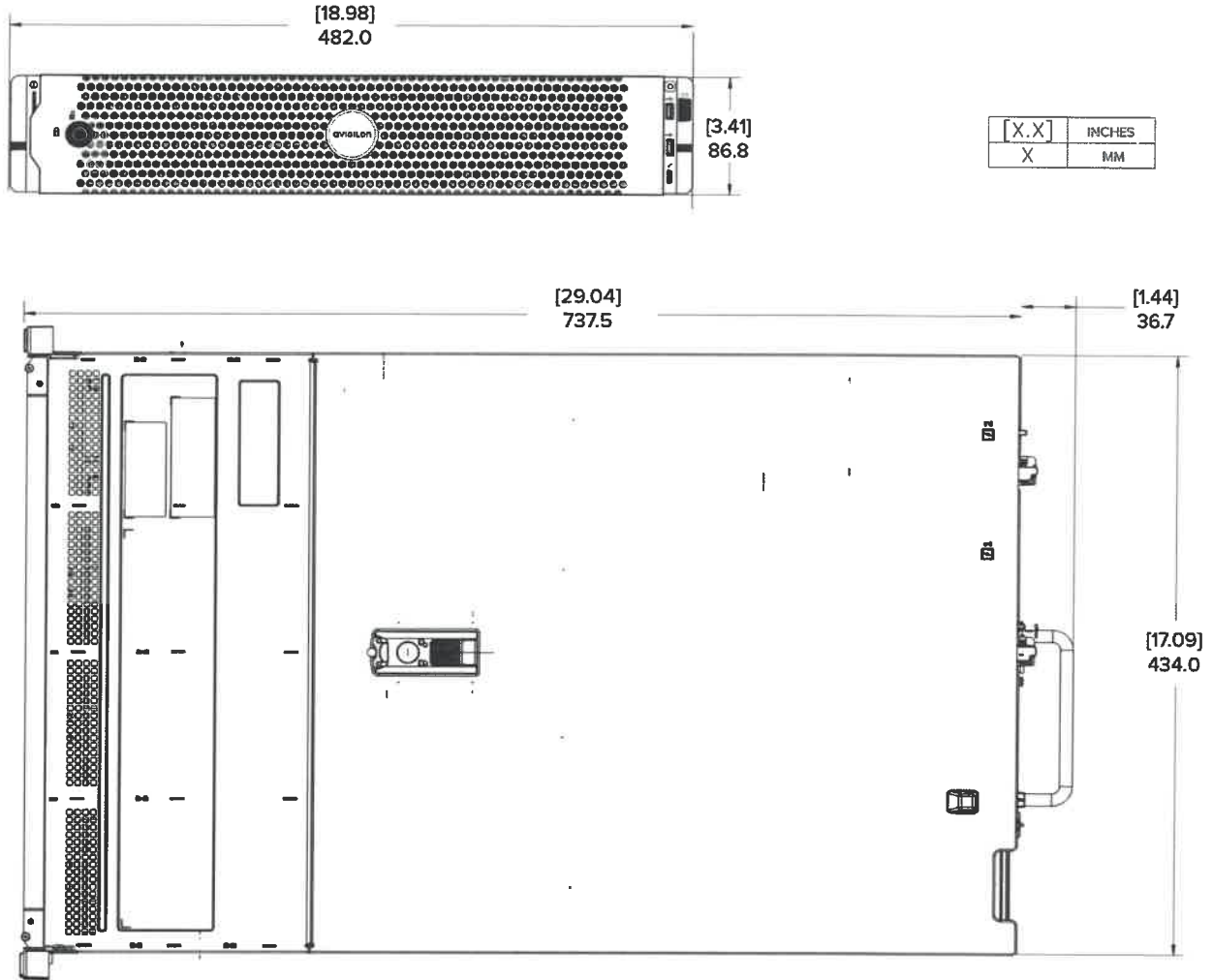
ELECTRICAL	Power Input	100 to 240 VAC, 50/60 Hz, auto-switching	
	Power Supply	80 Plus rating redundant, hot-swappable	
	Power Consumption	Average: 429 W (f+1) (1463.8 BTU/h), Maximum: 750 W (2559.1 BTU/h)	

ENVIRONMENTAL	Operating Temperature	10° C to 35° C (50° F to 95° F)	
	Storage Temperature	-40° C to 65° C (-40° F to 149° F)	
	Humidity	10% to 80% relative humidity with 29°C (84.2°F) maximum dew point	
	Operating Vibration	0.26 Grms at 5 Hz to 350 Hz	
	Storage Vibration	1.88 Grms at 10 Hz to 500 Hz for 15 min	
	Operating Shock	Six consecutively executed shock pulses in the positive and negative x, y, and z axes of 6 G for up to 11ms	
	Storage Shock	Six consecutively executed shock pulses in the positive and negative x, y, and z axes (one pulse on each side of the system) of 71 G for up to 2 ms	
	Max. Operating Altitude	3,048 m (10,000 ft)	
	Storage Altitude	12,000 m (39,370 ft)	

SUPPLIED ACCESSORIES	Rack Rail System	Sliding rail system with cable management arm. Supports: <ul style="list-style-type: none"> • Tool-less mounting in 19"-wide EIA-310-E compliant square hole and unthreaded round-hole 4-post racks • Tool-less mounting in threaded hole 4-post racks 	
	Bezel	1, front	
	Power Cords	2	

CERTIFICATIONS	Certifications	UL, cUL, CE, BIS, BSMI, CCC, EAC, KC, NOM, NRCS, VCCI, RCM	
	Safety	EN 60950-1:2006 / A1:2009 / A1:2010 / A1:2011 / A2:2013; UL/CSA/IEC 60950-1, 2 Ed + Am 1: 2009 + Am 2: 2013	
	Electromagnetic Emissions	US CFR Title 47, FCC Part 2, 15; Canadian ICES-003(A) Issue 6; EN 55032:2012/ EN 55032:2015/ CISPR 32:2012/ CISPR 32:2015 (Class A); EN 61000-3-2:2014/ IEC 61000-3-2:2014 (Class D); EN 61000-3-3:2013/ IEC 61000-3-3:2013	
	Electromagnetic Immunity	EN 55024:2010+A1:2015/CISPR 24:2010 + A1:2015	
	Energy	Commission Regulation (EU) No. 617/2013	
	ROHS	EN 50581:2012	

Outline Dimensions



Ordering Information

HD-NVR4-PRM-64TB	64 TB (72 TB Raw) HD NVR4 Premium with Microsoft Windows Server 2016 Avigilon Control Center
HD-NVR4-PRM-96TB	96 TB (112 TB Raw) HD NVR4 Premium with Microsoft Windows Server 2016 Avigilon Control Center
HD-NVR4-PRM-128TB	128 TB (144 TB Raw) HD NVR4 Premium with Microsoft Windows Server 2016 Avigilon Control Center
HD-NVR4-PRM-157TB	157 TB (180 TB Raw) HD NVR4 Premium with Microsoft Windows Server 2016 Avigilon Control Center
HD-NVR4-PRM-192TB	192 TB (252 TB Raw) HD NVR4 Premium with Microsoft Windows Server 2016 Avigilon Control Center
Avigilon Control Center licenses must be purchased separately. Avigilon Appearance Search requires Enterprise version of ACC.	
HD-NVR-ANK2-1	Analytics Kit for Avigilon Appearance Search software
HD-NVR4-PRM-2NDPS-AU	Redundant, hot-swappable power supply, for AU
HD-NVR4-PRM-2NDPS-EU	Redundant, hot-swappable power supply, for EU
HD-NVR4-PRM-2NDPS-NA	Redundant, hot-swappable power supply, for NA
HD-NVR4-PRM-2NDPS-UK	Redundant, hot-swappable power supply, for UK
HD-NVR4-SFPPLUS-DA	SFP+ 10GbE Twinax Direct Attach Cable 3m
HD-NVR4-SFPPLUS-SR	SFP+ 10GBASE-Short Range Transceiver



HD NVR4 Premium

Avigilon fourth generation HD Network Video Recorder Premium (NVR4) is our next generation of NVRs with the highest capacity, retention and throughput. It provides secure, reliable and scalable platforms for high performance end-to-end security solutions. Our network security recorders have Avigilon Control Center (ACC) and Avigilon Appearance Search[™] technology preloaded and configured for plug-and-play network video recording and management of multi-megapixel IP cameras, up to our industry-leading 7K (30 megapixel) HD Pro.



The Avigilon HD NVR4 Premium is a 2U rack mountable recorder specifically manufactured for the Avigilon ecosystem with the flexibility to expand your surveillance system. It leverages the full power of Avigilon Control Center (ACC) and Appearance Search technology to deliver the highest available throughput, retention, and availability in the NVR4 line. The NVR4 Premium can be used individually or as a cluster of NVRs designed for IP video and video analytics metadata storage. It's backed by the Avigilon three-year warranty, extendable up to five years, which provides businesses with support and onsite parts replacement for continuous recording and retention of video while minimizing disruptions to security operations.

The HD NVR4 Premium is an out-of-the-box, ready to deploy video recording platform designed for single site surveillance or to be distributed across multiple remote sites.

KEY FEATURES

- Configured for and preloaded with ACC[™] video management software
- Natively supports Avigilon Appearance Search technology
- Up to 2100 Mbps of total throughput – simultaneous recording, playback and live streaming
- Highly scalable and flexible capacity options — from 64TB to 192TB (72 TB to 252 TB raw) of recording for long-term video retention or high camera counts
- Hot-swappable components maintain video recording and playback operations even in the event of multiple simultaneous component failures
- Separate of operating system and video storage volumes to enable independent, non-disruptive maintenance
- An easy to access and maintain 2U rack mount chassis — includes a sliding rail kit and cable management system
- A three-year warranty with on-site parts replacement service

Specifications

SYSTEM	Video Management Software		Avigilon Control Center™ – compatible with Enterprise, Standard and Core editions	
	Network Video Streaming Performance*	Network Connection	10 GbE - with multiple network connections	1 GbE
		Recording Data Rate	Up to 1500 Mbps (max 1250 Mbps per connection)	
		Playback and Live Streaming	Up to 600 Mbps (while simultaneously recording video)	Up to 600 Mbps
	Recording Storage Capacity		Up to 180 TB raw, 157 TB effective (RAID 6), or 252 TB raw, 192 TB effective (RAID 60)	
	Hard Disk Drive Configuration		Video data — up to 18 x large form factor near-line SAS hard disk drives, hot-swappable, RAID 6 or RAID 60 Operating system — 2 x M.2 SSD drives, RAID 1	
	Network Interface		2 x 10 GbE SFP+ ports (transceivers not included) 2 x 1 GbE RJ-45 ports (1000Base-T)	
	Memory		32GB DDR4	
	Operating System		Microsoft Windows Server 2016	
	Processor		Intel® Xeon®	
	Video Outputs		VGA	
	Local Viewing		No	
	Out-of-band management		iDRAC9 Express	

* These performance figures are based on validation testing by Avigilon, using Avigilon Control Center software. For more information, contact Avigilon [Sales](#).

MECHANICAL	Form Factor		2U rack mount chassis	
	Dimensions (LxWxD)	with bezel	751.3 mm x 482 mm x 86.8 mm; 29.58" x 18.98" x 3.41"	
		without bezel	737.5 mm x 482 mm x 86.8 mm; 29.04" x 18.98" x 3.41"	
	Weight		46.3 kg (102 lbs) when fully populated with hard drives	

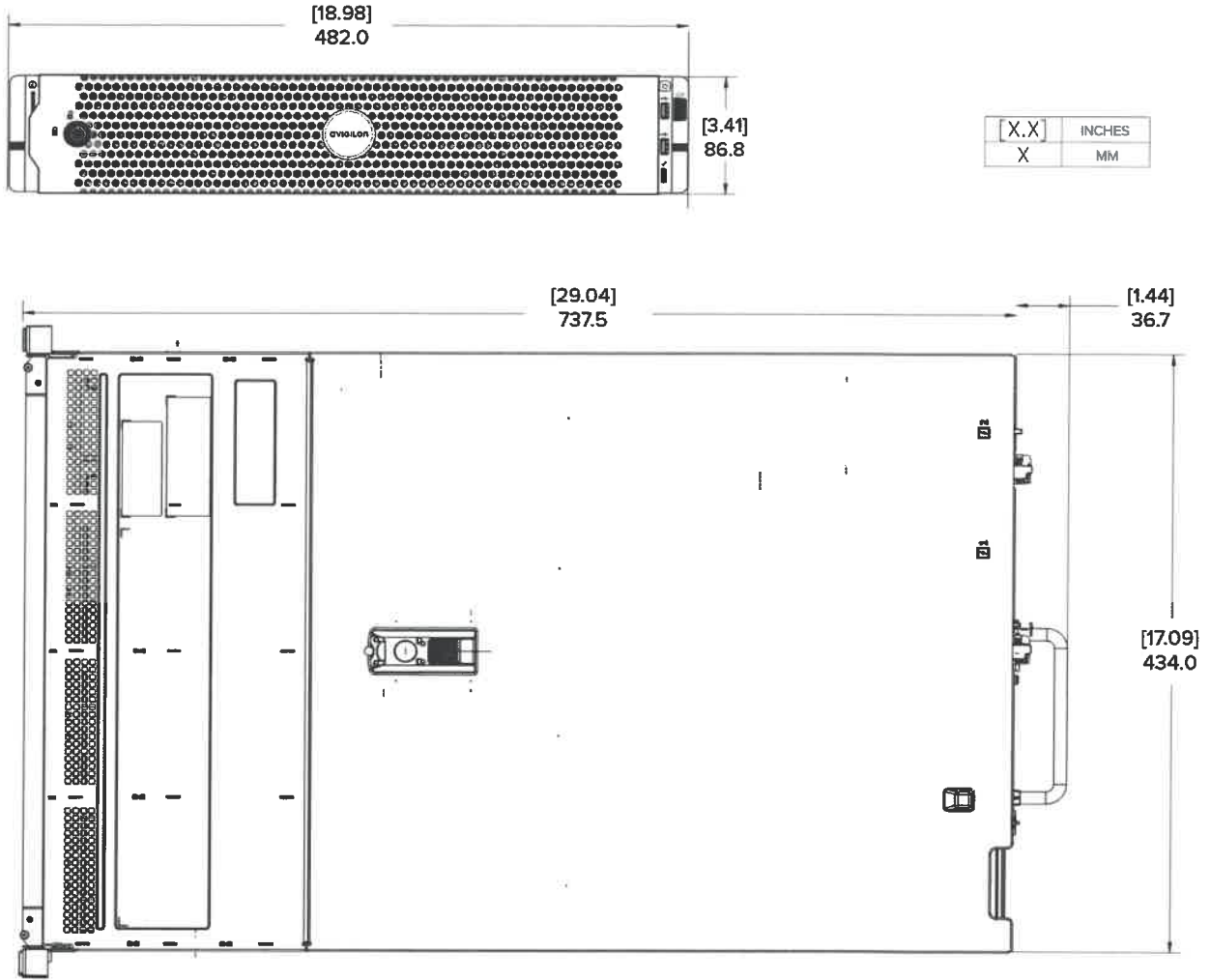
ELECTRICAL	Power Input		100 to 240 VAC, 50/60 Hz, auto-switching	
	Power Supply		80 Plus rating redundant, hot-swappable	
	Power Consumption		Average: 429 W (†) (1463.8 BTU/h), Maximum: 750 W (2559.1 BTU/h)	

ENVIRONMENTAL	Operating Temperature		10° C to 35° C (50° F to 95° F)	
	Storage Temperature		-40° C to 65° C (-40° F to 149° F)	
	Humidity		10% to 80% relative humidity with 29°C (84.2°F) maximum dew point	
	Operating Vibration		0.26 Gms at 5 Hz to 350 Hz	
	Storage Vibration		1.88 Gms at 10 Hz to 500 Hz for 15 min	
	Operating Shock		Six consecutively executed shock pulses in the positive and negative x, y, and z axes of 6 G for up to 11ms	
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	Max. Operating Altitude		3,048 m (10,000 ft)	
	Storage Altitude		12,000 m (39,370 ft)	

SUPPLIED ACCESSORIES	Rack Rail System		Sliding rail system with cable management arm. Supports: <ul style="list-style-type: none"> • Tool-less mounting in 19"-wide EIA-310-E compliant square hole and unthreaded round-hole 4-post racks • Tooled mounting in threaded hole 4-post racks 	
	Bezel		1, front	
	Power Cords		2	

CERTIFICATIONS	Certifications		UL, cUL, CE, BIS, BSMI, CCC, EAC, KC, NOM, NRCS, VCCI, RCM	
	Safety		EN 60950-1:2006 / A1:2009 / A1:2010 / A12:2011 / A2:2013; UL/CSA/IEC 60950-1, 2 Ed + Am 1: 2009 + Am 2: 2013	
	Electromagnetic Emissions		US CFR Title 47, FCC Part 2, 15; Canadian ICES-003(A) Issue 6; EN 55032:2012/ EN 55032:2015/ CISPR 32:2012/ CISPR 32:2015 (Class A); EN 61000-3-2:2014/ IEC 61000-3-2:2014 (Class D); EN 61000-3-3:2013/ IEC 61000-3-3:2013	
	Electromagnetic Immunity		EN 55024:2010+A1:2015/CISPR 24:2010 + A1:2015	
	Energy		Commission Regulation (EU) No. 617/2013	
	ROHS		EN 50581:2012	

Outline Dimensions



Ordering Information

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HD-NVR4-PRM-2NDPS-EU	Redundant, hot-swappable power supply, for EU
HD-NVR4-PRM-2NDPS-NA	Redundant, hot-swappable power supply, for NA
HD-NVR4-PRM-2NDPS-UK	Redundant, hot-swappable power supply, for UK
HD-NVR4-SFPPLUS-DA	SFP+ 10GbE Twinax Direct Attach Cable 3m
HD-NVR4-SFPPLUS-SR	SFP+ 10GBASE-Short Range Transceiver

HD-NVR4-PRM-xxTB-NA =



HD-NVR4-PRM-xxTB-UK =



HD-NVR4-PRM-xxTB-EU =



HD-NVR4-PRM-xxTB-AU =



H5SL Camera Line

1.3 MP

2 MP

3 MP

5 MP



Features



UNUSUAL MOTION DETECTION

Uses AI to notify you of unusual events that might otherwise have been missed, offering increased situational awareness and helping you effectively monitor more cameras.



LIGHTCATCHER™ TECHNOLOGY

Offers exceptional detail in areas with low lighting.



DUAL EXPOSURE WIDE DYNAMIC RANGE

Capture details in scenes with both very bright and dark areas.



ONVIF® COMPLIANT

Built on an open platform to allow integration with other security solutions.



MULTIPLE LENS OPTIONS

Choose from various lens types, including long zoom, for flexible coverage options.



H.265 WITH HDSM SMARTCODEC™ TECHNOLOGY

Optimizes compression levels for regions in a scene to help maximize bandwidth savings, helping to keep internet connectivity costs down.



ADAPTIVE INFRARED (IR)

Automatically adjusts IR beam width and exposure settings based on scene conditions to help maximize image quality.



RELAY I/O CONNECTIONS

Incorporate and configure input/output actions and alarms for fast event response.



MADE IN NORTH AMERICA AND 5 YEAR WARRANTY

Manufactured in North America* using globally-sourced materials and North American expertise, Avigilon stands behind the quality of its products. Backed by a 5 year warranty.

Specifications

		1.3 MP	2.0 MP	3.0 MP	5.0 MP	
IMAGE PERFORMANCE	Image Sensor	1/2.8" progressive scan CMOS				
	Aspect Ratio	5:4	16:9	4:3	4:3	
	Active Pixels (H x V)	1280 x 1024	1920 x 1080	2048 x 1536	2592 x 1944	
	Imaging Area (H x V)	3.2 mm x 2.56 mm; 0.126" x 0.101"	4.8 mm x 2.7 mm; 0.189" x 0.106"	5.12 mm x 3.84 mm; 0.202" x 0.151"	5.18 mm x 3.89 mm; 0.204" x 0.153"	
	Max Image Rate	(50 Hz/60 Hz): 25 fps/30 fps			(50 Hz/60 Hz): 25 fps/24 fps	
	Dynamic Range	WDR Off	100 dB			110 dB (dual exposure)
		WDR On	120 dB (dual exposure)			
	Resolution Scaling	Down to 384 x 216				
	Camera Operating Mode	N/A			Full feature or High framerate mode (UMD disabled in High framerate mode)	
	Bandwidth Management	HDSM SmartCodec technology; Idle scene mode				
3D Noise Reduction Filter	Yes					
LENS AND IR ILLUMINATION	IR Illumination Max Distance (high power 850 nm LEDs)	Dome	3 – 9 mm	3.1 – 8.4 mm	9.5 – 31 mm	
		Bullet	1.3 MP	30 m (100 ft), full tele 20 m (65 ft), full wide	30 m (100 ft), full tele 20 m (65 ft), full wide	N/A
			2.0 MP	N/A	50 m (165 ft), full tele 30 m (100 ft), full wide	70 m (230 ft), full tele 30 m (100 ft), full wide
	Minimum Illumination	1.3 MP	With IR: 0 lux in color or monochrome mode Without IR: 0.03 lux in color mode; 0.015 lux in monochrome mode	With IR: 0 lux in color or monochrome mode Without IR: 0.04 lux in color mode; 0.02 lux in monochrome mode	With IR: 0 lux in color or monochrome mode Without IR: 0.03 lux in color mode; 0.015 lux in monochrome mode	
		2.0 MP				
		3.0 MP				
		5.0 MP				
	Horizontal Angle of View Based on Aspect Ratio	1.3 MP	(16:9)(4:3) 35° – 90° (5:4) 33° – 85°	(16:9)(4:3) 35° – 90° (5:4) 33° – 85°	N/A N/A (16:9) 10° – 32°; (5:4) 9.5° – 32°; (4:3) 9.5° – 30°	
		2.0 MP				
		3.0 MP				
		5.0 MP				
	Vertical Angle of View Based on Aspect Ratio	1.3 MP	(16:9) 20° – 49° (5:4)(4:3) 26° – 66°	(16:9) 20° – 49° (5:4)(4:3) 26° – 66°	N/A N/A (16:9) 6° – 17°; (5:4)(4:3) 7° – 23° (16:9) 6° – 17°; (4:3) 7° – 23°	
		2.0 MP				
3.0 MP						
5.0 MP						
Max Aperture	F1.4		F1.6	F1.4		
Control	P-Iris, Remote Focus and Zoom					
IMAGE CONTROL	Image Compression Method	H.264 HDSM SmartCodec, H.265 HDSM SmartCodec, Motion JPEG				
	Streaming	Multi-stream H.264, Multi-stream H.265, Motion JPEG				
	Motion Detection	Pixel and Unusual Motion Detection (UMD)				
	Temper Detection	Yes				
	Electronic Shutter Control	Automatic, Manual (1/6 to 1/8000 sec)				
	Iris Control	Automatic, Manual				
	Day/Night Control	Automatic, Manual				
	Flicker Control	50 Hz, 60 Hz				
	White Balance	Automatic, Manual				
	Backlight Compensation	Adjustable				
Privacy Zones	Up to 64 zones					
AUXILIARY I/O	Audio Compression Method	Opus, G.711 PCM 8 kHz				
	Audio Input/Output	Line level input and output				
	External I/O Terminals	Alarm In, Alarm Out				
NETWORK	Network	100BASE-TX				
	Cabling Type	CAT5				
	Connector	RJ-45				
	ONVIF	ONVIF compliant with Profile S and Profile T (www.onvif.org)				
	Security	Password protection, HTTPS encryption, digest authentication, WS authentication, user access log, 802.1x port based authentication				
	Protocols	IPv6, IPv4, HTTP, HTTPS, SOAP, DNS, NTP, RTSP, RTCP, RTP, TCP, UDP, IGMP, ICMP, DHCP, Zeroconf, ARP				
	Streaming Protocols	RTP/UDP, RTP/UDP multicast, RTP/RTSP/TCP, RTP/RTSP/HTTP/TCP, RTP/RTSP/HTTPS/TCP, HTTP				
	Device Management Protocols	SNMP v2c, SNMP v3				
	PERIPHERALS	USB Port	USB 2.0			
Onboard Storage		microSD/microSDHC/microSDXC slot – minimum class 6; class 10/UHS-1 or better recommended				

Specifications (Con't)

MECHANICAL (DOME)

	SURFACE MOUNT	IN-CEILING MOUNT	PENDANT MOUNT	
			NPT ADAPTER	NPT + WALL MOUNT
Dimensions (LxWxH)	147 mm x 147 mm x 119 mm; 5.8" x 5.8" x 4.7"	174 mm x 174 mm x 162 mm; 6.9" x 6.9" x 6.4"	153 mm x 153 mm x 166 mm; 6.0" x 6.0" x 6.5"	269 mm x 153 mm x 214 mm; 10.6" x 6.0" x 8.4"
Max. Ceiling Thickness	N/A	32 mm (1.25")	N/A	N/A
Weight	Indoor Dome — 0.76 kg; 1.68 lbs Outdoor Dome — 0.78 kg; 1.72 lbs	Indoor Dome — 0.75 kg; 1.65 lbs Outdoor Dome — 0.77 kg; 1.69 lbs	Indoor Dome — 0.75 kg; 1.65 lbs Outdoor Dome — 0.77 kg; 1.69 lbs	Indoor Dome — 2.02 kg; 4.45 lbs Outdoor Dome — 2.04 kg; 4.49 lbs
Dome Bubble	Polycarbonate, clear			
Body	Polycarbonate			Polycarbonate/aluminum
Housing	Vandal resistant			
Finish	Cool grey			Close to RAL 9003
Adjustment Range	360° pan, ±180° azimuth, 30° – 95° tilt (recommended), 10° – 95° tilt (maximum)			

MECHANICAL (BULLET)

Dimensions (LxWxH)	285 mm x 131 mm x 97 mm; 11.2" x 5.1" x 3.8" (including mounting bracket)
Weight	Camera 1.29 kg (2.84 lbs) Mounting Bracket 0.21 kg (0.46 lbs)
Body	Aluminum
Housing	Surface mount, tamper resistant, vandal resistant
Finish	Powder coat, cool grey
Adjustment Range	±175° pan, ±90° tilt, ±175° azimuth

ELECTRICAL

Power Consumption	Indoor Dome 5 W max Outdoor Dome 8 W max Bullet 9 W max
Power Source*	PoE: IEEE802.3af Class 3 compliant
RTC Backup Battery	3V manganese lithium

* When powered with some models of PoE++ injectors, the injectors may not power the camera correctly.

ENVIRONMENTAL

Operating Temperature	Indoor Dome 0 °C to +60 °C (32 °F to 140 °F) Bullet and Outdoor Dome -30 °C to +60 °C (-22 °F to 140 °F)
Storage Temperature	-10 °C to +70 °C (14 °F to 158 °F)
Humidity	0 - 95% non-condensing

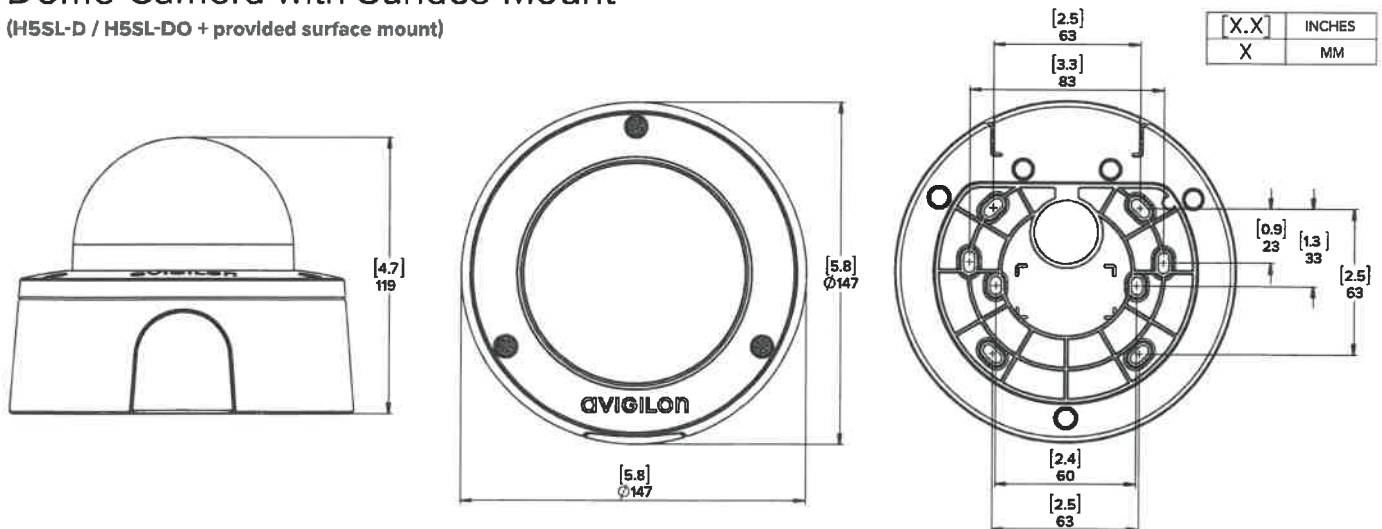
CERTIFICATIONS

Certifications/Directives	UL, cUL, CE, ROHS, RCM, EAC, BIS, KC
Safety	UL 62368-1, CSA 62368-1, IEC/EN 62368-1, IEC 62471
Environmental	Bullet IEC 62262 IK10 Impact Rating, UL/CSA/IEC 60950-22, IEC 60529 IP66 and IP67 Weather Rating Outdoor Dome IEC 62262 IK10 Impact Rating, UL/CSA/IEC 60950-22, IEC 60529 IP66 and IP67 Weather Rating
Electromagnetic Emissions	FCC Part 15 Subpart B Class B, IC ICES-003 Class B, EN 55032 Class B, EN 61000-6-3, EN 61000-3-2, EN 61000-3-3
Electromagnetic Immunity	EN 55024, EN 61000-6-1
Industrial EMC	EN 50130-4, EN 50121-4

Outline Dimensions

Dome Camera with Surface Mount

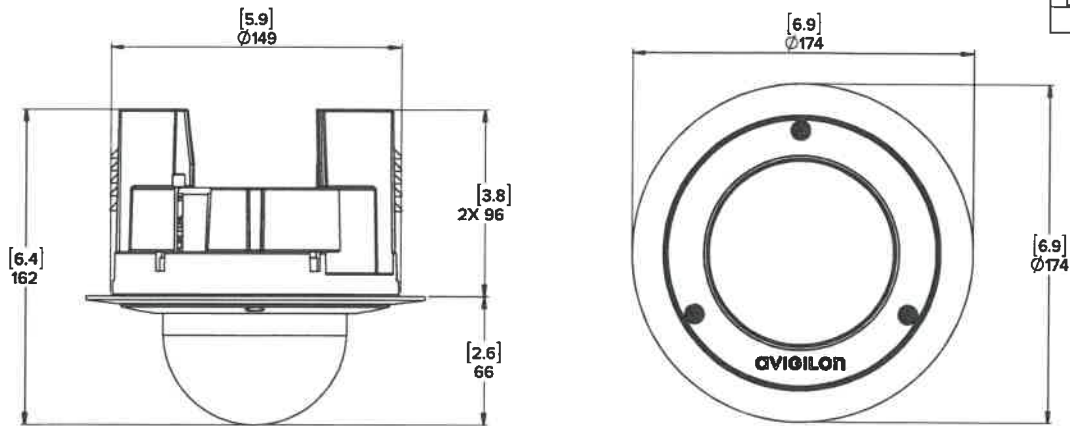
(H5SL-D / H5SL-DO + provided surface mount)



Outline Dimensions (Con't)

Dome Camera with In-Ceiling Mount

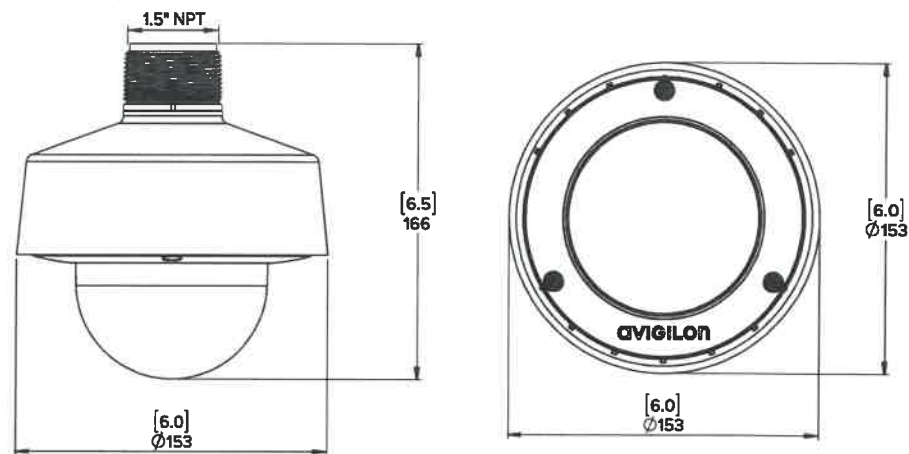
(H5SL-D/H5SL-DO + H4SL-MT-DCIL)



[X.X]	INCHES
X	MM

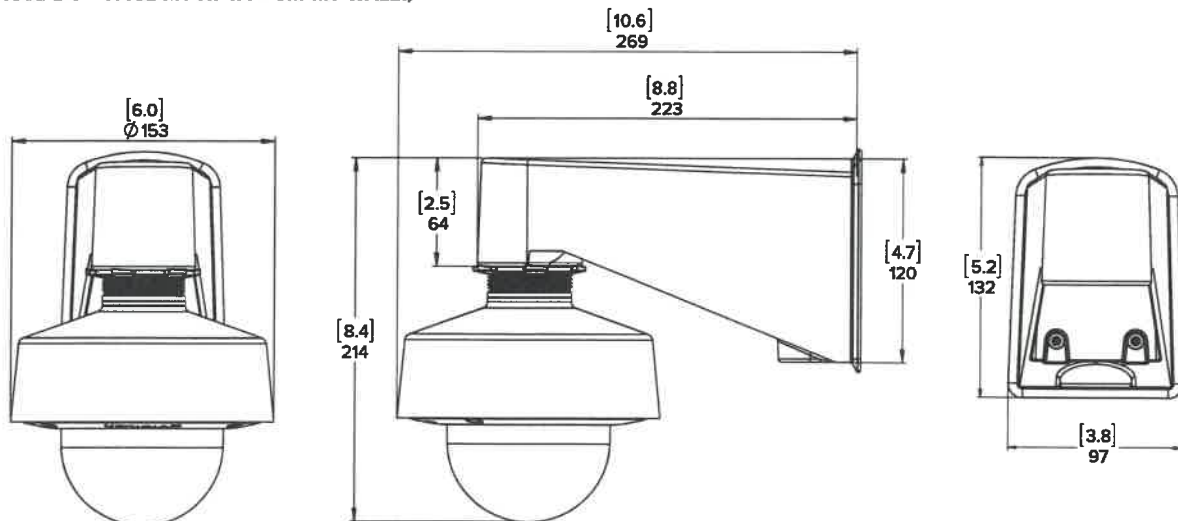
Dome Camera with NPT Adapter

(H5SL-D/H5SL-DO + H4SL-MT-NPTA)



Dome Camera with NPT Adapter and Pendant Wall Mount

(H5SL-D/H5SL-DO + H4SL-MT-NPTA + CM-MT-WALL1)

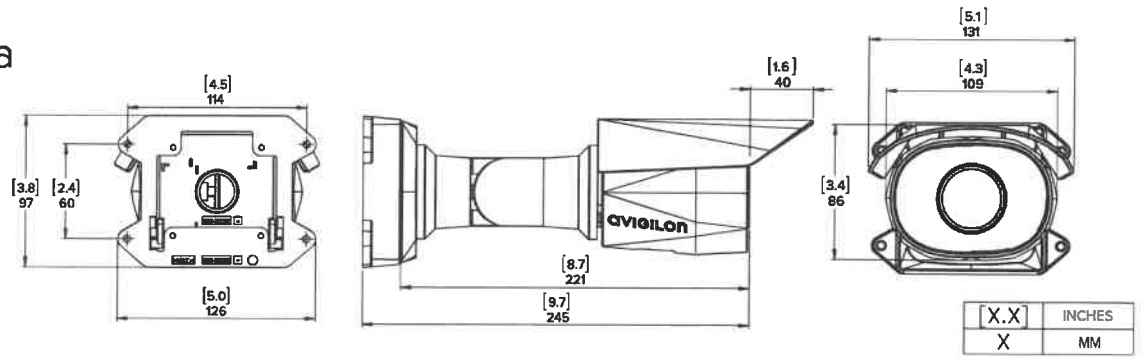


Outline Dimensions (Con't)

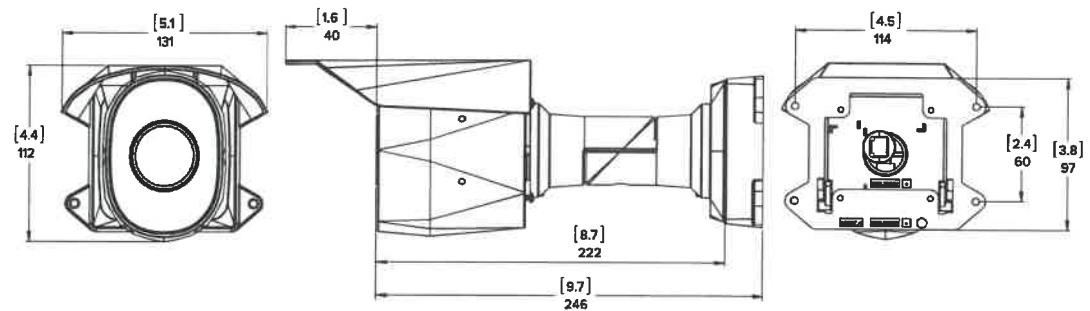
Bullet Camera

(H5SL-BO-IR)

LANDSCAPE MODE

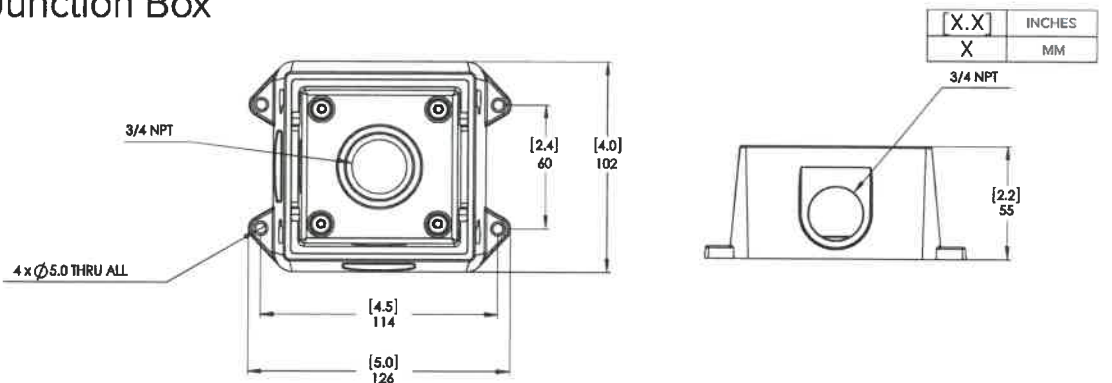


HALLWAY MODE



Bullet Camera Junction Box

(H4-BO-JBOX1)



Ordering Information (Bullet)

	MP	WDR	LightCatcher Technology	Lens	IR	IP66/IP67	HDSM SmartCodec
1.3C-H5SL-BO1-IR	1.3	✓	✓	3.1 - 8.4 mm	✓	✓	✓
2.0C-H5SL-BO1-IR	2.0	✓	✓	3.1 - 8.4 mm	✓	✓	✓
3.0C-H5SL-BO1-IR	3.0	✓	✓	3.1 - 8.4 mm	✓	✓	✓
3.0C-H5SL-BO2-IR	3.0	✓	✓	9.5 - 31 mm	✓	✓	✓
5.0C-H5SL-BO1-IR	5.0	✓	✓	3.1 - 8.4 mm	✓	✓	✓
5.0C-H5SL-BO2-IR	5.0	✓	✓	9.5 - 31 mm	✓	✓	✓

H4-BO-JBOX1	Junction box for H5SL, H4SL, and H4 HD bullet cameras
H4-MT-POLE1	Aluminum pole mounting bracket
H4-MT-CRNR1	Aluminum corner mounting bracket
H4-AC-WIFI2-NA / H4-AC-WIFI2-EU	USB WiFi adapter

Ordering Information (Dome)

The variety of mounting options for the H5SL dome camera provides maximum flexibility. All the available camera modules can be used in any of the mounting options.

MOUNTING SCENARIO

ORDERING INFORMATION

SURFACE MOUNT



- Order one of:
- Camera

IN-CEILING MOUNT



- Order one of:
- Camera
 - H4SL-MT-DCIL1
 - Optional, H4-DC-CPNL1 if ceiling panel needed

PENDANT NPT MOUNT



- Order one of:
- Camera
 - H4SL-MT-NPTA1

PENDANT WALL MOUNT



- Order one of:
- Camera
 - H4SL-MT-NPTA1
 - CM-MT-WALL1
 - Optional, H4-MT-POLE1 or H4-MT-CRNR1 if pole or corner mount needed

	MP	WDR	LightCatcher Technology	Lens	IR	IP66/IP67	HDSM SmartCodec
1.3C-H5SL-D1	1.3	✓	✓	3 - 9 mm			✓
1.3C-H5SL-D1HR	1.3	✓	✓	3 - 9 mm	✓		✓
1.3C-H5SL-DO1HR	1.3	✓	✓	3.1 - 8.4 mm	✓	✓	✓
2.0C-H5SL-D1	2.0	✓	✓	3 - 9 mm			✓
2.0C-H5SL-D1HR	2.0	✓	✓	3 - 9 mm	✓		✓
2.0C-H5SL-DO1HR	2.0	✓	✓	3.1 - 8.4 mm	✓	✓	✓
3.0C-H5SL-D1	3.0	✓	✓	3 - 9 mm			✓
3.0C-H5SL-D1HR	3.0	✓	✓	3 - 9 mm	✓		✓
3.0C-H5SL-DO1HR	3.0	✓	✓	3.1 - 8.4 mm	✓	✓	✓
5.0C-H5SL-D1	5.0	✓	✓	3.1 - 8.4 mm			✓
5.0C-H5SL-D1HR	5.0	✓	✓	3.1 - 8.4 mm	✓		✓
5.0C-H5SL-DO1HR	5.0	✓	✓	3.1 - 8.4 mm	✓	✓	✓

H4SL-MT-DCIL1	In-celling mounting adapter for the H5SL and H4SL dome camera
H4SL-MT-NPTA1	NPT adapter for the H5SL and H4SL dome camera
CM-MT-WALL1	Pendant wall mount
H4-DC-CPNL1	Metal ceiling panel
H4-MT-POLE1	Aluminum pole mounting bracket
H4-MT-CRNR1	Aluminum corner mounting bracket
H4-AC-WIFI2-NA / H4-AC-WIFI2-EU	USB Wi-Fi adapter
H4SL-DD-SMOK1	Replacement outdoor smoke dome cover
H4SL-DD-CLER1	Replacement outdoor clear dome cover
H4SL-DI-SMOK1	Replacement indoor smoke dome cover
H4SL-DI-CLER1	Replacement indoor clear dome cover
H4SL-DO1-BASE	Replacement outdoor surface mount adapter
H4SL-DI-BASE	Replacement indoor surface mount adapter

H4 Multisensor Camera Line

The H4 Multisensor camera line combines Avigilon self-learning video analytics with exceptional coverage, featuring 3 or 4 individually configurable camera sensors that can be positioned to monitor virtually any area. With up to 32 MP effective resolution, the H4 Multisensor can provide the image quality needed to cover larger areas with excellent detail. Combining support for H.265 video compression along with Avigilon's HDSM SmartCodec™ technology, the H4 Multisensor camera has the ability to maintain high-image quality with less bandwidth and storage requirements.



With self-learning video analytics on board, the H4 Multisensor camera can detect and differentiate people and vehicles from regular motion, and notify operators of potentially critical events that may need further investigation. Featuring wide dynamic range, Avigilon LightCatcher™ technology and the option to add content adaptive IR to outdoor models, the H4 Multisensor camera can provide exceptional image quality in challenging lighting conditions.

KEY FEATURES AND BENEFITS

- Self-learning video analytics on all sensors
- Increased range of sensor positioning
- High efficiency video encoding using H.265
- Up to 32 MP total resolution
- Wide Dynamic Range and LightCatcher technology on all resolutions
- IP66 and IK10 rated on outdoor models
- Avigilon's HDSM SmartCodec technology
- Content Adaptive IR Technology up to 30m (98ft)
- Interchangeable Camera Mounts

	3-Sensor Model			4-Sensor Model		
Total Resolution	9 MP	15 MP	24 MP	12 MP	20 MP	32 MP
Max Coverage	180°–270°			360°		

Specifications

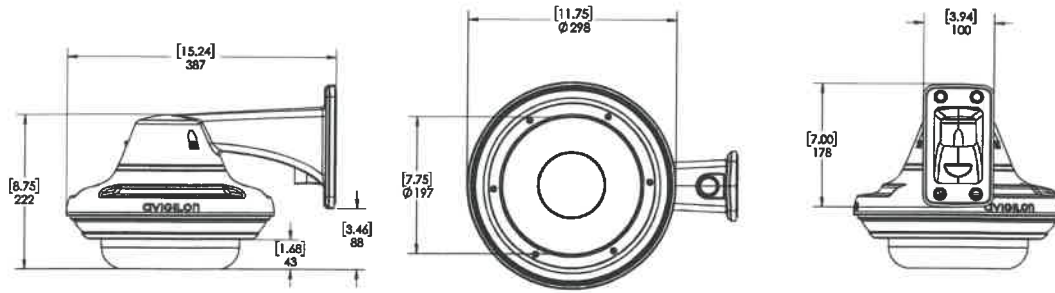
		3.0 MP	5.0 MP	4K (8.0 MP)	
IMAGE PERFORMANCE (per image sensor)	Image Sensor	1/2.8" progressive scan CMOS	1/2.8" progressive scan CMOS	1/2.5" progressive scan CMOS	
	Active Pixels	2048 (H) × 1536 (V)	2592 × 1944	3840 × 2160	
	3 × image sensor, max resolution	6144 (H) × 1536 (V)	7776 × 1944	11520 × 2160	
	4 × image sensor, max resolution	8192 (H) × 1536 (V)	10368 × 1944	15360 × 2160	
	Aspect ratio	4:3	4:3	16:9	
	IR Illumination - Optional (high power 850 nm LEDs)	30m (98 ft) maximum distance at 0 lux			
	Minimum Illumination	2.8mm: 0.025 lux (F1.2) in color mode 0.005 lux (F1.2) in mono mode 0 lux with optional IR illuminator		0.2 lux (F1.8) in color mode 0.04 lux (F1.8) in mono mode 0 lux with optional IR illuminator	
		4mm: 0.05 lux (F1.6) in color mode 0.010 lux (F1.6) in mono mode 0 lux with optional IR illuminator			
	Dynamic Range	100 dB, true WDR, dual exposure			
	3D Noise Reduction Filter	Yes	Yes	Yes	
	Image Rate—Analytics Enabled on All Sensors				
	3x Image Sensor (60 Hz/50 Hz)	24 / 25 fps	15 / 17 fps	12 / 13 fps	
4x Image Sensor (60 Hz/50 Hz)	20 / 20 fps	13 / 13 fps	8 / 8 fps		
Image Rate—High Framerate Mode					
3x Image Sensor (60 Hz/50 Hz)	30 / 25 fps	20 / 20 fps	15 / 14 fps		
4x Image Sensor (60 Hz/50 Hz)	20 / 20 fps	15 / 14 fps	10 / 10 fps		
LENS (per image sensor)	Lens and Horizontal Field of View	2.8mm f1.2 – 103° 4mm f1.6 – 72° Remote focus	2.8mm f1.2 – 103° 4mm f1.6 – 72° Remote focus	4mm f1.8 – 101° 5.2mm f1.8 – 70° Remote focus	
	Image Compression Method	H.264 HDSM SmartCodec, H.265 HDSM SmartCodec, Motion JPEG			
	Streaming	Multi-stream H.264, Multi-stream H.265, Motion JPEG			
	Motion Detection	Selectable sensitivity and threshold			
Electronic Shutter Control	Automatic, Manual (1/8 to 1/8000 sec)				
Iris Control	Fixed				
Day/Night Control	Automatic, Manual				
Flicker Control	60 Hz, 50 Hz				
White Balance	Automatic, Manual				
Backlight Compensation	Adjustable				
Privacy Zones	Up to 64 zones				
Audio Compression Method	G.711 PCM 8 kHz				
Audio Input/Output	Line level input and output				
External I/O Terminals	Alarm In, Alarm Out				
NETWORK	Network	Gigabit Ethernet, 1000BASE-TX			
	Cabling Type	CAT5E			
	Connector	RJ-45			
	API	ONVIF® compliance Profile S and Profile T (www.onvif.org)			
	Security	Password protection, HTTPS encryption, digest authentication, WS authentication, user access log, 802.1x port based authentication			
	Protocol	IPv4, IPv6, HTTP, HTTPS, SOAP, DNS, NTP, RTSP, RTCP, RTP, TCP, UDP, IGMP, ICMP, DHCP, Zeroconf, ARP			
	Streaming Protocols	RTP/UDP, RTP/UDP multicast, RTP/RTSP/TCP, RTP/RTSP/HTTP/TCP, RTP/RTSP/HTTPS/TCP, HTTP			
	Device Management Protocols	SNMP v2c, SNMP v3			
	PERIPHERALS	USB Port	USB 2.0		
		Onboard Storage	MicroSD/microSDHC/microSDXC slot – class 10/UHS-1 or better recommended		

Specifications

		IN-CEILING MOUNT	SURFACE MOUNT	PENDANT MOUNT
MECHANICAL	Dimension	Ø299 mm × 163 mm (Ø11.77" × 6.42"), below mounting surface: Ø299 mm × 76 mm (Ø11.77" × 2.99")	Ø299 mm × 115 mm (11.77" × 4.53")	With wall arm: 385 mm × 262 mm × 299 mm (15.15" × 10.30" × 11.77") With NPT adapter: Ø299 mm × 248 mm (Ø11.77" × 9.76")
	Weight	5.2 kg (11.5 lbs)	With IR: 7 kg (15.4 lbs) Without IR: 5.8 kg (12.8 lbs)	With wall arm and IR: 8.4 kg (18.5 lbs) With wall arm only: 7.3 kg (16.1 lbs) With NPTA adapter and IR: 7.8 kg (17.2 lbs) With NPTA adapter only: 6.7 kg (14.8 lbs)
	Body	Aluminum, Plastic dome trim	Aluminum	Aluminum
	Finish	Plastic, cool grey	Powder coat, cool grey	Powder coat, cool grey
	Environmental	Not applicable		IK10 Impact Rating and IP66 Weather Rating
	Optional IR Illuminator Ring	Not available		Optional accessory, 30m (98 ft) IR range
PER SENSOR	Tilt	+7° to 96° from horizon		
	Pan	+/-120° (depending on position of image sensors)		
	Azimuth	+/-180°		
ELECTRICAL	Power Consumption	26 W with 24 VDC 37 VA with 24 VAC POE+	With IR: 52 W with 24 VDC 74 VA with 24 VAC POE++ or 60W POE* Without IR: 26 W with 24 VDC 37 VA with 24 VAC POE+	With IR: 52 W with 24 VDC 74 VA with 24 VAC POE++ or 60W POE* Without IR: 26 W with 24 VDC 37 VA with 24 VAC POE+
	External Power	24 VDC ± 10%; 24 VAC rms ± 10%, 50 or 60Hz		
	PoE*	25.5W PoE+, IEEE 802.3at Type 2 PoE Plus	With IR: High Power 51W PoE++* Without IR: 25.5W PoE+, IEEE 802.3at Type 2 PoE Plus	
		* High power PoE may not be compatible with all switches or injectors. High power PoE is compatible with Cisco® UPoE, up to 60 W over 4 pairs, or with the high PoE products listed in the Accessories section. Contact Avigilon sales or Avigilon technical support for more information.		
ENVIRONMENTAL	Operating Temperature Range	-10 °C (14 °F) to 50 °C (122 °F)		-40 °C (-40 °F) to 60 °C (140 °F)
	Storage Temperature	-10 °C to 70 °C (14 °F to 158 °F)		
	Humidity	0-95% non-condensing		
CERTIFICATIONS	Certifications	UL, cUL, CE, ROHS, WEEE, RCM, EAC, BIS, KC		
	Safety	UL 62368-1, CSA 62368-1, IEC/EN 62368-1		
	Environmental	UL 2043 Plenum	UL/CSA/IEC 60950-22 IEC 60529 IP66 Rating, IK10 Impact Rating, IEC 60068-2-6 IEC 60068-2-27 Vibration and Shock	
	Electromagnetic Emissions	FCC Part 15 Subpart B Class B, IC ICES-003 Class B, EN 55032 Class B, EN 61000-6-3, EN 61000-3-2, EN 61000-3-3, EN 50121-4 (when used with CM-AC-FERR1 on aux power)		
	Electromagnetic Immunity	EN 55024, EN 61000-6-1		
	Directives	RoHS, Reach (SVHC), WEEE		
SUPPORTED RULE BASED VIDEO ANALYTIC EVENTS (PER SENSOR)	Objects in Area	The event is triggered when the selected object type moves into the region of interest.		
	Object Loitering	The event is triggered when the selected object type stays within the region of interest for an extended amount of time.		
	Objects Crossing Beam	The event is triggered when the specified number of objects have crossed the directional beam that is configured over the camera's field of view. The beam can be unidirectional or bidirectional.		
	Object Appears or Enters Area	The event is triggered by each object that enters the region of interest. This event can be used to count objects.		
	Object Not Present in Area	The event is triggered when no objects are present in the region of interest.		
	Objects Enter Area	The event is triggered when the specified number of objects have entered the region of interest.		
	Objects Leave Area	The event is triggered when the specified number of objects have left the region of interest.		
	Object Stops in Area	The event is triggered when an object in a region of interest stops moving for the specified threshold time.		
	Direction Violated	The event is triggered when an object moves in the prohibited direction of travel.		
	Tamper Detection	The event is triggered when the scene unexpectedly changes.		

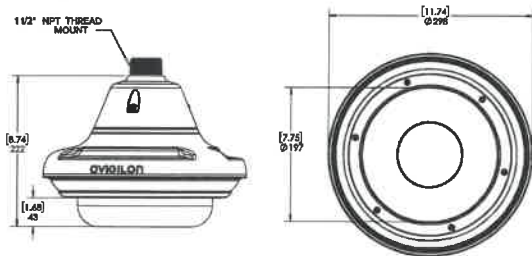
Outline Dimensions

Pendant Wall Mount

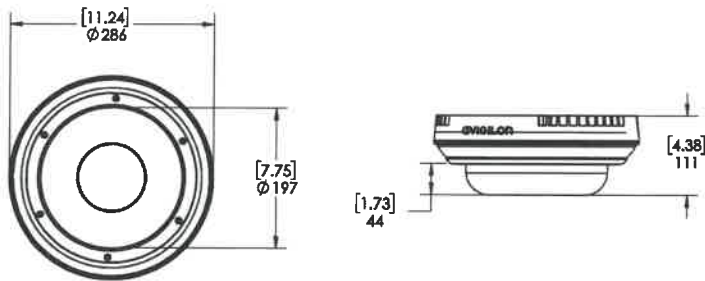


[X.X]	INCHES
X	MM

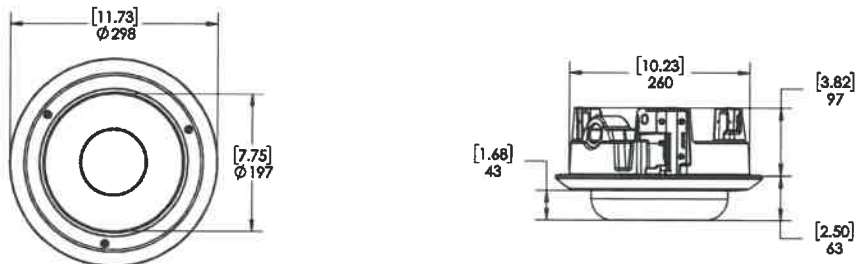
Pendant NPT Mount



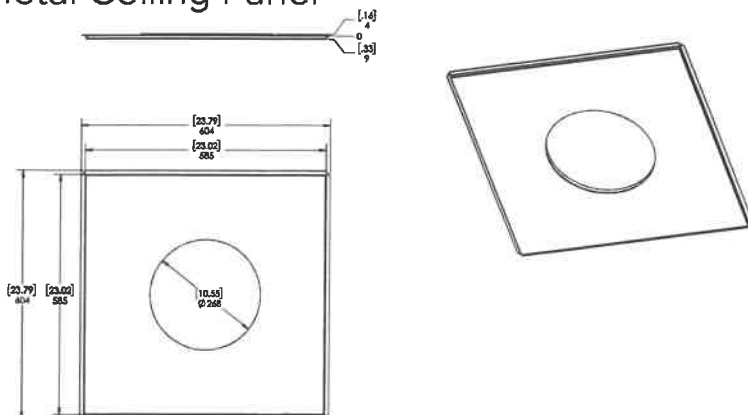
Surface Mount



In-ceiling Mount



Metal Ceiling Panel



Ordering Information

The variety of mounting options for the H4 Multisensor provides maximum flexibility. All the available camera modules can be used in any of the mounting options.

MOUNTING SCENARIO ORDERING INFORMATION

PENDANT WALL MOUNT



- Order one of:
- Camera module
 - H4AMH-AD-PEND1
 - H4AMH-DO-COVR1 or H4AMH-DO-COVR1-SMOKE
 - IRPTZ-MNT-WALL1
 - Optional, H4AMH-AD-IRIL

PENDANT NPT MOUNT



- Order one of:
- Camera module
 - H4AMH-AD-PEND1
 - H4AMH-DO-COVR1 or H4AMH-DO-COVR1-SMOKE
 - IRPTZ-MNT-NPTA1
 - Optional, H4AMH-AD-IRIL1

SURFACE MOUNT



- Order one of:
- Camera module
 - H4AMH-AD-DOME1
 - H4AMH-DO-COVR1 or H4AMH-DO-COVR1-SMOKE
 - Optional, H4AMH-AD-IRIL1

IN-CEILING MOUNT



- Order one of:
- Camera module
 - H4AMH-AD-CEIL1
 - H4AMH-DC-COVR1 or H4AMH-DC-COVR1-SMOKE
 - Optional, H4AMH-DC-CPNL1 if ceiling panel needed

Camera Modules

With the modular design of the H4 Multisensor, any camera module can be paired with any mounting adapter for maximum versatility and optimal installation. Each camera module must be ordered with a matching mounting adapter and dome cover.

DISPLAY PART NUMBER	DESCRIPTION
9C-H4A-3MH-270	3×3 MP, WDR, LightCatcher, 2.8mm, Camera Only
9C-H4A-3MH-180	3×3 MP, WDR, LightCatcher, 4mm, Camera Only
15C-H4A-3MH-270	3×5 MP, WDR, LightCatcher, 2.8mm, Camera Only
15C-H4A-3MH-180	3×5 MP, WDR, LightCatcher, 4mm, Camera Only
24C-H4A-3MH-270	3×4K (8 MP), WDR, LightCatcher, 4mm, Camera Only
24C-H4A-3MH-180	3×4K (8 MP), WDR, LightCatcher, 5.2mm, Camera Only
12C-H4A-4MH-360	4×3 MP, WDR, LightCatcher, 2.8mm, Camera Only
20C-H4A-4MH-360	4×5 MP, WDR, LightCatcher, 2.8mm, Camera Only
32C-H4A-4MH-360	4×4K (8 MP), WDR, LightCatcher, 4mm, Camera Only

Mounting Adapters and Dome Covers

The H4 Multisensor modular design provides pendant, surface, or in ceiling mounting adapters and a choice of two dome covers compatible with all the H4 Multisensor camera modules.

DISPLAY PART NUMBER	DESCRIPTION
H4AMH-AD-DOME1	Outdoor surface mount adapter, must order either a H4AMH-DO-COVR1 or H4AMH-DO-COVR1-SMOKE.
H4AMH-AD-PEND1	Outdoor pendant mount adapter, must order one of IRPTZ-MNT-WALL1 or IRPTZ-MNT-NPTA1 and one of H4AMH-DO-COVR1 or H4AMH-DO-COVR1-SMOKE.
IRPTZ-MNT-WALL1	Pendant wall arm adapter, for use with H4AMH-AD-PEND1 or H4 IRPTZ.
IRPTZ-MNT-NPTA1	Pendant NPT adapter for use with H4AMH-AD-PEND1 or H4 IRPTZ.
H4-MT-POLE1	Aluminum pole mounting bracket for H4 pendant style cameras or H4 HD bullet cameras.
H4-MT-CRNR1	Aluminum corner mounting bracket for H4 pendant style cameras or H4 HD bullet cameras.
H4AMH-AD-CEIL1	In-ceiling adapter, must order either a H4AMH-DC-COVR1 or H4AMH-DC-COVR1-SMOKE.
H4AMH-DO-COVR1	Dome bubble end cover, for outdoor surface mount or pendant mount, clear.
H4AMH-DO-COVR1-SMOKE	Dome bubble end cover, for outdoor surface mount or pendant mount, smoked. Not recommended for lowlight applications.
H4AMH-DC-COVR1	Dome bubble and cover, for in-ceiling mount, clear.
H4AMH-DC-COVR1-SMOKE	Dome bubble and cover, for in-ceiling mount, smoked. Not recommended for lowlight applications.
H4AMH-DC-CPNL1	Metal ceiling panel.

Optional IR Illuminator

The optional IR illuminator is available for the H4 Multisensor when mounted in a pendant or surface mount adapter.

DISPLAY PART NUMBER	DESCRIPTION
H4AMH-AD-IRIL1	Optional IR illuminator ring, up to 30m (100ft), for use with H4AMH-DO-COVR1.

Optional Injectors and Switches

DISPLAY PART NUMBER	DESCRIPTION
ES-PS-S4	Managed switch, 5 port, Outdoor IP66, -40°C (-40°F) to 50°C (122°C), Gigabit Ethernet, AC power input. 1x SFP uplink and 4 port RJ45. Maximum PoE power allocation: Up to 4 ports of PoE+ each, or 2 ports of 60W PoE each. In 60W PoE mode, compatible with H4 PTZ, H4 IR PTZ and H4 Multisensor.
ES-PS-MNT-POLE1	Pole mount bracket for ES-PS-S4 switch.
POE-INJ2-60W-NA	Indoor single port Gigabit PoE++ 60W, North American power cord included. May also be used in European Union, Japan, Australia, New Zealand, Mexico, China, South Korea, Russia, Argentina, Saudi Arabia, Kuwait, UAE and Brazil. Temperature range of the PoE injector is -10 °C to +45 °C (14 °F to 113 °F). When used with the H4 IR PTZ, the camera will operate in a reduced temperature range from -10 °C to +50 °C (14 °F to 122 °F).
POE-INJ2-PLUS	Indoor single port PoE+ injector. Injector operational temperature range -20°C to +40°C (-4°F to 104°F).

Miscellaneous Accessories

DISPLAY PART NUMBER	DESCRIPTION
CM-AC-FERR1	Ferrite clamp for use with aux power cable when meeting EN 50121-4 requirements. Pack of 5.

H4 Multisensor Camera Line

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- Self-learning video analytics on all sensors
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- Up to 32 MP total resolution
- Wide Dynamic Range and LightCatcher technology on all resolutions
- IP66 and IK10 rated on outdoor models
- Avigilon's HDSM SmartCodec technology
- Content Adaptive IR Technology up to 30m (98ft)
- Interchangeable Camera Mounts

	3-Sensor Model			4-Sensor Model		
Total Resolution	9 MP	15 MP	24 MP	12 MP	20 MP	32 MP
Max Coverage	180°–270°			360°		

Specifications

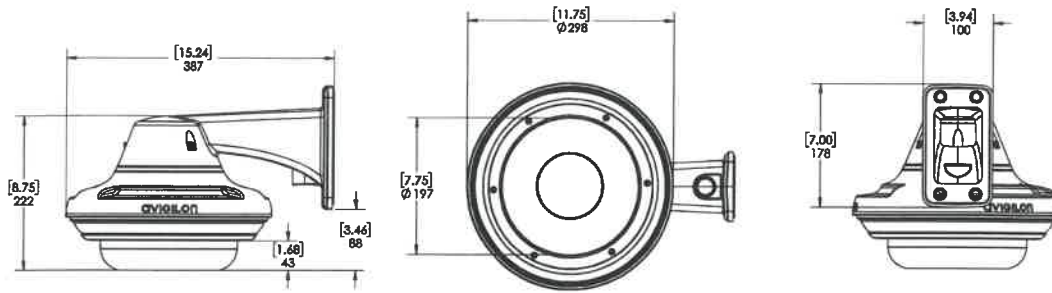
		3.0 MP	5.0 MP	4K (8.0 MP)
IMAGE PERFORMANCE (per image sensor)	Image Sensor	1/2.8" progressive scan CMOS	1/2.8" progressive scan CMOS	1/2.5" progressive scan CMOS
	Active Pixels	2048 (H) × 1536 (V)	2592 × 1944	3840 × 2160
	3 × image sensor, max resolution	6144 (H) × 1536 (V)	7776 × 1944	11520 × 2160
	4 × image sensor, max resolution	8192 (H) × 1536 (V)	10368 × 1944	15360 × 2160
	Aspect ratio	4:3	4:3	16:9
	IR Illumination - Optional (high power 850 nm LEDs)	30m (98 ft) maximum distance at 0 lux		
	Minimum Illumination	2.8mm: 0.025 lux (F1.2) in color mode 0.005 lux (F1.2) in mono mode 0 lux with optional IR illuminator		0.2 lux (F1.8) in color mode 0.04 lux (F1.8) in mono mode 0 lux with optional IR illuminator
		4mm: 0.05 lux (F1.6) in color mode 0.010 lux (F1.6) in mono mode 0 lux with optional IR illuminator		
	Dynamic Range	100 dB, true WDR, dual exposure		
	3D Noise Reduction Filter	Yes	Yes	Yes
	Image Rate—Analytics Enabled on All Sensors			
	3x Image Sensor (60 Hz/50 Hz)	24 / 25 fps	15 / 17 fps	12 / 13 fps
	4x Image Sensor (60 Hz/50 Hz)	20 / 20 fps	13 / 13 fps	8 / 8 fps
Image Rate—High Framerate Mode				
3x Image Sensor (60 Hz/50 Hz)	30 / 25 fps	20 / 20 fps	15 / 14 fps	
4x Image Sensor (60 Hz/50 Hz)	20 / 20 fps	15 / 14 fps	10 / 10 fps	
LENS (per image sensor)	Lens and Horizontal Field of View	2.8mm f1.2 – 103° 4mm f1.6 – 72° Remote focus	2.8mm f1.2 – 103° 4mm f1.6 – 72° Remote focus	4mm f1.8 – 101° 5.2mm f1.8 – 70° Remote focus
	Image Compression Method	H.264 HDSM SmartCodec, H.265 HDSM SmartCodec, Motion JPEG		
	Streaming	Multi-stream H.264, Multi-stream H.265, Motion JPEG		
Motion Detection	Selectable sensitivity and threshold			
Electronic Shutter Control	Automatic, Manual (1/8 to 1/8000 sec)			
Iris Control	Fixed			
Day/Night Control	Automatic, Manual			
Flicker Control	60 Hz, 50 Hz			
White Balance	Automatic, Manual			
Backlight Compensation	Adjustable			
Privacy Zones	Up to 64 zones			
Audio Compression Method	G.711 PCM 8 kHz			
Audio Input/Output	Line level input and output			
External I/O Terminals	Alarm In, Alarm Out			
NETWORK	Network	Gigabit Ethernet, 1000BASE-TX		
	Cabling Type	CAT5E		
	Connector	RJ-45		
	API	ONVIF® compliance Profile S and Profile T (www.onvif.org)		
	Security	Password protection, HTTPS encryption, digest authentication, WS authentication, user access log, 802.1x port based authentication		
	Protocol	IPv4, IPv6, HTTP, HTTPS, SOAP, DNS, NTP, RTSP, RTCP, RTP, TCP, UDP, IGMP, ICMP, DHCP, Zeroconf, ARP		
	Streaming Protocols	RTP/UDP, RTP/UDP multicast, RTP/RTSP/TCP, RTP/RTSP/HTTP/TCP, RTP/RTSP/HTTPS/TCP, HTTP		
	Device Management Protocols	SNMP v2c, SNMP v3		
	PERIPHERALS	USB Port	USB 2.0	
Onboard Storage		MicroSD/microSDHC/microSDXC slot – class 10/UHS-1 or better recommended		

Specifications

		IN-CEILING MOUNT	SURFACE MOUNT	PENDANT MOUNT
MECHANICAL	Dimension	Ø299 mm × 163 mm (Ø11.77" × 6.42"), below mounting surface: Ø299 mm × 76 mm (Ø11.77" × 2.99")	Ø299 mm × 115 mm (11.77" × 4.53")	With wall arm: 385 mm × 262 mm × 299 mm (15.15" × 10.30" × 11.77") With NPT adapter: Ø299 mm × 248 mm (Ø11.77" × 9.76")
	Weight	5.2 kg (11.5 lbs)	With IR: 7 kg (15.4 lbs) Without IR: 5.8 kg (12.8 lbs)	With wall arm and IR: 8.4 kg (18.5 lbs) With wall arm only: 7.3 kg (16.1 lbs) With NPTA adapter and IR: 7.8 kg (17.2 lbs) With NPTA adapter only: 6.7 kg (14.8 lbs)
	Body	Aluminum, Plastic dome trim	Aluminum	Aluminum
	Finish	Plastic, cool grey	Powder coat, cool grey	Powder coat, cool grey
	Environmental	Not applicable		IK10 Impact Rating and IP66 Weather Rating
	Optional IR Illuminator Ring	Not available		Optional accessory, 30m (98 ft) IR range
PER SENSOR	Tilt	+7° to 96° from horizon		
	Pan	+/-120° (depending on position of image sensors)		
	Azimuth	+/-180°		
ELECTRICAL	Power Consumption	26 W with 24 VDC 37 VA with 24 VAC POE+	With IR: 52 W with 24 VDC 74 VA with 24 VAC POE++ or 60W POE* Without IR: 26 W with 24 VDC 37 VA with 24 VAC POE+	With IR: 52 W with 24 VDC 74 VA with 24 VAC POE++ or 60W POE* Without IR: 26 W with 24 VDC 37 VA with 24 VAC POE+
	External Power	24 VDC ± 10%; 24 VAC rms ± 10%, 50 or 60Hz		
	PoE*	25.5W PoE+, IEEE 802.3at Type 2 PoE Plus	With IR: High Power 51W PoE++* Without IR: 25.5W PoE+, IEEE 802.3at Type 2 PoE Plus	
		* High power PoE may not be compatible with all switches or injectors. High power PoE is compatible with Cisco® UPoE, up to 60 W over 4 pairs, or with the high PoE products listed in the Accessories section. Contact Avigilon sales or Avigilon technical support for more information.		
ENVIRONMENTAL	Operating Temperature Range	-10 °C (14 °F) to 50 °C (122 °F)		-40 °C (-40 °F) to 60 °C (140 °F)
	Storage Temperature	-10 °C to 70 °C (14 °F to 158 °F)		
	Humidity	0-95% non-condensing		
CERTIFICATIONS	Certifications	UL, cUL, CE, ROHS, WEEE, RCM, EAC, BIS, KC		
	Safety	UL 62368-1, CSA 62368-1, IEC/EN 62368-1		
	Environmental	UL 2043 Plenum	UL/CSA/IEC 60950-22 IEC 60529 IP66 Rating, IK10 Impact Rating, IEC 60068-2-6 IEC 60068-2-27 Vibration and Shock	
	Electromagnetic Emissions	FCC Part 15 Subpart B Class B, IC ICES-003 Class B, EN 55032 Class B, EN 61000-6-3, EN 61000-3-2, EN 61000-3-3, EN 50121-4 (when used with CM-AC-FERR1 on aux power)		
	Electromagnetic Immunity	EN 55024, EN 61000-6-1		
	Directives	RoHS, Reach (SVHC), WEEE		
SUPPORTED RULE BASED VIDEO ANALYTIC EVENTS (PER SENSOR)	Objects in Area	The event is triggered when the selected object type moves into the region of interest.		
	Object Loitering	The event is triggered when the selected object type stays within the region of interest for an extended amount of time.		
	Objects Crossing Beam	The event is triggered when the specified number of objects have crossed the directional beam that is configured over the camera's field of view. The beam can be unidirectional or bidirectional.		
	Object Appears or Enters Area	The event is triggered by each object that enters the region of interest. This event can be used to count objects.		
	Object Not Present in Area	The event is triggered when no objects are present in the region of interest.		
	Objects Enter Area	The event is triggered when the specified number of objects have entered the region of interest.		
	Objects Leave Area	The event is triggered when the specified number of objects have left the region of interest.		
	Object Stops in Area	The event is triggered when an object in a region of interest stops moving for the specified threshold time.		
	Direction Violated	The event is triggered when an object moves in the prohibited direction of travel.		
	Tamper Detection	The event is triggered when the scene unexpectedly changes.		

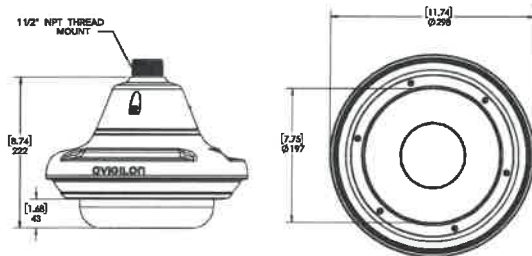
Outline Dimensions

Pendant Wall Mount

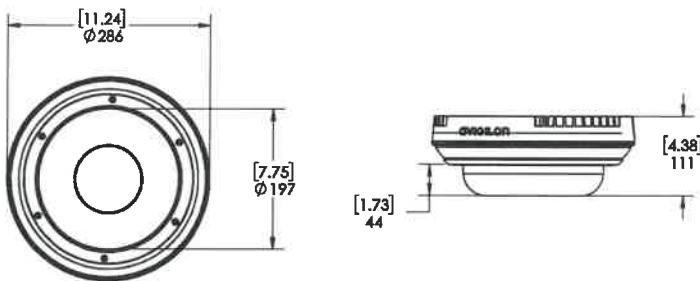


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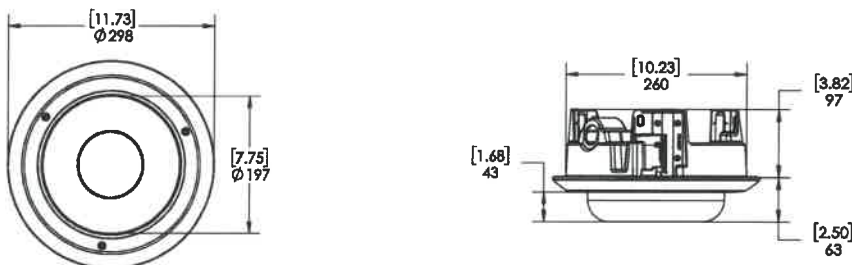
Pendant NPT Mount



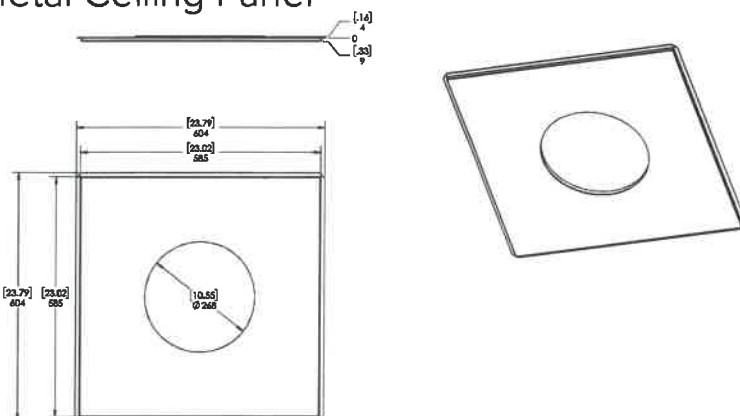
Surface Mount



In-ceiling Mount



Metal Ceiling Panel



Ordering Information

The variety of mounting options for the H4 Multisensor provides maximum flexibility. All the available camera modules can be used in any of the mounting options.

MOUNTING SCENARIO ORDERING INFORMATION

PENDANT WALL MOUNT



- Order one of:
- Camera module
 - H4AMH-AD-PEND1
 - H4AMH-DO-COVR1 or H4AMH-DO-COVR1-SMOKE
 - IRPTZ-MNT-WALL1
 - Optional, H4AMH-AD-IRIL1

PENDANT NPT MOUNT



- Order one of:
- Camera module
 - H4AMH-AD-PEND1
 - H4AMH-DO-COVR1 or H4AMH-DO-COVR1-SMOKE
 - IRPTZ-MNT-NPTA1
 - Optional, H4AMH-AD-IRIL1

SURFACE MOUNT



- Order one of:
- Camera module
 - H4AMH-AD-DOME1
 - H4AMH-DO-COVR1 or H4AMH-DO-COVR1-SMOKE
 - Optional, H4AMH-AD-IRIL1

IN-CEILING MOUNT



- Order one of:
- Camera module
 - H4AMH-AD-CEIL1
 - H4AMH-DC-COVR1 or H4AMH-DC-COVR1-SMOKE
 - Optional, H4AMH-DC-CPNL1 if ceiling panel needed

Camera Modules

With the modular design of the H4 Multisensor, any camera module can be paired with any mounting adapter for maximum versatility and optimal installation. Each camera module must be ordered with a matching mounting adapter and dome cover.

DISPLAY PART NUMBER	DESCRIPTION
9C-H4A-3MH-270	3×3 MP, WDR, LightCatcher, 2.8mm, Camera Only
9C-H4A-3MH-180	3×3 MP, WDR, LightCatcher, 4mm, Camera Only
15C-H4A-3MH-270	3×5 MP, WDR, LightCatcher, 2.8mm, Camera Only
15C-H4A-3MH-180	3×5 MP, WDR, LightCatcher, 4mm, Camera Only
24C-H4A-3MH-270	3×4K (8 MP), WDR, LightCatcher, 4mm, Camera Only
24C-H4A-3MH-180	3×4K (8 MP), WDR, LightCatcher, 5.2mm, Camera Only
12C-H4A-4MH-360	4×3 MP, WDR, LightCatcher, 2.8mm, Camera Only
20C-H4A-4MH-360	4×5 MP, WDR, LightCatcher, 2.8mm, Camera Only
32C-H4A-4MH-360	4×4K (8 MP), WDR, LightCatcher, 4mm, Camera Only

Mounting Adapters and Dome Covers

The H4 Multisensor modular design provides pendant, surface, or in ceiling mounting adapters and a choice of two dome covers compatible with all the H4 Multisensor camera modules.

DISPLAY PART NUMBER	DESCRIPTION
H4AMH-AD-DOME1	Outdoor surface mount adapter, must order either a H4AMH-DO-COVR1 or H4AMH-DO-COVR1-SMOKE.
H4AMH-AD-PEND1	Outdoor pendant mount adapter, must order one of IRPTZ-MNT-WALL1 or IRPTZ-MNT-NPTA1 and one of H4AMH-DO-COVR1 or H4AMH-DO-COVR1-SMOKE.
IRPTZ-MNT-WALL1	Pendant wall arm adapter, for use with H4AMH-AD-PEND1 or H4 IRPTZ.
IRPTZ-MNT-NPTA1	Pendant NPT adapter for use with H4AMH-AD-PEND1 or H4 IRPTZ.
H4-MT-POLE1	Aluminum pole mounting bracket for H4 pendant style cameras or H4 HD bullet cameras.
H4-MT-CRNR1	Aluminum corner mounting bracket for H4 pendant style cameras or H4 HD bullet cameras.
H4AMH-AD-CEIL1	In-ceiling adapter, must order either a H4AMH-DC-COVR1 or H4AMH-DC-COVR1-SMOKE.
H4AMH-DO-COVR1	Dome bubble and cover, for outdoor surface mount or pendant mount, clear.
H4AMH-DO-COVR1-SMOKE	Dome bubble and cover, for outdoor surface mount or pendant mount, smoked. Not recommended for lowlight applications.
H4AMH-DC-COVR1	Dome bubble and cover, for in-ceiling mount, clear.
H4AMH-DC-COVR1-SMOKE	Dome bubble and cover, for in-ceiling mount, smoked. Not recommended for lowlight applications.
H4AMH-DC-CPN1	Metal ceiling panel.

Optional IR Illuminator

The optional IR Illuminator is available for the H4 Multisensor when mounted in a pendant or surface mount adapter.

DISPLAY PART NUMBER	DESCRIPTION
H4AMH-AD-IRIL1	Optional IR illuminator ring, up to 30m (100ft), for use with H4AMH-DO-COVR1.

Optional Injectors and Switches

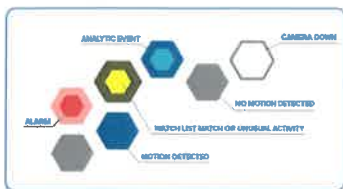
DISPLAY PART NUMBER	DESCRIPTION
ES-PS-S4	Managed switch, 5 port, Outdoor IP66, -40°C (-40°F) to 50°C (122°F), Gigabit Ethernet, AC power input. 1x SFP uplink and 4 port RJ45. Maximum PoE power allocation: Up to 4 ports of PoE+ each, or 2 ports of 60W PoE each. In 60W PoE mode, compatible with H4 PTZ, H4 IR PTZ and H4 Multisensor.
ES-PS-MNT-POLE1	Pole mount bracket for ES-PS-S4 switch.
POE-INJ2-60W-NA	Indoor single port Gigabit PoE++ 60W, North American power cord included. May also be used in European Union, Japan, Australia, New Zealand, Mexico, China, South Korea, Russia, Argentina, Saudi Arabia, Kuwait, UAE and Brazil. Temperature range of the PoE injector is -10 °C to +45 °C (14 °F to 113 °F). When used with the H4 IR PTZ, the camera will operate in a reduced temperature range from -10 °C to +50 °C (14 °F to 122 °F).
POE-INJ2-PLUS	Indoor single port POE+ injector. Injector operational temperature range -20°C to +40°C (-4°F to 104°F).

Miscellaneous Accessories

DISPLAY PART NUMBER	DESCRIPTION
CM-AC-FERR1	Ferrite clamp for use with aux power cable when meeting EN 50121-4 requirements. Pack of 5.

Avigilon Control Center™ 7 Software

Avigilon Control Center (ACC) software is an easy-to-use video management software that is designed to optimize the way security professionals manage and interact with high-definition video. It efficiently captures and stores HD video, while intelligently managing bandwidth and storage using our patented High Definition Stream Management (HDSM) technology. Version 7 of the software introduces an entirely new way to monitor live video through its Focus of Attention interface, enabling operators to see at a glance what is happening across the entire site and more effectively triage and respond to the most important events.



Focus of Attention Interface

Redefining live video monitoring, Focus of Attention helps increase operator effectiveness by providing an overview of events across all cameras in the site, including Avigilon analytic events, face and license plate watch list matches, Unusual Activity Detection (UAD) events, Unusual Motion Detection (UMD) events, motion events, and alarms. Operators can triage the most important events, reviewing associated video to determine if a response is required.



Facial Recognition Technology

Accelerate response times using AI-powered facial recognition technology to detect people of interest based on one or more secure watch lists managed by authorized users at the organization. Populate watch lists by uploading an image or finding a face from recorded video. Robust controls govern the accessibility and retention of watch list data. Avigilon cameras licensed for facial recognition will seek to identify potential matches based on watch lists, and if a match is found, the user is alerted through the Focus of Attention interface. For added security, create watch list alarms that trigger when any individual on the watch list is detected.



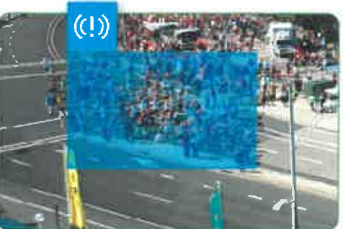
Avigilon Appearance Search™ Technology

A sophisticated AI search engine that enables investigators to sort through hours of recorded video with ease and quickly locate a person or vehicle of interest across an entire site. Search for a person or vehicle of interest by entering a physical description, or by finding an example in recorded video.



Next-Generation Analytics and Self-Learning Video Analytics

ACC™ video management software enables analytic events and alarms to be viewed and searched through an intuitive user interface. Real-time events and forensic capabilities detect and notify operators of scene changes and rules violations.



Unusual Activity and Unusual Motion Detection (UAD & UMD)

Advanced AI technology highlights the unanticipated by automatically flagging unusual activity and motion. Without any configuration, UMD detects atypical movement while UAD is object-aware and detects anomalous behavior (speed and location) of people and vehicles.

UAD H5A UMD H5SL H5M H4A H4SL H4 MINI DOME

Preinstalled on Avigilon Recorders and Appliances

ACC software is pre-installed and configured on Avigilon HD Video Appliances, Network Video Recorders (NVRs), NVR Workstations, ACC ES Recorders, ACC ES Analytics Appliances, ACC ES 8-Port Appliances and the H4ES camera line. You can also install the stand-alone ACC software to meet the needs of a wide variety of projects. Our NVRs come pre-installed with the NVR Analytics Kit to enable our patented Avigilon Appearance Search technology.



Avigilon Control Center Advanced Features



HDSM™ Technology

Intelligently manages HD image communications to optimize network bandwidth and workstation performance for even the highest resolution Avigilon cameras.



HDSM SmartCodec™ Technology Support

Automatically adjusts compression levels for regions in a scene, to optimize bandwidth while still maintaining image quality.



Avigilon Appearance Search Technology

Quickly search recorded video to find instances of a person or vehicle across all sites using cameras with Avigilon self-learning analytics. Search for a person by physical description, including clothing color, hair color, gender and age group. Search for a vehicle by physical description, including color and category - car, truck, bus, bicycle, and motorcycle.



Facial Recognition Technology

AI-powered facial recognition algorithms notify operators when a person of interest returns to a facility. Add a person to a face watch list by uploading a photo or from recorded video. Create watch list alarms or monitor the Focus of Attention interface to detect matches.



Intelligent Search

Powerful search tools enable you to quickly search recorded video for motion, the presence of classified objects (people or vehicles), background changes in the scene (thumbnail search), and for events.



Simple Camera and Server Installation

Plug-and-play capabilities for NVRs and cameras that automatically identify themselves on the network, without manual configuration or searching.



License Plate Recognition (LPR) Analytics

Second generation LPR analytics engine with easy configuration and improved accuracy for faster security response. Multiple license watch lists can trigger unique ACC rules when detecting a match.



ACM-ACC Interoperability

The Access Control Manager (ACM) system receives, processes, and acts on ACM™ door events, hardware input events, and access grants, enabling operators to unlock access doors directly from a camera view. Identity Verification enables users to see ACM system credentials dynamically displayed with ACC camera views. Identity Search enables users to visually verify access events, and initiate an Avigilon Appearance Search across the entire site for the same person.



Avigilon Cloud Services Web Client

Securely stream live and recorded video from firewall-protected ACC sites using a Chrome or Safari web browser. With no client installation required, this solution leverages Avigilon Cloud Services to support secure peer-to-peer connections to ACC servers.



ACC Mobile Software

Push alarm notifications, live and recorded video, two-way audio, self-learning video analytics overlays, digital output triggers, and PTZ control for Android™ and iOS mobile devices. Using Avigilon Cloud Services, log in to connected ACC sites without any complicated firewall configuration.



Video Archive

Retain and manage large amounts of video for on-demand retrieval and review. Extend your storage beyond NVRs using the Avigilon Video Archive for reliable and scalable storage.



Detailed Management, Monitoring, and Reporting of System Status and Security

Detailed logs of storage, network, and overall system status to help ensure the highest possible system uptime for critical applications.



Point-of-Sale Transaction Engine

Link HD security recorded video (viewed instantly) with transaction data to address compliance requirements and help reduce shrinkage and theft.



Scalable Integration with External Systems

Distributed architecture features .NET-based and REST-based APIs that can easily be integrated with other systems, such as access control and building management.



ONVIF® Profile S, T and G Compliant VMS

Ensures interoperability between IP based ONVIF conformant security devices regardless of manufacturer. Allows video and audio recovery from SD cards installed in Profile G cameras in case of network failure.



Unusual Activity Detection

UAD technology enables object-level detection of atypical activity. This edge-based intelligence uses advanced AI technology and is designed to be object-aware, enabling operators to know when a person or vehicle is in an unusual location in the scene or moving at an unusual speed.



Unusual Motion Detection

UMD technology enables fast video search and is designed to reduce hours of work to minutes by narrowing potentially thousands of motion events to a handful. This allows operators to focus their attention on recorded video needing further investigation.



Federal Government Compliance with FIPS 140-2 Certified Encryption

To comply with policies, Federal Government and other customers can enable FIPS 140-2 certified cryptography on ACC software and on supported Avigilon cameras. Required camera cryptography licenses are centrally managed in ACC. Within ACC, optionally turn on licensed FIPS cryptography on Avigilon cameras. ACC inventories the number of FIPS camera licenses being used and determines whether customers have the required number of licenses within a facility.

Specialty Devices



Avigilon Presence Detector Support

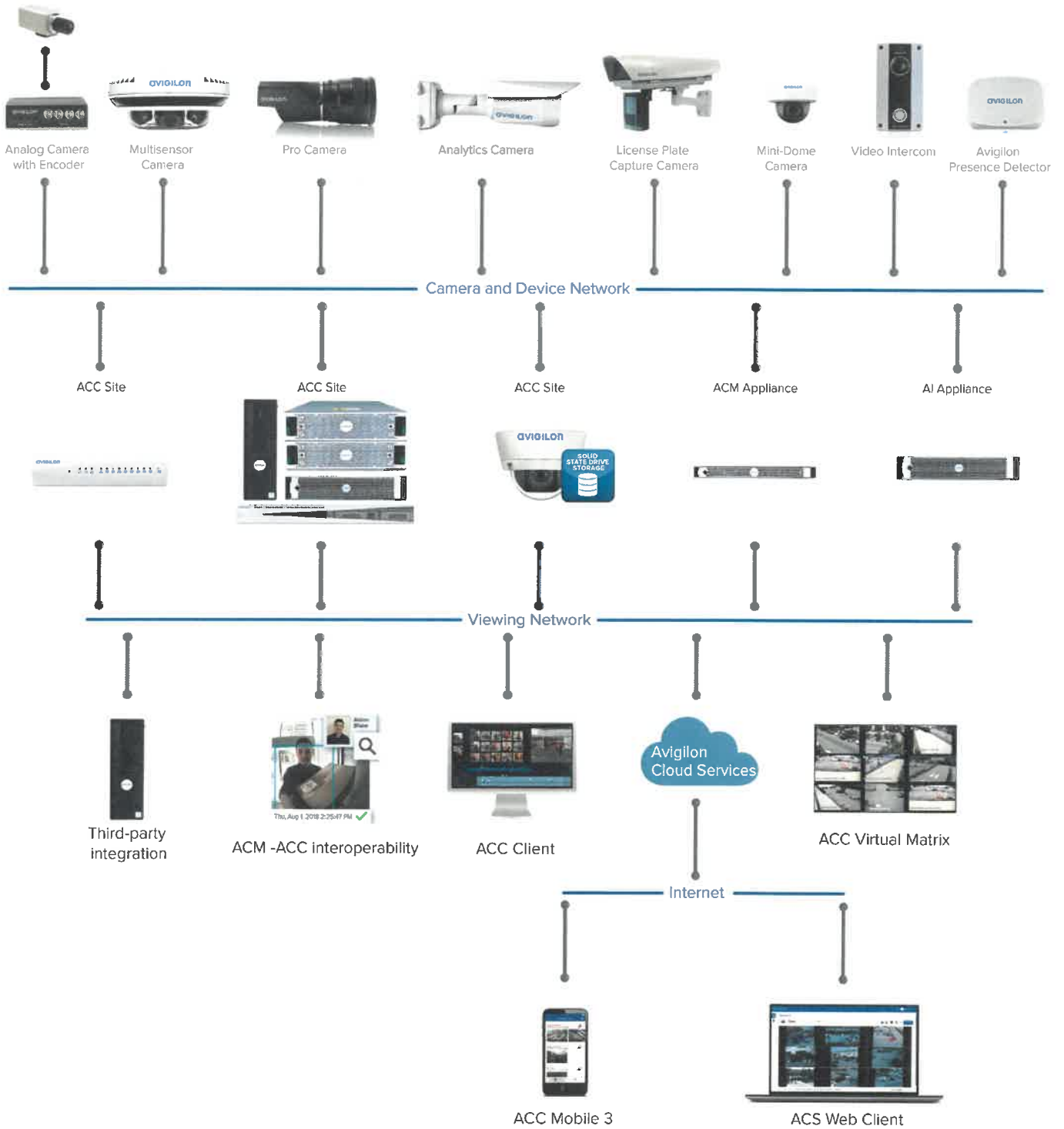
The Avigilon Presence Detector™ sensor is a small form factor impulse radar device with self-learning radar analytics that accurately detects the presence of a person even if they have stopped moving or are hidden. It has the ability to detect presence through blankets, cardboard, wood and drywall.



H4 Video Intercom Support

Video Intercom support provides operators with visual and audio verification of visitors. The H4 Video Intercom integration uses wide dynamic range and echo canceling technologies for clear viewing and two-way communication with visitors.

System Architecture



Software Editions

The Avigilon Control Center software is offered in three editions: Core, Standard and Enterprise. The Core edition is an entry-level version of our award-winning software that delivers advanced high definition video security capabilities, ease of use, and superior image quality to smaller implementations. The Standard edition is a cost-effective security solution that meets the vital and focused needs of mid-size operations. The Enterprise edition includes all of the Core and Standard features, plus advanced features to make it a powerful, open platform for large-scale video security needs.

SYSTEM	CORE	STANDARD	ENTERPRISE
Cameras per server	24	75	300+*
Cameras per site	24	75	10 000+*
Servers per site	1	1	100+*
Client licenses per server	2	10	Unlimited
Rule triggers	0	51	Unlimited
HDSM technology support	Yes	Yes	Yes
HDSM SmartCodec technology support	Yes	Yes	Yes
Dual Streaming for ONVIF compliant cameras	Yes	Yes	Yes
H.265, H.264, MPEG4, MJPEG, JPEG2000 video compression	Yes	Yes	Yes

* Actual limits will depend on the hardware environment. Please review Avigilon server and appliance datasheets for applicable limits.

DEVICE SUPPORT	CORE	STANDARD	ENTERPRISE
Automatic device discovery	Yes	Yes	Yes
Third-party IP cameras and encoders	Yes	Yes	Yes
ONVIF compliant cameras and encoders	Yes	Yes	Yes
H5A cameras with Next-Generation Video Analytics	Yes	Yes	Yes
H4A cameras with Self-Learning Video Analytics	Yes	Yes	Yes
H5SL, H5M, H4SL, H4 Multisensor, H4 PTZ, H4 IR PTZ, H4 Fisheye, H4 Mini Dome, H4ES, and H4 Thermal cameras	Yes	Yes	Yes
Avigilon H3, HD and earlier cameras	Yes	Yes	Yes
Avigilon analog video encoder	Yes	Yes	Yes
Avigilon Presence Detector (APD) sensor	No	Yes	Yes
H4 Video Intercom	No	Yes	Yes
H4 Pro cameras	No	No	Yes
H4 Thermal Elevated Temperature Detection (ETD)	Yes	Yes	Yes
Avigilon AI Appliance	No	No	Yes

CLIENT	CORE	STANDARD	ENTERPRISE
Video Analytics overlays <i>(Next-Generation Video Analytics, Self-Learning Video Analytics, UAD and UMD)</i>	Yes	Yes	Yes
Joystick support	Yes	Yes	Yes
ACC Mobile 3 app / Web Endpoint Including mobile alarm notifications	Yes	Yes	Yes
Avigilon Cloud Services Web Client	Yes	Yes	Yes
FIPS 140-2 Encryption	Yes	Yes	Yes
Certificate management between ACC Client and Server	Yes	Yes	Yes
Emergency privilege override	Yes	Yes	Yes
Two-factor authentication	Yes	Yes	Yes
Password strength meter	Yes	Yes	Yes
Light and dark interface themes	Yes	Yes	Yes
Editable Site View	Yes	Yes	Yes
Multi-camera export with optional password protection	Yes	Yes	Yes
Hourly configurable recording schedule	Yes	Yes	Yes
Saved views	No	Yes	Yes
Maps with configurable icons and camera thumbnail previews	No	Yes	Yes
Integrated web page bookmarking and display	No	Yes	Yes
Focus of Attention interface	No	No	Yes
Active Directory integration	No	No	Yes
Intelligent Virtual Matrix	No	No	Yes
Collaborative investigations	No	No	Yes
Multi-camera privacy blurred export from Avigilon Appearance Search results	No	No	Yes

SEARCH	CORE	STANDARD	ENTERPRISE
UAD and UMD timeline filtering with Skip Play	Yes	Yes	Yes
Intelligent motion search	Yes	Yes	Yes
Thumbnail search	Yes	Yes	Yes
Event search	Yes	Yes	Yes
Point-of-sale (POS) transaction search	No	Yes	Yes
Avigilon Appearance Search technology	No	No	Yes
Alarm search	No	No	Yes
License plate event search	No	No	Yes

ACC INTEROPERABILITY WITH ACM SYSTEMS	CORE	STANDARD	ENTERPRISE
Door and panel input event triggers	No	Yes	Yes
Door access grants	No	Yes	Yes
Shared operator access	No	Yes	Yes
ACM Identity Verification	No	Yes	Yes
ACM Identity Search	No	Yes	Yes

ADD-ON MODULES AND INTEGRATIONS	CORE	STANDARD	ENTERPRISE
POS transaction engine	No	Yes	Yes
Avigilon developed and supported integrations	No	Yes*	Yes
Third party system integrations	No	Yes	Yes
License Plate Recognition with multiple match lists	No	No	Yes
Face Recognition with multiple watch lists	No	No	Yes

*CommScope® iPatch®, RS2 Access It®, DDS Amadeus 5 and DSX only

ADDITIONAL FEATURES	CORE	STANDARD	ENTERPRISE
System and motion event e-mail notifications	Yes	Yes	Yes
Two person authenticated recorded video viewing	Yes	Yes	Yes
Camera replacement	Yes	Yes	Yes
Central station notifications including ANSI/SIA DC-09-2013	No	Yes	Yes
Digital input email trigger	No	Yes	Yes
Manual digital output trigger	No	Yes	Yes
Audio recording and output	No	Yes	Yes
APD™ event trigger	No	Yes	Yes
Next-Generation Video Analytics and Self-Learning Video Analytics event configuration	No	Yes	Yes
Camera standby / privacy mode	No	Yes	Yes
Avigilon AI Appliance analytics configuration	No	No	Yes
Redundant recording	No	No	Yes
Failover connections	No	No	Yes
ACC Client alarm notifications and escalation	No	No	Yes
One-time Video Archive	No	Yes	Yes
Tiered Storage Management with Continuous Archive	No	No	Yes

For the latest list of integrations and add-ons supported by Avigilon Control Center software, visit avigilon.com.

System Requirements

Note:

- Run Windows Update before launching Avigilon Control Center (ACC) software.
- NVR recording throughput and retention times can vary according to the number of cameras, camera resolution, estimated percent of motion, continuous recording settings and predefined retention period.
- For best-in-class performance, choose an **Avigilon Certified Solution**.

ACC Client Software

AVIGILON CERTIFIED SOLUTIONS

	DISPLAY MODEL NUMBER	KEY FEATURES
2 Monitor Professional High Performance Remote Monitoring Workstation	RM5-WKS-2MN	<ul style="list-style-type: none"> • Preloaded with ACC Client software. • Supports high resolution monitors.
4 Monitor Professional High Performance Remote Monitoring Workstation	RM5-WKS-4MN	<ul style="list-style-type: none"> • Includes the adapters and accessories for quick deployment. • Avigilon warranty and support included.

SYSTEM REQUIREMENTS	MINIMUM	RECOMMENDED
Operating System	Windows 8.1 (64-bit) or Windows 10 (64-bit) Microsoft .NET 4.6.2	Windows 10 (64-bit) Microsoft .NET 4.6.2
Processor	Intel® dual-core CPU (2.0 GHz)	8th Generation Intel Celeron® CPU or higher
System RAM	4 GB DDR3	8 GB DDR4
Video Card	PCI Express, DirectX 10.0 compliant with 256 MB RAM	NVIDIA® Quadro P620
Network Interface	1 Gbps	1 Gbps
Hard Disk Space	500 GB	500 GB

ACC Server Software

AVIGILON CERTIFIED SOLUTIONS

	DISPLAY MODEL NUMBER	KEY FEATURES
NVR Premium	HD-NVR4-PRM-64TB / 96TB / 128TB / 157TB / 192TB	<ul style="list-style-type: none"> • Optimized for video security applications in a 24/7/365 environment • ACC Server software is preinstalled, configured and enhanced for optimal system compatibility
NVR Standard	HD-NVR4-STD-16TB / 24TB / 32TB / 48TB	<ul style="list-style-type: none"> • Certified for the Avigilon video security environment - ACC software, LPR, Web Endpoint, Analytics, HDSM and 1-30MP cameras
NVR Value	NVR4-VAL-6TB / 12TB / 18TB / 24TB	<ul style="list-style-type: none"> • High throughputs of up to 1800 Mbps • Documented network architecture for a wide variety of applications • Avigilon warranty and support included • Access to Avigilon System Design Tool (SDT) to calculate storage requirements

SYSTEM REQUIREMENTS	MINIMUM	RECOMMENDED
Operating System	Windows Server 2012 R2, Windows 8.1 (64-bit) or Windows 10 (64-bit), Windows Server 2016, Windows Server 2019	Windows Server 2016 or Windows 10
Processor	x86 64 bit dual-core (1.9 GHz)	Intel® Xeon® E5 v3 (6 cores, 1.9GHz)
System RAM	4 GB DDR3	16 GB DDR4
Network Interface	1 Gbps	4 x 1 Gbps
Hard Drives	SATA-II 7200 RPM Enterprise Class Hard Drives	SATA-III 7200 RPM Enterprise Class Hard Drives

ACC Server Workstation

AVIGILON CERTIFIED SOLUTIONS

	DISPLAY MODEL NUMBER	KEY FEATURES
HD Video Appliance	VMA-AS3-8P2 / VMA-AS3-8P4 / VMA-AS3-8P8 / VMA-AS3-16P06 VMA-AS3-16P09 / VMA-AS3-16P12 / VMA-AS3-24P12 VMA-AS3-24P18 / VMA-AS3-24P24	<ul style="list-style-type: none"> • Preloaded and configured with ACC software • High-performance recording capacity • Throughputs of up to 400 Mbps • Avigilon warranty and support included • Access to Avigilon System Design Tool (SDT) to calculate storage requirements
ACC ES HD Recorder	VMA-RPO-4P2 / VMA-RPO-4P4	
ACC ES Analytics Appliance	VMA-RPA-4P2 / VMA-RPA-4P4	
ACC ES 8-Port Appliance	VMA-ENVR1-8P4 / VMA-ENVR1-8P8	
NVR4 Workstation	NVR4-WKS-4TB / NVR4-WKS-8TB	

SYSTEM REQUIREMENTS	MINIMUM	RECOMMENDED
Operating System	Windows 8.1 (64-bit) or Windows 10 (64-bit)	Windows 10 (64-bit)
Processor	Intel Quad-core CPU (2.0 GHz)	8th Generation Intel Celeron CPU or higher
System RAM	4 GB DDR3	8 GB DDR4
Network Interface	1 Gbps	1 Gbps
Video Card	PCI Express, DirectX 10.0 compliant with 256 MB RAM	NVIDIA Quadro P620
Hard Drives	SATA-II 7200 RPM Hard Drives	SATA-III 7200 RPM Hard Drives

Avigilon Appearance Search Technology and Face Recognition

Avigilon Appearance Search technology and Face Recognition require the ACC Analytics Service to be installed on the same computer as the ACC Server software and must meet the listed system requirements:

AVIGILON CERTIFIED SOLUTIONS

	DISPLAY MODEL NUMBER	KEY FEATURES
Analytics Kit for Avigilon Appearance Search Software	HD-NVR-ANK2-1	Tested and verified to provide enough processing power to run Avigilon Appearance Search feature.

SOFTWARE SYSTEM REQUIREMENTS	APPEARANCE SEARCH ONLY	APPEARANCE SEARCH AND FACE RECOGNITION
NVIDIA GPU Requirements	<ul style="list-style-type: none"> - 4 GB RAM - NVIDIA Pascal™ or NVIDIA Maxwell™ architecture - CUDA compute capability 5.2 or 6.1 - Windows x86_64 Driver Version 418.39 or above 	<ul style="list-style-type: none"> - 4 GB RAM - NVIDIA Pascal™ architecture - CUDA compute capability 6.1 - Windows x86_64 Driver Version 418.39 or above

ACC Mobile 3 Software

ACC Mobile version 3 is available for the listed device platforms and requires the ACC Web Endpoint service. The ACC Web Endpoint service comes pre-installed on ACC ES HD Recorder, ACC ES Analytics Appliance and ACC ES 8-Port Appliance. For NVR systems and HD Video Appliances, it should be installed on the same server as the ACC Server software.

	ANDROID	IOS
Platforms	Android version 5.0 or later	iPad with iOS 10 or later iPhone with iOS 10 or later iPod touch with iOS 10 or later
Processor	n/a	64-bit (Apple A7 or later)

Some images of the product interface have been simulated for illustrative purposes.

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Aug 2020 – Rev 5

Corner Mounting Bracket



H4-MT-CRNR1

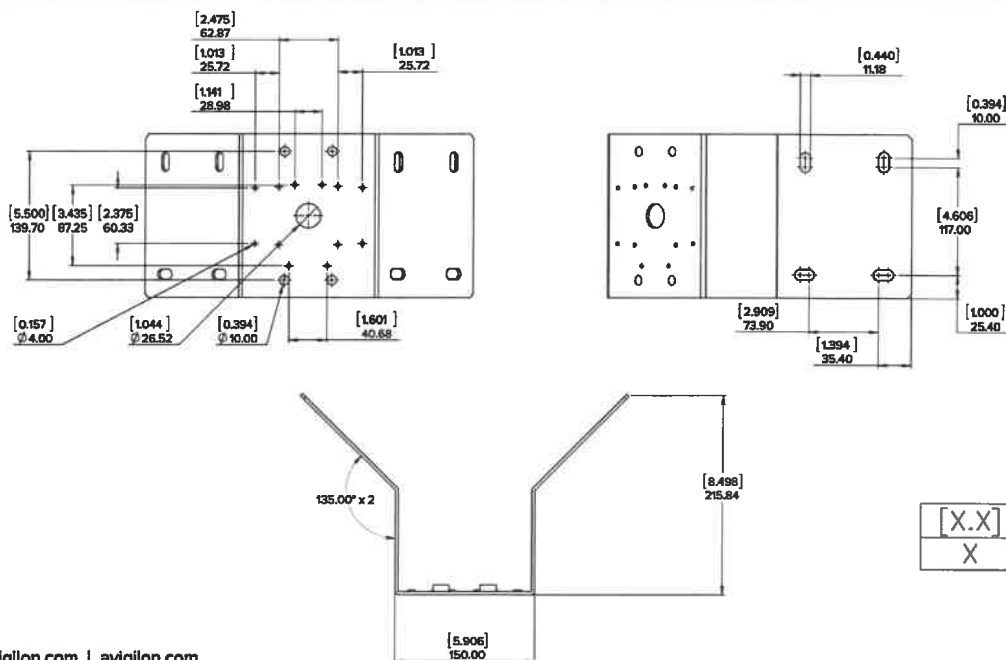
Aluminum corner mounting bracket for dome cameras using a pendant wall mount and bullet cameras.

Weight: 1.24 kg (2.73 lbs)

- Female inserts
- Compatible with:
 - Pendant Wall Mount (H4A-MT-WALL1) for H4A Pendant Dome Cameras
 - Pendant Wall Mount (CM-MT-WALL1) for H4 SL, H4 Fisheye, H4 PTZ and H3 Multisensor (H3-xMH-DP1-B) Dome Cameras
 - HD Bullet Cameras (H4A-BO-IR)
 - H4 SL Bullet Camera (H4SL-BO-IR)
 - HD Bullet Camera Junction Box (H4-BO-JBOX1)
 - H3 Bullet Camera Junction Box (H3-BO-JB)
 - H3 Pendant Wall Arm (MNT-PEND-WALL)
- 6"–20" Metal straps included
- Minimum pole diameter is 152.4 mm (6")
- Maximum pole diameter is 508 mm (20")
 - RAL 9003 Wall mounting hardware not included
- **RAL 9003**

Included components for Avigilon camera and accessories:

- 4 x Hex head bolts (3/8" – 16 x 1")
- 4 x Lock washers (3/8")
- 4 x Flat washers (3/8")
- 4 x Hex head bolts (M4-0.7 x 30)
- 4 x Lock Washers (M4)
- 4 x Flat washers (M4)



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H4 Multisensor Camera Line

The H4 Multisensor camera line combines Avigilon self-learning video analytics with exceptional coverage, featuring 3 or 4 individually configurable camera sensors that can be positioned to monitor virtually any area. With up to 32 MP effective resolution, the H4 Multisensor can provide the image quality needed to cover larger areas with excellent detail. Combining support for H.265 video compression along with Avigilon’s HDSM SmartCodec™ technology, the H4 Multisensor camera has the ability to maintain high-image quality with less bandwidth and storage requirements.



With self-learning video analytics on board, the H4 Multisensor camera can detect and differentiate people and vehicles from regular motion, and notify operators of potentially critical events that may need further investigation. Featuring wide dynamic range, Avigilon LightCatcher™ technology and the option to add content adaptive IR to outdoor models, the H4 Multisensor camera can provide exceptional image quality in challenging lighting conditions.

KEY FEATURES AND BENEFITS

- Self-learning video analytics on all sensors
- Increased range of sensor positioning
- High efficiency video encoding using H.265
- Up to 32 MP total resolution
- Wide Dynamic Range and LightCatcher technology on all resolutions
- IP66 and IK10 rated on outdoor models
- Avigilon’s HDSM SmartCodec technology
- Content Adaptive IR Technology up to 30m (98ft)
- Interchangeable Camera Mounts

	3-Sensor Model			4-Sensor Model		
Total Resolution	9 MP	15 MP	24 MP	12 MP	20 MP	32 MP
Max Coverage	180°–270°			360°		

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Specifications

		3.0 MP	5.0 MP	4K (8.0 MP)	
IMAGE PERFORMANCE (per image sensor)	Image Sensor	1/2.8" progressive scan CMOS	1/2.8" progressive scan CMOS	1/2.5" progressive scan CMOS	
	Active Pixels	2048 (H) x 1536 (V)	2592 x 1944	3840 x 2160	
	3 x image sensor, max resolution	6144 (H) x 1536 (V)	7776 x 1944	11520 x 2160	
	4 x image sensor, max resolution	8192 (H) x 1536 (V)	10368 x 1944	15360 x 2160	
	Aspect ratio	4:3	4:3	16:9	
	IR Illumination - Optional (high power 850 nm LEDs)	30m (98 ft) maximum distance at 0 lux			
	Minimum Illumination	2.8mm: 0.025 lux (F1.2) in color mode 0.005 lux (F1.2) in mono mode 0 lux with optional IR illuminator		0.2 lux (F1.8) in color mode 0.04 lux (F1.8) in mono mode 0 lux with optional IR illuminator	
		4mm: 0.05 lux (F1.6) in color mode 0.010 lux (F1.6) in mono mode 0 lux with optional IR illuminator			
	Dynamic Range	100 dB, true WDR, dual exposure			
	Image Rate—Analytics Enabled on All Sensors				
	3x Image Sensor (60 Hz/50 Hz)	24 / 25 fps	15 / 17 fps	12 / 13 fps	
4x Image Sensor (60 Hz/50 Hz)	20 / 20 fps	13 / 13 fps	8 / 8 fps		
Image Rate—High Framerate Mode					
3x Image Sensor (60 Hz/50 Hz)	30 / 25 fps	20 / 20 fps	15 / 14 fps		
4x Image Sensor (60 Hz/50 Hz)	20 / 20 fps	15 / 14 fps	10 / 10 fps		
LENS (per image sensor)	Lens and Horizontal Field of View	2.8mm f1.2 – 103° 4mm f1.6 – 72° Remote focus	2.8mm f1.2 – 103° 4mm f1.6 – 72° Remote focus	4mm f1.8 – 101° 5.2mm f1.8 – 70° Remote focus	
	IMAGE CONTROL	Image Compression Method: H.264 HDSM SmartCodec, H.265 HDSM SmartCodec, Motion JPEG			
	Streaming	Multi-stream H.264, Multi-stream H.265, Motion JPEG			
	Motion Detection	Selectable sensitivity and threshold			
Electronic Shutter Control	Automatic, Manual (1/8 to 1/8000 sec)				
Iris Control	Fixed				
Day/Night Control	Automatic, Manual				
Flicker Control	60 Hz, 50 Hz				
White Balance	Automatic, Manual				
Backlight Compensation	Adjustable				
Privacy Zones	Up to 64 zones				
Audio Compression Method	G.711 PCM 8 kHz				
Audio Input/Output	Line level input and output				
External I/O Terminals	Alarm In, Alarm Out				
NETWORK	Network	Gigabit Ethernet, 1000BASE-TX			
	Cabling Type	CAT5E			
	Connector	RJ-45			
	API	ONVIF® compliance version 1.02, 2.00, Profile S (www.onvif.org)			
	Security	Password protection, HTTPS encryption, digest authentication, WS authentication, user access log, 802.1x port based authentication			
	Protocol	IPv4, IPv6, HTTP, HTTPS, SOAP, DNS, NTP, RTSP, RTCP, RTP, TCP/UDP, IGMP, ICMP, DHCP, Zeroconf, ARP			
	Streaming Protocols	RTP/UDP, RTP/UDP multicast, RTP/RTSP/TCP, RTP/RTSP/HTTP/TCP, RTP/RTSP/HTTPS/TCP, HTTP			
	Device Management Protocols	SNMP v2c, SNMP v3			
	PERIPHERALS	USB Port	USB 2.0		
		Onboard Storage	MicroSD/microSDHC/microSDXC slot – class 10/UHS-1 or better recommended		

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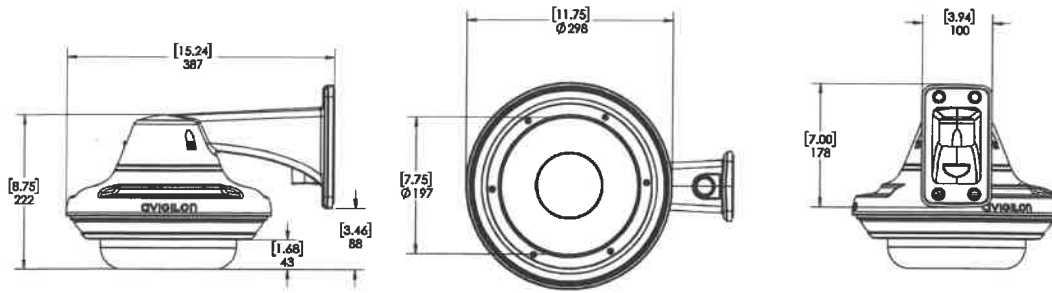
Specifications

	IN-CEILING MOUNT	SURFACE MOUNT	PENDANT MOUNT		
MECHANICAL	Dimension	Ø299 mm x 163 mm (Ø11.77" x 6.42"), below mounting surface: Ø299 mm x 76 mm (Ø11.77" x 2.99")	Ø299 mm x 115 mm (11.77" x 4.53")	With wall arm: 385 mm x 262 mm x 299 mm (15.15" x 10.30" x 11.77") With NPT adapter: Ø299 mm x 248 mm (Ø11.77" x 9.76")	
	Weight	5.2 kg (11.5 lbs)	With IR: 7 kg (15.4 lbs) Without IR: 5.8 kg (12.8 lbs)	With wall arm and IR: 8.4 kg (18.5 lbs) With wall arm only: 7.3 kg (16.1 lbs) With NPTA adapter and IR: 7.8 kg (17.2 lbs) With NPTA adapter only: 6.7 kg (14.8 lbs)	
	Body	Aluminum, Plastic dome trim	Aluminum	Aluminum	
	Finish	Plastic, cool grey	Powder coat, cool grey	Powder coat, cool grey	
	Environmental	Not applicable		IK10 Impact Rating and IP66 Weather Rating	
	Optional IR Illuminator Ring	Not available		Optional accessory, 30m (98 ft) IR range	
	PER SENSOR	Tilt	+7° to 96° from horizon		
		Pan	+/-120° (depending on position of image sensors)		
Azimuth		+/-180°			
ELECTRICAL	Power Consumption	26 W with 24 VDC 37 VA with 24 VAC POE+	With IR: 52 W with 24 VDC 74 VA with 24 VAC POE+ or 60W POE Without IR: 26 W with 24 VDC 37 VA with 24 VAC POE+ or 60W POE	With IR: 52 W with 24 VDC 74 VA with 24 VAC POE+ or 60W POE Without IR: 26 W with 24 VDC 37 VA with 24 VAC POE+ or 60W POE	
	External Power	24 VDC ± 10%; 24 VAC rms ± 10%, 50 or 60Hz			
	PoE	25.5W PoE+, IEEE 802.3at Type 2 PoE Plus	With IR: 51W PoE++ Without IR: 25.5W PoE+, IEEE 802.3at Type 2 PoE Plus		
ENVIRONMENTAL	Operating Temperature Range	-10 °C (14 °F) to 50 °C (122 °F)		-40 °C (-40 °F) to 60 °C (140 °F)	
	Storage Temperature	-10 °C to 70 °C (14 °F to 158 °F)			
	Humidity	0-95% non-condensing			
CERTIFICATIONS	Certifications	UL, cUL, CE, ROHS, WEEE, RCM			
	Safety	UL 62368-1, CSA 62368-1, IEC/EN 62368-1			
	Environmental	UL 2043 Plenum	UL/CSA/IEC 60950-22 IEC 60529 IP66 Rating, IK10 Impact Rating, IEC 60068-2-6 IEC 60068-2-27 Vibration and Shock		
	Electromagnetic Emissions	FCC Part 15 Subpart B Class B, IC ICES-003 Class B, EN 55032 Class B, EN 61000-6-3, EN 61000-3-2, EN 61000-3-3			
	Electromagnetic Immunity	EN 55024, EN 61000-6-1			
	Directives	RoHS, Reach (SVHC), WEEE			
SUPPORTED RULE BASED VIDEO ANALYTIC EVENTS (PER SENSOR)	Objects In Area	The event is triggered when the selected object type moves into the region of interest.			
	Object Loitering	The event is triggered when the selected object type stays within the region of interest for an extended amount of time.			
	Objects Crossing Beam	The event is triggered when the specified number of objects have crossed the directional beam that is configured over the camera's field of view. The beam can be unidirectional or bidirectional.			
	Object Appears or Enters Area	The event is triggered by each object that enters the region of interest. This event can be used to count objects.			
	Object Not Present in Area	The event is triggered when no objects are present in the region of interest.			
	Objects Enter Area	The event is triggered when the specified number of objects have entered the region of interest.			
	Objects Leave Area	The event is triggered when the specified number of objects have left the region of interest.			
	Object Stops In Area	The event is triggered when an object in a region of interest stops moving for the specified threshold time.			
	Direction Violated	The event is triggered when an object moves in the prohibited direction of travel.			
Tamper Detection	The event is triggered when the scene unexpectedly changes.				

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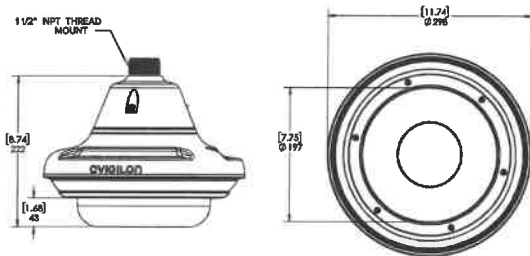
Outline Dimensions

Pendant Wall Mount

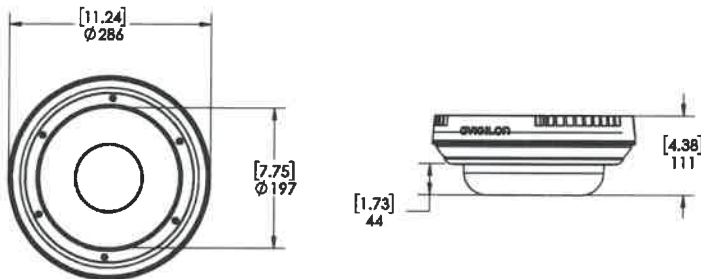


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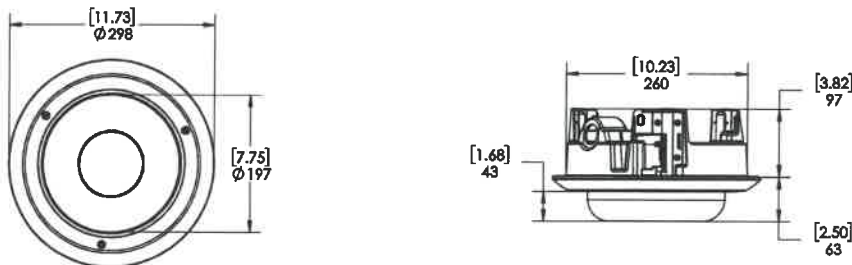
Pendant Pole Mount



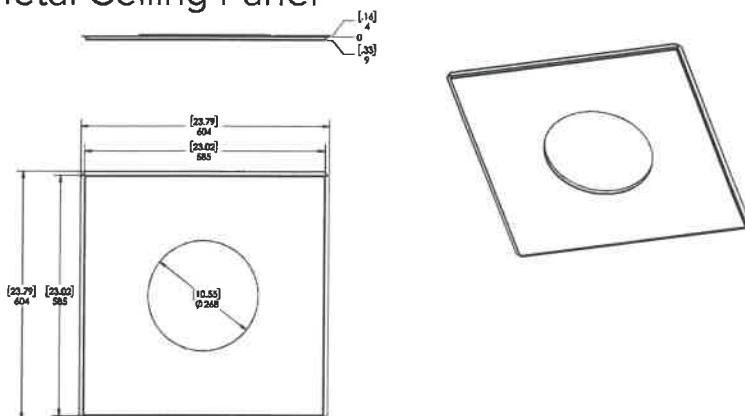
Surface Mount



In-ceiling Mount



Metal Ceiling Panel



Ordering Information

The variety of mounting options for the H4 Multisensor provides maximum flexibility. All the available camera modules can be used in any of the mounting options.

MOUNTING SCENARIO ORDERING INFORMATION

PENDANT WALL MOUNT



- Order one of:
- Camera module
 - H4AMH-AD-PEND1
 - H4AMH-DO-COVR1 or H4AMH-DO-COVR1-SMOKE
 - IRPTZ-MNT-WALL1
 - Optional, H4AMH-AD-IRIL

PENDANT POLE MOUNT



- Order one of:
- Camera module
 - H4AMH-AD-PEND1
 - H4AMH-DO-COVR1 or H4AMH-DO-COVR1-SMOKE
 - IRPTZ-MNT-NPTA1
 - Optional, H4AMH-AD-IRIL1

SURFACE MOUNT



- Order one of:
- Camera module
 - H4AMH-AD-DOME1
 - H4AMH-DO-COVR1 or H4AMH-DO-COVR1-SMOKE
 - Optional, H4AMH-AD-IRIL1

IN-CEILING MOUNT



- Order one of:
- Camera module
 - H4AMH-AD-CEIL1
 - H4AMH-DC-COVR1 or H4AMH-DC-COVR1-SMOKE
 - Optional, H4AMH-DC-CPNL1 if ceiling panel needed

Camera Modules

With the modular design of the H4 Multisensor, any camera module can be paired with any mounting adapter for maximum versatility and optimal installation. Each camera module must be ordered with a matching mounting adapter and dome cover.

DISPLAY PART NUMBER	DESCRIPTION
9C-H4A-3MH-270	3×3 MP, WDR, LightCatcher, 2.8mm, Camera Only
9C-H4A-3MH-180	3×3 MP, WDR, LightCatcher, 4mm, Camera Only
15C-H4A-3MH-270	3×5 MP, WDR, LightCatcher, 2.8mm, Camera Only
15C-H4A-3MH-180	3×5 MP, WDR, LightCatcher, 4mm, Camera Only
24C-H4A-3MH-270	3×4K (8 MP), WDR, LightCatcher, 4mm, Camera Only
24C-H4A-3MH-180	3×4K (8 MP), WDR, LightCatcher, 5.2mm, Camera Only
12C-H4A-4MH-360	4×3 MP, WDR, LightCatcher, 2.8mm, Camera Only
20C-H4A-4MH-360	4×5 MP, WDR, LightCatcher, 2.8mm, Camera Only
32C-H4A-4MH-360	4×4K (8 MP), WDR, LightCatcher, 4mm, Camera Only

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Mounting Adapters and Dome Covers

The H4 Multisensor modular design provides pendant, surface, or in ceiling mounting adapters and a choice of two dome covers compatible with all the H4 Multisensor camera modules.

DISPLAY PART NUMBER	DESCRIPTION
H4AMH-AD-DOME1	Outdoor surface mount adapter, must order either a H4AMH-DO-COVR1 or H4AMH-DO-COVR1-SMOKE.
H4AMH-AD-PEND1	Outdoor pendant mount adapter, must order one of IRPTZ-MNT-WALL1 or IRPTZ-MNT-NPTA1 and one of H4AMH-DO-COVR1 or H4AMH-DO-COVR1-SMOKE.
IRPTZ-MNT-WALL1	Pendant wall arm adapter, for use with H4AMH-AD-PEND1 or H4 IRPTZ.
IRPTZ-MNT-NPTA1	Pendant NPT adapter for use with H4AMH-AD-PEND1 or H4 IRPTZ.
H4-MT-POLE1	Aluminum pole mounting bracket for H4 pendant style cameras or H4 HD bullet cameras.
H4-MT-CRNR1	Aluminum corner mounting bracket for H4 pendant style cameras or H4 HD bullet cameras.
H4AMH-AD-CEIL1	In-ceiling adapter, must order either a H4AMH-DC-COVR1 or H4AMH-DC-COVR1-SMOKE.
H4AMH-DO-COVR1	Dome bubble and cover, for outdoor surface mount or pendant mount, clear.
H4AMH-DO-COVR1-SMOKE	Dome bubble and cover, for outdoor surface mount or pendant mount, smoked. Not recommended for lowlight applications.
H4AMH-DC-COVR1	Dome bubble and cover, for in-ceiling mount, clear.
H4AMH-DC-COVR1-SMOKE	Dome bubble and cover, for in-ceiling mount, smoked. Not recommended for lowlight applications.
H4AMH-DC-CPNL1	Metal ceiling panel.

Optional IR Illuminator

The optional IR Illuminator is available for the H4 Multisensor when mounted in a pendant or surface mount adapter.

DISPLAY PART NUMBER	DESCRIPTION
H4AMH-AD-IRIL1	Optional IR Illuminator ring, up to 30m (100ft), for use with H4AMH-DO-COVR1.

Optional Injectors and Switches

DISPLAY PART NUMBER	DESCRIPTION
ES-PS-S4	Managed switch, 5 port, Outdoor IP66, -40°C (-40°F) to 50°C (122°C), Gigabit Ethernet, AC power input. 1x SFP uplink and 4 port RJ45. Maximum PoE power allocation: Up to 4 ports of PoE+ each, or 2 ports of 60W PoE each. In 60W PoE mode, compatible with H4 PTZ, H4 IR PTZ and H4 Multisensor.
ES-PS-MNT-POLE1	Pole mount bracket for ES-PS-S4 switch.
POE-INJ2-60W-NA	Indoor single port Gigabit PoE++ 60W, North American power cord included. May also be used in European Union, Japan, Australia, New Zealand, Mexico, China, South Korea, Russia, Argentina, Saudi Arabia, Kuwait, UAE and Brazil. Temperature range of the PoE injector is -10 °C to +45 °C (14 °F to 113 °F). When used with the H4 IR PTZ, the camera will operate in a reduced temperature range from -10 °C to +50 °C (14 °F to 122 °F).
POE-INJ2-PLUS	Indoor single port PoE+ injector. Injector operational temperature range -20°C to +40°C (-4°F to 104°F).

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Indoor/Outdoor Pendant NPT Adapter



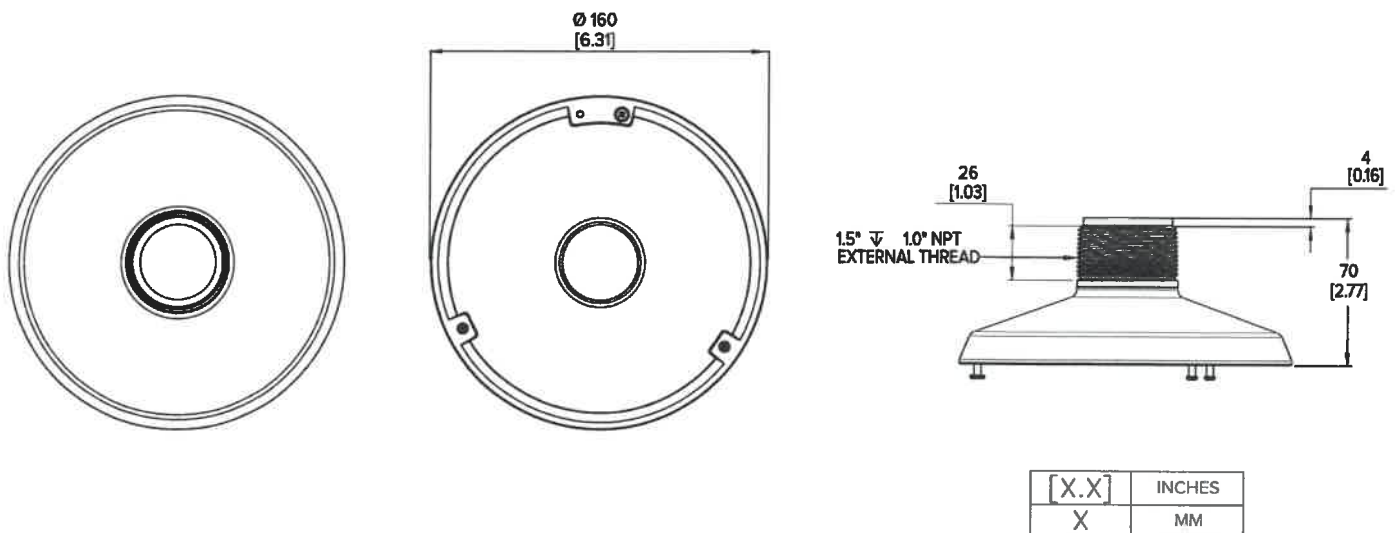
H4F-MT-NPTA1

NPT adapter for H4 Fisheye Dome Cameras (H4F-DO-IR)

Weight: 0.312 kg (0.688 lbs)

Finish: RAL 9003

- Mounts to a female 1-1/2" NPT threaded pipe
- Compatible with Pendant Wall Mount (CM-MT-WALL1)



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H4 PTZ Dome Camera Line with Self-Learning Video Analytics

Pan-tilt-zoom (PTZ) cameras are a useful surveillance solution because of their ability to simultaneously cover wide areas and zoom in for finer details with a single camera. With the new Avigilon™ H4 PTZ, we are pushing the boundaries of the traditional PTZ camera by offering a high-performance camera with even greater zoom and evidentiary detail.



The Avigilon H4 PTZ camera line combines high-speed tracking and 360-degree coverage with excellent image quality, low-light performance and video analytics. The new H4 PTZ camera line is available in 1 and 2 megapixel (MP) camera resolutions in outdoor pendant and in-ceiling mount formats. The 1 MP PTZ camera has 45x zoom, while the 2 MP PTZ has a built-in 30x zoom lens for high-quality, detailed images from great distances.

This camera line is equipped with our patented LightCatcher™ technology, enabling exceptional color images in low light, as well as true wide dynamic range (WDR) for detailed images in both extreme brightness and darkness. It is also enabled with self-learning video analytics, for object tracking, alarm notifications and the ability to zoom in for key details.

Built on our next-generation H4 platform, the new H4 PTZ camera line allows customers to harness the strength of Avigilon Control Center (ACC)™, High Definition Stream Management (HDSM)™ and idle scene mode technologies, to intelligently and efficiently manage their video data, processing high-definition video with fewer strains on network resources.

KEY FEATURES

- 1 MP and 2 MP camera resolutions
- 1 MP zooms up to 45x and 2 MP zooms up to 30x
- Self-learning video analytics
- Patented Advanced Video Pattern Detection and Teach by Example Technology
- Patented High Definition Stream Management (HDSM) technology
- Idle Scene Mode lowers bandwidth and storage usage if there are no motion events detected in the scene
- Avigilon LightCatcher technology provides exceptional image quality in low-light environments
- Up to 60 fps high frame rate operation
- IP67 certified for comprehensive dust and water ingress protection
- True wide dynamic range (WDR)

Specifications

		1.0 MP	2.0 MP
IMAGE PERFORMANCE	Image Sensor	WDR 1/2.8" progressive scan CMOS	
	Active Pixels	1280 (H) x 720 (V)	1920 (H) x 1080 (V)
	Imaging Area	4.8 mm (H) x 2.7 mm (V); 0.189" (H) x 0.106" (V)	
	Minimum Illumination	0.1 lux (F1.6) in color mode; 0.03 lux (F1.6) in monochrome mode	
	Dynamic Range	120+ dB	
	Image Rate	Up to 60 fps	
	(Aspect Ratio) Resolution Scaling	down to (16:9) 384x216 or (5:4) 320x256	
LENS	Lens	4.3 to 129 mm, F/1.6 – F/4.7, autofocus, up to 45x zoom	4.3 to 129 mm, F/1.6 – F/4.7, autofocus, up to 30x zoom
	Angle of View	1.5° - 63.7°	2.3° - 63.7°
IMAGE CONTROL	Image Compression Method	H.264 (MPEG-4 Part 10/AVC), Motion JPEG	
	Streaming	Multi-stream H.264 and Motion JPEG	
	Motion Detection	Selectable sensitivity and threshold	
	Electronic Shutter Control	Automatic, Manual (1/1 to 1/10,000 sec)	
	Iris Control	Automatic, Manual	
	Day/Night Control	Automatic, Manual	
	Flicker Control	50 Hz, 60 Hz	
	White Balance	Automatic, Manual	
	Backlight Compensation	Manual	
	Privacy Zones	Up to 64 zones, 3D privacy mask supported	
	Presets	100 named presets	
	Tours	10 named guard tours	
	Audio Compression Method	G.711 PCM 8 kHz	
Digital Zoom	Up to 100x when used with ACC Client for Windows		
NETWORK	Network	100BASE-TX	
	Cabling Type	CAT5e	
	Connector	RJ-45	
	API	ONVIF Profile S compliant (www.onvif.org)	
	Security	Password protection, HTTPS encryption, digest authentication, WS authentication, user access log, 802.1x port based authentication	
	Protocol	IPv4, HTTP, HTTPS, SOAP, DNS, NTP, RTSP, RTCP, RTP, TCP/UDP, IGMP, ICMP, DHCP, Zeroconf, ARP, LLDP	
	Streaming Protocols	RTP/UDP, RTP/UDP multicast, RTP/RTSP/TCP, RTP/RTSP/HTTP/TCP, RTP/RTSP/HTTPS/TCP, HTTP	
	Device Management Protocols	SNMP v2c, SNMP v3	
	PERIPHERALS	Audio Input/Output	Line level input and output
Video Output		NTSC/PAL	
External I/O Terminals		Alarm In, Alarm Out	
Onboard Storage		SD/SDHC/SDXC slot – minimum class 4; class 6 or better recommended	
MECHANICAL		IN-CEILING MOUNT	PENDANT MOUNT
	Dimensions (ØxH)	232 mm x 222.7 mm; 9.13" x 8.77"	226 mm x 313 mm; 8.9" x 12.32"
	Weight	2.18 kg; 4.85 lbs	3.9 kg; 8.6 lbs
	Dome Bubble	Nylon	
	Body	Plastic	Aluminum
	Housing	Recessed mount	Pendant mount
	Finish	Plastic, cool grey	Powder coat, cool grey
	Tilt	-10° to 90°, e-Flip, 360°/second	
	Pan	360°, endless, 450°/second	
	ELECTRICAL	Power Consumption	23 W max with external power (24 V DC) or PoE+ (32 VA with 24 V AC power)
Power Source		External Power	
PoE		IEEE 802.3at Class 4 PoE+	IEEE 802.3at Class 4 PoE+ 60 W PoE (POE-INJ2-60W)
Power Connector		2-pin terminal block	Waterproof 3-pin connector
ENVIRONMENTAL	Operating Temperature	-10 °C to +50 °C (-14 °F to 122 °F)	-40 °C to +50 °C (-40 °F to 122 °F) with external power or 60 W PoE -10 °C to +50 °C (-14 °F to 122 °F) with IEEE 802.3at Class 4 PoE+ power
	Storage Temperature	-10 °C to +70 °C (-14 °F to 158 °F)	
	Humidity	0 - 95% non-condensing	
CERTIFICATIONS	Certifications/Directives	UL, cUL, CE, ROHS, WEEE, RCM, EAC	
	Safety	UL 60950-1, CSA 60950-1, IEC/EN 60950-1	
	Environmental	n/a	IK10 Impact Rating, IEC 60529 IP66/IP67 Rating, UL/CSA/IEC 60950-22
	Electromagnetic Emissions	FCC Part 15 Subpart B Class B, IC ICES-003 Class B, EN 55022 Class B, EN 61000-6-3, EN 61000-3-2, EN 61000-3-3, EN 55032	
	Electromagnetic Immunity	EN 55024, EN 61000-6-1, EN 50130-4	

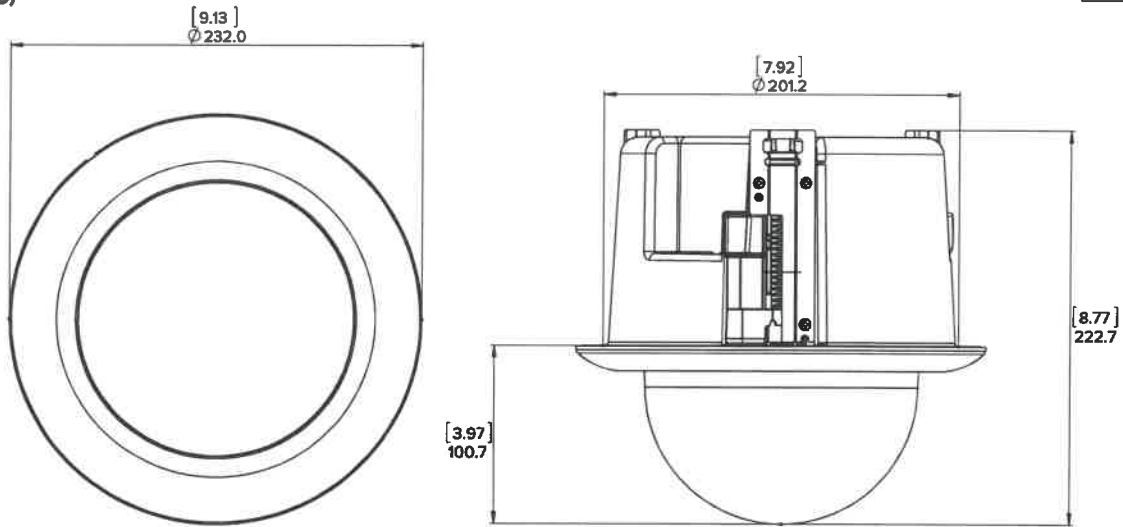
SUPPORTED VIDEO ANALYTICS EVENTS AT HOME POSITION

Objects In Area	The event is triggered when the selected object type moves into the region of interest.
Object Loitering	The event is triggered when the selected object type stays within the region of interest for an extended amount of time.
Objects Crossing Beam	The event is triggered when the specified number of objects have crossed the directional beam that is configured over the camera's field of view. The beam can be unidirectional or bidirectional.
Object Appears or Enters Area	The event is triggered by each object that enters the region of interest. This event can be used to count objects.
Object Not Present in Area	The event is triggered when no objects are present in the region of interest.
Objects Enter Area	The event is triggered when the specified number of objects have entered the region of interest.
Objects Leave Area	The event is triggered when the specified number of objects have left the region of interest.
Object Stops in Area	The event is triggered when an object in a region of interest stops moving for the specified threshold time.
Direction Violated	The event is triggered when an object moves in the prohibited direction of travel.
Tamper Detection	The event is triggered when the scene unexpectedly changes.

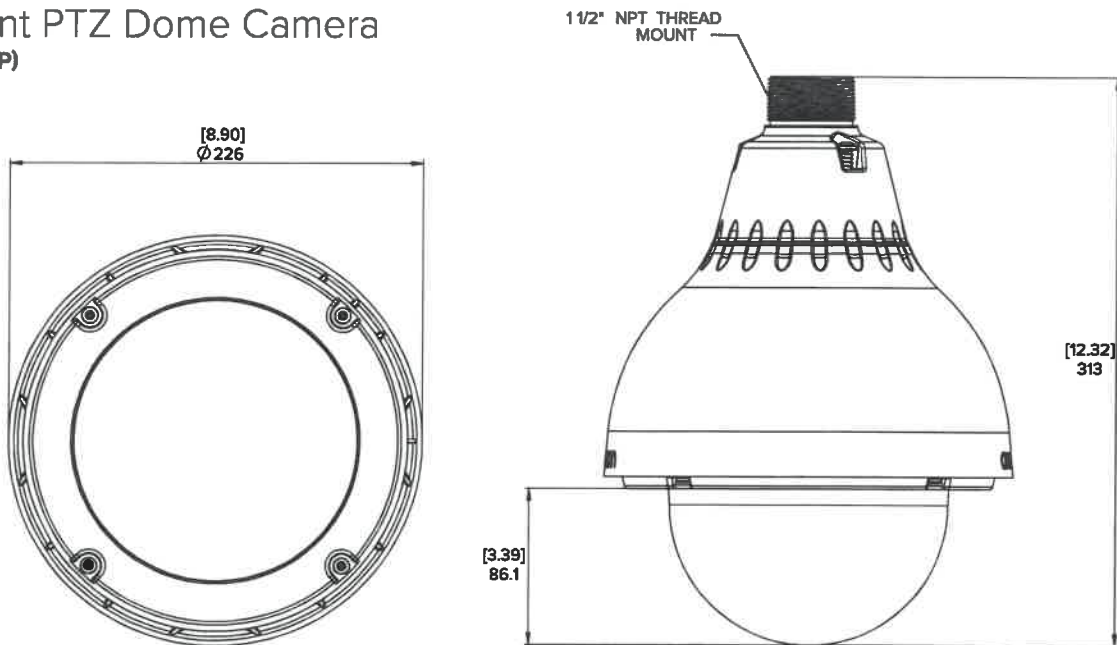
Outline Dimensions

In-Ceiling PTZ Dome Camera (H4PTZ-DC)

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X	MM



Pendant PTZ Dome Camera (H4PTZ-DP)



Ordering Information

IN-CEILING PTZ DOME CAMERAS	MP	WDR	LIGHTCATCHER TECHNOLOGY	ANALYTICS	LENS	ZOOM	
1.0C-H4PTZ-DC45	1.0	✓	✓	✓	4.3 to 129 mm	45x	
2.0C-H4PTZ-DC30	2.0	✓	✓	✓	4.3 to 129 mm	30x	
PTZMH-DC-CLER1	PTZ In-Ceiling Dome Camera Cover with Clear Bubble						
PTZMH-DC-SMOK1	PTZ In-Ceiling Dome Camera Cover with Smoked Bubble						
PTZMH-DC-CPNL1	Metal Ceiling Panel						

PENDANT PTZ DOME CAMERAS	MP	WDR	LIGHTCATCHER TECHNOLOGY	ANALYTICS	LENS	ZOOM	IP66/IP67
1.0C-H4PTZ-DP45	1.0	✓	✓	✓	4.3 to 129 mm	45x	✓
2.0C-H4PTZ-DP30	2.0	✓	✓	✓	4.3 to 129 mm	30x	✓
CM-MT-WALL1	Pendant wall mount						
H4-MT-POLE1	Pole Mounting Bracket						
H4-MT-CRNR1	Corner Mounting Bracket						
PTZMH-DP-CLER1	Dome Camera Cover with Clear Bubble (IK10)						
PTZMH-DP-SMOK1	Dome Camera Cover with Smoked Bubble (IK10)						
POE-INJ2-60W	60 W PoE Injector						

H4 Multisensor Camera Line

The H4 Multisensor camera line combines Avigilon self-learning video analytics with exceptional coverage, featuring 3 or 4 individually configurable camera sensors that can be positioned to monitor virtually any area. With up to 32 MP effective resolution, the H4 Multisensor can provide the image quality needed to cover larger areas with excellent detail. Combining support for H.265 video compression along with Avigilon’s HDSM SmartCodec™ technology, the H4 Multisensor camera has the ability to maintain high-image quality with less bandwidth and storage requirements.



With self-learning video analytics on board, the H4 Multisensor camera can detect and differentiate people and vehicles from regular motion, and notify operators of potentially critical events that may need further investigation. Featuring wide dynamic range, Avigilon LightCatcher™ technology and the option to add content adaptive IR to outdoor models, the H4 Multisensor camera can provide exceptional image quality in challenging lighting conditions.

KEY FEATURES AND BENEFITS

- Self-learning video analytics on all sensors
- Increased range of sensor positioning
- High efficiency video encoding using H.265
- Up to 32 MP total resolution
- Wide Dynamic Range and LightCatcher technology on all resolutions
- IP66 and IK10 rated on outdoor models
- Avigilon’s HDSM SmartCodec technology
- Content Adaptive IR Technology up to 30m (98ft)
- Interchangeable Camera Mounts

	3-Sensor Model			4-Sensor Model		
Total Resolution	9 MP	15 MP	24 MP	12 MP	20 MP	32 MP
Max Coverage	180°–270°			360°		

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Specifications

		3.0 MP	5.0 MP	4K (8.0 MP)	
IMAGE PERFORMANCE (per image sensor)	Image Sensor	1/2.8" progressive scan CMOS	1/2.8" progressive scan CMOS	1/2.5" progressive scan CMOS	
	Active Pixels	2048 (H) x 1536 (V)	2592 x 1944	3840 x 2160	
	3 x image sensor, max resolution	6144 (H) x 1536 (V)	7776 x 1944	11520 x 2160	
	4 x image sensor, max resolution	8192 (H) x 1536 (V)	10368 x 1944	15360 x 2160	
	Aspect ratio	4:3	4:3	16:9	
	IR Illumination - Optional (high power 850 nm LEDs)	30m (98 ft) maximum distance at 0 lux			
	Minimum Illumination	2.8mm: 0.025 lux (F1.2) in color mode 0.005 lux (F1.2) in mono mode 0 lux with optional IR illuminator		0.2 lux (F1.8) in color mode 0.04 lux (F1.8) in mono mode 0 lux with optional IR illuminator	
		4mm: 0.05 lux (F1.6) in color mode 0.010 lux (F1.6) in mono mode 0 lux with optional IR illuminator			
	Dynamic Range	100 dB, true WDR, dual exposure			
	Image Rate—Analytics Enabled on All Sensors				
	3x Image Sensor (60 Hz/50 Hz)	24 / 25 fps	15 / 17 fps	12 / 13 fps	
4x Image Sensor (60 Hz/50 Hz)	20 / 20 fps	13 / 13 fps	8 / 8 fps		
Image Rate—High Framerate Mode					
3x Image Sensor (60 Hz/50 Hz)	30 / 25 fps	20 / 20 fps	15 / 14 fps		
4x Image Sensor (60 Hz/50 Hz)	20 / 20 fps	15 / 14 fps	10 / 10 fps		
LENS (per image sensor)	Lens and Horizontal Field of View	2.8mm f1.2 – 103° 4mm f1.6 – 72° Remote focus	2.8mm f1.2 – 103° 4mm f1.6 – 72° Remote focus	4mm f1.8 – 101° 5.2mm f1.8 – 70° Remote focus	
	IMAGE CONTROL	Image Compression Method: H.264 HDSM SmartCodec, H.265 HDSM SmartCodec, Motion JPEG			
	Streaming	Multi-stream H.264, Multi-stream H.265, Motion JPEG			
	Motion Detection	Selectable sensitivity and threshold			
Electronic Shutter Control	Automatic, Manual (1/8 to 1/8000 sec)				
Iris Control	Fixed				
Day/Night Control	Automatic, Manual				
Flicker Control	60 Hz, 50 Hz				
White Balance	Automatic, Manual				
Backlight Compensation	Adjustable				
Privacy Zones	Up to 64 zones				
Audio Compression Method	G.711 PCM 8 kHz				
Audio Input/Output	Line level input and output				
External I/O Terminals	Alarm In, Alarm Out				
NETWORK	Network	Gigabit Ethernet, 1000BASE-TX			
	Cabling Type	CAT5E			
	Connector	RJ-45			
	API	ONVIF® compliance version 1.02, 2.00, Profile S (www.onvif.org)			
	Security	Password protection, HTTPS encryption, digest authentication, WS authentication, user access log, 802.1x port based authentication			
	Protocol	IPv4, IPv6, HTTP, HTTPS, SOAP, DNS, NTP, RTSP, RTCP, RTP, TCP/UDP, IGMP, ICMP, DHCP, Zeroconf, ARP			
	Streaming Protocols	RTP/UDP, RTP/UDP multicast, RTP/RTSP/TCP, RTP/RTSP/HTTP/TCP, RTP/RTSP/HTTPS/TCP, HTTP			
	Device Management Protocols	SNMP v2c, SNMP v3			
	PERIPHERALS	USB Port	USB 2.0		
		Onboard Storage	MicroSD/microSDHC/microSDXC slot – class 10/UHS-1 or better recommended		

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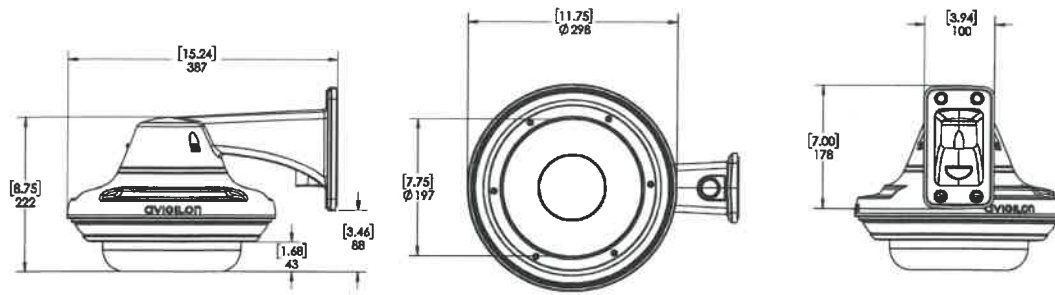
Specifications

	IN-CEILING MOUNT	SURFACE MOUNT	PENDANT MOUNT		
MECHANICAL	Dimension	Ø299 mm x 163 mm (Ø11.77" x 6.42"), below mounting surface: Ø299 mm x 76 mm (Ø11.77" x 2.99")	Ø299 mm x 115 mm (11.77" x 4.53")	With wall arm: 385 mm x 262 mm x 299 mm (15.15" x 10.30" x 11.77") With NPT adapter: Ø299 mm x 248 mm (Ø11.77" x 9.76")	
	Weight	5.2 kg (11.5 lbs)	With IR: 7 kg (15.4 lbs) Without IR: 5.8 kg (12.8 lbs)	With wall arm and IR: 8.4 kg (18.5 lbs) With wall arm only: 7.3 kg (16.1 lbs) With NPTA adapter and IR: 7.8 kg (17.2 lbs) With NPTA adapter only: 6.7 kg (14.8 lbs)	
	Body	Aluminum, Plastic dome trim	Aluminum	Aluminum	
	Finish	Plastic, cool grey	Powder coat, cool grey	Powder coat, cool grey	
	Environmental	Not applicable	IK10 Impact Rating and IP66 Weather Rating		
	Optional IR Illuminator Ring	Not available	Optional accessory, 30m (98 ft) IR range		
	PER SENSOR	Tilt	+7° to 96° from horizon		
		Pan	+/-120° (depending on position of image sensors)		
	Azimuth	+/-180°			
ELECTRICAL	Power Consumption	26 W with 24 VDC 37 VA with 24 VAC POE+	With IR: 52 W with 24 VDC 74 VA with 24 VAC POE+ or 60W POE Without IR: 26 W with 24 VDC 37 VA with 24 VAC POE+ or 60W POE	With IR: 52 W with 24 VDC 74 VA with 24 VAC POE+ or 60W POE Without IR: 26 W with 24 VDC 37 VA with 24 VAC POE+ or 60W POE	
	External Power	24 VDC ± 10%; 24 VAC rms ± 10%, 50 or 60Hz			
	PoE	25.5W PoE+, IEEE 802.3at Type 2 PoE Plus	With IR: 51W PoE++ Without IR: 25.5W PoE+, IEEE 802.3at Type 2 PoE Plus		
	ENVIRONMENTAL	Operating Temperature Range	-10 °C (14 °F) to 50 °C (122 °F)	-40 °C (-40 °F) to 60 °C (140 °F)	
	Storage Temperature	-10 °C to 70 °C (14 °F to 158 °F)			
	Humidity	0-95% non-condensing			
CERTIFICATIONS	Certifications	UL, cUL, CE, ROHS, WEEE, RCM			
	Safety	UL 62368-1, CSA 62368-1, IEC/EN 62368-1			
	Environmental	UL 2043 Plenum	UL/CSA/IEC 60950-22 IEC 60529 IP66 Rating, IK10 Impact Rating, IEC 60068-2-6 IEC 60068-2-27 Vibration and Shock		
	Electromagnetic Emissions	FCC Part 15 Subpart B Class B, IC ICES-003 Class B, EN 55032 Class B, EN 61000-6-3, EN 61000-3-2, EN 61000-3-3			
	Electromagnetic Immunity	EN 55024, EN 61000-6-1			
	Directives	RoHS, Reach (SVHC), WEEE			
SUPPORTED RULE BASED VIDEO ANALYTIC EVENTS (PER SENSOR)	Objects In Area	The event is triggered when the selected object type moves into the region of interest.			
	Object Loitering	The event is triggered when the selected object type stays within the region of interest for an extended amount of time.			
	Objects Crossing Beam	The event is triggered when the specified number of objects have crossed the directional beam that is configured over the camera's field of view. The beam can be unidirectional or bidirectional.			
	Object Appears or Enters Area	The event is triggered by each object that enters the region of interest. This event can be used to count objects.			
	Object Not Present In Area	The event is triggered when no objects are present in the region of interest.			
	Objects Enter Area	The event is triggered when the specified number of objects have entered the region of interest.			
	Objects Leave Area	The event is triggered when the specified number of objects have left the region of interest.			
	Object Stops In Area	The event is triggered when an object in a region of interest stops moving for the specified threshold time.			
	Direction Violated	The event is triggered when an object moves in the prohibited direction of travel.			
	Tamper Detection	The event is triggered when the scene unexpectedly changes.			

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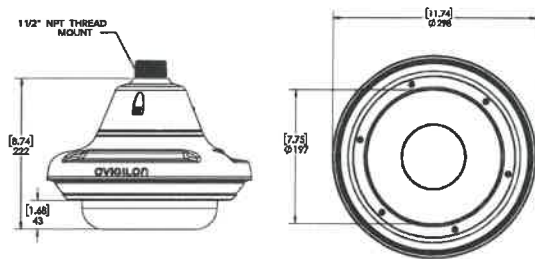
Outline Dimensions

Pendant Wall Mount

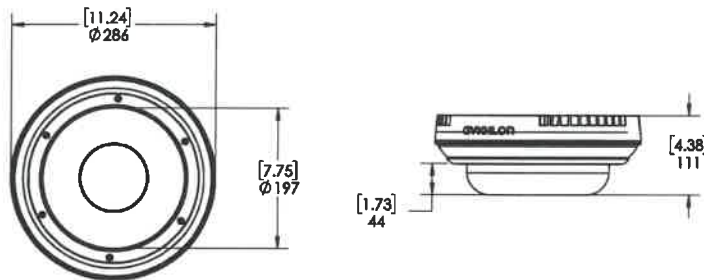


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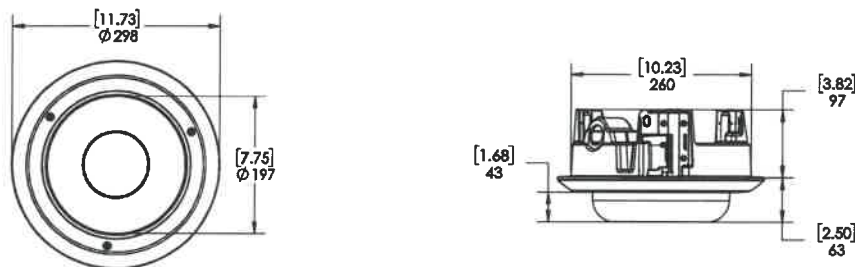
Pendant Pole Mount



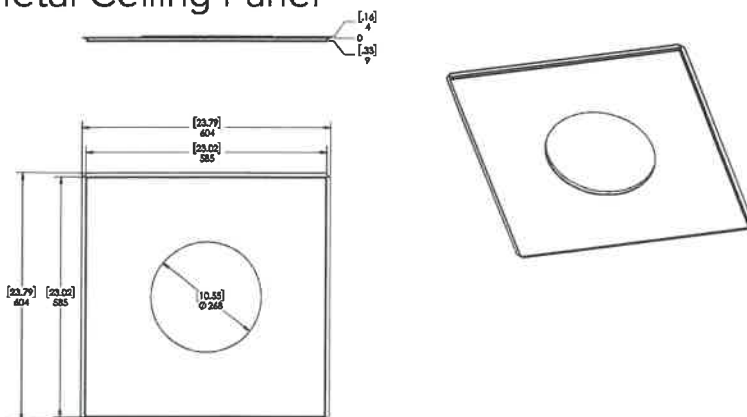
Surface Mount



In-ceiling Mount



Metal Ceiling Panel



Ordering Information

The variety of mounting options for the H4 Multisensor provides maximum flexibility. All the available camera modules can be used in any of the mounting options.

MOUNTING SCENARIO ORDERING INFORMATION

PENDANT WALL MOUNT



- Order one of:
- Camera module
 - H4AMH-AD-PEND1
 - H4AMH-DO-COVR1 or H4AMH-DO-COVR1-SMOKE
 - IRPTZ-MNT-WALL1
 - Optional, H4AMH-AD-IRIL

PENDANT POLE MOUNT



- Order one of:
- Camera module
 - H4AMH-AD-PEND1
 - H4AMH-DO-COVR1 or H4AMH-DO-COVR1-SMOKE
 - IRPTZ-MNT-NPTA1
 - Optional, H4AMH-AD-IRIL1

SURFACE MOUNT



- Order one of:
- Camera module
 - H4AMH-AD-DOME1
 - H4AMH-DO-COVR1 or H4AMH-DO-COVR1-SMOKE
 - Optional, H4AMH-AD-IRIL1

IN-CEILING MOUNT



- Order one of:
- Camera module
 - H4AMH-AD-CEIL1
 - H4AMH-DC-COVR1 or H4AMH-DC-COVR1-SMOKE
 - Optional, H4AMH-DC-CPNL1 if ceiling panel needed

Camera Modules

With the modular design of the H4 Multisensor, any camera module can be paired with any mounting adapter for maximum versatility and optimal installation. Each camera module must be ordered with a matching mounting adapter and dome cover.

DISPLAY PART NUMBER	DESCRIPTION
9C-H4A-3MH-270	3x3 MP, WDR, LightCatcher, 2.8mm, Camera Only
9C-H4A-3MH-180	3x3 MP, WDR, LightCatcher, 4mm, Camera Only
15C-H4A-3MH-270	3x5 MP, WDR, LightCatcher, 2.8mm, Camera Only
15C-H4A-3MH-180	3x5 MP, WDR, LightCatcher, 4mm, Camera Only
24C-H4A-3MH-270	3x4K (8 MP), WDR, LightCatcher, 4mm, Camera Only
24C-H4A-3MH-180	3x4K (8 MP), WDR, LightCatcher, 5.2mm, Camera Only
12C-H4A-4MH-360	4x3 MP, WDR, LightCatcher, 2.8mm, Camera Only
20C-H4A-4MH-360	4x5 MP, WDR, LightCatcher, 2.8mm, Camera Only
32C-H4A-4MH-360	4x4K (8 MP), WDR, LightCatcher, 4mm, Camera Only

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Mounting Adapters and Dome Covers

The H4 Multisensor modular design provides pendant, surface, or in ceiling mounting adapters and a choice of two dome covers compatible with all the H4 Multisensor camera modules.

DISPLAY PART NUMBER	DESCRIPTION
H4AMH-AD-DOME1	Outdoor surface mount adapter, must order either a H4AMH-DO-COVR1 or H4AMH-DO-COVR1-SMOKE.
H4AMH-AD-PEND1	Outdoor pendant mount adapter, must order one of IRPTZ-MNT-WALL1 or IRPTZ-MNT-NPTA1 and one of H4AMH-DO-COVR1 or H4AMH-DO-COVR1-SMOKE.
IRPTZ-MNT-WALL1	Pendant wall arm adapter, for use with H4AMH-AD-PEND1 or H4 IRPTZ.
IRPTZ-MNT-NPTA1	Pendant NPT adapter for use with H4AMH-AD-PEND1 or H4 IRPTZ.
H4-MT-POLE1	Aluminum pole mounting bracket for H4 pendant style cameras or H4 HD bullet cameras.
H4-MT-CRNR1	Aluminum corner mounting bracket for H4 pendant style cameras or H4 HD bullet cameras.
H4AMH-AD-CEIL1	In-ceiling adapter, must order either a H4AMH-DC-COVR1 or H4AMH-DC-COVR1-SMOKE.
H4AMH-DO-COVR1	Dome bubble and cover, for outdoor surface mount or pendant mount, clear.
H4AMH-DO-COVR1-SMOKE	Dome bubble and cover, for outdoor surface mount or pendant mount, smoked. Not recommended for lowlight applications.
H4AMH-DC-COVR1	Dome bubble and cover, for in-ceiling mount, clear.
H4AMH-DC-COVR1-SMOKE	Dome bubble and cover, for in-ceiling mount, smoked. Not recommended for lowlight applications.
H4AMH-DC-CPNL1	Metal ceiling panel.

Optional IR Illuminator

The optional IR Illuminator is available for the H4 Multisensor when mounted in a pendant or surface mount adapter.

DISPLAY PART NUMBER	DESCRIPTION
H4AMH-AD-IRIL1	Optional IR Illuminator ring, up to 30m (100ft), for use with H4AMH-DO-COVR1.

Optional Injectors and Switches

DISPLAY PART NUMBER	DESCRIPTION
ES-PS-S4	Managed switch, 5 port, Outdoor IP66, -40°C (-40°F) to 50°C (122°C), Gigabit Ethernet, AC power input. 1x SFP uplink and 4 port RJ45. Maximum PoE power allocation: Up to 4 ports of PoE+ each, or 2 ports of 60W PoE each. In 60W PoE mode, compatible with H4 PTZ, H4 IR PTZ and H4 Multisensor.
ES-PS-MNT-POLE1	Pole mount bracket for ES-PS-S4 switch.
POE-INJ2-60W-NA	Indoor single port Gigabit PoE++ 60W, North American power cord included. May also be used in European Union, Japan, Australia, New Zealand, Mexico, China, South Korea, Russia, Argentina, Saudi Arabia, Kuwait, UAE and Brazil. Temperature range of the PoE injector is -10 °C to +45 °C (14 °F to 113 °F). When used with the H4 IR PTZ, the camera will operate in a reduced temperature range from -10 °C to +50 °C (14 °F to 122 °F).
POE-INJ2-PLUS	Indoor single port POE+ Injector. Injector operational temperature range -20°C to +40°C (-4°F to 104°F).

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The bridge to possible

Data sheet
Cisco public

Cisco 350 Series Managed Switches

Contents

Cisco 350 Series Switches	3
Business applications	4
Features and benefits	4
Product specifications	9
Ordering information	29
A powerful, affordable foundation for your small business network	32
Cisco Capital	32
For more information	32

Easy-to-Use Managed Switches That Provide the Ideal Combination of Features and Affordability

To stay ahead in a competitive marketplace, businesses need to make every dollar count. That means getting the most value from your technology investments, but it also means making sure that employees have fast, reliable access to the business tools and information they need. Every minute an employee waits for an unresponsive application and every minute your network is down has an effect on your profits. The importance of maintaining a strong and dependable business network only grows as your business adds more employees, applications, and network complexity.

When your business needs advanced security and features but value is still a top consideration, you're ready for the new generation of Cisco® Small Business managed switches: the Cisco 350 Series (Figure 1).



Figure 1.
Cisco 350 Series Managed Switches

Cisco 350 Series Switches

The Cisco 350 Series, part of the Cisco Small Business line of network solutions, is a portfolio of affordable managed switches that provides a reliable foundation for your business network. These switches deliver the features you need to improve the availability of your critical business applications, protect your sensitive information, and optimize your network bandwidth to deliver information and applications more effectively. Easy to set up and use, the Cisco 350 Series provides the ideal combination of affordability and capabilities for small businesses and helps you create a more efficient, better-connected workforce.

The Cisco 350 Series is a broad portfolio of fixed-configuration managed Ethernet switches. Models are available with 8 to 48 ports of Fast Ethernet and 10 to 52 ports of Gigabit Ethernet connectivity, providing optimal flexibility to create exactly the right network foundation for your business. However, unlike other small business switching solutions that provide managed network capabilities only in the costliest models, all Cisco 350 Series Switches support the advanced security management capabilities and network features you need to support business-class data, voice, security, and wireless technologies. At the same time, these switches are simple to deploy and configure, allowing you to take advantage of the managed network services your business needs.

Business applications

Whether you need a basic high-performance network to connect employee computers or a solution to deliver data, voice, and video services, the Cisco 350 Series offers a solution to meet your needs. Possible deployment scenarios include:

- **Secure desktop connectivity:** Cisco 350 Series Switches can simply and securely connect employees working in small offices with each other and with all of the servers, printers, and other devices they use. High performance and reliable connectivity help speed file transfers and data processing, improve network uptime, and keep your employees connected and productive.
- **Secure wireless connectivity:** With its advanced security features, Power over Ethernet, Auto Smartports, QoS, VLAN, and access control features, the Cisco 350 Series Switches are the perfect foundation to add business-grade wireless to a business network.
- **Unified communications:** As a managed network solution, the Cisco 350 Series provides the performance and advanced traffic-handling intelligence you need to deliver all communications and data over a single network. Cisco offers a complete portfolio of IP telephony and other unified communications products designed for businesses. Cisco 350 Series Switches have been rigorously tested to help ensure easy integration and full compatibility with these and other products, providing a complete business solution.
- **Highly secure guest connectivity:** Cisco 350 Series Switches let you extend highly secure network connectivity to guests in a variety of settings, such as a hotel, an office waiting room, or any other area open to nonemployee users. Using powerful but easy-to-configure security and traffic segmentation capabilities, you can isolate your vital business traffic from guest services and keep guests' network sessions private from each other.

Features and benefits

Cisco 350 Series switches provide the advanced feature set that growing businesses require and that high-bandwidth applications and technologies demand. These switches can improve the availability of your critical applications, protect your business information, and optimize your network bandwidth to more effectively deliver information and support applications. The switches provide the following benefits.

Ease of management and deployment

Cisco 350 Series switches are designed to be easy to use and manage by commercial customers or the partners that serve them. They feature:

- Cisco Smart Network Application (SNA) is an innovative network-level monitoring and management tool embedded in Cisco 100 to 500 Series switches. It can discover network topology, display link status, monitor events, apply configurations, and upgrade software images across multiple switches in the network.
- The FindIT Network Manager and Probe are designed to manage Cisco 100 to 500 Series switches, routers, and wireless access points. The Manager lets you proactively manage the network instead of just reacting to events. FindIT Network Management is the perfect addition to your business network. For more information, visit <https://www.cisco.com/go/findit>.

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- The Cisco FindIT Network Discovery Utility works through a simple toolbar on your web browser to discover Cisco devices on the network and display basic device information, inventory, and new firmware updates to aid in the configuration and speed the deployment of Cisco Small Business products. For more information, visit <https://www.cisco.com/go/findit>.
 - The USB port on the front panel of the switch enables easy image and configuration transfer for faster deployment or upgrade.
 - Simple-to-use graphical interfaces reduce the time required to deploy, troubleshoot, and manage the network and allow you to support sophisticated capabilities without increasing IT head count.
 - The switches also support Textview, a full Command-Line Interface (CLI) option for partners that prefer it.
 - Using Auto Smartports intelligence, the switch can detect a network device connected to any port and automatically configure the optimal security, Quality of Service (QoS), and availability on that port.
 - Cisco Discovery Protocol discovers Cisco devices and allows devices to share critical configuration information, simplifying network setup and integration.
 - Support for Simple Network Management Protocol (SNMP) allows you to set up and manage your switches and other Cisco devices remotely from a network management station, improving IT workflow and mass configurations.

High reliability and resiliency

In a growing business where availability 24 hours a day, 7 days a week is critical, you need to assure that employees can always access the data and resources they need. The Cisco 350 Series supports dual images, allowing you to perform software upgrades without having to take the network offline or worry about the network going down during the upgrade.

Strong security

Cisco 350 Series switches provide the advanced security features you need to protect your business data and keep unauthorized users off the network:

- Embedded Secure Sockets Layer (SSL) encryption protects management data traveling to and from the switch.
- Extensive Access Control Lists (ACLs) restrict sensitive portions of the network to keep out unauthorized users and guard against network attacks.
- Guest VLANs let you provide Internet connectivity to nonemployee users while isolating critical business services from guest traffic.
- Support for advanced network security applications such as IEEE 802.1X port security tightly limits access to specific segments of your network. Web-based authentication provides a consistent interface to authenticate all types of host devices and operating systems, without the complexity of deploying IEEE 802.1X clients on each endpoint.
- Advanced defense mechanisms, including dynamic Address Resolution Protocol (ARP) inspection, IP Source Guard, and Dynamic Host Configuration Protocol (DHCP) snooping, detect and block deliberate network attacks. Combinations of these protocols are also referred to as IP-MAC port binding (IPMB).

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- IPv6 First Hop Security extends the advanced threat protection to IPv6. This comprehensive security suite includes ND inspection, RA guard, DHCPv6 guard, and neighbor binding integrity check, providing unparalleled protection against a vast range of address spoofing and man-in-the-middle attacks on IPv6 networks.
 - Time-based ACLs and port operation restrict access to the network during predesignated times such as business hours.
 - Uniform MAC address-based security can be applied automatically to mobile users as they roam between wireless access points.
 - Secure Core Technology (SCT) helps ensure that the switch is able to process management traffic in the face of a Denial-of-Service (DoS) attack.
 - Private VLAN Edge (PVE) provides Layer 2 isolation between devices on the same VLAN.
 - Storm control can be applied to broadcast, multicast, and unknown unicast traffic.
 - Protection of management sessions occurs using RADIUS, TACACS+, and local database authentication as well as secure management sessions over SSL, SSH, and SNMPv3.
 - DoS attack prevention maximizes network uptime in the presence of an attack.

Power over Ethernet

Cisco 350 Series Switches are available with up to 48 PoE ports. This capability simplifies advanced technology deployments such as IP telephony, wireless, and IP surveillance by allowing you to connect and power network endpoints over a single Ethernet cable. With no need to install separate power supplies for IP phones or wireless access points, you can take advantage of advanced communications technologies more quickly and at a lower cost. Models support 802.3af PoE, 802.3at PoE+, and 60 Watt PoE.

Multigigabit performance

Network needs are changing quickly. Thanks to evolving wireless standards and the rising number of wireless devices, keeping up with data rates and growing traffic can be a challenge. Your traditional Ethernet infrastructure can support speeds up to 1 Gigabit per second (Gbps), but competing today requires much more capacity. One option is completely replacing your older cabling infrastructure and upgrading your hardware. But wouldn't it be better to increase network speed and traffic capacity in a way that's quick, inexpensive, and efficient?

Cisco's new Multigigabit Ethernet switches offer just that: an easy-to-deploy, budget-friendly solution that allows you to increase network speed and bandwidth using your existing cables. By partnering with other industry leaders to form the NBASE-T Alliance, Cisco uses NBASE-T technology to help you get more out of your existing infrastructure. Save time and money by avoiding upgrades and extending the life of your installed cable plants. And discover the benefits of meeting consumer demand for increased bandwidth and speeds without a large initial investment.

Multigigabit Ethernet technology uses capabilities in your existing cabling infrastructure to meet bandwidth requirements and provide up to five times the performance. The technology enables intermediate data rates of 2.5 and 5 Gbps to ease the jump between traditional rates of 1 Gbps and 10 Gbps. These intermediate rates run on most installed cables and preserve older UTP wiring, which is good for 802.11ac wireless LAN applications.

The technology also supports Power over Ethernet (PoE) forms, including PoE+ and 60W PoE. Cisco Multigigabit Ethernet switches help you avoid having to run multiple cables between switches and access points and let your networks welcome next-generation traffic speeds and data rates.

Networkwide automatic voice deployment

Using a combination of Cisco Discovery Protocol, LLDP-MED, Auto Smartports, and Voice Services Discovery Protocol (or VSDP, a unique Cisco protocol), customers can deploy an end-to-end voice network dynamically. The switches in the network automatically converge around a single voice VLAN and QoS parameters and then propagate them out to the phones on the ports, where they are discovered. For example, automated voice VLAN capabilities let you plug any IP phone (including third-party phones) into your IP telephony network and receive an immediate dial tone. The switch automatically configures the device with the right VLAN and QoS parameters to prioritize voice traffic.

IPv6 support

As the IP address scheme evolves to accommodate a growing number of network devices, the Cisco 350 Series can support the transition to the next generation of networking and operating systems such as Windows 8, Vista, and Linux. These switches continue to support previous-generation IPv4, allowing you to evolve to the new IPv6 standard at your own pace and helping ensure that your current network will continue to support your business applications in the future. Cisco 350 Series switches have successfully completed rigorous IPv6 testing and have received the USGv6 and IPv6 Gold certification.

Advanced layer 3 traffic management

The Cisco 350 Series enables a more advanced set of traffic management capabilities to help growing businesses organize their networks more effectively and efficiently. For example, the switches provide static LAN Layer 3 routing, allowing you to segment your network into workgroups and communicate across VLANs without degrading application performance.

With these capabilities, you can boost the efficiency of your network by offloading internal traffic-handling tasks from your router and allowing it to manage primarily external traffic and security.

Power efficiency

The Cisco 350 Series integrates a variety of power-saving features across all models, providing the industry's most extensive energy-efficient switching portfolio. These switches are designed to conserve energy by optimizing power use, which helps protect the environment and reduce your energy costs. They provide an eco-friendly network solution without compromising performance. Cisco 350 Series switches feature:

- Support for the Energy Efficient Ethernet (IEEE 802.3az) standard, which reduces energy consumption by monitoring the amount of traffic on an active link and putting the link into a sleep state during quiet periods
- The latest Application-Specific Integrated Circuits (ASICs)
- Automatic power shutoff on ports when a link is down
- LEDs that can be turned off to save power
- Embedded intelligence to adjust signal strength based on the length of the connecting cable

Expansion ports

The Cisco 350 Series provides more ports per Gigabit Ethernet switch than traditional switch models, giving you more flexibility to connect and empower your business. Gigabit Ethernet models offer 28 to 52 ports to give you more value, versus the 24-port or 48-port varieties with four shared ports that's common in the market. The Cisco 350 Series also offers small form-factor pluggable (SFP) expansion slots that give you the option to add fiber-optic or Gigabit Ethernet uplink connectivity to the switch. With the ability to increase the connectivity range of the switches, you have more flexibility to design your network around your unique business environment and to easily connect switches on different floors or across the business.

Peace of mind and investment protection

Cisco 350 Series switches offer the reliable performance and peace of mind you expect from a Cisco switch. When you invest in the Cisco 350 Series, you gain the benefits of:

- Limited lifetime warranty with Next-Business-Day (NBD) advance replacement (where available; otherwise same day ship).
- A solution that has been rigorously tested to help ensure optimal network uptime to keep employees connected to primary resources and productive.
- A solution designed and tested to easily and fully integrate with other Cisco voice, unified communications, security, and networking products as part of a comprehensive technology platform for your business.
- Complimentary software updates for bug fixes for the warranty term. To download software updates, go to <https://software.cisco.com/download/home>.
- Telephone technical support at no charge for the first 12 months following the date of purchase.
- Product warranty terms and other information applicable to Cisco products are available at <https://www.cisco.com/go/warranty>.
- Cisco Small Business products are supported by professionals in Cisco Small Business Support Center locations worldwide who are specifically trained to understand your needs. The Cisco Small Business Support Community, an online forum, enables you to collaborate with your peers and reach Cisco technical experts for support information.

Cisco limited lifetime hardware warranty

Cisco 350 Series switches offer a limited lifetime hardware warranty with NBD advance replacement (where available; otherwise same day ship) and a limited lifetime warranty for fans and power supplies.

In addition, Cisco offers software application updates for bug fixes for the warranty term and telephone technical support at no charge for the first 12 months following the date of purchase. To download software updates, go to <https://software.cisco.com/download/home>.

Product warranty terms and other information applicable to Cisco products are available at <https://www.cisco.com/go/warranty>.

World-class service and support

Your time is valuable, especially when you have a problem affecting your business. Cisco 350 Series switches are backed by Cisco SMARTnet® Total Care™ which provides affordable peace-of-mind coverage. Delivered by Cisco and backed by your trusted partner, this comprehensive service includes software updates and access to the Cisco Support Center, and it extends technical service to three years.

Cisco SMB products are supported by professionals in the Cisco Support Center, a dedicated resource for small business customers and networks, with locations worldwide that are specifically trained to understand your needs. You also have access to extensive technical and product information through the Cisco Support Community, an online forum that enables you to collaborate with your peers and reach Cisco technical experts for support information.

Product specifications

Table 1 gives the product specifications for the Cisco 350 Series Switches.

Table 1. Product specifications

Feature	Description		
Performance			
Switching capacity and forwarding rate	Model Name	Capacity in Millions of Packets per Second (mpps) (64-byte packets)	Switching Capacity in Gigabits per Second (Gbps)
All switches are wire speed and nonblocking	SF350-08	1.19	1.6
	SF352-08	4.17	5.6
	SF352-08P	4.17	5.6
	SF352-08MP	4.17	5.6
	SF350-24	9.52	12.8
	SF350-24P	9.52	12.8
	SF350-24MP	9.52	12.8
	SF350-48	13.09	17.6
	SF350-48P	13.09	17.6
	SF350-48MP	13.09	17.6
	SG350-8PD	46.13	62.0
	SG350-10	14.88	20.0
	SG350-10P	14.88	20.0
	SG350-10MP	14.88	20.0
	SG355-10MP	14.88	20.0

Feature	Description
SG350-10SFP	14.88 20.0
SG350-20	29.76 40.0
SG350-28	41.66 56.0
SG350-28P	41.66 56.0
SG350-28MP	41.66 56.0
SG350-28SFP	41.66 56.0
SG350-52	77.38 104.0
SG350-52P	77.38 104.0
SG350-52MP	77.38 104.0

Layer 2 Switching

Spanning Tree Protocol	<p>Standard 802.1d Spanning Tree support</p> <p>Fast convergence using 802.1w (Rapid Spanning Tree [RSTP]), enabled by default</p> <p>Multiple Spanning Tree instances using 802.1s (MSTP); 8 instances are supported</p> <p>Per-VLAN Spanning Tree Plus (PVST+) and Rapid PVST+ (RPVST+); 126 instances are supported</p>
Port grouping/link aggregation	<p>Support for IEEE 802.3ad Link Aggregation Control Protocol (LACP)</p> <ul style="list-style-type: none"> • Up to 8 groups • Up to 8 ports per group with 16 candidate ports for each (dynamic) 802.3ad link aggregation
VLAN	<p>Support for up to 4,094 VLANs simultaneously</p> <p>Port-based and 802.1Q tag-based VLANs; MAC-based VLAN; protocol-based VLAN; IP subnet-based VLAN,</p> <p>Management VLAN</p> <p>Private VLAN with promiscuous, isolated, and community port</p> <p>Private VLAN Edge (PVE), also known as protected ports, with multiple uplinks</p> <p>Guest VLAN; unauthenticated VLAN</p> <p>Dynamic VLAN assignment via RADIUS server along with 802.1x client authentication</p> <p>CPE VLAN</p>
Voice VLAN	<p>Voice traffic is automatically assigned to a voice-specific VLAN and treated with appropriate levels of QoS</p> <p>Auto voice capabilities deliver networkwide zero-touch deployment of voice endpoints and call control devices</p>
Multicast TV VLAN	<p>Multicast TV VLAN allows the single multicast VLAN to be shared in the network while subscribers remain in separate VLANs. This feature is also known as Multicast VLAN Registration (MVR)</p>

Feature	Description
VLAN Translation	Support for VLAN One-to-One Mapping. In VLAN One-to-One Mapping, on an edge interface C-VLANs are mapped to S-VLANs and the original C-VLAN tags are replaced by the specified S-VLAN
Q-in-Q	VLANs transparently cross a service provider network while isolating traffic among customers
Selective Q-in-Q	Selective Q-in-Q is an enhancement to the basic Q-in-Q feature and provides, per edge interface, multiple mappings of different C-VLANs to separate S-VLANs Selective Q-in-Q also allows configuring of Ethertype (TPID) of the S-VLAN tag Layer 2 protocol tunneling over Q-in-Q is also supported
Generic VLAN Registration Protocol (GVRP)/Generic Attribute Registration Protocol (GARP)	Generic VLAN Registration Protocol (GVRP) and Generic Attribute Registration Protocol (GARP) enable automatic propagation and configuration of VLANs in a bridged domain
Unidirectional Link Detection (UDLD)	UDLD monitors physical connection to detect unidirectional links caused by incorrect wiring or cable/port faults to prevent forwarding loops and blackholing of traffic in switched networks
Dynamic Host Configuration Protocol (DHCP) Relay at Layer 2	Relay of DHCP traffic to DHCP server in different VLAN; works with DHCP Option 82
Internet Group Management Protocol (IGMP) versions 1, 2, and 3 snooping	IGMP limits bandwidth-intensive multicast traffic to only the requesters; supports 2K multicast groups (source-specific multicasting is also supported)
IGMP Querier	IGMP querier is used to support a Layer 2 multicast domain of snooping switches in the absence of a multicast router
Head-Of-Line (HOL) blocking	HOL blocking prevention
Loopback Detection	Loopback detection provides protection against loops by transmitting loop protocol packets out of ports on which loop protection has been enabled. It operates independently of STP
Layer 3	
IPv4 routing	Wirespeed routing of IPv4 packets Up to 990 static routes and up to 128 IP interfaces
IPv6 routing	Wirespeed routing of IPv6 packets
Layer 3 Interface	Configuration of Layer 3 interface on physical port, LAG, VLAN interface, or loopback interface
Classless Interdomain Routing (CIDR)	Support for classless interdomain routing
Policy-Based Routing (PBR)	Flexible routing control to direct packets to different next hop based on IPv4 or IPv6 ACL

Feature	Description
DHCP Server	Switch functions as an IPv4 DHCP server serving IP addresses for multiple DHCP pools/scopes Support for DHCP options
DHCP relay at Layer 3	Relay of DHCP traffic across IP domains
User Datagram Protocol (UDP) relay	Relay of broadcast information across Layer 3 domains for application discovery or relaying of bootP/DHCP packets
Security	
Secure Shell (SSH) Protocol	SSH is a secure replacement for Telnet traffic. SCP also uses SSH. SSH v1 and v2 are supported
Secure Sockets Layer (SSL)	SSL support: Encrypts all HTTPS traffic, allowing highly secure access to the browser-based management GUI in the switch
IEEE 802.1X (Authenticator role)	802.1X: RADIUS authentication and accounting, MD5 hash; guest VLAN; unauthenticated VLAN, single/multiple host mode and single/multiple sessions Supports time-based 802.1X Dynamic VLAN assignment
Web-based authentication	Web based authentication provides network admission control through web browser to any host devices and operating systems
STP Bridge Protocol Data Unit (BPDU) Guard	A security mechanism to protect the network from invalid configurations. A port enabled for BPDU Guard is shut down if a BPDU message is received on that port
STP Root Guard	This prevents edge devices not in the network administrator's control from becoming Spanning Tree Protocol root nodes
STP loopback guard	Provides additional protection against Layer 2 forwarding loops (STP loops)
DHCP snooping	Filters out DHCP messages with unregistered IP addresses and/or from unexpected or untrusted interfaces. This prevents rogue devices from behaving as DHCP Servers
IP Source Guard (IPSG)	When IP Source Guard is enabled at a port, the switch filters out IP packets received from the port if the source IP addresses of the packets have not been statically configured or dynamically learned from DHCP snooping. This prevents IP Address Spoofing
Dynamic ARP Inspection (DAI)	The switch discards ARP packets from a port if there are no static or dynamic IP/MAC bindings or if there is a discrepancy between the source or destination addresses in the ARP packet. This prevents man-in-the-middle attacks
IP/MAC/Port Binding (IPMB)	The preceding features (DHCP Snooping, IP Source Guard, and Dynamic ARP Inspection) work together to prevent DOS attacks in the network, thereby increasing network availability
Secure Core Technology (SCT)	Makes sure that the switch will receive and process management and protocol traffic no matter how much traffic is received
Secure Sensitive Data (SSD)	A mechanism to manage sensitive data (such as passwords, keys, and so on) securely on the switch, populating this data to other devices, and secure autoconfig. Access to view the sensitive data as plaintext or encrypted is provided according to the user-configured access level and the access method of the user

Feature	Description
Trustworthy systems	Trustworthy systems provide a highly secure foundation for Cisco products Run-time defenses (Executable Space Protection [X-Space], Address Space Layout Randomization [ASLR], Built-In Object Size Checking [BOSC])
Private VLAN	Private VLAN provides security and isolation between switch ports, which helps ensure that users cannot snoop on other users' traffic; supports multiple uplinks
Layer 2 isolation Private VLAN Edge (PVE) with community VLAN	PVE (also known as protected ports) provides Layer 2 isolation between devices in the same VLAN, supports multiple uplinks
Port security	Ability to lock source MAC addresses to ports and limits the number of learned MAC addresses
RADIUS/TACACS+	Supports RADIUS and TACACS authentication. Switch functions as a client
RADIUS accounting	The RADIUS accounting functions allow data to be sent at the start and end of services, indicating the amount of resources (such as time, packets, bytes, and so on) used during the session
Storm control	Broadcast, multicast, and unknown unicast
DoS prevention	Denial-Of-Service (DOS) attack prevention
Multiple user privilege levels in CLI	Level 1, 7, and 15 privilege levels
ACLs	Support for up to 1K rules Drop or rate limit based on source and destination MAC, VLAN ID or IPv4 or IPv6 address, IPv6 flow label, protocol, port, Differentiated Services Code Point (DSCP)/IP precedence, TCP/UDP source and destination ports, 802.1p priority, Ethernet type, Internet Control Message Protocol (ICMP) packets, IGMP packets, TCP flag; ACL can be applied on both ingress and egress sides Time-based ACLs supported
Quality of Service	
Priority levels	8 hardware queues
Scheduling	Strict priority and Weighted Round-Robin (WRR) Queue assignment based on DSCP and class of service (802.1p/CoS)
Class of service	Port based; 802.1p VLAN priority based; IPv4/v6 IP precedence/Type of Service (ToS)/DSCP based; Differentiated Services (DiffServ); classification and remarking ACLs, trusted QoS Queue assignment based on DSCP and class of service (802.1p/CoS)
Rate limiting	Ingress policer; egress shaping and rate control; per VLAN, per port, and flow based; 2R3C policing
Congestion avoidance	A TCP congestion avoidance algorithm is required to minimize and prevent global TCP loss synchronization

Feature	Description
Standards	
Standards	IEEE 802.3 10BASE-T Ethernet, IEEE 802.3u 100BASE-TX Fast Ethernet, IEEE 802.3ab 1000BASE-T Gigabit Ethernet, IEEE 802.3ad Link Aggregation Control Protocol, IEEE 802.3z Gigabit Ethernet, IEEE 802.3x Flow Control, IEEE 802.1D (STP, GARP, and GVRP), IEEE 802.1Q/p VLAN, IEEE 802.1w Rapid STP, IEEE 802.1s Multiple STP, IEEE 802.1X Port Access Authentication, IEEE 802.3af, IEEE 802.3at, IEEE 802.1AB Link Layer Discovery Protocol, IEEE 802.3az Energy Efficient Ethernet, RFC 768, RFC 783, RFC 791, RFC 792, RFC 793, RFC 813, RFC 826, RFC 879, RFC 896, RFC 854, RFC 855, RFC 856, RFC 858, RFC 894, RFC 919, RFC 920, RFC 922, RFC 950, RFC 951, RFC 1042, RFC 1071, RFC 1123, RFC 1141, RFC 1155, RFC 1157, RFC 1213, RFC 1215, RFC 1286, RFC 1350, RFC 1442, RFC 1451, RFC 1493, RFC 1533, RFC 1541, RFC 1542, RFC 1573, RFC 1624, RFC 1643, RFC 1700, RFC 1757, RFC 1867, RFC 1907, RFC 2011, RFC 2012, RFC 2013, RFC 2030, RFC 2131, RFC 2132, RFC 2233, RFC 2576, RFC 2616, RFC 2618, RFC 2665, RFC 2666, RFC 2674, RFC 2737, RFC 2819, RFC 2863, RFC 3164, RFC 3176, RFC 3411, RFC 3412, RFC 3413, RFC 3414, RFC 3415, RFC 3416, RFC 4330
IPv6	
IPv6	IPv6 host mode; IPv6 over Ethernet; Dual IPv6/IPv4 stack IPv6 neighbor and router discovery (ND); IPv6 stateless address autoconfiguration; Path Maximum Transmission Unit (MTU) discovery Duplicate Address Detection (DAD); ICMP version 6 DHCPv6 stateful client IPv6 over IPv4 network with Intrasite Automatic Tunnel Addressing Protocol (ISATAP) tunnel support USGv6 and IPv6 Gold Logo certified
IPv6 QoS	Prioritize IPv6 packets in hardware
IPv6 ACL	Drop or rate limit IPv6 packets in hardware
IPv6 First Hop Security	RA guard ND inspection DHCPv6 guard Neighbor binding table (snooping and static entries) Neighbor binding integrity check
Multicast Listener Discovery (MLD v1/2) snooping	Deliver IPv6 multicast packets only to the required receivers
IPv6 applications	Web/SSL, Telnet server/SSH, ping, traceroute, Simple Network Time Protocol (SNTP), Trivial File Transfer Protocol (TFTP), SNMP, RADIUS, syslog, DNS client, Telnet Client, DHCP Client, DHCP Autoconfig, IPv6 DHCP Relay, TACACS+
IPv6 RFCs supported	RFC 4443 (which obsoletes RFC2463): ICMP version 6 RFC 4291 (which obsoletes RFC 3513): IPv6 address architecture RFC 4291: IPv6 addressing architecture RFC 2460: IPv6 specification RFC 4861 (which obsoletes RFC 2461): neighbor discovery for IPv6

Feature	Description																																						
	<p>RFC 4862 (which obsoletes RFC 2462): IPv6 stateless address autoconfiguration</p> <p>RFC 1981: path MTU discovery</p> <p>RFC 4007: IPv6 scoped address architecture</p> <p>RFC 3484: default address selection mechanism</p> <p>RFC 5214 (which obsoletes RFC 4214): ISATAP tunneling</p> <p>RFC 4293: MIB IPv6: textual conventions and general group</p> <p>RFC 3595: textual conventions for IPv6 flow label</p>																																						
Management																																							
Web user interface	<p>Built-in switch configuration utility for easy browser-based device configuration (HTTP/HTTPS)</p> <p>Supports simple and advanced mode, configuration, wizards, customizable dashboard, system maintenance, monitoring, online help, and universal search</p>																																						
Smart Network Application	<p>Smart Network Application (SNA) is an innovative network-level monitoring and management tool embedded in Cisco 100 to 500 Series switches. It can discover network topology, display link status, monitor events, apply configurations, and upgrade software images across multiple switches in the network</p> <p>(Note: Management of your network using Smart Network Application requires the use of either a 350, 350X, or 550X Series switch model as a part of your network)</p>																																						
SNMP	<p>SNMP versions 1, 2c, and 3 with support for traps, and SNMP version 3 User-based Security Model (USM)</p>																																						
Standard MIBs	<table border="0"> <tr><td>lldp-MIB</td><td>rfc2668-MIB</td></tr> <tr><td>lldpextdot1-MIB</td><td>rfc2737-MIB</td></tr> <tr><td>lldpextdot3-MIB</td><td>rfc2925-MIB</td></tr> <tr><td>lldpextmed-MIB</td><td>rfc3621-MIB</td></tr> <tr><td>rfc2674-MIB</td><td>rfc4668-MIB</td></tr> <tr><td>rfc2575-MIB</td><td>rfc4670-MIB</td></tr> <tr><td>rfc2573-MIB</td><td>trunk-MIB</td></tr> <tr><td>rfc2233-MIB</td><td>tunnel-MIB</td></tr> <tr><td>rfc2013-MIB</td><td>udp-MIB</td></tr> <tr><td>rfc2012-MIB</td><td>draft-ietf-bridge-8021x-MIB</td></tr> <tr><td>rfc2011-MIB</td><td>draft-ietf-bridge-rstp-mib-04-MIB</td></tr> <tr><td>RFC-1212</td><td>draft-ietf-hubmib-etherif-mib-v3-00-MIB</td></tr> <tr><td>RFC-1215</td><td>draft-ietf-syslog-device-MIB</td></tr> <tr><td>SNMPv2-CONF</td><td>ianaaddrfamnumbers-MIB</td></tr> <tr><td>SNMPv2-TC</td><td>ianaifty-MIB</td></tr> <tr><td>p-bridge-MIB</td><td>ianaprot-MIB</td></tr> <tr><td>q-bridge-MIB</td><td>inet-address-MIB</td></tr> <tr><td>rfc1389-MIB</td><td>ip-forward-MIB</td></tr> <tr><td>rfc1493-MIB</td><td>ip-MIB</td></tr> </table>	lldp-MIB	rfc2668-MIB	lldpextdot1-MIB	rfc2737-MIB	lldpextdot3-MIB	rfc2925-MIB	lldpextmed-MIB	rfc3621-MIB	rfc2674-MIB	rfc4668-MIB	rfc2575-MIB	rfc4670-MIB	rfc2573-MIB	trunk-MIB	rfc2233-MIB	tunnel-MIB	rfc2013-MIB	udp-MIB	rfc2012-MIB	draft-ietf-bridge-8021x-MIB	rfc2011-MIB	draft-ietf-bridge-rstp-mib-04-MIB	RFC-1212	draft-ietf-hubmib-etherif-mib-v3-00-MIB	RFC-1215	draft-ietf-syslog-device-MIB	SNMPv2-CONF	ianaaddrfamnumbers-MIB	SNMPv2-TC	ianaifty-MIB	p-bridge-MIB	ianaprot-MIB	q-bridge-MIB	inet-address-MIB	rfc1389-MIB	ip-forward-MIB	rfc1493-MIB	ip-MIB
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rfc2013-MIB	udp-MIB																																						
rfc2012-MIB	draft-ietf-bridge-8021x-MIB																																						
rfc2011-MIB	draft-ietf-bridge-rstp-mib-04-MIB																																						
RFC-1212	draft-ietf-hubmib-etherif-mib-v3-00-MIB																																						
RFC-1215	draft-ietf-syslog-device-MIB																																						
SNMPv2-CONF	ianaaddrfamnumbers-MIB																																						
SNMPv2-TC	ianaifty-MIB																																						
p-bridge-MIB	ianaprot-MIB																																						
q-bridge-MIB	inet-address-MIB																																						
rfc1389-MIB	ip-forward-MIB																																						
rfc1493-MIB	ip-MIB																																						

Feature	Description	Description
	rfc1611-MIB	RFC1155-SMI
	rfc1612-MIB	RFC1213-MIB
	rfc1850-MIB	SNMPv2-MIB
	rfc1907-MIB	SNMPv2-SMI
	rfc2571-MIB	SNMPv2-TM
	rfc2572-MIB	RMON-MIB
	rfc2574-MIB	rfc1724-MIB
	rfc2576-MIB	dcb-raj-DCBX-MIB-1108-MIB
	rfc2613-MIB	rfc1213-MIB
	rfc2665-MIB	rfc1757-MIB
Private MIBs	CISCOB-ldp-MIB CISCOB-	CISCOB-ip-MIB
	brgmulticast-MIB CISCOB-	CISCOB-iprouter-MIB
	bridgemibobjects-MIB	CISCOB-ipv6-MIB
	CISCOB-bonjour-MIB	CISCOB-mnginf-MIB
	CISCOB-dhcpcl-MIB	CISCOB-licli-MIB
	CISCOB-MIB	CISCOB-localization-MIB
	CISCOB-wrandomtaildrop-MIB	CISCOB-mcmngr-MIB
	CISCOB-traceroute-MIB	CISCOB-mng-MIB
	CISCOB-telnet-MIB	CISCOB-physdescription-MIB
	CISCOB-stormctrl-MIB	CISCOB-Poe-MIB
	CISCOB-ssh-MIB	CISCOB-protectedport-MIB
	CISCOB-socket-MIB	CISCOB-rmon-MIB
	CISCOB-sntp-MIB	CISCOB-rs232-MIB
	CISCOB-smon-MIB	CISCOB-SecuritySuite-MIB
	CISCOB-phy-MIB	CISCOB-snmplib-MIB
	CISCOB-multisessionterminal-MIB	CISCOB-specialbpdu-MIB
	CISCOB-mri-MIB	CISCOB-banner-MIB
	CISCOB-jumboframes-MIB	CISCOB-syslog-MIB
	CISCOB-gvrp-MIB	CISCOB-TcpSession-MIB
	CISCOB-endofmib-MIB	CISCOB-traps-MIB
	CISCOB-dot1x-MIB	CISCOB-trunk-MIB
	CISCOB-deviceparams-MIB	CISCOB-tuning-MIB
	CISCOB-cli-MIB	CISCOB-tunnel-MIB
	CISCOB-cdb-MIB	CISCOB-udp-MIB
	CISCOB-brgmacswitch-MIB	CISCOB-vlan-MIB
	CISCOB-3sw2swtables-MIB	CISCOB-ipstdacl-MIB
	CISCOB-smartPorts-MIB	CISCOB-eee-MIB

Feature	Description
	CISCOB-tbi-MIB
	CISCOB-macbaseprio-MIB
	CISCOB-policy-MIB
	CISCOB-env_mib
	CISCOB-sensor-MIB
	CISCOB-aaa-MIB
	CISCOB-application-MIB
	CISCOB-bridgesecurity-MIB
	CISCOB-copy-MIB
	CISCOB-CpuCounters-MIB
	CISCOB-Custom1BonjourService-MIB
	CISCOB-dhcp-MIB
	CISCOB-dlf-MIB
	CISCOB-dnscl-MIB
	CISCOB-embweb-MIB
	CISCOB-fft-MIB
	CISCOB-file-MIB
	CISCOB-greeneth-MIB
	CISCOB-interfaces-MIB
	CISCOB-interfaces_recovery-MIB
	CISCOB-ssl-MIB
	CISCOB-qosclimib-MIB
	CISCOB-digitalkeymanage-MIB
	CISCOB-tbp-MIB
	CISCOB-MIB
	CISCOB-secsd-MIB
	CISCOB-draft-ietf-entmib-sensor-MIB
	CISCOB-draft-ietf-syslog-device-MIB
	CISCOB-rfc2925-MIB
	CISCO-SMI-MIB
	CISCOB-DebugCapabilities-MIB
	CISCOB-CDP-MIB
	CISCOB-vlanVoice-MIB
	CISCOB-EVENTS-MIB
	CISCOB-sysmng-MIB
	CISCOB-sct-MIB
	CISCO-TC-MIB
	CISCO-VTP-MIB
	CISCO-CDP-MIB
Remote Monitoring (RMON)	Embedded RMON software agent supports 4 RMON groups (history, statistics, alarms, and events) for enhanced traffic management, monitoring, and analysis
IPv4 and IPv6 dual stack	Coexistence of both protocol stacks to ease migration
Firmware upgrade	<ul style="list-style-type: none"> • Web browser upgrade (HTTP/HTTPS) and TFTP and upgrade over SCP running over SSH • Upgrade can be initiated through console port as well • Dual images for resilient firmware upgrades
Port mirroring	Traffic on a port can be mirrored to another port for analysis with a network analyzer or RMON probe. Up to 8 source ports can be mirrored to one destination port. A single session is supported
VLAN mirroring	Traffic from a VLAN can be mirrored to a port for analysis with a network analyzer or RMON probe. Up to 8 source VLANs can be mirrored to one destination port. A single session is supported
DHCP (options 12, 66, 67, 82, 129, and 150)	DHCP options facilitate tighter control from a central point (DHCP server) to obtain IP address, autoconfiguration (with configuration file download), DHCP relay, and hostname
Secure Copy (SCP)	Securely transfer files to and from the switch
Autoconfiguration with Secure Copy (SCP) file download	Enables secure mass deployment with protection of sensitive data

Feature	Description
Text-editable config files	Config files can be edited with a text editor and downloaded to another switch, facilitating easier mass deployment
Smartports	Simplified configuration of QoS and security capabilities
Auto Smartports	Applies the intelligence delivered through the Smartport roles and applies it automatically to the port based on the devices discovered over Cisco Discovery Protocol or LLDP-MED. This facilitates zero-touch deployments
Textview CLI	Scriptable command-line interface. A full CLI as well as a menu-based CLI is supported. User privilege levels 1, 7, and 15 are supported for the CLI
Cloud services	Support for Cisco FindIT Network Manager and Cisco Active Advisor
Embedded Probe for FindIT Network Manager	Support for embedded FindIT Network Probe running on the switch. Eliminates the need to set up a separate hardware or virtual machine for the FindIT Network Probe on site
Cisco Network Plug and Play (PnP) agent	The Cisco Network Plug and Play solution provides a simple, secure, unified, and integrated offering to ease new branch or campus device rollouts or for provisioning updates to an existing network. The solution provides a unified approach to provision Cisco routers, switches, and wireless devices with a near-zero-touch deployment experience Supports Cisco PnP Connect
Localization	Localization of GUI and documentation into multiple languages
Login banner	Configurable multiple banners for web as well as CLI
Other management	Traceroute; single IP management; HTTP/HTTPS; SSH; RADIUS; port mirroring; TFTP upgrade; DHCP client; BOOTP; SNMP; Xmodem upgrade; cable diagnostics; ping; syslog; Telnet client (SSH secure support); automatic time settings from Management Station
Time-based port operation	Link up or down based on user-defined schedule (when the port is administratively up)
Time-based PoE	Capability for power to be on or off based on a user-defined schedule to save energy
Power Efficiency	
Energy Detect	Automatically turns power off on Gigabit Ethernet and 10/100 RJ-45 port when detecting link down. Active mode is resumed without loss of any packets when the switch detects the link up
Cable length detection	Adjusts the signal strength based on the cable length for Gigabit Ethernet models. Reduces the power consumption for shorter cables
EEE Compliant (802.3az)	Supports IEEE 802.3az on all copper Gigabit Ethernet ports
Disable port LEDs	LEDs can be manually turned off to save on energy
Time-based port operation	Link up or down based on user-defined schedule (when the port is administratively up)
Time-based PoE	Capability for power to be on or off based on a user-defined schedule to save energy

Feature	Description																																													
General																																														
Jumbo frames	Frame sizes up to 9K bytes. The default MTU is 2K bytes																																													
MAC table	16K addresses																																													
Discovery																																														
Bonjour	The switch advertises itself using the Bonjour protocol																																													
Link Layer Discovery Protocol (LLDP) (802.1ab) with LLDP-MED extensions	LLDP allows the switch to advertise its identification, configuration, and capabilities to neighboring devices that store the data in a MIB. LLDP-MED is an enhancement to LLDP that adds the extensions needed for IP phones																																													
Cisco Discovery Protocol	The switch advertises itself using the Cisco Discovery Protocol. It also learns the connected device and its characteristics via Cisco Discovery Protocol																																													
Power over Ethernet (PoE)																																														
802.3af PoE, 802.3at PoE+, or 60W PoE are delivered over the RJ-45 ports within the listed power budgets	<p>The following switches support 802.3at PoE+, 802.3af PoE, and Cisco prestandard (legacy) PoE on any of the RJ45 network ports. 60W PoE is also supported on selected RJ-45 network ports</p> <p>Maximum power of 60W is delivered to any of the 60W PoE ports, and maximum power of 30W is delivered to any of the other RJ45 network ports, until the PoE budget for the switch is reached</p> <p>The total power available for PoE per switch is as follows</p> <table border="1"> <thead> <tr> <th>Model Name</th> <th>Power Dedicated to PoE</th> <th>Number of Ports That Support PoE</th> </tr> </thead> <tbody> <tr> <td>SF352-08P</td> <td>62W</td> <td>8</td> </tr> <tr> <td>SF352-08MP</td> <td>128W</td> <td>8</td> </tr> <tr> <td>SF350-24P</td> <td>185W</td> <td>24 (4 support 60W PoE)</td> </tr> <tr> <td>SF350-24MP</td> <td>375W</td> <td>24 (4 support 60W PoE)</td> </tr> <tr> <td>SF350-48P</td> <td>382W</td> <td>48 (8 support 60W PoE)</td> </tr> <tr> <td>SF350-48MP</td> <td>740W</td> <td>48 (8 support 60W PoE)</td> </tr> <tr> <td>SG350-8PD</td> <td>124W</td> <td>8</td> </tr> <tr> <td>SG350-10P</td> <td>62W</td> <td>8</td> </tr> <tr> <td>SG355-10P</td> <td>62W</td> <td>8</td> </tr> <tr> <td>SG350-10MP</td> <td>124W</td> <td>8</td> </tr> <tr> <td>SG350-28P</td> <td>195W</td> <td>24 (4 support 60W PoE)</td> </tr> <tr> <td>SG350-28MP</td> <td>382W</td> <td>24 (4 support 60W PoE)</td> </tr> <tr> <td>SG350-52P</td> <td>375W</td> <td>48 (8 support 60W PoE)</td> </tr> <tr> <td>SG350-52MP</td> <td>740W</td> <td>48 (8 support 60W PoE)</td> </tr> </tbody> </table>	Model Name	Power Dedicated to PoE	Number of Ports That Support PoE	SF352-08P	62W	8	SF352-08MP	128W	8	SF350-24P	185W	24 (4 support 60W PoE)	SF350-24MP	375W	24 (4 support 60W PoE)	SF350-48P	382W	48 (8 support 60W PoE)	SF350-48MP	740W	48 (8 support 60W PoE)	SG350-8PD	124W	8	SG350-10P	62W	8	SG355-10P	62W	8	SG350-10MP	124W	8	SG350-28P	195W	24 (4 support 60W PoE)	SG350-28MP	382W	24 (4 support 60W PoE)	SG350-52P	375W	48 (8 support 60W PoE)	SG350-52MP	740W	48 (8 support 60W PoE)
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Feature	Description
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PoE powered device and PoE passthrough

In addition to AC power, compact switch models can work as PoE powered devices and be powered by PoE switches connected to the uplink ports. The switch can also pass through the power to downstream PoE end devices if required

Maximum of 60W can be drawn per uplink port if the peer PoE switch supports 60W PoE. When multiple uplink ports are connected to PoE switches, the power drawn from these ports is combined

When AC power is connected and functioning properly, it will have priority over the PoE powered device function. The PoE powered device function will then act as a backup power source to the AC power. The PoE powered device function will be the primary power source for the switch if AC power is not connected

Model	Power Option	Available PoE Power (W)	Can Switch Be Powered with Uplinks?
SG350-10P	1 PoE uplink	0W	Yes
	2 PoE uplink	0W	Yes
	1 PoE+ uplink	0W	Yes
	2 PoE+ uplink	22W	Yes
	1 60W PoE uplink	22W	Yes
	2 60W PoE uplink	50W	Yes
	AC power	62W	Yes
SG350-10MP	1 PoE uplink	0W	Yes
	2 PoE uplink	0W	Yes
	1 PoE+ uplink	0W	Yes
	2 PoE+ uplink	22W	Yes
	1 60W PoE uplink	22W	Yes
	2 60W PoE uplink	50W	Yes
	AC power	128W	Yes
SG355-10P	1 PoE uplink	0W	Yes
	2 PoE uplink	0W	Yes
	1 PoE+ uplink	0W	Yes
	2 PoE+ uplink	22W	Yes

Feature	Description				
		1 60W PoE uplink	22W	Yes	
		2 60W PoE uplink	50W	Yes	
		AC power	62W	Yes	
Power consumption (worst case)	Model	Green Power (mode)	System Power Consumption	Power Consumption (with PoE)	Heat Dissipation (BTU/hr)
	SF350-08	Energy Detect	110V=5.6W 220V=5.8W	N/A	30.0
	SF352-08	Energy Detect	110V=6.9W 220V=6.9W	N/A	23.5
	SF352-08P	Energy Detect	110V=10.4W 220V=11.2W	110V=78.7W 220V=79.3W	207.4
	SF352-08MP	Energy Detect	110V=10.4W 220V=11.2W	110V=157.2W 220V=156.2W	536.1
	SF350-24	Energy Detect	110V=10.6W 220V=10.9W	110V=240W 220V=230W	43.3
	SF350-24P	Energy Detect	110V=10.6W 220V=10.9W	110V=240W 220V=230W	684.1
	SF350-24MP	Energy Detect	110V=29.2W 220V=28.3W	110V=238W 220V=233W	1333.0
	SF350-48	Energy Detect	110V=23.4W 220V=24.2W	N/A	82.6
	SF350-48P	Energy Detect	110V=50.8W 220V=52.1W	110V=464.3W 220V=453.1W	1584.3
	SF350-48MP	Energy Detect	110V=58.4W 220V=58.5W	110V=866.7W 220V=843.5W	2957.3
	SG350-8PD	EEE, Energy Detect, Short Reach	110V=29.8W 220V=31.3W	110V=167W 220V=165.2W	569.5
	SG350-10	EEE, Energy Detect, Short Reach	110V=9.0W 220V=9.8W	N/A	33.4
	SG350-10P	EEE, Energy Detect, Short Reach	110V=13.0W 220V=13.5W	110V=84.7W 220V=83.5W	289.0

Feature	Description				
	SG355-10P	EEE, Energy Detect, Short Reach	110V=12.4W 220V=12.6W	110V=83.5W 220V=83.4W	284.8
	SG350-10MP	EEE, Energy Detect, Short Reach	110V=13.2W 220V=13.5W	110V=152.8W 220V=151.6W	521.5
	SG350-10SFP	EEE, Energy Detect, Short Reach	110V=11.1W 220V=11.9W	N/A	40.6
	SG350-20	EEE, Energy Detect, Short Reach	110V=14.5W 220V=15.2W	N/A	51.8
	SG350-28	EEE, Energy Detect, Short Reach	110V=19.7W 220V=19.9W	N/A	67.9
	SG350-28P	EEE, Energy Detect, Short Reach	110V=35.7W 220V=36.9W	110V=263W 220V=255.1W	897.4
	SG350-28MP	EEE, Energy Detect, Short Reach	110V=41.3W 220V=42.1W	110V=261.1W 220V=451.2W	1573.3
	SG350-28SFP	EEE, Energy Detect, Short Reach	110V=32.0W 220V=34.3W	N/A	117.0
	SG350-52	EEE, Energy Detect, Short Reach	110V=40.4W 220V=40.6.8W	N/A	136.4
	SG350-52P	EEE, Energy Detect, Short Reach	110V=62.4W 220V=61.8W	110V=440.0W 220V=431.0W	1429.4
	SG350-52MP	EEE, Energy Detect, Short Reach	110V=72.5W 220V=73.6W	110V=858.0W 220V=833.0W	2674.8

Ports	Model Name	Total System Ports	RJ-45 Ports	Combo Ports (RJ-45 + SFP)
	SF350-08	8 Fast Ethernet	8 Fast Ethernet	N/A
	SF352-08	8 Fast Ethernet + 2 Gigabit Ethernet	8 Fast Ethernet	2 Gigabit Ethernet combo
	SF352-08P	8 Fast Ethernet + 2 Gigabit Ethernet	8 Fast Ethernet	2 Gigabit Ethernet combo
	SF352-08MP	8 Fast Ethernet + 2 Gigabit Ethernet	8 Fast Ethernet	2 Gigabit Ethernet combo

Feature	Description			
	SF350-24	24 Fast Ethernet + 4 Gigabit Ethernet	24 Fast Ethernet	2 Gigabit Ethernet combo + 2 SFP
	SF350-24P	24 Fast Ethernet + 4 Gigabit Ethernet	24 Fast Ethernet	2 Gigabit Ethernet combo + 2 SFP
	SF350-24MP	24 Fast Ethernet + 4 Gigabit Ethernet	24 Fast Ethernet	2 Gigabit Ethernet combo + 2 SFP
	SF350-48	48 Fast Ethernet + 4 Gigabit Ethernet	48 Fast Ethernet 2 Gigabit Ethernet	2 Gigabit Ethernet combo + 2 SFP
	SF350-48P	48 Fast Ethernet + 4 Gigabit Ethernet	48 Fast Ethernet 2 Gigabit Ethernet	2 Gigabit Ethernet combo + 2 SFP
	SF350-48MP	48 Fast Ethernet + 4 Gigabit Ethernet	48 Fast Ethernet 2 Gigabit Ethernet	2 Gigabit Ethernet combo + 2 SFP
	SG350-8PD	6 Gigabit Ethernet + 2 2.5G + 2 Multigigabit	6 Gigabit Ethernet + 2 2.5G	2 Multigigabit/SFP+ combo
	SG350-10	10 Gigabit Ethernet	8 Gigabit Ethernet	2 Gigabit Ethernet combo
	SG350-10P	10 Gigabit Ethernet	8 Gigabit Ethernet	2 Gigabit Ethernet combo
	SG355-10P	10 Gigabit Ethernet	8 Gigabit Ethernet	2 Gigabit Ethernet combo
	SG350-10MP	10 Gigabit Ethernet	8 Gigabit Ethernet	2 Gigabit Ethernet combo
	SG350-10SFP	10 Gigabit Ethernet	8 Gigabit SFP Slots	2 Gigabit Ethernet combo
	SG350-20	20 Gigabit Ethernet	16 Gigabit Ethernet	2 Gigabit Ethernet combo + 2 SFP
	SG350-28	28 Gigabit Ethernet	24 Gigabit Ethernet	2 Gigabit Ethernet combo + 2 SFP
	SG350-28P	28 Gigabit Ethernet	24 Gigabit Ethernet	2 Gigabit Ethernet combo + 2 SFP
	SG350-28MP	28 Gigabit Ethernet	24 Gigabit Ethernet	2 Gigabit Ethernet combo + 2 SFP
	SG350-28SFP	28 Gigabit Ethernet	24 Gigabit SFP slots	2 Gigabit Ethernet combo + 2 SFP
	SG350-52	52 Gigabit Ethernet	48 Gigabit Ethernet	2 Gigabit Ethernet combo + 2 SFP

Feature	Description																														
	<table border="1"> <tr> <td>SG350-52P</td> <td>52 Gigabit Ethernet</td> <td>48 Gigabit Ethernet</td> <td>2 Gigabit Ethernet combo + 2 SFP</td> </tr> <tr> <td>SG350-52MP</td> <td>52 Gigabit Ethernet</td> <td>48 Gigabit Ethernet</td> <td>2 Gigabit Ethernet combo + 2 SFP</td> </tr> </table>	SG350-52P	52 Gigabit Ethernet	48 Gigabit Ethernet	2 Gigabit Ethernet combo + 2 SFP	SG350-52MP	52 Gigabit Ethernet	48 Gigabit Ethernet	2 Gigabit Ethernet combo + 2 SFP																						
SG350-52P	52 Gigabit Ethernet	48 Gigabit Ethernet	2 Gigabit Ethernet combo + 2 SFP																												
SG350-52MP	52 Gigabit Ethernet	48 Gigabit Ethernet	2 Gigabit Ethernet combo + 2 SFP																												
Console port	Cisco Standard RJ45 console port																														
USB slot	USB Type-A slot on the front panel of the switch for easy file and image management																														
Buttons	Reset button																														
Cabling type	Unshielded Twisted Pair (UTP) Category 5 or better for 10BASE-T/100BASE-TX; UTP Category 5e or better for 1000BASE-T																														
LEDs	System, Link/Act, PoE, Speed																														
Flash	256 MB																														
CPU	800 MHz ARM																														
CPU memory	512 MB																														
Packet buffer	<p>All numbers are aggregate across all ports as the buffers are dynamically shared:</p> <table border="1"> <thead> <tr> <th>Model Name</th> <th>Packet Buffer</th> </tr> </thead> <tbody> <tr><td>SF350-08</td><td>1.5 MB</td></tr> <tr><td>SF352-08</td><td>1.5 MB</td></tr> <tr><td>SF352-08P</td><td>1.5 MB</td></tr> <tr><td>SF352-08MP</td><td>1.5 MB</td></tr> <tr><td>SF350-24</td><td>1.5 MB</td></tr> <tr><td>SF350-24P</td><td>1.5 MB</td></tr> <tr><td>SF350-24MP</td><td>1.5 MB</td></tr> <tr><td>SF350-48</td><td>3 MB</td></tr> <tr><td>SF350-48P</td><td>3 MB</td></tr> <tr><td>SF350-48MP</td><td>3 MB</td></tr> <tr><td>SG350-8PD</td><td>1.5 MB</td></tr> <tr><td>SG350-10</td><td>1.5 MB</td></tr> <tr><td>SG350-10P</td><td>1.5 MB</td></tr> <tr><td>SG355-10P</td><td>1.5 MB</td></tr> </tbody> </table>	Model Name	Packet Buffer	SF350-08	1.5 MB	SF352-08	1.5 MB	SF352-08P	1.5 MB	SF352-08MP	1.5 MB	SF350-24	1.5 MB	SF350-24P	1.5 MB	SF350-24MP	1.5 MB	SF350-48	3 MB	SF350-48P	3 MB	SF350-48MP	3 MB	SG350-8PD	1.5 MB	SG350-10	1.5 MB	SG350-10P	1.5 MB	SG355-10P	1.5 MB
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SG350-10P	1.5 MB																														
SG355-10P	1.5 MB																														

Feature	Description
	SG350-10MP 1.5 MB
	SG350-10SFP 1.5 MB
	SG350-20 1.5 MB
	SG350-28 1.5 MB
	SG350-28P 1.5 MB
	SG350-28MP 1.5 MB
	SG350-28SFP 1.5 MB
	SG350-52 3 MB
	SG350-52P 3 MB
	SG350-52MP 3 MB

Supported SFP modules	SKU	Media	Speed	Maximum Distance
	MGBSX1	Multimode fiber	1000 Mbps	500 m
	MGBLX1	Single-mode fiber	1000 Mbps	10 km
	MGBLH1	Single-mode fiber	1000 Mbps	40 km
	MGBT1	UTP cat 5e	1000 Mbps	100 m
	GLC-LH-SMD	Single-mode fiber	1000 Mbps	10 km
	GLC-BX-U	Single-mode fiber	1000 Mbps	10 km

Environmental

Unit dimensions (W x H x D)	Model Name	Unit Dimensions
	SF350-08	279.4 x 44 x 170 mm (11.0 x 1.73 x 6.69 in)
	SF352-08	279.4 x 44 x 170 mm (11.0 x 1.73 x 6.69 in)
	SF352-08P	279.4 x 44 x 170 mm (11.0 x 1.73 x 6.69 in)
	SF352-08MP	279.4 x 44 x 170 mm (11.0 x 1.73 x 6.69 in)
	SF350-24	440 x 44 x 202 mm (17.3 x 1.73 x 7.95 in)
	SF350-24P	440 x 44 x 257 mm (17.3 x 1.73 x 10.12 in)
	SF350-24MP	440 x 44 x 257 mm (17.3 x 1.73 x 10.12 in)
	SF350-48	440 x 44 x 257 mm (17.3 x 1.73 x 10.12 in)

Feature	Description
	SF350-48P 440 x 44 x 350 mm (17.3 x 1.73 x 13.78 in)
	SF350-48MP 440 x 44 x 350 mm (17.3 x 1.73 x 13.78 in)
	SG350-8PD 344.4 x 44 x 252.5 (13.6 x 1.73 x 9.94 in)
	SG350-10 280 x 44 x 170 mm (11.0 x 1.73 x 6.69 in)
	SG350-10P 280 x 44 x 170 mm (11.0 x 1.73 x 6.69 in)
	SG355-10P 440 x 44 x 203 mm (17.3 x 1.73 x 7.99 in)
	SG350-10MP 280 x 44 x 170 mm (11.0 x 1.73 x 6.69 in)
	SG350-10SFP 279.4 x 44 x 170 mm (11.0 x 1.73 x 6.69 in)
	SG350-20 440 x 44 x 203 mm (17.3 x 1.73 x 7.99 in)
	SG350-28 440 x 44 x 202 mm (17.3 x 1.73 x 7.95 in)
	SG350-28P 440 x 44 x 257 mm (17.3 x 1.73 x 10.12 in)
	SG350-28MP 440 x 44 x 257 mm (17.3 x 1.73 x 10.12 in)
	SG350-28SFP 440 x 44 x 203 mm (17.3 x 1.73 x 7.99 in)
	SG350-52 440 x 44 x 257 mm (17.3 x 1.73 x 10.12 in)
	SG350-52P 440 x 44 x 350 mm (17.3 x 1.73 x 13.78 in)
	SG350-52MP 440 x 44 x 350 mm (17.3 x 1.73 x 13.78 in)

Unit weight	Model Name	Unit Weight
	SF350-08	1.18 kg (2.60 lb)
	SF352-08	1.06 kg (2.34 lb)
	SF352-08P	1.16 kg (2.56 lb)
	SF352-08MP	1.16 kg (2.56 lb)
	SF350-24	2.72 kg (6.0 lb)
	SF350-24P	4.08 kg (8.99 lb)
	SF350-24MP	4.12 kg (9.08 lb)
	SF350-48	3.58 kg (7.89 lb)
	SF350-48P	5.59 kg (12.32 lb)
	SF350-48MP	5.61 kg (12.37 lb)

Feature	Description
	SG350-8PD 2.5 kg (5.51 lb)
	SG350-10 1.09 kg (2.40 lb)
	SG350-10P 1.19 kg (2.62 lb)
	SG355-10P 2.36 kg (5.20 lb)
	SG350-10MP 1.19 kg (2.62 lb)
	SG350-10SFP 2.08 kg (4.59 lb)
	SG350-20 2.12 kg (4.67 lb)
	SG350-28 2.75 kg (6.06 lb)
	SG350-28P 3.83 kg (8.44 lb)
	SG350-28MP 3.37 kg (7.43 lb)
	SG350-28SFP 2.7 kg (5.95 lb)
	SG350-52 2.75 kg (6.06 lb)
	SG350-52P 3.81 kg (8.40 lb)
	SG350-52MP 3.83 kg (8.44 lb)
Power	100-240V 50-60 Hz, internal, universal: SF350-24, SF350-24P, SF350-24MP, SF350-48, SF350-48P, SF350-48MP, SG350-8PD, SG355-10P, SG350-20, SG350-28, SG350-28P, SG350-28MP, SG350-28SFP, SG350-52, SG350-52P, SG350-52MP 100-240V 50-60 Hz, external: SF350-08, SF352-08, SF352-08P, SF352-08MP, SG350-10, SG350-10P, SG350-10MP, SG350-10SFP
Certification	UL (UL 60950), CSA (CSA 22.2), CE mark, FCC Part 15 (CFR 47) Class A
Operating temperature	32° to 122° F (0° to 50° C): SF350-08, SF352-08, SF352-08P, SF352-08MP, SF350-24, SF350-24P, SF350-24MP, SF350-48, SF350-48P, SF350-48MP, SG350-10, SG350-10P, SG355-10P, SG350-10MP, SG350-10SFP, SG350-20, SG350-28, SG350-28P, SG350-28MP, SG350-28SFP, SG350-52, SG350-52P, SG350-52MP 32° to 113° F (0° to 45° C): SG350-08PD
Storage temperature	-4° to 158° F (-20° to 70° C)
Operating humidity	10% to 90%, relative, noncondensing
Storage humidity	10% to 90%, relative, noncondensing

Feature	Description			
Acoustic noise and MTBF	Model Name	FAN (Number)	Acoustic Noise	MTBF @40C (hr)
	SF350-08	Fanless	N/A	644,573
	SF352-08	Fanless	N/A	532,704
	SF352-08P	Fanless	N/A	530,716
	SF352-08MP	Fanless	N/A	478,335
	SF350-24	Fanless	N/A	562,313
	SF350-24P	2	0°C - 25°C: 39.7dB 50°C: 52.2dB	293,029
	SF350-24MP	2	0°C - 25°C: 39.7dB 50°C: 52.2dB	272,127
	SF350-48	Fanless	N/A	277,653
	SF350-48P	3	0°C - 25°C: 42.5dB 50°C: 55.0dB	182,270
	SF350-48MP	4	0°C - 25°C: 42.0dB 50°C: 54.1dB	191,951
	SG350-8PD	Fanless	N/A	562,664
	SG350-10	Fanless	N/A	308,196
	SG350-10P	Fanless	N/A	205,647
	SG355-10P	Fanless	N/A	296,426
	SG350-10MP	Fanless	N/A	80,093
	SG350-10SFP	Fanless	N/A	851,827
	SG350-20	Fanless	N/A	1,400,007
	SG350-28	Fanless	N/A	367,209
	SG350-28P	2	0°C - 25°C: 37.2dB 50°C: 53.7dB	396,687
	SG350-28MP	2	0°C - 25°C: 37.2dB 50°C: 51.8dB	213,373
	SG350-28SFP	1	0°C - 30°C: 40.3dB 50°C: 43.6dB	101,523

Feature	Description		
	SG350-52	1	0°C - 25°C: 36.6dB 301,297 50°C: 52.6dB
	SG350-52P	3	0°C - 25°C: 41.2dB 195,746 50°C: 54.2dB
	SG350-52MP	4	0°C - 25°C: 43.7dB 163,704 50°C: 55.5dB

Warranty Limited lifetime with next business day advance replacement (where available)

Package Contents

- Cisco 350 Series Managed Switch
- Power Cord (Power Adapter for select SKUs)
- Mounting Kit
- Console Cable
- Quick Start Guide

Minimum Requirements

- Web browser: Chrome, Firefox, Edge, Safari
- Category 5 Ethernet network cable
- TCP/IP, network adapter, and network operating system (such as Microsoft Windows, Linux, or Mac OS X) installed on each computer in the network

Ordering information

Table 2 provides ordering information for the Cisco 350 Series Switches. Table 3 gives region- and country-specific information, and Table 4 provides MGE transceiver ordering information.

Table 2. Cisco 350 Series Switches ordering information

Model Name	Order Product ID Number	Description
Fast Ethernet		
SF350-08	SF350-08-K9-xx	<ul style="list-style-type: none"> • 8 10/100 ports
SF352-08	SF352-08-K9-xx	<ul style="list-style-type: none"> • 8 10/100 ports • 2 Gigabit copper/SFP combo
SF352-08P	SF352-08P-K9-xx	<ul style="list-style-type: none"> • 8 10/100 PoE+ ports • 2 Gigabit copper/SFP combo • 62W PoE power budget
SF352-08MP	SF352-08MP-K9-xx	<ul style="list-style-type: none"> • 8 10/100 PoE+ ports • 2 Gigabit copper/SFP combo • 128W PoE power budget

Model Name	Order Product ID Number	Description
SF350-24	SF350-24-K9-xx	<ul style="list-style-type: none"> • 24 10/100 ports • 2 Gigabit copper/SFP combo + 2 SFP ports
SF350-24P	SF350-24P-K9-xx	<ul style="list-style-type: none"> • 24 10/100 PoE+ ports (4 support 60W PoE) • 2 Gigabit copper/SFP combo + 2 SFP ports • 185W PoE power budget
SF350-24MP	SF350-24MP-K9-xx	<ul style="list-style-type: none"> • 24 10/100 PoE+ ports (4 support 60W PoE) • 2 Gigabit copper/SFP combo + 2 SFP ports • 375W PoE power budget
SF350-48	SF350-48-K9-xx	<ul style="list-style-type: none"> • 48 10/100 ports • 2 Gigabit copper/SFP combo + 2 SFP ports
SF350-48P	SF350-48P-K9-xx	<ul style="list-style-type: none"> • 48 10/100 PoE+ ports (8 support 60W PoE) • 2 Gigabit copper/SFP combo + 2 SFP ports • 382W PoE power budget
SF350-48MP	SF350-48MP-K9-xx	<ul style="list-style-type: none"> • 48 10/100 PoE+ ports (8 support 60W PoE) • 2 Gigabit copper/SFP combo + 2 SFP ports • 740W PoE power budget
Gigabit Ethernet		
SG350-10	SG350-10-K9-xx	<ul style="list-style-type: none"> • 8 10/100/1000 ports • 2 Gigabit copper/SFP combo
SG350-10P	SG350-10P-K9-xx	<ul style="list-style-type: none"> • 8 10/100/1000 PoE+ ports • 2 Gigabit copper/SFP combo • 62W PoE power budget
SG355-10P	SG355-10P-K9-xx	<ul style="list-style-type: none"> • 8 10/100/1000 PoE+ ports • 2 Gigabit copper/SFP combo • 62W PoE power budget
SG350-10MP	SG350-10MP-K9-xx	<ul style="list-style-type: none"> • 8 10/100/1000 PoE+ ports • 2 Gigabit copper/SFP combo • 124W PoE power budget
SG350-10SFP	SG350-10SFP-K9-xx	<ul style="list-style-type: none"> • 8 SFP Gigabit slots • 2 Gigabit copper/SFP combo
SG350-20	SG350-20-K9-xx	<ul style="list-style-type: none"> • 16 10/100/1000 ports • 2 Gigabit copper/SFP combo + 2 SFP ports
SG350-28	SG350-28-K9-xx	<ul style="list-style-type: none"> • 24 10/100/1000 ports • 2 Gigabit copper/SFP combo + 2 SFP ports
SG350-28P	SG350-28P-K9-xx	<ul style="list-style-type: none"> • 24 10/100/1000 PoE+ ports (4 support 60W PoE) • 2 Gigabit copper/SFP combo + 2 SFP ports • 195W PoE power budget
SG350-28MP	SG350-28MP-K9-xx	<ul style="list-style-type: none"> • 24 10/100/1000 PoE+ ports (4 support 60W PoE) • 2 Gigabit copper/SFP combo + 2 SFP ports • 382W PoE power budget

Model Name	Order Product ID Number	Description
SG350-28SFP	SG350-28SFP-K9-xx	<ul style="list-style-type: none"> • 24 SFP Gigabit slots • 2 Gigabit copper/SFP combo + 2 SFP ports
SG350-52	SG350-52-K9-xx	<ul style="list-style-type: none"> • 48 10/100/1000 ports • 2 Gigabit copper/SFP combo + 2 SFP ports
SG350-52P	SG350-52P-K9-xx	<ul style="list-style-type: none"> • 48 10/100/1000 PoE+ ports (8 support 60W PoE) • 2 Gigabit copper/SFP combo + 2 SFP ports • 375W PoE power budget
SG350-52MP	SG350-52MP-K9-xx	<ul style="list-style-type: none"> • 48 10/100/1000 PoE+ ports (8 support 60W PoE) • 2 Gigabit copper/SFP combo + 2 SFP ports • 740W PoE power budget

Multi-Gigabit Ethernet

SG350-8PD	SG350-8PD-K9-xx	<ul style="list-style-type: none"> • 6 10/100/1000 PoE+ ports • 2 2.5G PoE+ ports • 2 Multigigabit/SFP+ combo • 124W PoE power budget
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* Each combo port has one 10/100/1000 Ethernet port and one SFP Gigabit Ethernet slot, with one port active at a time.

The -xx in the Product Order ID Number is a country-/region-specific suffix. For example, the complete PID of SG350-28P for the United States is SG350-28P-K9-NA. Please refer to Table 3 for the correct suffix to use for your country/region.

Table 3. Country/region suffix for product order ID number

Suffix	Country/Region
-NA	USA, Canada, Mexico, Colombia, Chile and rest of Latin America
-BR	Brazil
-AR	Argentina
-EU	EU, Russia, Ukraine, Israel, United Arab Emirates, Turkey, Egypt, South Africa, Indonesia, Philippines, Vietnam, Thailand, Korea
-UK	United Kingdom, Saudi Arabia, Qatar, Kuwait, Singapore, Hong Kong, Malaysia
-AU	Australia, New Zealand
-CN	China
-IN	India
-JP	Japan
-KR	Korea

The products may also be available in a country/region not listed in Table 3. Not all product models are offered in all countries/regions. For Korea, either -EU or -KR suffix will be used depending on product models. Please consult with your local Cisco sales representative or Cisco partners for more details.

Table 4. MGE transceiver ordering information

MGE Transceivers	
MGBSX1	1000BASE-SX SFP transceiver, for multimode fiber, 850 nm wavelength, support up to 500 m
MGBLX1	1000BASE-LX SFP transceiver for single-mode fiber, 1310 nm wavelength, supports up to 10 km
MGBLH1	1000BASE-LH SFP transceiver, for single-mode fiber, 1310 nm wavelength, support up to 40 km
MGBT1	1000BASE-T SFP transceiver for Category 5 copper wire, supports up to 100 m

A powerful, affordable foundation for your small business network

As you strive to make your employees as productive and effective as possible, your business applications and information and the network that delivers them become ever more vital parts of your business. You need a technology foundation that can meet your business’s needs today and in the future and that delivers the right feature set at the right price. The Cisco 350 Series portfolio of managed switches provides the reliability, performance, security, and capabilities you need to power your business.

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Cisco Capital makes it easier to get the right technology to achieve your objectives, enable business transformation and help you stay competitive. We can help you reduce the total cost of ownership, conserve capital, and accelerate growth. In more than 100 countries, our flexible payment solutions can help you acquire hardware, software, services and complementary third-party equipment in easy, predictable payments. [Learn more.](#)

For more information

To find out more about the Cisco 350 Series, visit <https://www.cisco.com/go/350switches>.

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SMT-4033

40" LED Monitor

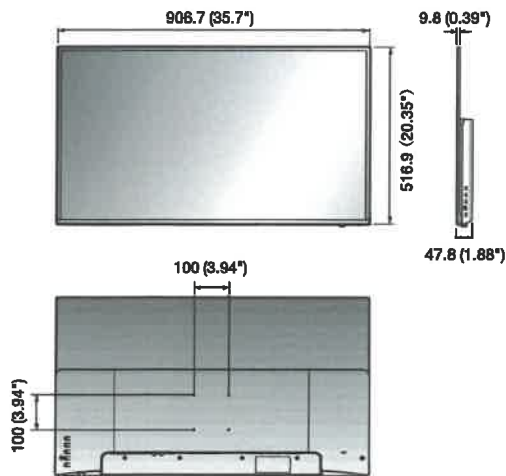


Key Features

- Support up to 1,920 x 1,080 resolution
- Contrast ratio 5,000 : 1
- Response time 9.5ms
- Video input : HDMI, DVI, VGA, BNC
- Panel life 30,000hours

Dimensions

Unit : mm (inch)



SMT-4033

DISPLAY

Screen Size	39.5"
Max. Resolution	1,920 x 1,080
Brightness	350cd/m ²
Contrast Ratio	5,000 : 1
Aspect Ratio	16 : 9
Viewing Angle (H/V)	178° / 178°
Display Color	16.7million
Response Time	9.5ms
Video System	NTSC / PAL
Panel Life	30,000hours
Filter Type	3D combfilter

INTERFACE

Video	Connector	VGA, DVI, HDMI, BNC (CVBS, Through Out)
	Connector	Analogue D-sub (15 pin), DVI-D
	Input Signal	0.7Vpp ±5%
RGB / DVI	Available Format	640 x 480@60Hz/72Hz/75Hz (VGA), 800 x 600@56Hz/60Hz/72Hz/75Hz (SVGA), 1,024 x 768@60Hz/70Hz/75Hz (XGA), 1,152 x 864@75Hz, 1,280 x 720@60Hz, 1,280 x 800@60Hz, 1,280 x 1,024@60Hz/75Hz (SXGA), 1,360 x 768@60Hz, 1,440 x 900@60Hz, 1,600 x 900@60Hz, 1,680 x 1,050@60Hz, 1,920 x 1,080@60Hz
	Connector	HDMI
HDMI	Available Format	640 x 480p@60Hz, 720 x 480p@60Hz, 720 x 576p@50Hz, 1,280 x 720p@50Hz/60Hz, 1,920 x 1,080@60Hz, 1,920 x 1,080p@60Hz
	Connector	3.5mm Mini phone jack
Audio	Output Signal	Loop-through line level (PC only), Speakers : 2 x 2W
	Application Support	Remote controller

ON SCREEN DISPLAY

Functions	VESA™ DPM Compatible
Language	Chinese (Simplified), English, French, German, Spanish, Dutch, Russian, Arabic

GENERAL

Electrical	Input Voltage	100 ~ 240V AC (50/60Hz)
	Power Consumption	< 60W
Environmental	Operating Temperature	0°C ~ +40°C (+32°F ~ +104°F)
	Operating Humidity	10% ~ 80% (Non-condensing)
Mechanical	Dimensions without Stand (WxHxD)	906.7 x 516.9 x 47.8mm (35.7" x 20.35" x 1.88")
	Bezel Size	Top 13.66mm (0.54") / Bottom 17.66mm (0.7")
	Cabinet Color	Black
	VESA Mounts Interface	100 x 100mm (3.94" x 3.94")
Accessory	STAND	

* The latest product information / specification can be found at hanwha-security.com
 * Design and specifications are subject to change without notice.
 * Wisenet is the proprietary brand of Hanwha Technwin, formerly known as Samsung Techwin.