

BID NUMBER PA-02012
TO: CITY OF LONG BEACH
ATTN: CITY CLERK
333 West Ocean Blvd, Plaza Level
Long Beach, CA 90802



INVITATION TO BID

*****REBID*****
SURVEILLANCE CAMERAS & PARTS

CONTRACT NO. 32732

1. **COMPLETE CONTRACT:**
This Invitation to Bid, together with THE NOTICE INVITING BIDS, the entire Bid (including Specifications), or any items(s) thereof, the signature page, Instructions to Bidders, General Conditions, Special Conditions, Bid Section, Addendums, and when required, CONTRACTOR'S BOND shall become the Contract upon its acceptance by the City Manager or designee on behalf of the City of Long Beach, Contractor will be provided with a copy of the executed Contract. All materials or services provided by the Contractor shall comply with the City Charter, and all applicable Federal, State and City Laws.
2. **SERVICES TO BE PROVIDED BY THE CONTRACTOR:**
Contractor shall upon acceptance of this Bid by the City, furnish the goods and services herein specified according to the terms and conditions set forth herein.
3. **AMOUNT TO BE PAID:**
The City shall pay Contractor for the goods or services as described in the section entitled "PAYMENT" in the Instructions to Bidders.
4. **CHOICE OF ALTERNATE PROVISIONS; OPTIONS; NOTIFICATION:**
When alternative provisions are requested, or options are offered, Contractor will be notified as to which provision, or option, is being accepted at the same time that he is notified that he is the successful Bidder.
5. **DECLARATION OF NON-COLLUSION:**
The undersigned certifies or declares under penalty of perjury that this Bid is genuine and not sham or collusive, or made in the interest or on behalf of any person or entity not herein named; that the Bidder has not directly or indirectly induced or solicited any other Bidder to submit a sham bid, or any other person or entity to refrain from bidding, and that the Bidder has not in any manner sought by collusion to secure to himself any advantage over other Bidders.

BIDDER MUST COMPLETE AND SIGN BELOW:

(Signature of Corporate Officers or persons authorized to sign bids and contracts on behalf of the Contractor – refer to page 2 Instructions Concerning Signatures.)

EXECUTED AT: San Clemente CA ON THE 8th DAY OF May, 20 12.
CITY STATE MONTH

COMPANY NAME: Pacific Services Inc TIN: [REDACTED]
(FEDERAL TAX IDENTIFICATION NUMBER)

STREET ADDRESS: 1000 Calle Negocio, Ste C CITY: San Clemente STATE: CA ZIP: 92673

PHONE: 949-542-7995 FAX: 949-542-7996

S/ [Signature] (SIGNATURE) President (TITLE)

Gary Greening (PRINT NAME) gary.g@pacdata.com.com (EMAIL ADDRESS)

S/ [Signature] (SIGNATURE) vice president (TITLE)

Mechelle Greening (PRINT NAME) mechelle.g@pacdata.com.com (EMAIL ADDRESS)

ALL SIGNATURES MUST BE NOTARIZED FOR ALL COMPANIES LOCATED OUTSIDE THE STATE OF CALIFORNIA.
NO OUT-OF-STATE BID WILL BE CONSIDERED UNLESS A NOTARIAL ACKNOWLEDGMENT IS ATTACHED.
NOTARIES ARE NOT REQUIRED FOR CALIFORNIA BIDDERS.

IN WITNESS WHEREOF the City of Long Beach has caused this contract to be executed as required by law as of the date stated below. APPROVED AS TO FORM 8-16, 20 12

THE CITY OF LONG BEACH
BY [Signature]
Director of Financial Management

[Signature]
Date

ROBERT E. SHANNON
CITY ATTORNEY
[Signature]
Deputy

BID NUMBER PA-02012

The City of Long Beach is committed to provide maximum opportunities for Disadvantaged, Minority, Women and Long Beach Business Enterprises (DBEs, MBEs, WBEs and Local) to compete successfully in supplying our needs for products and services.

The following information is submitted regarding the Bidder:

Legal Form of Bidder:

Corporation State of CA
Partnership State of _____
General Limited
Joint Venture
Individual DBA _____
Limited Liability Company State of _____

Composition of Ownership (more than 51% of ownership of the organization):

OPTIONAL

Ethnic (Check one):

Black Asian Other Non-white
 Hispanic American Indian Caucasian

Non-ethnic Factors of Ownership (check all that apply):

Male Yes - Physically Challenged Under 65
 Female No - Physically Challenged Over 65

Is the firm certified as a Disadvantaged Business: Yes No

Has firm previously been certified as a minority-owned and/or woman-owned business enterprise by any other agency?

Yes No

Name of certifying agency: _____

INSTRUCTIONS CONCERNING SIGNATURES

Please use the proper notary form, which applies to your type of organization on all Bid documents, attachments and bonds requiring a signature by officers of your company.

NOTE: FAILURE TO COMPLY MAY RESULT IN DISQUALIFICATION OF YOUR BID.

INDIVIDUAL (Doing Business As)

- a. The only acceptable signature is the owner of the company. (Only one signature is required.)
- b. The owner's signature must be notarized if the company is located outside of the state of California.

PARTNERSHIP

- a. The only acceptable signature(s) is/are that of the general partner or partners.
- b. Signature(s) must be notarized if the partnership is located outside of the state of California.

CORPORATION

- a. Two (2) officers of the corporation must sign.
- b. Each signature must be notarized if the corporation is located outside of the state of California.

OR

- a. The signature of one officer or the signature of person other than an officer is acceptable if the Bid is accompanied by a certified corporate resolution granting authority to said person to execute contracts on behalf of the corporation.
- b. Signature(s) must be notarized if the corporation is located outside of the state of California.

LIMITED LIABILITY COMPANY

- a. The signature on the Bid must be a member or, if the Articles provide for a manager, must be the manager. (Only one signature is required.)
- b. Signature must be notarized if the company is located outside of the state of California.

THIS INFORMATION IS AVAILABLE IN AN ALTERNATIVE FORMAT BY CONTACTING 562-570-6200.

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

N/A

State of _____

County of _____

On _____ Before me, _____
DATE NAME, TITLE OF OFFICER - E.G. "JANE DOE, NOTARY PUBLIC"

Personally appeared _____
NAME(S) OF SIGNER(S)

personally known to me - OR - proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

SIGNATURE OF NOTARY

OPTIONAL

Though the data below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent reattachment of this form.

CAPACITY CLAIMED BY SIGNER

DESCRIPTION OF ATTACHED DOCUMENT

- INDIVIDUAL
- CORPORATE OFFICER
- _____ TITLE(S)
- PARTNER(S) LIMITED GENERAL
- ATTORNEY-IN-FACT
- TRUSTEE(S)
- GUARDIAN/CONSERVATOR
- OTHER:

TITLE OR TYPE OF DOCUMENT

NUMBER OF PAGES

DATE OF DOCUMENT

SIGNER IS REPRESENTING:
NAME OF PERSON(S) OR ENTITY(IES):

SIGNER(S) OTHER THAN NAMED ABOVE

INSTRUCTIONS TO BIDDERS

1. PREPARATION OF BID:

The preparation of the Bid, including visits to the Site prior to submittal of the Bid, shall be at the expense of Bidder. All prices and notations must be typewritten or written in ink. Any markings in pencil shall not form part of the Bid and shall be disregarded by the City. Any changes or corrections in the Bid must be Initialed in ink by the person signing the Bid. Bidder shall state brand name or make of each item bid. If not bidding on item as described, the manufacturer's name and catalog number of the substitute must be given. Bidder shall also attach specifications and furnish other data to establish the suitability of the substitute. Bidder shall quote separately on each item. Bidder shall quote his lowest price and best delivery date as no changes are permitted after the bid opening. Cash discounts offered for payment within fourteen (14) days or less will not be considered when evaluating bids. No telephonic, telegraphic or fax Bids are acceptable.

NOTE: ALL PAGES OF THE INVITATION TO BID MUST BE RETURNED.

2. EXAMINATION OF BID:

Bidder is responsible for examining the Invitation to Bid and submitting its Bid complete and in conformance with these instructions.

3. CONDITIONS OF WORK:

Bidder shall carefully examine the Site to become fully informed regarding all existing and expected conditions and matters, which could affect performance, cost or time of the Work.

4. DISCREPANCIES IN BID DOCUMENTS:

If Bidder finds discrepancies in or omissions from the Invitation to Bid, if the intent of the Invitation is not clear, or if provisions of the Specifications restrict Bidder from bidding, he may request in writing that the deficiency(s) be modified. Such request must be received by the City Purchasing Agent at least five (5) working days before bid opening date. Bidders will be notified by Addendum of any approved changes in the Invitation to Bid.

5. ORAL STATEMENTS:

The City of Long Beach shall not be bound by oral statements made by any employee or agent concerning this Invitation to Bid. If Bidder requires specific information, Bidder must request it in writing and obtain a reply in writing from the City.

6. BRAND NAMES AND SPECIFICATIONS:

The detailed specifications and/or brand names stated are descriptive only and indicate quality, design and construction of items required. **Offers will be considered to supply articles substantially the same as those described herein but with minor variations. Bidders must describe variations in the Bid.** Substitute items must be equal in quality, utility and performance. The phrase "or approved equal" throughout the specifications means that the City in its sole and absolute discretion shall make the final determination whether or not the substitute items are equal.

7. AWARD:

Bid shall be subject to acceptance by the City for a period of three (3) months unless a lesser period is prescribed in the quotation by Bidder. The City reserves the right to award all items to one Bidder, or to award separate items or groups of items to various Bidders, or to increase or decrease the quantities of any item. Bidder may submit alternate prices or name a lump sum or discount conditional on two or more items being awarded to him.

The City's purchases of goods and services are based on the City's actual needs and requirements. The City is obligated under this contract/purchase order to purchase and pay for only those goods and services that the City needs and requires, and that the City actually orders and receives. Any dollar amount identified as a "not to exceed:" amount in any City document is not a guaranteed payment amount to any contractor or service provider. Furthermore, the City may determine that its needs and requirements may be met by City labor or by a second contractor or service provider, even after an award is made to one contractor or service provider. An award is not a promise or guarantee of exclusivity.

Bidders are cautioned that comments and statements, whether oral or written, made by City employees regarding the validity of Bids, the waiver of deviations from Specifications, the possibility or probability of an award being made to a particular Bidder, and other similar matters are NOT binding on the City. Bidders should not order materials, obtain financing or take other actions based on such comments and statements. Only authorization of a Contract by the City Council or Issuance of a Purchase Order is conclusive and binding on the City with respect to this Bid and its resulting Contract or Purchase Order. However, prior to authorization by the City Council or Issuance of the Purchase Order, Bidders may rely on: (1) approval of an "equal" or "substitute" item which will be issued in writing, and (2) written notice of intent to award by the City Council, which is often issued prior to the authorization by the City Council so that a Bidder can order materials that have a long lead time.

8. PAYMENT:

Payment terms are NET/30 unless Bidder otherwise quotes. All Cash Discounts shall be taken and computed from the date of delivery or completion and acceptance of the material, or from date of receipt of invoice, whichever occurs last. Invoices must be submitted as specified at the time of shipping authorization. Partial payments may be made by the City on delivery & acceptance of goods and on receipt of goods and on receipt of Contractor's invoice.

In the event the Contract to be awarded hereunder, including specifications and other documents incorporated therein by reference, provides for the withholding of moneys by the City to ensure performance of such Contract, Contractor may deposit with the City, as a substitute for said withheld moneys, securities listed in Section 16430 of the California Government Code or bank or savings and loan certificates of deposit, or both, equivalent to the amount withheld, provided Contractor requests permission to make such substitution and bears all expenses in connection therewith.

9. SAFETY APPROVAL:

Where required by City Regulations, any items delivered must carry Underwriters Laboratories Approval or City of Long Beach City Safety Officer approval. Failure to so comply will be cause to reject Bid. Also, any equipment must conform with the Safety Orders of the California Division of Industrial Safety and OSHA regulations.

10. BUSINESS LICENSE:

The Long Beach Municipal Code (LBMC) requires all businesses operating in the City of Long Beach to pay a business license tax. In some cases the City may require a regulatory permit and/or evidence of a State or Federal license. Prior to issuing a business license, certain business types will require the business license application and/or business location to be reviewed by the Development Services, Fire, Health, and/or Police Departments. For more information, go to www.longbeach.gov/finance/business_license.

INSTRUCTIONS TO BIDDERS

11. PUBLIC WORK AND PREVAILING WAGES:

The Contractor to whom the contract is awarded, along with its subcontractors, shall pay not less than the general prevailing rate of per diem, holiday and overtime wages established by the Department of Industrial Relations (DIR) of the State of California for the locality in which the public work is to be performed for each craft, classification or type of worker needed to execute the contract. Refer to the California DIR's website, <http://www.dir.ca.gov/dlstr> for such prevailing wages and additional information.

The Director of Public Works of the City by and on behalf of the City Council has obtained from the Director of the Department of Industrial Relations of the State of California the general prevailing rate of per diem wages and the general prevailing rate of holiday and overtime work in the locality in which the public work is to be performed for each craft, classifications or type of workers needed to execute the Contract, and the same is on file with the City Engineer, 9th floor, City Hall, 333 W. Ocean Boulevard, Long Beach, California 90802. It shall be mandatory upon the Contractor to whom the Contract is awarded, and his Subcontractors to pay not less than the said prevailing rate of wages to all workers employed by Contractor or said Subcontractors in the execution of the Contract.

12. RIGHT TO REJECT:

The City reserves the right to reject at any time any or all Bids, or parts thereof, and to waive any variances, technicalities and informalties which do not impair the quality, utility, durability or performance of the items.

13. SAMPLES:

Samples of items when requested or required must be furnished to the City free of expense to the City and, if not destroyed by tests, will upon request be returned at Bidder's expense.

14. PRICES:

Prices shall be in accordance with those extended to other governmental agencies. In case of error in extension of prices, unit price will govern. All prices must be firm for the Contract term unless the City specifically provides for adjustment.

15. CITY'S POLICY FOR MINORITY AND WOMEN-OWNED BUSINESSES:

The City of Long Beach is committed to providing maximum opportunities for Disadvantaged, Minority, Women and Long Beach Business Enterprises (DBEs, MBEs, WBEs and Local) to compete successfully in supplying our needs for products and services.

Please visit <http://www.longbeach.gov/purchasing/diversity.asp> for more information on the City's Diversity Outreach Program.

SUBCONTRACTORS

To assist the City in maintaining records of its Minority and Women Outreach Program, Bidder is requested to provide the following information. Answers are optional, and failure to answer will not disqualify Bid. If additional space is required, Bidder shall attach a separate sheet.

The following Minority- or Woman-owned subcontractors are to be utilized to provide equipment, material, supplies and/or services for this Contract requirement:

Company Name: _____

Address: _____

Commodity/Service Provided: _____
 Circle appropriate designation: MBE WBE

Ethnic Factors of Ownership: (more than 51%)
 Black () American Indian ()
 Hispanic () Other Non-white ()
 Asian () Caucasian ()

Certified by: _____
 Valid thru: _____
 Dollar value of participation: \$ _____

16. BID SUBMITTAL AND WITHDRAWAL OF BIDS:

Each Bid must be delivered to the location and received on or before the due date and time stated herein. Bids will not be accepted after the date and time stated herein. Bids may be withdrawn without prejudice providing the written request is received by the City Clerk no later than the time set for opening Bids. Withdrawals will be returned to Bidder unopened.

SUBMIT TO:
CITY OF LONG BEACH
CITY CLERK
 333 W OCEAN BLVD/PLAZA LEVEL
 LONG BEACH CA 90802

BID DUE DATE: MAY 11, 2012
TIME: 11:00 am

IF BIDDER HAS ANY QUESTIONS REGARDING THIS INVITATION TO BID PLEASE CONTACT THE FOLLOWING CITY PERSONNEL.

- A. COMMERCIAL (TERMS AND CONDITIONS, ETC)
- | | |
|----------------------|---------------------|
| <u>MICHELLE KING</u> | <u>562-570-6020</u> |
| BUYER | TELEPHONE NUMBER |
- B. TECHNICAL (SPECIFICATIONS, DRAWINGS, ETC.)
- | | |
|-----------------------|---------------------|
| <u>SANFORD TAYLOR</u> | <u>562-570-6776</u> |
| DEPARTMENT CONTACT | TELEPHONE NUMBER |

17. BID OPENING PROCEDURES:

All Bids will be publicly opened and read at the date and time specified in Instructions to Bidders, Item 15.

It is our policy not to release price information on these Bids until the department has reviewed them and award has been approved by the City Council and the City Attorney. At that time, the information becomes public. You are welcome to review the results at that time by calling the buyer that handled that Bid and setting up an appointment. Due to the large volume of Bids received, Bid results will not be given out by phone and information will not be faxed.

After the Purchasing Division has analyzed the Bids, the name of the apparent low Bidder will be posted on the Internet for a period of one (1) month, together with the rankings of the top three Bidders. These rankings will not contain price information.

CAUTION: Only the City Council has authority to make an award, and a contract is not in effect until the City Council makes an award and contract documents (including insurance and bonds) are signed, submitted and approved.

Bid protest procedures may be obtained from the Buyer. Protests must be submitted within seven (7) calendar days after the date of the Bid opening.

INSTRUCTIONS TO BIDDERS

18. INTER-AGENCY PARTICIPATION:

IF OTHER AGENCIES EXPRESS AN INTEREST IN PARTICIPATING IN THIS BID, WOULD YOU SUPPLY THE SAME ITEMS.

YES NO

(If yes, any agency electing to participate in this Bid will order its own requirements without regard to the City of Long Beach. The City of Long Beach assumes no liability or payment guarantee on any units sold to participating agencies.)

19. AMERICANS WITH DISABILITIES ACT:

Contractor shall have and be allocated the sole responsibility to comply with the Americans with Disabilities Act of 1990 ("ADA") with respect to performance hereunder and contractor shall defend, indemnify and hold the City, its officials and employees harmless from and against any and all claims of failure to comply with or violation of the ADA as said claim relates to this Contract.

20. EQUAL BENEFITS ORDINANCE:

Bidders/Proposers are advised that any contract awarded pursuant to this procurement process shall be subject to the applicable provisions of Long Beach Municipal Code section 2.73 et seq., the Equal Benefits Ordinance. Bidders/Proposers shall refer to Attachment/Appendix for further information regarding the requirements of the Ordinance.

All Bidders/Proposers shall complete and return, with their bid/proposal, the Equal Benefits Ordinance Compliance form contained in the Attachment/Appendix. Unless otherwise specified in this procurement package, Bidders/Proposers do not need to submit supporting documentation verifying with their bids/proposals. However, supporting documentation verifying that the benefits are provided equally shall be required if the Bidder/Proposer that is selected for award of a contract.

21. PERMITS, LICENSES, AND CERTIFICATES

The Contractor shall conduct all aspects of its operation in compliance with all state and federal laws and regulations.

The Contractor shall provide the City with proof of compliance with all applicable permitting (including building and public right of way permits) and licensing laws, including but not limited to, copies of all permits and licenses. The Contractor shall maintain in good standing all applicable licenses and permits related to the manufacture and delivery of bid items and related supplies and services and shall immediately notify the City of any change in the status, or the terms or conditions, of any permit or license thereof.

The Contractor shall immediately inform the City of any investigation, citation or legal action by any state, regional or federal regulatory agency in any way related to the storage, collection, composting, re-use, transfer, or disposal of any green waste, and further, shall defend, indemnify and hold harmless the City, its officials and employees from any claim demand, liability, damage, cause of action, or loss, including but not limited to attorney's fees, court costs, fines, penalties and corrective measures, that the City may sustain by reason of the Contractor's failure or alleged failure to comply with any state, regional, or federal law or regulation.

The Contractor shall be responsible for the proper disposal of all by-products, remainder and waste resulting from its services, including, but not limited to, proper storage, handling, transportation, and final disposal at a properly licensed facility.

CONTRACT – GENERAL CONDITIONS

1. Acceptance of the offer contained in this Contract is expressly limited to the terms and conditions of such offer as herein stated.
2. No charges for taxes, transportation, boxing, packaging, crating or returnable containers will be allowed and paid by the City unless separately stated hereon. All sales, use, excise or similar taxes to be paid by the City must be itemized separately hereon and on invoices. The City is exempt from payment of Federal Excise Tax under Certificate No. [REDACTED] and none shall be charged to the City.
3. The City's obligation to pay the sum herein stated for any one fiscal year shall be contingent upon the City Council of the City appropriating the necessary funds for such payment by the City in each fiscal year during the term of this Contract. For the purposes of this section a fiscal year commences on October 1 of the year and continues through September 30 of the following year. In the event that the City Council of the City fails to appropriate the necessary funds for any fiscal year, then, and in that event, the Contract will terminate at no additional cost or obligation to the City.
4. Contractor shall deliver the materials, equipment, supplies or services, or cause the work to be performed, within the time and in the manner specified in the Contract. Times and dates stated herein are of the essence. If at any time Contractor has reason to believe that deliveries will not be made as scheduled, written notice setting forth the cause of the anticipated delay shall be given immediately to the City. Deliveries must be prepaid. C.O.D. shipments will not be accepted.
5. The City reserves the right at any time to make changes in drawings and specifications, in methods of shipment and packaging and in place of delivery as to any articles covered by this Contract. In such event there will be made an equitable adjustment in price and time of performance mutually satisfactory to Contractor and the City; but any claim by Contractor for such an adjustment must be made within thirty (30) days of such change.
6. Contractor warrants that the goods, machinery or equipment delivered or the work performed hereunder shall conform to the specifications, drawings, samples or other description specified by the City and shall be fit and sufficient for the purpose intended, merchantable, of good material and workmanship, in good working order and free from defect or faulty workmanship for a period of ninety (90) days. When defective goods, machinery, or equipment or faulty workmanship is discovered which requires repair or replacement pursuant to this warranty, Contractor shall provide all labor, materials, parts and equipment to correct such defect at no expense to the City.
7. Contractor shall defend, indemnify and hold the City, its officials and employees harmless from any and all loss, damage, liability, demands, claims, causes of action, costs and expenses (including reasonable attorney' fees) for injuries to persons (including death) or damage or destruction of property connected with or arising from the negligent acts or omissions of Contractor, its officers, agents and employees in the performance of this Contract.
8. The City reserves the right to terminate this Contract at any time in whole or in part even though Contractor is not in default hereunder. In such event there will be made an equitable adjustment of the terms that is mutually satisfactory to the City and Contractor. Upon receipt of any notice of such termination, Contractor shall, unless such notice otherwise directs, immediately discontinue all work on the Contract and deliver, if and as directed, to the City all completed and partially completed articles, work in process and materials purchased or acquired for performance of the Contract. The provisions of this section shall not limit or affect the right of the City to terminate this Contract immediately upon written notice of breach.
9. The City reserves the right to cancel this Contract or any part thereof and reject delivery of goods if delivery is not undertaken and completed when specified and in accordance with specifications. Contractor shall be charged for any direct losses, but not any consequential damages, sustained by the City by reason of such delay or failure, excepting losses caused by a delay for reasons beyond Contractor's reasonable control. Direct losses shall include any costs to the city in excess of the Contract price of obtaining goods from other sources similar to those cancelled or rejected hereunder.
10. The City shall pay to Contractor the price(s) specified in the Contract on delivery of the materials, equipment, supplies or services and acceptance thereof by the City Manager or his designee, or upon completion of the work to be performed and accepted thereof, as specified in the Contract. Defective articles or articles not in accordance with the City's specifications shall be held for Contractor's instructions at Contractor's risk, and if Contractor so directs will be returned at Contractor's expense.
11. No return or exchange of material, equipment or supplies shall be permitted without written approval of the City Purchasing Agent.
12. All royalties for patents, or changes for the use of patents, which may be involved in any article to be furnished under this Contract shall be included in the Contract price.
13. In cases where a price subject to escalation has been agreed upon, the price escalation shall be shown as a separate item on the invoice. Unless an escalator clause has been shown as a specific part of this Contract Contractor shall not be entitled to reimbursement for costs incurred due to escalation.

14. All materials, supplies and equipment provided under this Contract shall be in full compliance with the Safety Orders and Regulations of the Division of Industrial Safety of the State of California, Title 8, California Code of Regulations (CAL/OSHA) and all applicable OSHA regulations as well as all other applicable California Code of Regulations. Contractor shall indemnify and hold the City, its officials, and employees harmless for, of and from any and all loss, including but not limited to fines, penalties and corrective measures, the City may sustain by reason of Contractor's failure to comply with said laws, rules and regulations in connection with the performance of this Contract.
15. Contractor shall keep confidential and not disclose to others or use in any way to the detriment of the City confidential business or technical information that the City may disclose in conjunction with this Contract or Contractor may learn as a result of performing this Contract.
16. This Contract shall not be assigned in whole or in part, nor any duties delegated without the City's prior written approval.
17. The remedies herein reserved shall be cumulative and additional to any other remedies at law or in equity. The waiver of any breach of this Contract shall not be held to be a waiver of any other or subsequent breach. The City's failure to object to provisions contained in any communication from Contractor shall not be deemed an acceptance of such provisions or a waiver of the provisions of this Contract.
18. This Contract shall not be amended or modified, except by written agreement signed by the parties and expressly referring to this Contract.
19. Contractor shall indemnify, hold harmless and defend the City, its officials and employees from any damage, claim, loss, cost, liability, cause of action or expense, including reasonable attorney's fees, whether or not reduced to judgment, arising from any infringement or claimed infringement of any patent, trademark or copyright, or misappropriation of confidential information or trade secrets of any third party and based on the manufacture, sale or use of goods, machinery or equipment supplied hereunder.
20. Contractor shall furnish further itemization and breakdown of the Contract price when requested by the City.
21. Contractor, in the performance of any work or the furnishing of any labor under this Contract, shall be considered as an independent contractor. Contractor, his agents and employees shall not be considered as employees of the City.
22. Contractor and subcontractor(s) shall not discriminate against any person in the performance of this Contract and shall comply with applicable federal, state and city equal employment opportunity laws, ordinances, rules and regulations. Contractor and subcontractor(s) shall not discriminate against any employee or applicant for employment or against any subcontractor on the basis of race, color, religion, national origin, sex, sexual orientation, AIDS, HIV status, age, disability, or handicap, subject to federal and state laws, rules and regulations.
23. Contractor shall comply with all applicable federal, state and local laws pertaining to the subject matter hereof.
24. Contractor shall submit samples of all documents that Contractor may require the City to execute to complete this transaction. By accepting these samples as part of the bid or by awarding the Contract to a Contractor who has submitted said samples, the City does not agree to the terms stated in said samples. This Invitation to Bid and Contractor's bid shall take priority over said samples and this Invitation and Contractor's bid shall become the Contract between the City and the Contractor.
25. All quantities stated herein are only ESTIMATES. The City reserves the right to increase or decrease these estimated quantities based on its actual needs and funds available.
26. The City reserves the right to exercise, at its option, an increase in expenditures by ten (10) percent annually, but the City does not guarantee such an increase.
27. Contractor shall cooperate with the City in all matters relating to taxation and the collection of taxes, particularly with respect to the self-accrual of use tax. Contractor shall cooperate as follows: (i) for all leases and purchases of materials, equipment, supplies or other tangible personal property totaling over \$100,000 shipped from outside California, a qualified Contractor shall complete and submit to the appropriate governmental entity the form in Appendix "A" attached hereto; and (ii) for construction contracts and subcontracts totaling \$5,000,000 or more, Contractor shall obtain a sub-permit from the California Board of Equalization for the Work site. "Qualified"

means that the Contractor purchased at least \$500,000 in tangible personal property that was subject to sales or use tax in the previous calendar year.

In completing the form and obtaining the permit(s), Contractor shall use the address of the Work site as its business address and may use any address for its mailing address. Copies of the form and permit(s) shall also be delivered to the Purchasing Agent. The form must be submitted and the permit(s) obtained as soon as Contractor receives a notice of award. Contractor shall not order any materials or equipment over \$100,000 from vendors outside California until the form is submitted and the permit(s) obtained and, if Contractor does so, it shall be a material breach of the Agreement. In addition, Contractor shall make all purchases from its Long Beach sales office and the Long Beach sales office of its vendors if those vendors have a Long Beach office and all purchases made by Contractor under this Agreement which are subject to use tax of \$500,000 or more shall be allocated to the City of Long Beach. Contractor shall require the same form and permit(s) from its subcontractors.

Contractor shall not be entitled to and by signing this Contract waives any claim or damages for delay against City if Contractor does not timely submit these forms to the appropriate governmental entity. Contractor may contact Rosie Bouquin at 562-570-7079 for assistance with the form.

28. The California Integrated Waste Management Act (Public Resources Code, Sec. 40000 et seq.) requires governmental entities to achieve fifty (50) percent diversion of waste. In conjunction with the City's Integrated Resources Bureau, the City is currently developing an Environmentally Preferable Product (EPP) procurement plan. These guidelines enable the City Purchasing Agent to greatly expand procurement programs by moving beyond a singular consideration of "recycled-content". EPP procurement facilitates the purchase of products that qualify within a broad range of "environmentally preferable" criteria, such as: minimal packaging; energy savings; non-toxic; manufactured from sustainably-harvested materials. Contractor shall monitor products that fall within the EPP guidelines and document all criteria that qualifies the product as an EPP. Documentation from the manufacturer will be acceptable and may be required during the term of the Contract.

29. NOTICE TO BIDDERS REGARDING THE PUBLIC RECORDS ACT:
Responses to this Invitation to Bid become the exclusive property of the City of Long Beach. All Bids submitted in response to this Invitation to Bid are a matter of public record and shall be regarded as public records. Exceptions will be only those elements in each Bid that are defined by the Bidder as business or trade secrets and are marked as "Trade Secrets", "Confidential" or "Proprietary".

The City shall not be liable or responsible in any way for disclosure of any records not marked as "Trade Secrets", "Confidential" or "Proprietary". The City shall not be liable or responsible in any way for disclosure of any records so marked if disclosure is deemed to be required by law or by a court order.

30. THE FOLLOWING ADDITIONAL CONDITIONS APPLY ONLY IN CASES WHERE CONTRACTOR IS TO PERFORM WORK ON CITY PROPERTY:

A. If at any time during the progress of the Work, Contractor shall allow any indebtedness to accrue for labor, equipment or materials, or which may become a claim against the City, Contractor shall immediately upon request from the City pay such claim or indebtedness or cause such lien to be dissolved and discharged by giving a bond or otherwise and, in case of his failure so to do, the City may withhold any money due Contractor until such claim or indebtedness is paid or may apply such money toward the discharge thereof; or in such event the City may, at its option, declare this Contract to be terminated, take possession and control of the Work, and complete the same or cause the same to be completed according to the specifications. Contractor shall pay to the City the difference between the Contract price and the actual cost to the City in completing or causing the Work to be completed.

B. Contractor shall carry on the Work at its own risk until the same is fully completed and accepted and shall, in case of any accident, destruction or injury to the Work or materials before its final completion and acceptance, repair or replace the Work or materials so injured, damaged and destroyed, at his own expense and to the satisfaction of the City. When materials and equipment are furnished by others for installation or erection by Contractor, Contractor shall receive, unload, store and handle same at the Site and become responsible therefore as though such materials and equipment were being furnished by Contractor under the Contract.

C. Contractor shall procure and maintain at Contractor's expense for the duration of the Contract the following insurance against claims for injuries to persons or damage to property which may arise from or in connection

with the performance of the Contract by Contractor, its agents, representatives, employees or subcontractors:

- (1) Comprehensive General Liability: \$1,000,000 combined single limit for each occurrence or \$2,000,000 General Aggregate for bodily injury, personal injury and property damage, including products and completed operations coverage.

The City, its officials, employees and agents shall be named as additional insureds as respects: liability arising out of activities performed by or on behalf of Contractor; products and completed operations of Contractor; and premises owned, leased or used by Contractor.

- (2) Automobile Liability: \$500,000 combined single limit per accident for bodily injury and property damage covering owned, non-owned and hired vehicles.
- (3) Workers' Compensation as required by the California Labor Code and Employers Liability limits of \$1,000,000 per accident.

Any self-insurance program and self-insured retention must be separately approved in writing by the City.

Each insurance policy shall be endorsed to state that coverage shall not be cancelled by either party or reduced in coverage except after thirty (30) days prior written notice to the City.

Contractor shall maintain at its expense, until completion of performance and acceptance by City, from an insurer:

- a. Admitted (licensed) in the State of California with a current financial responsibility rating of A (Excellent) or better and a current financial size category (FSC) of V (capital surplus and conditional surplus funds of greater than \$10 million) or greater rating as reported by A.M. Best Company or equivalent, unless waived in writing by City's Risk Manager, or
- b. Non-admitted in the State of California with a current financial responsibility rating of A (Excellent) or better and a current financial size category (FSC) of VIII (capital surplus and conditional surplus funds of greater than \$100 million) or greater rating as reported by A.M. Best Company or equivalent, unless waived in writing by City's Risk Manager.

All coverages for Subcontractors shall be subject to the requirements stated herein and shall be maintained at no expense to the City.

Contractor shall furnish the City with certificates of insurance and original endorsements providing coverage as required above. The certificates and endorsements for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf.

Before any of Contractor's or Subcontractor's employees shall do any Work on the City's property, Contractor shall furnish the City with the required certificates evidencing that such insurance is being maintained. Such certificates shall specify the date when such insurance expires. Such insurance shall be maintained until after the Work under the Contract has been completed and accepted.

Such insurance as required herein or in any other documents to be considered a part hereof shall not be deemed to limit Contractor's liability under this Contract.

- D. Contractor shall defend, indemnify and hold harmless the City, its officials and employees from and against any and all liability for claims for bodily injury and property damage arising out of negligent acts, omissions or errors of any employee of Contractor at the Site.
- E. Contractor shall list the name and location of the place of business of each Subcontractor who will perform work, labor or services for Contractor, or who specially fabricates and installs a portion of the Work or improvement in an amount in excess of one-half of one percent of Contractor's total contract cost. The Subcontractor list shall be submitted with Contractor's Bid.

*****REBID*****
PA02012
SURVEILLANCE CAMERAS & PARTS

City of Long Beach is seeking bids for furnishing and delivering of surveillance camera parts and accessories on an as needed basis.

The City currently uses Genetec Omnicast Pro version 4.7 to manage and maintain 150 existing cameras and associated system equipment. All cameras proposed must be compatible with Genetec version 4.7 or above.

AWARD

The City prefers to award to a single vendor but reserves the right to award to multiple vendors.

CONTRACT PERIOD:

Twelve months after date of award. This Contract may be extended by mutual agreement for up to two additional periods of one year each in accordance with terms and conditions stated herein.

It is agreed that if the Contract is extended, the City shall so notify the Vendor 90 days prior to the expiration date. Vendor shall be required to submit any price or model changes to the City Purchasing Agent for approval at least 60 days prior to expiration of the Contract. Said notice shall show item number, price, contract number and purchase order number. The City reserves the rights to accept or reject any price increases and to cancel the renewal notice if price increases are not acceptable.

ILLUSTRATIVE AND TECHNICAL DATA

Bidder shall submit with bid illustrative and technical data on items to be furnished. Failure to provide technical information may disqualify bid.

FUTURE AMENDMENTS

The City reserves the right to add and/or delete items, which may become necessary. Any such revisions shall be accomplished by written authorization approved by the City Purchasing Agent or her designee

DELIVERY REQUIREMENT

Products shall be delivered to specify locations between the hours of 7:30 am and 4:30 pm, Monday through Friday. Price quoted shall include all handling and inside delivery charges to the location designated at time of order, which shall be within the City of Long Beach.

Delivery, in days, after receipt of order: 30 (calendar days)

*****REBID*****
PA02012
SURVEILLANCE CAMERAS & PARTS

BID SECTION

The City of Long Beach Technology Services Department (TSD) maintains over 100 surveillance cameras and the associated infrastructure equipment to support them throughout the City. Surveillance cameras are expected to surpass over 200 in the next year. The attached parts list contains the equipment that will be used to repair, replace, upgrade, and expand the City's video surveillance network. Please provide the cost for each item on the list and please provide estimated delivery time from date and time of order placement.

PAYMENT TERMS net 30

This contract is subject to extension for two additional one (1) year periods from the date of expiration of this contract, at the option of the City, in accordance with the options granted in your bid.

Price increase shall not exceed 4.5 % during the first renewal option.

Price increase shall not exceed 4.5 % during the second renewal option.

Video System Parts

Item	Minimum Requirements	Quantity	Unit Cost																																																							
Motherboard/CPU Combo -	2x240 pin memory slots; DDR 2800/667 memory standard; 4GB maximum memory supported; Dual Channel supported; Expansion Slots; 1 PCI Slot, SATA 2 x SATA 3.0Gb/s storage devices; SVGA onboard video chipset; onboard audio; audio chipset; onboard LAN chipset min: 10/100 ethernet; 10/100Mbps LAN speed; PS/2 rear panel ports; D-Sub video ports; 4 x USB 2.0; 3 audio ports; Internal I/O connectors; 4 x USB 2.0 Onboard USB	1	\$ 343.97																																																							
Physical Specifications	Mini ITX; 6.7" x 6.7"; DDR2 800/666 Memory; 1TB 3.5"/2TB 3.5" SATA drives; unmanaged Industrial switch; 5 10/100 ports; operating temperature -40 to +85 degrees C; cold startup at -40 degrees C; vibration IEC60068-2-6; humidity 5 to 95% HR; metal case, 5 ports; 10/100 port speed; RJ-45 port connection.																																																									
Electronics enclosure Pole Mount	Universal pole mounting kit-pole diameter 3 to 4 inches; stainless steel rails; rails securely bolted to the enclosure; stamped in gripping edges rails to grip pole; heavy duty U bolts to secure enclosure to the pole.	1	\$ 49.88																																																							
Electronics enclosure	Fiberglass reinforced polyester; machine tool gray in color; 12 VDC voltage; .10 in. (2.5 mm) thick anodized aluminum mounting plate 16.8 x 14.8 inches (42.6 x 37.5 cm); 21.8 lbs (9.9 kg) weight; 19.5 x 17.5 x 10 (49.5 x 44.4 x 25.4 cm) maximum outside dimensions; 17.7 x 15.7 x 8.5 inches (44.9 x 39.9 x 21.6 cm) inside dimensions; UL 94-5V flame rating; RoHS compliant; 1/2" cable conduit connector; NEMA Type 3R, 3RX / IP24 rated.	1	\$ 229.85																																																							
Cables	LMR 400 cable for interface from panels to AP's, LMR 400 N style connectors; RG59 20 gauge coax; BNC connectors for RG59 20 gauge cable; two pair twisted with shield 20 gauge stranded wire for pan tilt positioning; 12 gauge THHN stranded (blue) power interconnect; 12 gauge THHN standard (white) power interconnect; 12 gauge THHN stranded (green) power interconnect.	1	\$ 1,405.21/1000ft																																																							
Wi-Fi Network Adapter 2.4 mhz, 4.9 Mhz, 5.x Mhz selectable	<p>a) Transceiver type: Broadband, Time Division Duplex, ODFM, non line of site capable</p> <p>b) Transceiver frequency: Public safety 4940-4990 Mhz as primary band, with software selection for 2.4 GHz or 5. x GHz bands</p> <p>c) Channel Bandwidth: 5, 10, 20 MHz (software selectable)</p> <p>d) PCI Interface: PCI interface into PC motherboard</p> <p>e) Antenna diversity: Antenna diversity supported for each radio</p> <p>f) Power Output (from radio) 20dbm minimum, adjustable</p> <p>g) Receiver sensitivity: Exceeding values in table below</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Receiver Sensitivity in dBm</th> <th colspan="3">Bandwidth in MHz</th> </tr> <tr> <th>20</th> <th>10</th> <th>5</th> </tr> </thead> <tbody> <tr> <td>54</td> <td>-72</td> <td></td> <td></td> </tr> <tr> <td>48</td> <td>-74</td> <td></td> <td></td> </tr> <tr> <td>36</td> <td>-81</td> <td></td> <td></td> </tr> <tr> <td>24</td> <td>-84</td> <td>-77</td> <td></td> </tr> <tr> <td>18</td> <td>-86</td> <td>-84</td> <td></td> </tr> <tr> <td>12</td> <td>-88</td> <td>-87</td> <td>-80</td> </tr> <tr> <td>9</td> <td>-89</td> <td>-89</td> <td>-87</td> </tr> <tr> <td>6</td> <td>-91</td> <td>-91</td> <td>-90</td> </tr> <tr> <td>4.5</td> <td></td> <td>-92</td> <td>-92</td> </tr> <tr> <td>3</td> <td></td> <td>-94</td> <td>-94</td> </tr> <tr> <td>2.25</td> <td></td> <td></td> <td>-95</td> </tr> <tr> <td>1.5</td> <td></td> <td></td> <td>-97</td> </tr> </tbody> </table> <p>h) Data Protocol: WIFI based</p> <p>i) Security: AES</p> <p>j) QoS: IEEE 802.1p / 802.1q (Vendor shall specify other QoS features)</p> <p>k) Remote Management: SNMP, TelNet</p> <p>l) Digital Connection type: RJ45</p>	Receiver Sensitivity in dBm	Bandwidth in MHz			20	10	5	54	-72			48	-74			36	-81			24	-84	-77		18	-86	-84		12	-88	-87	-80	9	-89	-89	-87	6	-91	-91	-90	4.5		-92	-92	3		-94	-94	2.25			-95	1.5			-97	1	\$ 444.44
Receiver Sensitivity in dBm	Bandwidth in MHz																																																									
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3		-94	-94																																																							
2.25			-95																																																							
1.5			-97																																																							
PCI LAN Adapter	PCI interface into PC motherboard; onboard LAN chipset min: 10/100/1G ethernet; 10/100Mbps / 1ghz LAN speed.	1	\$ 18.85																																																							

Video System Parts

Video Encoders Single Port	H.264 (MPEG-4 part 10/AVC) Motion JPEG video compression; 176x120 to 720x576 resolution; H.264 30/25 (NTSC/PAL) fps in all resolutions frame rate; 30/25 (NTSC/PAL) fps in all resolutions frame rate motion JPEG; multi-stream H.264 and motion JPEG: 3 simultaneous, individually configured streams in max. resolution at 30/25 fps, more streams if identical or limited in frame rate/resolution; controllable frame rate and bandwidth VBR/CBR H.264	1	\$ 506.22
	Image settings: Compression, color, brightness, contrast; Rotation: 90°, 180°, 270°; aspect ratio correction; mirroring of images; text and image overlay; privacy mask; enhanced deinterlace filter;		
	Pan/Tilt/Zoom: Wide range of analog PTZ cameras supported (drivers available for download at www.axls.com), 100 presets, guard tour, PTZ control queue. Supports Windows compatible joysticks; two way, full duplex audio streaming; AAC-LC 8 kHz 32 kbit/s, 16 kHz 64 kbit/s, G.711 PCM 8 kHz 64 kbit/s, G.726 ADPCM 8 kHz 32 or 24 kbit/s audio compression; external microphone input or line input, line level output.		
	Security: Password protection, IP address filtering HTTPS encryption IEEE 802.1X network access control, digest authentication, user access log.		
	Supported protocols: IPv4/v6, HTTP, HTTPS, QoS layer 3 DiffServ, FTP, SMTP, Bonjour, UPnP, SNMPv1/v2c/v3(MIB-II), DNS, DynDNS, NTP, RTSP, RTP, TCP, UDP, IGMP, RTCP, ICMP, DHCP, ARP, SOCKS		
Video encoder Dual port	Video standards MPEG-4; video data rate 9.6 kbps - 6 Mbps per channel; video resolution 704 x 576/480 (D1/4CIF: 25/30 IPS), 704 x 288/240 (2CIF: 25/30 IPS), 352 x 576/480 (Half D1: 25/30 IPS), 352 x 288/240 (CIF: 25/30 IPS), 176 x 144/120 (QCIF: 25/30 IPS); GOP structure I, IP; overall delay (IP) MPEG-4: 120 ms; network protocols RTP, TelNet, UDP, TCP, IP, HTTP, IGMP V2, ARP, SNMP; software update Flash ROM, remote programmable.	1	\$ 1,182.50
	Configuration Via web browser, built-in web server interfaces; video in 2x analog composite: NTSC/PAL; BNC connector 75 Ohm switchable, 0.7 - 1.2 Vp-p; Alarm In 4x (non-isolated closure contact type), max. activation resistance 10 Ohm; Relay Out 1x, 30 Vp-p, 2 A; Connectors 14 position spring clamp contact for alarm, relay and COM port; COM Port 1x RS-232/422/485, spring clamp contacts; USB Port 1x 2.0 external interface*.		
	Ethernet 10/100Base-T, auto-sensing, half/full duplex,RJ-45; Audio Model VIP X2A; Audio Standard G.711; 300 Hz - 3.4 kHz; Audio Data Rate 80 kbit/s; Audio Sampling Rate 8 kHz; Line In Dual channel via stereo jack 3.5 mm, 9 kOhm typ., 5.5 Vpp max.; Line Out Dual channel via stereo jack 3.5 mm, 16 Ohm min., 3 Vpp max.; Microphone In CombiCon plug, 2kOhm typ., 2.8 Vpp max. -20dB, supply 2.3 V typ.; Speaker Out CombiCon plug, 4 Ohm min., 6 Vpp max., power RMS 1 W.		
	Environmental: Input Voltage 12 - 24 VDC, spring clamp contact; Power Consumption Approx. 10 VA; Power supply unit approx. 0.2 kg (0.44 lb) in weight; operating temperature 0°C - 40°C (32°F - 104°F) ambient temperature.		
Video encoder Four port	H.264 (MPEG-4 Part 10/AVC, motion JPEG video compression; resolutions NTSC: 720x480 to 176x120, PAL: 720x576 to 176x144; H.264 30.25 (NTSC/PAL) fps in all resolutions frame rate; Motion JPEG 30/25 (NTSC/PAL) fps in all resolutions; video streaming: Multiple, individually configurable streams per channel in H.264 and/or Motion JPEG: 3 simultaneous streams in max. resolution at 30/25 fps from each channel; more streams if identical or limited in frame/rate resolution; controllable frame rate and bandwidth VBR/CBR H.264.	1	\$ 954.22
	Image settings: Compression, color, brightness, contrast; Rotation: 90°, 180°, 270°; Aspect ratio correction; Mirroring of images; Text and image overlay; Privacy mask; Enhanced deinterlace filter.		
	Audio streaming: Two way, half-duplex on Channel 1; Audio Compression: AAC-LC 8 kHz 32 kbit/s, 16 kHz 64 kbit/s; G.711 PCM 8 kHz 64 kbit/s; G.726 ADPCM 8 kHz 32 or 24 kbit/s. Audio Input/output: External microphone input or line input, line level output.		
	Security: Password protection, IP address filtering, HTTPS* encryption, IEEE 802.1X* network access control, digest authentication, user access log.		
	Supported protocols: IPv4/v6, HTTP, HTTPS*, IEEE 802.1X*, QoS layer 3 DiffServ, FTP, SMTP, Bonjour, UPnP, SNMPv1/v2c/v3(MIB-II), DNS, DynDNS, NTP, RTSP, RTP, TCP, UDP, IGMP, RTCP, ICMP, DHCP, ARP, SOCKS		

Video System Parts

Power Supply	MW / RS-100-12 Voltage; Rated current, current range, rated Pwr 12V, 8.5A, 0 ~ 8.5A, 102 W R&N, Volt. Adj., Tol., Line Reg. Load Reg. Eff. OVP 120mV, 11.4 ~ 13.2V, ±1.0%, ±0.5% ±0.5% 81% 13.8 ~ 16.2V	1	\$ 378.5
Battery Backup	Battery; 12 VDC; Lead Acid; 5; Rechargeable; 12; 3.54 In. L x 2.76 In. W x 3.9; computer motherboard power supply PICOPSU-15-XT; PicoPSU-150-XT, 102W Power Kit contains: - DC-DC ATX PSU: picoPSU-150-XT - Power adapter: AC-DC 12V, 8.5A Switching Power Adapter - 12V-ATX cable (4 pin power) - Fits 24 pin mini-ITX boards - Configurable wire harness - Power cord - ROHS compliant version	1	\$ 68.61
Camera Licences	Server / NVR for Omnicast 4.7 provides support for new hardware and Includes cutting-edge product features like video trickling, simplification of unit enrolment, HTTPS support on selected cameras, Cross Line Detection support for H.264 as well as M-PEG4.	1	\$ 216.05
Fixed Outdoors CAMERA/OPTICS	Dome smoked; super dynamic (SD5) day/night; wide dynamic range models. Pendant mount, outdoor Corner mount, Indoor or outdoor Flush mount kit Pole Mount Plate to mount Wall Mount to pole Compact wall mount to Pendant Image Sensor 1/3-Inch interline transfer CCD Effective Pixels, NTSC 976 (H) x 494 (V) Scanning Area 0.19-inch (H) x 0.14-inch (V) (4.8 x 3.6 mm) Scanning System 2:1 interlace Scanning Lines: NTSC, 525 lines Scanning Frequency: NTSC, Horizontal, 15.734 kHz, Vertical, 59.95 Hz Synchronization: Internal LL (phase adjustable power supply synchronization) Horizontal Resolution: 650 TV lines, typical (color mode)700 TV lines or more (B-W mode) Minimum Illumination: 0.1 lux (color mode), 0.003 lux (sensitivity up x32), 0.01 lux (B-W mode), 0.0003 lux (sensitivity up x32) Dynamic range 54 dB/128X, Day/Night type IR filter removal, Video Output: 1.0 Vp-p, NTSC/PAL composite, 75 ohms, BNC connector; auto tracking white balance/automatic balance control; signal-to-noise ratio: 50 dB (equivalent to AGC Off, weight On), 50 dB (equivalent to AGC Off, weight On); 2x varifocal lens; 3.8 ~ 8.0 mm focal length; f/14 (WIDE) to f/1.8 (TELE) F-Number; 3.9 ft (1.2 m) focus range; 73.6° wide zoom; 35.6° telephoto zoom; angle of view horizontal/vertical 53.4° wide zoom; 26.6° telephoto zoom; ±170° panning range; ±75° tilting range; ±100° rotation range.	1	\$ 733.07
PTZ Outdoors CAMERA/OPTICS, Day/Night (35X) PENDANT MODEL, Dome Clear	Pole mount plate to mount wall mount to pole Wall mount arm to pendant Sensor 1/4-Inch EXview HAD™, 768 (H) X 494 (V), 752 (H) X 582 (V), Horizontal Resolution NTSC, >540 TV Lines; Lens f/1.4 (focal length, 3.4 ~ 119 mm) f/1.4 (focal length, 3.4 ~ 91.8mm); zoom 35X optical, 12X digital; zoom speed (optical range) 3.2/4.6/6.6 seconds; horizontal 55.8° at 3.4 mm wide zoom; 1.7° at 119 mm telephoto zoom angle of view; automatic with manual override focus; maximum sensitivity at 35 IRE, NTSC/EIA, 0.55 lux at 1/60 sec (color), 0.018 lux at 1/2 sec (color), 0.00018 lux at 1/2 sec (B-W); Sync System Internal/AC line lock, phase adjustable using remote control; V-Sync; white balance automatic with manual override; shutter speed NTSC automatic (electronic iris)/Manual 1/2 ~ 1/30,000; Automatic Iris control with manual override; Automatic/OFF gain control; 1 Vp-p, 75 ohms video output; >50 dB video signal-to-noise; 128X wide dynamic range; Integrated/selectable electronic image stabilization; Integrated/selectable image enhancement.	1	\$ 2,911.42
Tax			\$ 796.44
Shipping	FOB Destination		\$ 0
Total			\$ 9,898.58

City of Long Beach, CA

Commonly Made Errors

The following are commonly made errors when submitting a bid to the City of Long Beach:


It is essential that all requirements of the bid are completed as specified.

- Instructions concerning signatures (page 2 on bid) are NOT followed.
- **Bid must be signed by two corporate officers if the bidder is a corporation unless accompanied by a corporate resolution. Link to samples of acceptable documentation to allow other signature.**
- All pages of the Invitation to Bid are not returned as required.
- Invitation to Bid document is not fully completed as required.
- Notarial Acknowledgment is not submitted when required; i.e., companies located outside of the state of California or companies that do not have a business operation with an established address within California (must be same address as shown on Invitation to Bid; P.O. Boxes are not acceptable) are required to submit a Notarial Acknowledgment of Corporate Officer or of the authorized person that has signed the bid.
NOTE: Only one signature will be required of the "Principal" if the principal is a partnership, sole proprietary (individuals) or limited liability company.
- When bonds are required (Labor & Material or Performance Bonds), and Notarial Acknowledgments are not submitted. Three acknowledgments are required; two for the Principal (company submitting the bid), and one for the Surety (bonding company). If the Principal is a corporation, the signatures of two corporate officers are required for Labor & Material and Performance Bonds. Labor & Material and Performance Bonds are only required of companies that are being considered for an award (they are not required when Invitation to Bid is submitted).
NOTE: Bid Bonds require only two acknowledgments; one for the Principal (company submitting the bid), and one for the Surety (bonding company).
- Bonds are not submitted on City of Long Beach forms.
- The title of the individual signing the Invitation to Bid does not match the title shown on the Notarial Acknowledgment; (i.e., the signature on the Invitation to Bid appears to be the President. The same signature appears on the Notarial Acknowledgment, but the title differs (Vice President).
- The person that signed the Invitation to bid differs from that of the Notarial Acknowledgment.
- When references are required, they are not submitted with bid.
- Bids are not submitted on time (11:00 am) to the proper location (City Clerk's Office - Plaza Level of City Hall).
- Contractor does not allow for firm pricing when submitting Invitation to Bid as required.
- The Invitation to Bid is not signed.

EBO Form to be Attached to Bids/ RFPs

**CERTIFICATION OF COMPLIANCE WITH THE
EQUAL BENEFITS ORDINANCE**

Section 1. CONTRACTOR/VENDOR INFORMATION

Name: Pacific Services Federal Tax ID No. 
Address: 1060 Calle Negocio, Ste C
City: San Clemente State: CA ZIP: 92673
Contact Person: Sandy Lewis Telephone: 949-542-7995
Email: sandy1@pacdata.com Fax: 949-542-7996

Section 2. COMPLIANCE QUESTIONS

- A. The EBO is inapplicable to this Contract because the Contractor/Vendor has no employees. Yes No
- B. Does your company provide (or make available at the employees' expense) any employee benefits? Yes No
(If "yes," proceed to Question C. If "no," proceed to section 5, as the EBO does not apply to you.)
- C. Does your company provide (or make available at the employees' expense) any benefits to the spouse of an employee?
 Yes No
- D. Does your company provide (or make available at the employees' expense) any benefits to the domestic partner of an employee?
 Yes No (If you answered "no" to both questions C and D, proceed to section 5, as the EBO is not applicable to this contract. If you answered "yes" to both Questions C and D, please continue to Question E. If you answered "yes" to Question C and "no" to Question D, please continue to section 3.)
- E. Are the benefits that are available to the spouse of an employee identical to the benefits that are available to the domestic partner of an employee? Yes No
(If "yes," proceed to section 4, as you are in compliance with the EBO. If "no," continue to section 3.)

Section 3. PROVISIONAL COMPLIANCE

- A. Contractor/vendor is not in compliance with the EBO now but will comply by the following date:

_____ By the first effective date after the first open enrollment process following the contract start date, not to exceed two years, if the Contractor/vendor submits evidence of taking reasonable measures to comply with the EBO; or

_____ At such time that the administrative steps can be taken to incorporate nondiscrimination in benefits in the Contractor/vendor's infrastructure, not to exceed three months; or

_____ Upon expiration of the contractor's current collective bargaining agreement(s).

B. If you have taken all reasonable measures to comply with the EBO but are unable to do so, do you agree to provide employees with a cash equivalent? (The cash equivalent is the amount of money your company pays for spousal benefits that are unavailable for domestic partners.)

____ Yes ____ No

Section 4. REQUIRED DOCUMENTATION

At time of issuance of purchase order or contract award, you may be required by the City to provide documentation (copy of employee handbook, eligibility statement from your plans, insurance provider statement, etc.) to verify that you do not discriminate in the provision of benefits.

Section 5. CERTIFICATION

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that I am authorized to bind this entity contractually. By signing this certification, I further agree to comply with all additional obligations of the Equal Benefits Ordinance that are set forth in the Long Beach Municipal Code and in the terms of the contract of purchase order with the City.

Executed this 9th day of May, 2012 at Sunnyvale, CA
Name Gary Greening Signature [Signature]
Title President Federal Tax ID No. [Redacted]

Request for Taxpayer Identification Number and Certification

Give form to the
requester. Do not
send to the IRS.

Print or type
See Specific Instructions on page 2.

Name (as shown on your income tax return)

Pacific Services Inc.

Business name, if different from above

Check appropriate box: Individual/Sole proprietor Corporation Partnership
 Limited liability company. Enter the tax classification (D=disregarded entity, C=corporation, P=partnership) ▶
 Other (see instructions) ▶

Exempt
payee

Address (number, street, and apt. or suite no.)

1060 Calle Negocio, Ste. C

City, state, and ZIP code

San Clemente, CA 92673

Requester's name and address (optional)

List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on Line 1 to avoid backup withholding. For individuals, this is your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

Social security number

or

Note. If the account is in more than one name, see the chart on page 4 for guidelines on whose number to enter.

Part II Certification

Under penalties of perjury, I certify that:

- The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me), and
- I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding, and
- I am a U.S. citizen or other U.S. person (defined below).

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the Certification, but you must provide your correct TIN. See the instructions on page 4.

Sign
Here

Signature of
U.S. person ▶

Cynthia Ford

Date ▶

8/9/12

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Purpose of Form

A person who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) to report, for example, income paid to you, real estate transactions, mortgage interest you paid, acquisition or abandonment of secured property, cancellation of debt, or contributions you made to an IRA.

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN to the person requesting it (the requester) and, when applicable, to:

- Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
- Certify that you are not subject to backup withholding, or
- Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income.

Note. If a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

Definition of a U.S. person. For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien,
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States,
- An estate (other than a foreign estate), or
- A domestic trust (as defined in Regulations section 301.7701-7).

Special rules for partnerships. Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax on any foreign partners' share of income from such business. Further, in certain cases where a Form W-9 has not been received, a partnership is required to presume that a partner is a foreign person, and pay the withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid withholding on your share of partnership income.

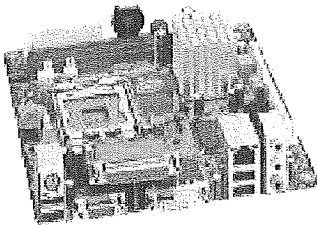
The person who gives Form W-9 to the partnership for purposes of establishing its U.S. status and avoiding withholding on its allocable share of net income from the partnership conducting a trade or business in the United States is in the following cases:

- The U.S. owner of a disregarded entity and not the entity,



Mini-ITX Form Factor

Intel® Desktop Board DG41AN Classic Series



Enhanced features provide an extraordinary computing experience

The Intel® Desktop Board DG41AN is designed to support a wide range of processors based on the LGA775 package, including the Intel® Core™2 Quad** and Intel® Core™2 Duo processors.

With enhanced DDR3 memory support for higher bandwidth and a small form factor, the Intel Desktop Board DG41AN brings you a unique computing experience.

Your PC is cool for work and entertainment

- Features Intel® Graphics Media Accelerator X4500 (Intel® GMA X4500) with Intel® Clear Video Technology.
- Enhance your gaming experience with DirectX® 10.
- Enjoy smooth high-definition video thanks to built-in hardware video acceleration.
- Gain flexibility with the VGA and DVI-D graphic outputs.
- Get super fast network connectivity with an Integrated 10/100/1000 Network Connection.

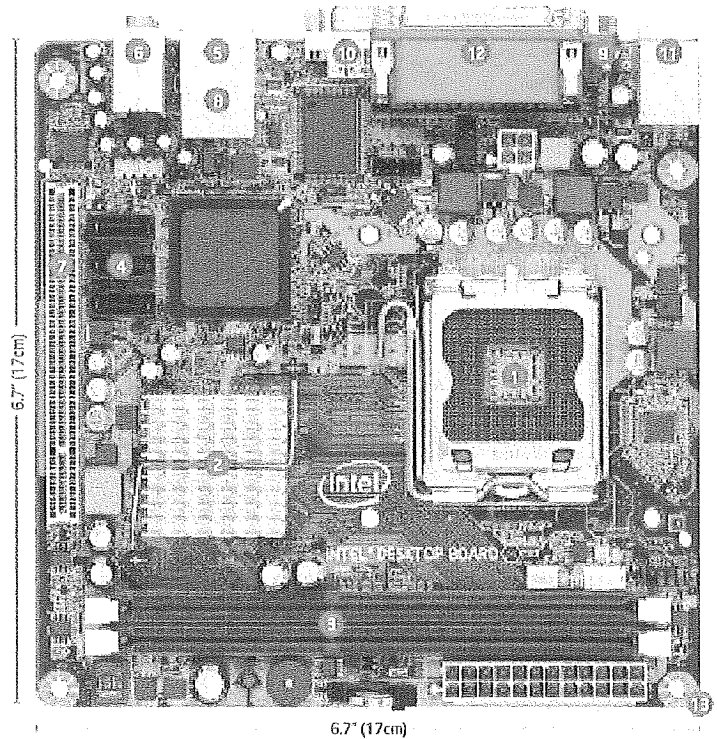
- Experience the rich sound quality of Intel® High Definition Audio® with 5.1-channel surround sound and 2-channel multi-streaming.
- Microsoft® Windows® 7 and Windows Vista® Premium WHQL certified.

line 1

Intel® Desktop Board DG41AN Classic Series

Features and Benefits

- 1 Supports the Intel® Core™2 Quad** and Intel® Core™2 Duo processors: Features quad-core and dual-core processing with 1333 / 1066 / 800 MHz system bus in the LGA775 package.
- 2 Intel® G41 Express Chipset featuring Intel® Graphics Media Accelerator X4500 (Intel® GMA X4500)
- 3 Dual-channel DDR3 with two connectors for 1333^{2,3} / 1066 / 800 MHz memory support (4 GB⁴ max): Two DIMM connectors designed to support the latest DDR3 technology.
- 4 Three SATA ports (3.0 Gb/s): Facilitate high-speed storage and data transfers at up to 3.0 Gb/s for each port.
- 5 Integrated 10/100/1000 Network Connection
- 6 Six-channel Intel® High Definition Audio¹: Audio subsystem with three analog audio outputs (5.1 + 2 independent multi-streaming).
- 7 One PCI connector
- 8 Eight Hi-Speed USB 2.0 ports: Four back panel ports and four additional ports via two internal headers.
- 9 VGA port
- 10 DVI-D port: Built-in HDCP support enables viewing of protected HD Video multimedia content.
- 11 PS/2 port: Supports keyboard or mouse.
- 12 Parallel port: Provides legacy device compatibility.
- 13 Mini-ITX form factor



Intel® Desktop Board DG41AN Classic Series

Technical Specifications

PROCESSOR

Processor Support

- Intel® Core™2 Quad** processors in the LGA775 package
- Intel® Core™2 Duo processors in the LGA775 package
- Intel® Pentium® processors in the LGA775 package
- Intel® Celeron® processors in the LGA775 package
- Supports Intel® 64 architecture⁵

CHIPSET

Intel® G41 Express Chipset

- Designed to support up to 4 GB⁶ of system memory using DDR3 1333^{2,3} / 1066 / 800 MHz SDRAM
- Intel® 82G41 Graphics and Memory Controller Hub (GMCH)
- Intel® Graphics Media Accelerator X4500 with Intel® Clear Video Technology
- Intel® Fast Memory Access

Intel® I/O Controller Hub (ICH)

- Intel® 82801GB I/O Controller Hub (ICH7)
- Three SATA ports (3.0 Gb/s)
- Integrated 10/100/1000 Network Connection
- Eight Hi-Speed USB 2.0 ports (four back panel ports and four additional ports via two internal headers)

System BIOS

- 8 Mb Flash EEPROM with Intel® Platform Innovation Framework for EFI Plug and Play
- Advanced configuration and power interface
- V2.0b, DMI 2.0, multilingual support
- Serial Peripheral Interface (SPI) Flash

SYSTEM MEMORY

Memory Capacity

- Two 240-pin DIMM connectors supporting up to two double-sided DIMMs (4 GB⁶ max)

Memory Types

- DDR3 1333^{2,3} / 1066 / 800 SDRAM memory support
- Non-ECC Memory

Memory Modes

- Dual- or single-channel operation support

Memory Voltage

- 1.35 V to 1.65 V

Hardware Management Features

- Processor fan speed control
- System chassis fan speed control
- Voltage and temperature sensing
- Fan sensor inputs used to monitor fan activity
- Power management support for ACPI 1.0b

Expansion Capabilities

- One PCI bus add-in card connector

Headers

- One serial header

Audio

- Six-channel Intel® High Definition Audio³ codec

JUMPERS AND FRONT-PANEL CONNECTORS

Jumpers

- Single configuration jumper design
- Jumper access for BIOS maintenance mode

For ordering information, visit www.intel.com

For a complete list of solutions and opportunities, visit www.intel.com/go/upgradesreseller or www.intel.com/go/dfdb

Front-Panel Connectors

- Reset, HDD LED, Power LEDs, power on / off
- Front-panel Hi-Speed USB 2.0 headers
- Front-panel audio header

MECHANICAL

Board Style

- ATX 2.2-compliant

Board Size

- 6.7" x 6.7" (17cm x 17cm)

Baseboard Power Requirements

- ATX 12 V

ENVIRONMENT

Operating Temperature

- 0° C to +55° C

Storage Temperature

- -20° C to +70° C

REGULATIONS AND STANDARDS

United States

- UL 60950-1

Canada

- CAN / CSA C22.2 No. 60950-1

Europe

- (Low Voltage Directive 2006 / 95 / EC)
- EN 60950-1

International

- IEC 60950-1

EMC Regulations (Class B)

United States

- FCC CFR Title 47, Chapter I, Part 15, Subparts A / B

Canada

- ICES-003

Europe

- (EMC Directive 2004 / 108 / EC)
- EN 55022 and EN 55024

Australia / New Zealand

- EN 55022

Japan

- VCCI V-3, V-4

South Korea

- KN-22 and KN-24

Taiwan

- CNS 13438

International

- CISPR 22

Environmental Compliance

Europe

- Europe RoHS (Directive 2002 / 95 / EC)

China

- China RoHS (MII Order # 39)

¹ Intel® High Definition Audio requires a system with an appropriate Intel® chipset and a motherboard with an appropriate codec and the necessary drivers installed. System sound quality will vary depending on actual implementation, controller, codec, drivers, and speakers. For more information about Intel® HD Audio, visit www.intel.com/design/chipsets/hdaudio.htm

² DDR3 1333 is supported through overlocking in BIOS.

³ WARNING: Altering PC memory frequency, voltage and/or latency may: (i) reduce system stability and useful life of the system, memory and processor; (ii) cause the processor and other system components to fail; (iii) cause reductions in system performance; (iv) cause additional heat or other damage; and (v) affect system data integrity. Intel has not tested, and does not warrant, the operation of the memory beyond its specifications. Intel assumes no responsibility that the memory, including if used with altered clock frequencies and/or voltages, will be fit for any particular purpose. Check with memory manufacturer for warranty and additional details.

⁴ System resources and hardware (such as PCI and PCI Express*) require physical memory address locations that can reduce available addressable system memory. This could result in a reduction of as much as 1 GB or more of physical addressable memory being available to the operating system and applications, depending on the system configuration and operating system.

⁵ 64-bit computing on Intel® architecture requires a computer system with a processor, chipset, BIOS, operating system, device drivers, and applications enabled for Intel® 64 architecture. Processors will not operate (including 32-bit operation) without an Intel 64 architecture-enabled BIOS. Performance will vary depending on your hardware and software configurations. Visit <http://developer.intel.com/technology/intel64/index.htm> for more information.

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All products, dates, and figures specified are preliminary based on current expectations, and are subject to change without notice. Availability in different channels may vary.

Actual Intel® Desktop Board may differ from the image shown.

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* Other names and brands may be claimed as the property of others.

** Supports 65 W Thermal Design Power Intel® Core™2 Quad processors with 1333 / 1066 MHz System Bus. For information, visit <http://processormatch.intel.com>.

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Memory Module Specifications

KVR800D2N6/2G

2GB 2Rx8 256M x 64-Bit DDR2-800
CL6 240-Pin DIMM

DESCRIPTION

This document describes ValueRAM's 256M x 64-bit (2GB) DDR2-800 CL6 SDRAM (Synchronous DRAM) 2Rx8 memory module, based on sixteen 128M x 8-bit FBGA components. This 240-pin DIMM uses gold contact fingers and requires +1.8V. The electrical and mechanical specifications are as follows:

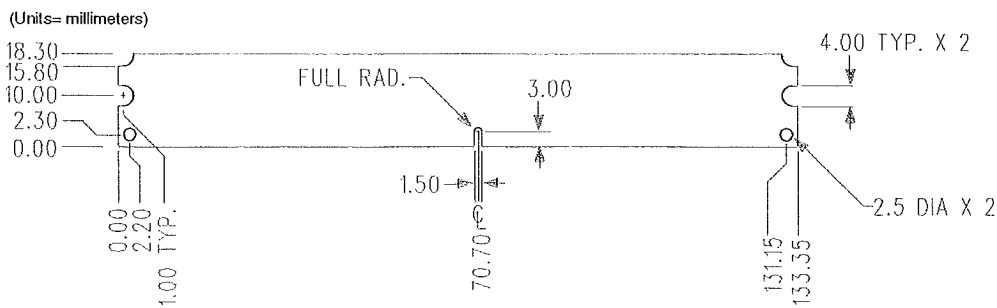
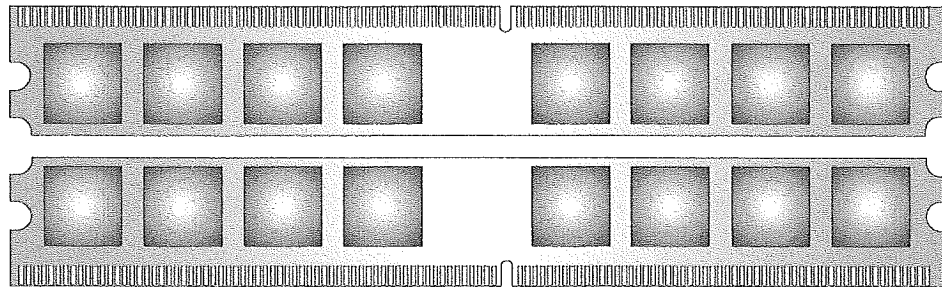
SPECIFICATIONS

Clock Cycle Time (tCK)	2.5ns (min.) / 8ns (max.)
Row Cycle Time (tRCmin)	60ns (min.)
Refresh to Active/Refresh Command Time (tRFCmin)	127.5ns (min.)
Row Active Time (tRASmin)	45ns (min.) / 70,000 (max.)
Single Power Supply of	+1.8V (+/- .1V)
Power Operating	2.016 W (Approx.*)
UL Rating	94 V - 0

*Power will vary depending on the SDRAM used.

Note: The module described in this data sheet is one of several configurations available under this part number. While all configurations are compatible, the DRAM combination and/or the module height may vary from what is described here.

Figure 1: KVR800D2N6/2G 240-Pin DIMM





WD AV-GP

Power-saving Hard Drives

WD AV-GP SATA hard drives store more hi-def audio and video than ever before – up to 3 TB. They are optimized with SilkStream™ technology to capture data from up to 12 simultaneous HD video streams. And with 24x7 operation, low temperature, and best-in-class reliability, WD AV-GP hard drives are ideal for DVR/PVR and video surveillance applications. 3-year limited warranty.



INTERFACE

SATA

WIDTH/HEIGHT

3.5-inch/1-inch

ROTATIONAL SPEED

IntelliPower™

CAPACITIES

160 GB to 3 TB

MODEL NUMBERS

WD30EURS	WD10EUCX	WD5000AVDS	WD2500AVVS
WD25EURS	WD10EVDX	WD5000AVCS	WD1600AVCS
WD20EURS	WD7500AURS	WD3200AVCS	WD1600AVVS
WD15EURS	WD7500AVDS	WD3200AVVS	
WD10EURX	WD5000AUDX	WD2500AVCS	

Note: Not all products may be available in all regions of the world.

Product Features

Highest capacity for audio/video storage

WD AV-GP SATA drives now offer unrivaled storage capacity up to 3 TB – perfect for today's storage intensive applications.

24x7 reliability

These drives are designed to last in high temperature always-on streaming digital audio/video environments such as PVR/DVR, IPTV, and video surveillance systems.

Compatible

Tested for compatibility in a broad range of AV products including set top boxes, DVR/PVR, and mainstream video surveillance systems. For drives with greater than 2.19 TB capacity, compatibility is selective to PVRs and surveillance systems that are compatible with hard drives exceeding 2.19 TB. For more information on large capacity drive compatibility, go to <http://avlargecapacitydrives.com>.

Reduced power consumption

WD AV-GP drives consume less power by up to 40 percent compared to 7200 RPM hard drives. Lower power means less heat and greater reliability.

Quiet

Noise levels have been minimized to less than one sone* - virtually below the threshold of human hearing.

SilkStream

Optimized for smooth, continuous digital video playback of up to twelve simultaneous HD streams. SilkStream is compatible with the ATA streaming command set so CE customers can use standard streaming management and error recovery options.

IntelliSeek™

Calculates optimum seek speeds to lower power consumption, noise, and vibration.

IntelliPower

A fine-tuned balance of spin speed, transfer rate, and caching algorithms designed to deliver both significant power savings and solid performance.

NoTouch™ ramp load technology

The recording head never touches the disk media ensuring significantly less wear to the recording head and media as well as better drive protection in transit.

Preemptive Wear Leveling (PWL)

The drive arm frequently sweeps across the disk to reduce uneven wear on the drive surface common to audio video streaming applications.

Advanced Format (AF)

Technology being adopted by WD and other drive manufacturers as one of multiple ways to continue growing hard drive capacities. AF is a more efficient media format that enables increased areal densities. (EURS/EURX/EUCX/AURS/AUDX models only)

1 million hours MTBF

Best-in-class reliability for mainstream 3.5-inch form-factor AV storage.**

* A sone is a subjective unit of loudness as perceived by a person with normal hearing.

** Based upon dual tuner system operating in typical 30°C air ambient environment.



PUT YOUR LIFE ON IT®



WD AV-GP

Specifications ¹	3 TB	2.5 TB	2 TB	1.5 TB	1 TB	1 TB
Model numbers	WD30EURS	WD25EURS	WD20EURS	WD15EURS	WD10EURX WD10EUCX	WD10EVD5
Formatted capacity	3,000,592 MB	2,500,495 MB	2,000,398 MB	1,500,301 MB	1,000,204 MB	1,000,204 MB
User sectors per drive	5,860,533,168	4,883,781,168	3,907,029,168	2,930,277,168	1,953,525,168	1,953,525,168
Advanced Format (AF)	Yes	Yes	Yes	Yes	Yes	No
Native command queuing	Yes	Yes	Yes	Yes	Yes	Yes
SATA latching connector ²	Yes	Yes	Yes	Yes	Yes	Yes
RoHS compliant ²	Yes	Yes	Yes	Yes	Yes	Yes
Form factor	3.5-inch	3.5-inch	3.5-inch	3.5-inch	3.5-inch	3.5-inch
Performance						
Data transfer rate (max)						
Buffer to host (SATA)	3 Gb/s	3 Gb/s	3 Gb/s	3 Gb/s	6 Gb/s	3 Gb/s
Host to/from drive (sustained)	145 MB/s	145 MB/s	130 MB/s	130 MB/s	110 MB/s	111 MB/s
Cache (MB)	64	64	64	64	64 (WD10EURX) 16 (WD10EUCX)	32
Rotational speed (RPM)	IntelliPower	IntelliPower	IntelliPower	IntelliPower	IntelliPower	IntelliPower
Average drive ready time (sec)	17	17	14.5	14.5	14.5	14.3
Reliability/Data Integrity						
Load/unload cycles ³	300,000	300,000	300,000	300,000	300,000	300,000
Non-recoverable read errors per bits read	<1 in 10 ¹⁴	<1 in 10 ¹⁴	<1 in 10 ¹⁴	<1 in 10 ¹⁴	<1 in 10 ¹⁴	<1 in 10 ¹⁴
Limited warranty (years) ⁴	3	3	3	3	3	3
Power Management						
12VDC (A, max)	1.775	1.775	1.725	1.725	1.28	1.671
Average power requirements (W)						
Read/Write	6	6	5.3	5.3	5.3	4.9
Idle	5.5	5.5	4.8	4.8	3.3	4.2
Standby	0.75	0.75	0.9	0.9	0.7	0.4
Sleep	0.75	0.75	0.9	0.9	0.7	0.4
Environmental Specifications⁵						
Temperature (°C)						
Base casting (max)	70	70	70	70	70	70
Operating	0 to 60	0 to 60	0 to 60	0 to 60	0 to 60	0 to 60
Non-operating	-40 to 70	-40 to 70	-40 to 70	-40 to 70	-40 to 70	-40 to 70
Shock (Gs)						
Operating (2 ms, read/write)	30	30	30	30	30	30
Operating (2 ms, read)	65	65	65	65	65	65
Non-operating (2 ms)	250	250	250	250	300	300
Average acoustics (dBA) ⁶						
Idle mode	24	24	24	24	23	24
Quiet seek mode	25	25	25	25	24	25
Physical Dimensions						
Height (in./mm, max)	1.028/26.1	1.028/26.1	1.028/26.1	1.028/26.1	1.028/26.1	1.028/26.1
Length (in./mm, max)	5.787/147	5.787/147	5.787/147	5.787/147	5.787/147	5.787/147
Width (in./mm, ± .01 in.)	4/101.6	4/101.6	4/101.6	4/101.6	4/101.6	4/101.6
Weight (lb./kg, ± 10%)	1.61/0.73	1.61/0.73	1.40/0.64	1.40/0.64	1.32/0.60	1.32/0.60

¹ As used for storage capacity, one megabyte (MB) = one million bytes, one gigabyte (GB) = one billion bytes, and one terabyte (TB) = one trillion bytes. Total accessible capacity varies depending on operating environment. As used for buffer or cache, one megabyte (MB) = 1,048,576 bytes. As used for transfer rate or interface, megabyte per second (MB/s) = one million bytes per second, and gigabit per second (Gb/s) = one billion bits per second. Effective maximum SATA 3 Gb/s transfer rate calculated according to the Serial ATA specification published by the SATA-IO organization as of the date of this specification sheet. Visit www.sata-io.org for details.

² WD hard drive products manufactured and sold worldwide after June 1, 2006, meet or exceed Restriction of Hazardous Substances (RoHS) compliance requirements as mandated by the RoHS Directive 2011/65/EU.

³ Controlled unload at ambient condition.

⁴ The term of the limited warranty may vary by region. Visit <http://support.wdc.com/warranty> for details.

⁵ No non-recoverable errors during operating tests or after non-operating tests.

⁶ Sound power level.



UNMANAGED INDUSTRIAL ETHERNET SWITCHES

The SL/SLX-5ES and SL/SLX-8/9ES are 5 and 8/9 port industrial Ethernet switches that provide advanced performance that enables you to achieve real-time deterministic operation. These ruggedized switches are hardened to provide superior reliability. They require no user setup and immediately start operating as soon as you power them up. Sixnet switches are designed to make your job easier, ensuring your system will keep running for many years to come.

PRODUCT HIGHLIGHTS

- Slim packaging fits on your Din-rail
- High performance and value
- Truly industrial hardened design
- Plug & play saves you time and money

REAL-TIME ETHERNET PERFORMANCE

- Fast wire-speed switching
- Intelligent message routing - No collisions!
- Ideal for any system

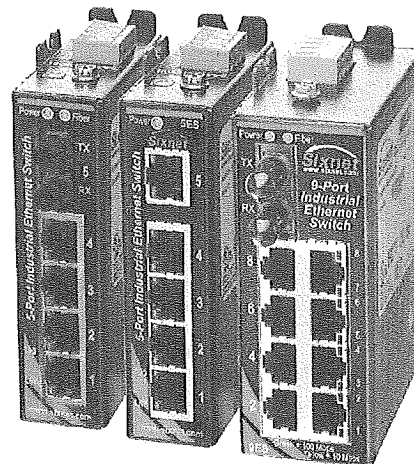
PLUG & PLAY SIMPLICITY

- Auto-sensing for speed and duplex
- Auto-mdi/mdix-crossover works with straight or crossed cables
- Auto-polarity corrects for crossed signals

TROUBLE FREE OPERATION

- Ultra-reliable 1,000,000+ hours MTBF
- Dual power inputs with industrial spike protection
- DIN-rail or direct panel mounting
- UL/CSA (CUL), CE, hazardous locations (Zone 2) and maritime rated
- -40 to 85°C operating range (SLX models)

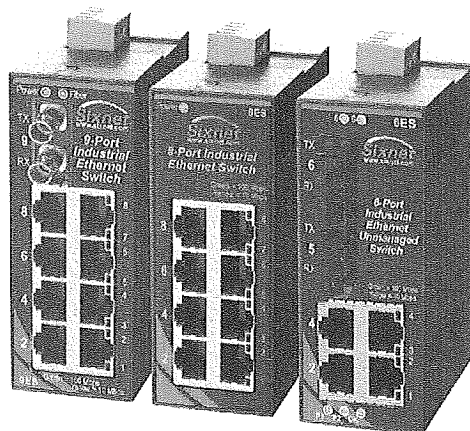
SLX Models



Sixnet Knows Industrial

We have been designing industrial hardware such as Remote Terminal Units for over 30 years and have used this expertise to design the toughest Ethernet switches on the market. Don't trust your critical communications to so-called industrial hardware from commercial switch manufacturers. Sixnet switches give you proven assurance that your system will keep running for years to come.

SL Models



ETHERNET PERFORMANCE

- Unmanaged with 5, 8 or 9 Ethernet ports
- Store & forward wire-speed switching
- Automatic address learning, aging and migration
- Full duplex operation with flow control (no collisions)
- All IEEE 802.3 Ethernet protocols supported
- 1024 MAC addresses supported
- Memory bandwidth 3.2 Gbps
- Typical latency (varies on load)
 - @ 100 Mbps: 5 μ s + frame time
 - @ 10 Mbps: 16 μ s + frame time
- Ethernet isolation 1500 VRMS 1 minute

ETHERNET PORTS

- Shielded RJ45 ports for 10/100BaseTX
 - Auto-negotiation for 10 or 100 Mbps
 - Auto-MDI/MDIX-crossover for either cable type
 - Auto-polarity corrects for crossed +/- signals
- Fiber optic port speed 100BaseFX (100 Mbps)
- Fiber duplex operation: Full duplex
- Fiber wavelength: 1300 nm center (typical)
- Fiber max. distance (full duplex) (see web for details)
 - 4 km for multimode 50 or 62.5/125 μ m (SC or ST)
 - 20 km for singlemode 9 or 10/125 μ m (SC or ST)
 - 40 km (long haul) or more (contact Sixnet)

ETHERNET COMPLIANCE

- IEEE 802.3 (10Mbps Ethernet supports legacy devices)
- IEEE 802.3u (Fast Ethernet 100Mbps for newer devices)
- IEEE 802.3x (Full-Duplex with Flow Control)

POWER INPUT

- Power input voltage: 10-30 VDC
- Redundant input terminals
- Input power (typical - all ports active at 100 Mbps)
 - 2.0 W (5-port without fiber)
 - 3.0 W (5-port including 1 fiber)
 - 4.0 W (8-port without fiber)
 - 5.0 W (9-port including 1 fiber)
- Transient protection: 15,000 watts peak
- Spike protection: 5,000 watts (10 times for 10 μ s)

ENVIRONMENTAL

- Operating temperature
 - SL -5ES models: -10 to +60°C
 - SL -6/8/9 ES models: -40 to +60°C
 - SLX models: -40 to +85°C (cold startup at -40)
- Storage temperature: -40 to +85 °C
- Humidity (non-condensing) 5 to 95% RH
- Vibration and shock: IEC60068-2-6

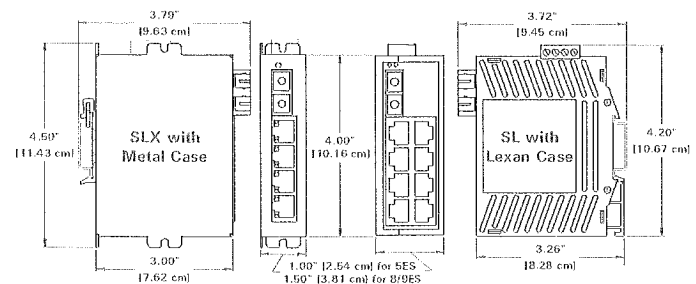
STANDARDS COMPLIANCE

- Electrical safety - UL508/CSA C22.2/14, EN61010-1, CE
- EMC - FCC part 15, ICES-003, EN55022, EN61000-6, CE
- Hazardous locations: UL1604/CSA C22.2/13 (Class I, Div. 2); EN60079-15 (Zone 2, Category 3), CE (ATEX)
- Maritime rated for marine & offshore per ABS
- Eye safety (fiber models) - IEC60825-1, Class 1; FDA 21 CFR 1040.10 and 1040.11

PHYSICAL

- Din-rail or direct panel mounting
- Ingress protection: IP30
- Case: UL94V0 Lexan (SL) or Aluminum (SLX)
- Weight:
 - 4 oz (0.11 kg) – SL-5ES
 - 6 oz (0.17 kg) – SLX-5ES, SL-8/9ES
 - 8 oz (0.23 kg) – SLX-8/9ES
- Dimensions – see mechanical diagram below

All specifications are subject to change. Consult factory for latest info.

MECHANICAL DRAWINGS

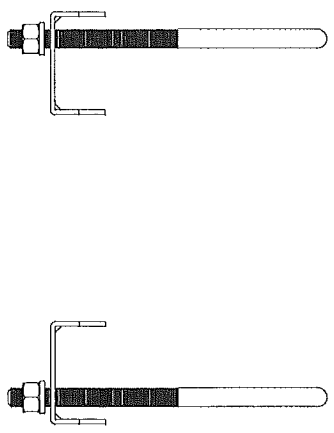
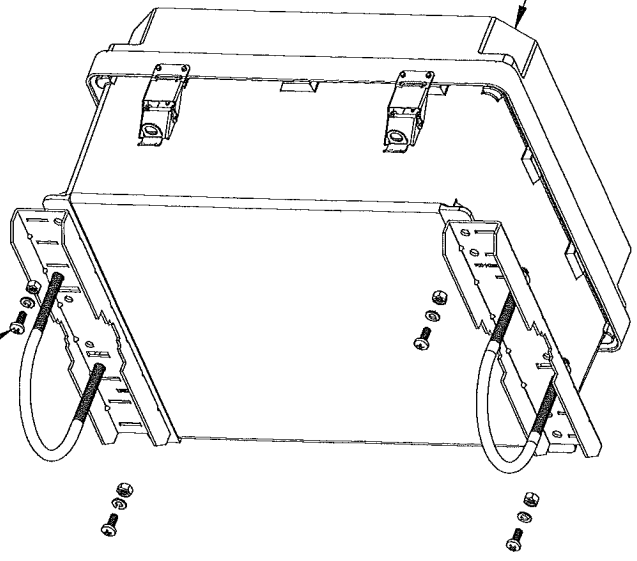
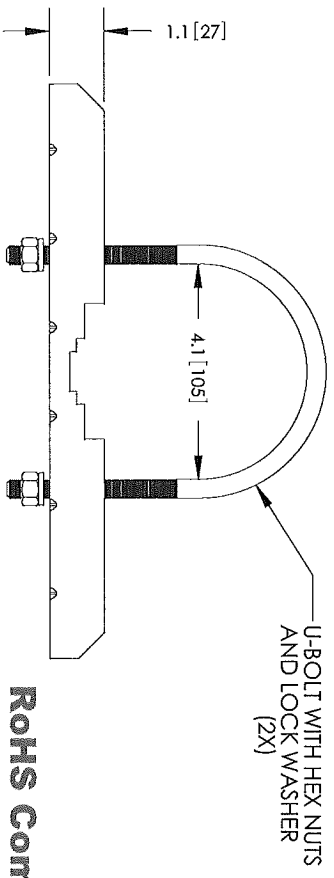
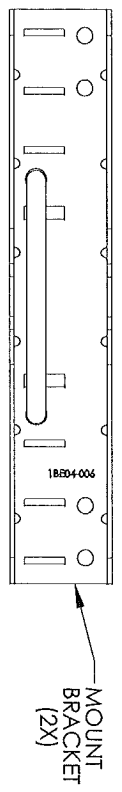
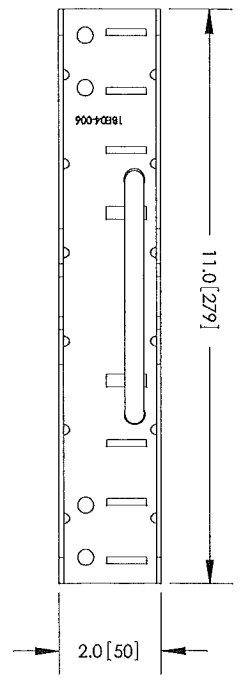
See the User Manual for a More Detailed Diagram

ORDERING GUIDE

SLX-5ES-1	5 RJ45 10/100 ports
SLX-5ES-2SC	4 RJ45 ports and 1 mm fiber SC, 4 Km
SLX-5ES-2ST	4 RJ45 ports and 1 mm fiber ST, 4 Km
SLX-5ES-3SC	4 RJ45 ports and 1 sm fiber SC, 20 Km
SLX-5ES-3ST	4 RJ45 ports and 1 sm fiber ST, 20 Km
SLX-6ES-4/5	Dual fiber - see separate datasheet
SLX-8ES-1	8 RJ45 10/100 ports
SLX-8ES-6/7	Three fiber - see separate datasheet
SLX-9ES-2SC	8 RJ45 ports and 1 mm fiber SC, 4 Km
SLX-9ES-2ST	8 RJ45 ports and 1 mm fiber ST, 4 Km
SLX-9ES-3SC	8 RJ45 ports and 1 sm fiber SC, 20 Km
SLX-9ES-3ST	8 RJ45 ports and 1 sm fiber ST, 20 Km
SL-	w/Lexan case and limited temperature
ET-PS-024-02	2 Amp, AC to 24 VDC Power Supply
SP-ETH-2	Dual Ethernet port surge & lightning protector
Contact Sixnet for special or long haul fiber transceivers up to 120 Km.	

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REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	12/13/11	D.GRIFFIN
-	-	-	-
-	-	-	-



RoHS Compliant

NOTES:
 PACKAGING:
 COMPONENT SHALL BE PACKAGED IN ACCORDANCE WITH L-COM SPEC PKG-00012.
 -ALL DIMENSIONS FOR REFERENCE-

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES (mm)	APPROVALS	DATE	 45 BEECHWOOD DRIVE NORTH ANDOVER, MA 01845
DIMENSIONAL TOLERANCES:	DRAWN BY	12/12/11	
X = ±.1 XX = ±.01 XXX = ±.005	CHECKED BY	12/12/11	
ANGULAR TOLERANCES:	APPROVED BY	12/12/11	CATEGORY: ENCLOSURE PRODUCT DESCRIPTION: UNIVERSAL POLE MOUNTING KIT- POLE DIAMETER 3 TO 4 INCHES
ALL = ±.1°	CONFIGURATION DETAILS OF UNDIMENSIONED FEATURES MAY VARY		
PROJECTION	COLOR VARIATIONS MAY OCCUR	SCALE: NONE	SHEET 1 OF 1 REV: A
	SIZE: A RSUN NO: 43321 DWG. NO: HGX-PM113	CAD FILE: HGX-PM113.SLDDRW	

line 2

18x16x8 Inch Vented Weatherproof Enclosure with Mounting Plate Model: NB181608-00V

line 3

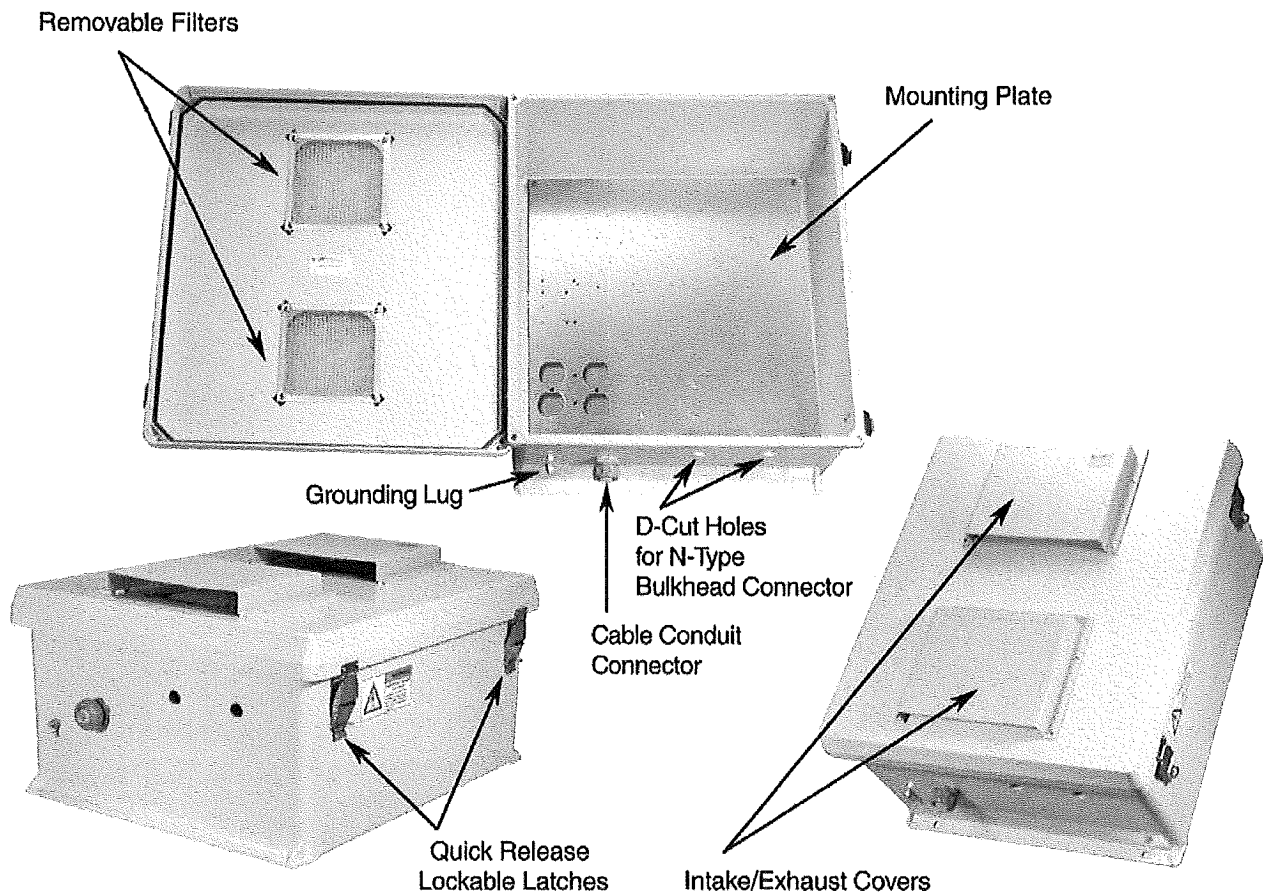
Applications and Features

Features:

- Molded Fiberglass Reinforced Polyester (FRP) industrial Enclosure
- Stainless steel quick release latches with padlock hasps
- NEMA Type 3R, 3RX / IP24 rated
- Fully gasketed raised Vented lid with removable filters & integral mounting flange
- Includes drilled aluminum mounting plate with AC socket cutouts

Applications:

- Remote Wireless LAN WiFi equipment installations
- Indoor and outdoor installations
- Rapid Deployment Installations
- Corrosive environments
- Protection of equipment from theft or damage



Product Description

Start with the Box...

The box is a rugged 18" x 16" x 8" weatherproof enclosure that is ideal for both indoor and outdoor applications. Constructed from molded fiberglass, it is well suited for high temperature or corrosive environments. The mounting flange allows it to be wall mounted as well as on a flat surface. The box can also be pole mounted with the optional pole mounting hardware kit. The fully gasketed lid features a stainless steel continuous hinge and stainless steel quick release latches with padlock hasps. The enclosure material is UV stabilized and comes in machine tool gray.

Mounting Plate

The aluminum mounting plate included with the NB181608-00V has provisions to mount WLAN equipment from Cisco®, Symbol®, D-Link®, HyperLink and more. With the optional HGX-AMOUNT02 bracket a wide array of HyperLink Amplifiers, Power-Over-Ethernet products and Power Supplies can be mounted as well. Two of these brackets can be mounted side by side. Also available is the HGX-NMOUNT03 Universal Mounting Shelf that can be attached to the mounting plate and can accommodate additional equipment to be placed in the enclosure. The enclosure also features holes for two N-Bulkhead Lightning Protectors or Connectors, a grounding lug and cable conduit connector.

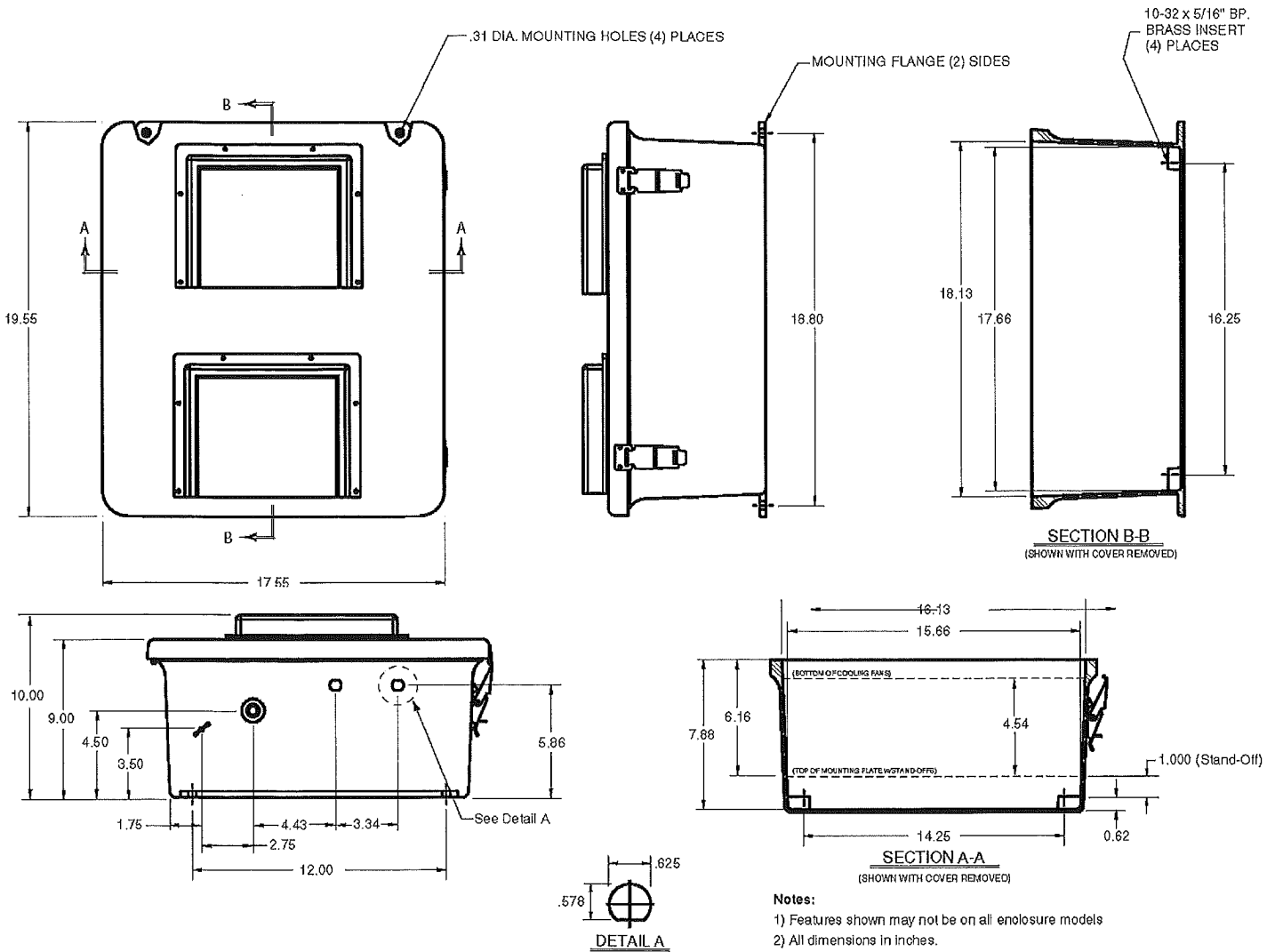
Vented Enclosure

The NB181608-00V features a vented lid with removable filters and vent covers on the outside of the enclosure.

Specifications

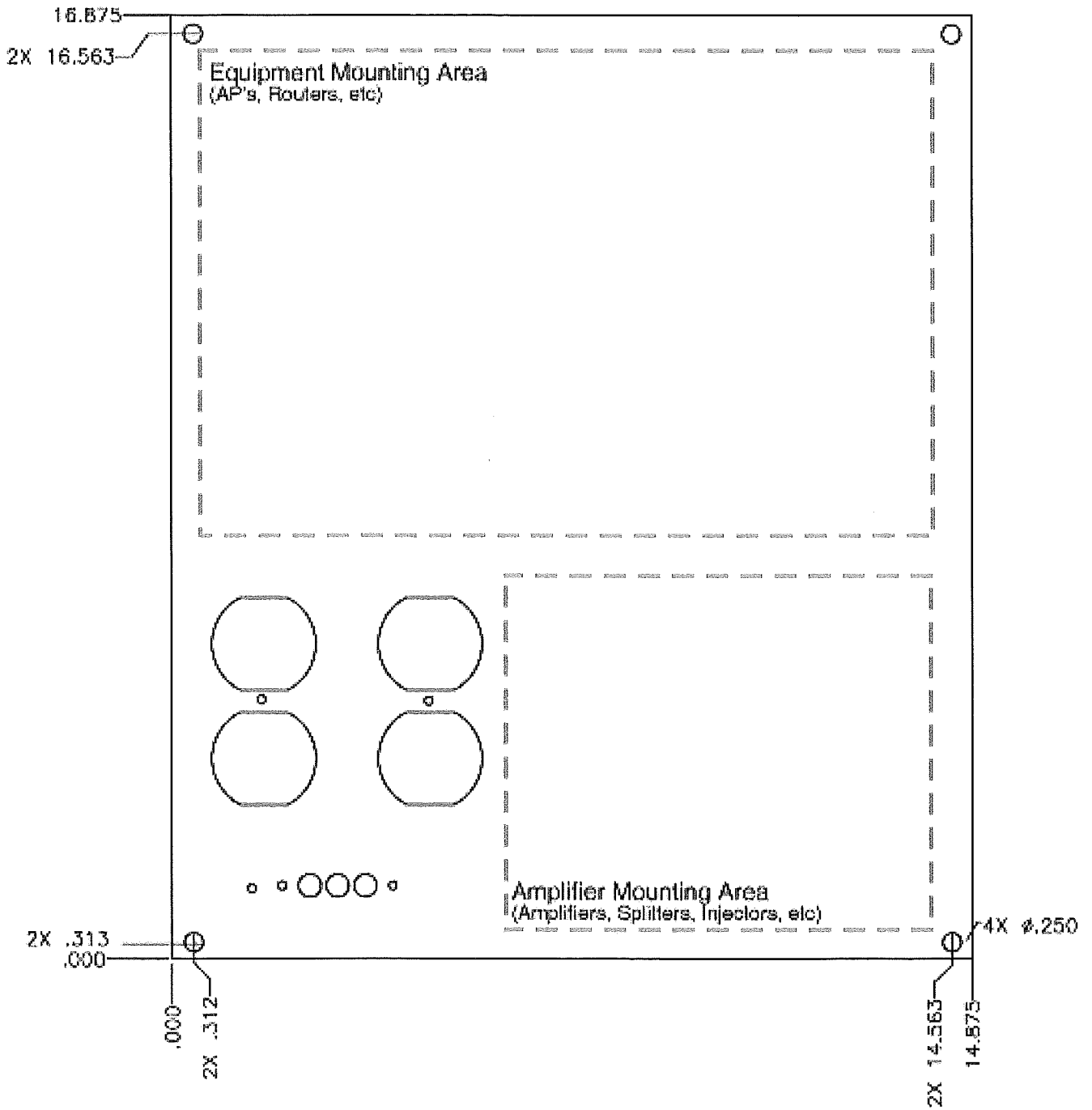
Enclosure Material	Fiberglass Reinforced Polyester
Enclosure Color	Machine Tool Gray
Mounting Plate Material	.10 in. (2.5mm) Thick Anodized Aluminum
Mounting Plate Dimensions	16.8 x 14.8 inches (42.6 x 37.5 cm)
Weight	19.6 lbs (8.9 kg)
Outside Dimensions (max)	19.5 x 17.5 x 10 inches (49.5 x 44.4 x 25.4 cm)
Inside Dimensions	17.7 x 15.7 x 8.5 inches (44.9 x 39.9 x 21.6 cm)
Flame Rating	UL 94-5V
Cable Feed	1/2" Cable Conduit Connector
RoHS Compliant	Yes
Ratings	NEMA 3R, 3RX / IP24

Enclosure Dimensions



- Notes:**
- 1) Features shown may not be on all enclosure models
 - 2) All dimensions in inches.

Mounting Plate Details



LMR®-400

Flexible Low Loss Communications Coax

Ideal for...

- Drop-in replacement for RG-8/9913 Air-Dielectric type Cable
- Jumper Assemblies in Wireless Communications Systems
- Short Antenna Feeder runs
- Any application (e.g. WLL, GPS, LMR, WLAN, WiSP, WiMax, SCADA, Mobile Antennas) requiring an easily routed, low loss RF cable

LMR® standard is a UV Resistant Polyethylene jacketed cable designed for 20-year service outdoor use. The bending and handling characteristics are significantly better than air-dielectric and corrugated hard-line cables.

LMR®-DB is identical to standard LMR plus has the advantage of being watertight. The addition of waterproofing compound in and around the foil/braid insures continuous reliable service should the jacket be inadvertently damaged during installation or in the future.

LMR®-FR is a non-halogen (non-toxic), low smoke, fire retardant cable designed for in-building runs that can be routed anywhere except air handling plenums.

LMR-FR is UL/NEC & CSA rated 'CMR' and 'FT4' respectively, meets FAA FAR25 requirements and is MSHA-P for mining applications.

LMR®-FR-PVC is a general-purpose indoor cable and has a UL/NEC & CSA rating of 'CMR' and 'FT4' respectively. It is less expensive than LMR-FR, however it emits toxic fumes (HCL) and greater smoke density when burned.

LMR®-PVC is designed for low loss general-purpose applications and is somewhat more flexible than the standard polyethylene jacketed LMR.

LMR®-PVC-W is a white-jacketed version of LMR-PVC for marine and other applications where color compatibility is desired.

- Flexibility and bendability are hallmarks of the LMR-400 cable design. The flexible outer conductor enables the tightest bend radius available for any cable of similar size and performance.
- Low Loss is another hallmark feature of LMR-400.

Size for size LMR has the lowest loss of any flexible cable and comparable loss to semirigid hard-line cables.

- RF Shielding is 50 dB greater than typical single shielded coax (40 dB). The multi-ply bonded foil outer conductor is rated conservatively at > 90 dB (i.e. > 180 dB between two adjacent cables).
- Weatherability: LMR-400 cables designed for outdoor exposure incorporate the best materials for UV resistance and have life expectancy in excess of 20 years.
- Connectors: A wide variety of connectors are available for LMR-400 cable, including all common interface types, reverse polarity, and a choice of solder or non-solder center pins. Most LMR connectors employ crimp outer attachment using standard hex crimp sizes.
- Cable Assemblies: All LMR-400 cable types are available as pre-terminated cable assemblies. Refer to the section on Flex [tech for further details.

Part Number	Application	Jacket Color	Stock Code
LMR-400	Outdoor	PE Black	54001
LMR-400-DB	Outdoor/Watertight	PE Black	54091
LMR-400-FR	Indoor/Outdoor Riser	FRPE Black	54030
LMR-400-FR-PVC	Indoor/Outdoor Riser	FRPVC Black	54073
LMR-400-PVC	General Purpose	PVC Black	54218
LMR-400-PVC-W	General Purpose	PVC White	54204

Construction Specifications

Description	Material	In. (mm)
Inner Conductor	Solid BCCAI	0.108 (2.74)
Dielectric	Foam PE	0.285 (7.24)
Outer Conductor	Aluminum Tape	0.291 (7.39)
Overall Braid	Timed Copper	0.320 (8.13)
Jacket	(see table above)	0.405 (10.29)

Mechanical Specifications

Performance Property	Units	US	(metric)
Bend Radius: Installation	In. (mm)	1.00	(25.4)
Bend Radius: repeated	In. (mm)	4.0	(101.6)
Bending Moment	ft-lb (N-m)	0.5	(0.68)
Weight	lb/ft (kg/m)	0.068	(0.10)
Tensile Strength	lb (kg)	160	(72.6)
Flat Plate Crush	lb/in. (kg/mm)	40	(0.71)

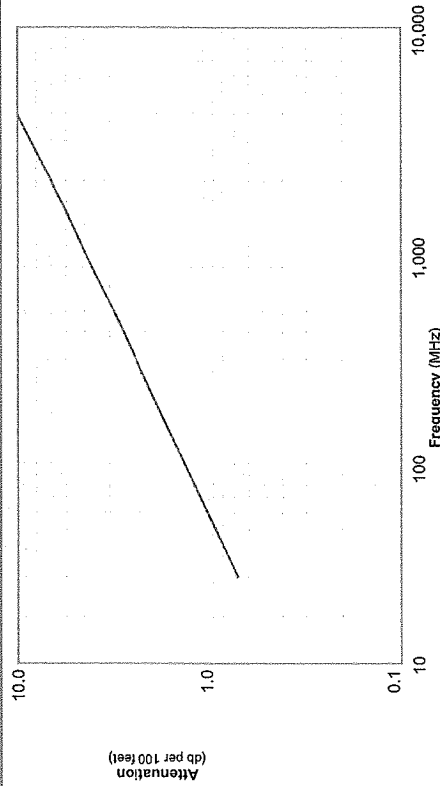
Environmental Specifications

Performance Property	Units	F	C
Installation Temperature Range		-40/+185	-40/+85
Storage Temperature Range		-94/+185	-70/+85
Operating Temperature Range		-40/+185	-40/+85

Electrical Specifications

Performance Property	Units	US	(metric)
Velocity of Propagation	%	85	
Dielectric Constant	nSft (pSft/m)	NA	1.38
Time Delay	ns/ft (pSft/m)	1.20	(3.92)
Impedance	ohms	50	
Capacitance	pF/ft (pF/m)	23.9	(78.4)
Inductance	uH/ft (uH/m)	0.060	(0.20)
Shielding Effectiveness	dB	>90	
DC Resistance	ohms/1000ft (ohm/km)	1.39	(4.6)
Inner Conductor	ohms/1000ft (ohm/km)	1.65	(5.4)
Outer Conductor	Volts DC	2500	
Voltage Withstand	Volts RMS	8000	
Jacket Spark	KW	16	
Peak Power			

Attenuation vs. Frequency (typical)

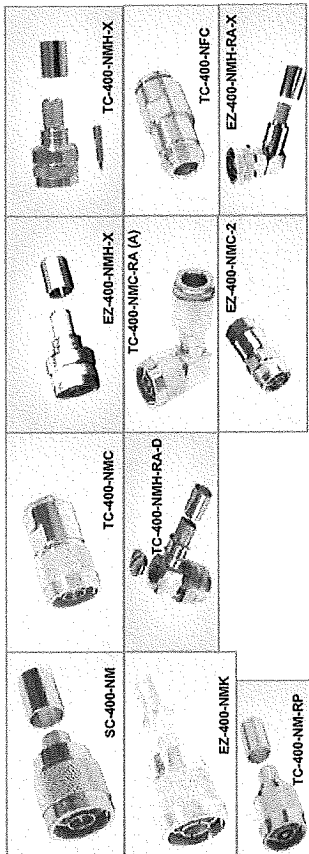


Frequency (MHz)	30	50	150	220	450	900	1500	1800	2000	2500	5800
Attenuation dB/100 ft	0.7	0.9	1.5	1.9	2.7	3.9	5.1	5.7	6.0	6.8	10.8
Attenuation dB/100 m	2.2	2.9	5.0	6.1	8.9	12.8	16.8	19.6	22.2	35.5	
Avg. Power kW	3.33	2.57	1.47	1.20	0.83	0.58	0.44	0.40	0.37	0.33	0.21

Calculate Attenuation = $(0.122290) \cdot \sqrt{\text{FMHz}} + (0.000260) \cdot \text{FMHz}$ (interactive calculator available at http://www.timesmicrowave.com/cable_calculators)
 Attenuation on: VSWR=1.0; Ambient = 100°C (212°F); Sea Level; dry air; atmospheric pressure; no solar loading

line 4

LMR-400 Flexible Low Loss Communications Coax



Connectors

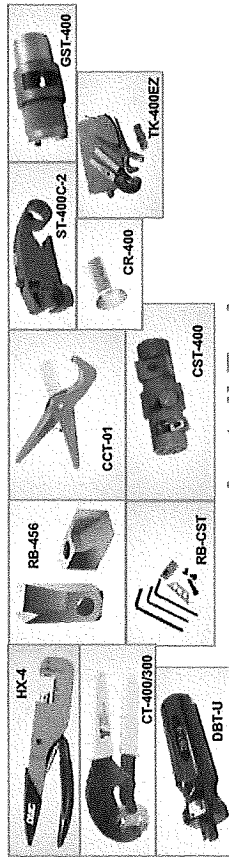
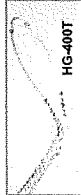
Table with columns: Interface, Description, Part Number, Stock Code, Frequency, Coupling, Inner Attach, Outer Finish, Contact, Body, Length, Width, Weight. Lists various connector types like Straight Jack, Straight Plug, Right Angle, etc., with their respective specifications.

* Finish: Nickel, Ni-Nickel, S-Silver, G-Gold, SS-Stubless Steel, Au-Gold. ** Order quantities based on 3 foot coils with a connector. *Available in bulk pack.



Hardware Accessories

Table with columns: Type, Part Number, Stock Code, Description. Lists Ground Kit, Hoisting Grip, Standard Grounding Kit, and Laced Type.

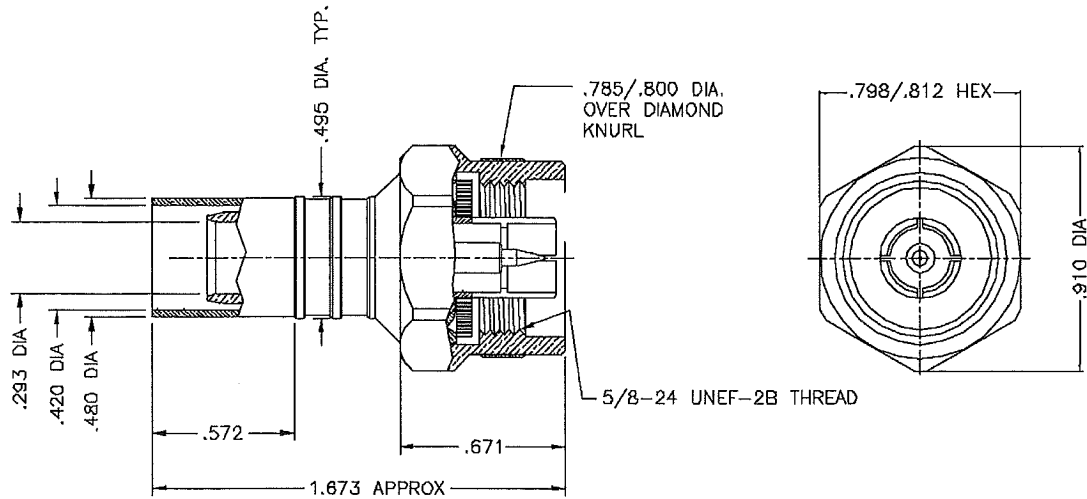


Install Tools

Table with columns: Type, Part Number, Stock Code, Description. Lists various tools like Crimp Tool, Crimp Dies, Crimp Rings, Crimp Tool, Ship Tool, Mid-Span Strip Tool, Replacement Blades, Debur Tool, Cutting Tool, Replacement Blade, Tool Kit, Replacement Kit, and Replacement blade kit.

THE REVISION STATUS OF ALL SHEETS OF THIS DRAWING IS THE SAME AS SHEET 1

LTR	DESCRIPTION	DATE	BY
-	Released	11/12/96	JCL
A	Redesign Nut and Back Body	11/9/05	JCL



I. MATERIALS & FINISHES

- center contact: Gold Plated Beryllium Copper
- outer contact: Albaloy Plated Brass
- body: Albaloy Plated Brass
- coupling nut: Albaloy Plated Brass
- crimp sleeve: Silver Plated Copper
- dielectric: Teflon® PTFE
- gasket: Silicone Rubber
- shrink sleeve: Adhesive Lined Polyolefin
- crimp size: .429" hex

II. ELECTRICAL PROPERTIES

- impedance: 50 ohms
- working voltage: 1000 vrms (max)
- vswr: 1.25:1 (max) up to 3GHz
- insertion loss: $0.1 \times \sqrt{Fghz}$

Unless otherwise specified, dimensions are in inches. Tolerances are applicable when specified.

These drawings and specifications contain proprietary information which is the property of Times Microwave Systems.

Approvals		
Drawn	JCL	11/12/96
Check		
Prj. Mgr.		
Prd. Mgr.		
QA Mgr.		



TIMES MICROWAVE SYSTEMS

Wallingford, CT 06492
 (203) 949-8400; (203) 949-8423.Fax
 www.timesmicrowave.com

EZ-400-NMH-D

Type N Male (plug) – Non-solder pin
 for LMR-400 Cable Type(s)

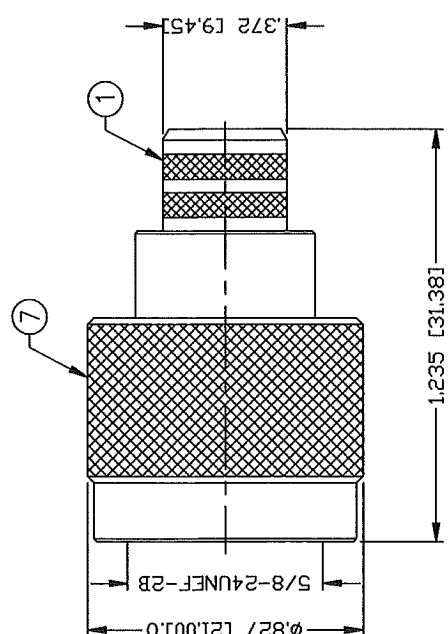
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Scale: NA	Rev. (A)	Sheet: 1 of 1

PART NO. **TRFN-1006-3I**

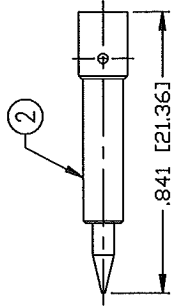
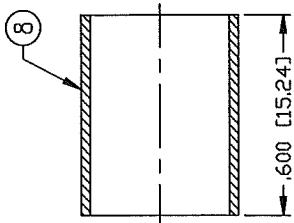
REV	DESCRIPTION	DWN	DATE	APPROVED
N1	ADD CRIMP TOOL, PIN LENGTH & SOLDER NOTE / P/N WAS 8103	CZS	10/11/04	JDMc
P	CHG. PIN DESIGN / ADJUST STRIPPING DIM. / UPDATE DWG & SPECS	CZS	4/22/05	JDMc
R	CHANGE PIN CRIMP DIE SIZE	CZS	3/6/05	JDMc
S	ADDED RG-8 TO SOLDER ONLY NOTE	CZS	8/8/06	JDMc

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ALL DIMENSIONS ARE REFERENCE ONLY



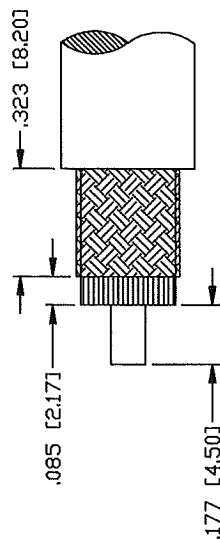
RECOMMENDED CRIMP DIE: .429"



RECOMMENDED CRIMP DIE: .118" OR .128"
* "SOLDER ONLY" FOR RG-8/U TYPE & "E" CABLE GROUP

SPECIFICATIONS:

IMPEDANCE: 50 Ohms
 FREQUENCY RANGE: 0-11 GHz
 VSWR: 1.3 Max. @ 9 GHz
 INSERTION LOSS: .06 dB Max. X/fGHz
 WORKING VOLTAGE: 1k V rms @ sea level
 TEMPERATURE RANGE: -65°C TO 85°C
 INSULATION RESISTANCE: 5k M Ohms min.
 (E) RG-8, 8A, 213/U, ALPHA 9008, 9213, BELDEN 8267, 9251, 9880, 89880, INTERCOMP 4085, 22132, TIMES AA-4478
 (I) FOR BELDEN 8214, 9913, 9913F, 9914, *RG-8/U TYPE, CAROL C1180, TIMES AA-5886 & LMR-400 CABLE



RECOMMENDED STRIPPING INSTRUCTIONS

UNLESS OTHERWISE SPECIFIED:		000486													
1 BODY	BRASS	SILVER, 5µ													
2 PIN	BRASS	GOLD, 3µ													
3 INSULATOR	PTFE	---													
4 RETAINING RING	BRASS	SILVER, 5µ													
5 GASKET	SI RUBBER	---													
6 GROUND RING	BRASS	SILVER, 5µ													
7 SHELL	BRASS	SILVER, 5µ													
8 FERRULE	BRASS	SILVER, 5µ													
9															
10															
11															
12															
13															
14															
# DESCRIPTION	QTY	MATERIAL	FINISH												
<table border="1"> <tr> <td>DRAWN</td> <td>C. ZUNIGA</td> <td>8/8/06</td> </tr> <tr> <td>CHECKED</td> <td></td> <td></td> </tr> <tr> <td>ORJ DRAWN</td> <td>P. BREAUX</td> <td>8/20/92</td> </tr> <tr> <td>P. BREAUX</td> <td></td> <td></td> </tr> </table>				DRAWN	C. ZUNIGA	8/8/06	CHECKED			ORJ DRAWN	P. BREAUX	8/20/92	P. BREAUX		
DRAWN	C. ZUNIGA	8/8/06													
CHECKED															
ORJ DRAWN	P. BREAUX	8/20/92													
P. BREAUX															
APPROVALS		DATE													

RF connectors

7610 MIRAMAR RD
 SAN DIEGO, CA 92126
 (858) 549-6340
 (858) 549-6345 FAX

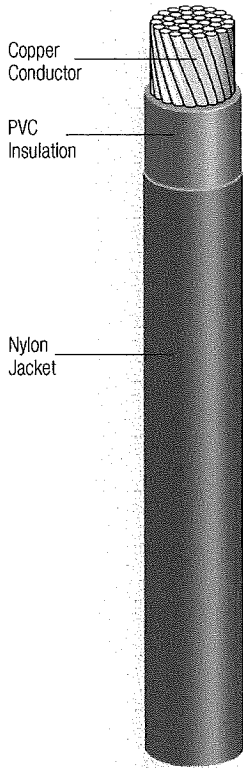
DIVISION OF RF INDUSTRIES, LTD.

N PLUG, CRIMP

SIZE	CABLE GROUP	DWG NO.	REV
A	E & I	TRFN-1006-3I	S

SCALE: NTS CAD FILE OUTLINE SHEET 1 OF 1

THHN / MTW / THWN-2 / T90 COPPER CONDUCTOR



ENGINEERING SPECIFICATIONS:

Standards:

Underwriters Laboratories Standards UL-83, UL-1063, UL-758
 AWM Spec 1316, 1317, 1318, 1319, 1320, 1321
 ASTM Stranding Class B3, B8, B787
 Federal Specification A-A-59544
 Canadian Standards Association C22.2 No. 75
 NEMA WC70/ICEA S-95-658
 Institute of Electrical and Electronics Engineers
 ARRA 2009; Section 1605 "Buy American" Compliant



Listed Solid E-123774
 Stranded E-156879



CONSTRUCTION:

Conductors:

Solid, uncoated copper conductors per ASTM-B3
 Stranded, uncoated copper conductors per ASTM-B3, ASTM-B787 and ASTM-B8

Insulation:

Color-coded Polyvinyl Chloride (PVC), heat and moisture-resistant, flame-retardant compound per UL-1063 and UL-83

Applications:

Type THHN/THWN-2 building wire is intended for general purpose applications as defined by the National Electrical Code (NEC). Type THHN/THWN-2 is permitted for new construction or rewiring for 600-volt applications. Applications requiring Type THHN or THWN-2: the conductor is appropriate for use in wet or dry locations at temperatures not to exceed 90°C or not to exceed 75°C in oil or coolants. Applications requiring Type MTW: the conductor is appropriate for use in dry locations at 90°C, or not to exceed 60°C in wet locations or where exposed to oils or coolants. Applications requiring Type AWM: the conductor is appropriate for use at temperatures to not exceed 105°C in dry locations.

Features:

Slick, Nylon outer jacket for easy pulling. VW-1 rated 14 AWG - 8 AWG. All sizes are rated gasoline and oil-resistant II.

Jacket:

A tough, polyamide, Nylon outer covering per UL-1063 and UL-83.

THHN/MTW/THWN-2/T90 Copper Conductor 600V

Size (AWG or KCMIL)	Number of Strands	Gross Sect. Area (mm²)	PVC Insulation Thickness (Conductor)		Nylon Jacket Thickness		Outside Diameter		Approximate Net Weight		Allowable Ampacity (Amps)*			Standard Packaging (ft)
			(mm)	(in)	(mm)	(in)	(mm)	(in)	(kg/km)	(lbs/1000 ft)	60°C	75°C	90°C	
14	Solid	2.08	0.380	0.015	0.100	0.004	2.57	0.101	22	15	15	15	15	2000 carton (4x500), 2500' reels
12	Solid	3.31	0.380	0.015	0.100	0.004	3.05	0.120	34	23	20	20	20	2000 carton (4x500), 2500' reels
10	Solid	5.26	0.510	0.020	0.100	0.004	3.78	0.149	55	37	30	30	30	1000 carton (2x500), 2500' reels
14	19	2.08	0.380	0.015	0.100	0.004	2.77	0.109	25	16	15	15	15	2000 carton (4x500), 2500' reels
12	19	3.31	0.380	0.015	0.100	0.004	3.23	0.127	36	23	20	20	20	2000 carton (4x500), 2500' reels
10	19	5.26	0.510	0.020	0.100	0.004	4.07	0.160	57	38	30	30	30	1000 carton (2x500), 2500' reels
8	19	8.37	0.760	0.030	0.130	0.005	5.39	0.212	94	62	40	50	55	500' 1000' 2500' 5000' reels

*Allowable ampacity shown above is per the National Electrical Code. The above data is approximate and subject to normal manufacturing tolerances.

PRINT LEGEND:

SOLID CONDUCTOR SIZES 14 AWG THROUGH 10 AWG: ENCORE WIRE CORPORATION (size) AWG TYPE THHN OR THWN-2 GR II VW-1 600 VOLTS (UL) OR AWM OR C-(UL) TYPE T90 NYLON OR T90 NYLON OR T90 FT1. DATE/TIME/OPER/QC
STRANDED CONDUCTOR SIZES 14 AWG THROUGH 8 AWG: ENCORE WIRE CORPORATION (size) AWG TYPE MTW OR THHN OR THWN-2 GR II VW-1 600 VOLTS (UL) OR AWM OR C-(UL) TYPE T90 NYLON OR T90 FT1. DATE/TIME/OPER/QC

THHN / MTW / THWN-2 / T90 COPPER CONDUCTOR

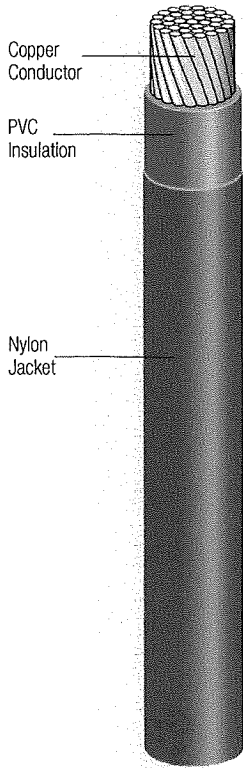
ENGINEERING SPECIFICATIONS:

Standards:

Underwriters Laboratories Standards UL-83, UL-1063, UL-758
 AWM Spec 1316, 1317, 1318, 1319, 1320, 1321
 ASTM Stranding Class B3, B8, B787
 Federal Specification A-A-59544
 Canadian Standards Association C22.2 No. 75
 NEMA WC70/ICEA S-95-658
 Institute of Electrical and Electronics Engineers IEEE 1202/FT4
 ICEA T-29-520 (210,000 Btu/hr) Flame Test
 ARRA 2009; Section 1605 "Buy American" Compliant



Stranded E-156879



CONSTRUCTION:

Conductors:

Solid, uncoated copper conductors per ASTM-B3
 Stranded, uncoated copper conductors per ASTM-B3, ASTM-B787 and ASTM-B8

Insulation:

Color-coded Polyvinyl Chloride (PVC), heat and moisture-resistant, flame-retardant compound per UL-1063 and UL-83

Applications:

Type THHN/THWN-2 building wire is intended for general purpose applications as defined by the National Electrical Code (NEC). Type THHN/THWN-2 is permitted for new construction or rewiring for 600-volt applications. Applications requiring Type THHN or THWN-2: the conductor is appropriate for use in wet or dry locations at temperatures not to exceed 90°C or not to exceed 75°C in oil or coolants. Applications requiring Type MTW: the conductor is appropriate for use in dry locations at 90°C, or not to exceed 60°C in wet locations or where exposed to oils or coolants. Applications requiring Type AWM: the conductor is appropriate for use at temperatures to not exceed 105°C in dry locations.

Features:

Slick Nylon outer jacket for easy pulling. 6 AWG and larger Sunlight Resistant in all colors. All sizes rated gasoline and oil resistant II. On 250 KCMIL and larger, sequential footage markings located every foot for easy measuring. For 1 AWG through 4/0 AWG sequential foot markings on master reels only unless otherwise specified. 1/0 AWG and larger are rated for cable tray use and comply with IEEE 1202/FT4 (70,000 Btu/hr.) flame test and ICEA T-29-520 (210,000 Btu/hr.) flame test.

Jacket:

A tough, polyamide, Nylon outer covering per UL-1063 and UL-83.

THHN/MTW/THWN-2/T90 Copper Conductor 600V

Size (AWG or KCMIL)	Number of Strands	Cross Sect. Area (mm²)	PVC Insulation Thickness (Conductor)		Nylon Jacket Thickness		Outside Diameter		Approximate Net Weight		Allowable Ampacity (Amps)*			Standard Packaging (#)
			(mm)	(in)	(mm)	(in)	(mm)	(in)	(kg/km)	(lbs/1000 ft)	60°C	75°C	90°C	
6	19	13.30	0.760	0.030	0.130	0.005	6.30	0.248	141	94	55	65	75	500' 1000' 2500' 5000' 25,000' reels
4	19	21.20	1.020	0.040	0.150	0.006	8.06	0.317	228	153	70	85	95	500' 1000' 2500' 5000' 20,000' reels
3	19	26.70	1.020	0.040	0.150	0.006	8.74	0.344	281	189	85	100	110	500' 1000' 2500' 5000' 15,000' reels
2	19	33.60	1.020	0.040	0.150	0.006	9.53	0.375	348	233	95	115	130	500' 1000' 2500' 5000' 14,000' reels
1	19	42.40	1.270	0.050	0.180	0.007	11.05	0.435	445	298	110	130	150	500' 1000' 2500' 5000' 22,000' reels
1/0	19	53.50	1.270	0.050	0.180	0.007	12.04	0.474	554	372	125	150	170	500' 1000' 2500' 5000' 16,000' reels
2/0	19	67.40	1.270	0.050	0.180	0.007	13.16	0.518	687	462	145	175	195	500' 1000' 2500' 5000' 14,000' reels
3/0	19	85.00	1.270	0.050	0.180	0.007	14.43	0.568	851	572	165	200	225	500' 1000' 2500' 5000' 12,000' reels
4/0	19	107.00	1.270	0.050	0.180	0.007	15.85	0.624	1059	712	195	230	260	500' 1000' 2500' 5000' 9000' reels
250	37	127.00	1.520	0.060	0.200	0.008	17.23	0.678	1266	849	215	255	290	500' 1000' 2500' 4000' 8500' reels
300	37	152.00	1.524	0.060	0.203	0.008	18.54	0.730	1503	1010	240	285	320	500' 1000' 3500' 7000' reels
350	37	177.00	1.520	0.060	0.200	0.008	19.74	0.777	1741	1170	260	310	350	500' 1000' 3000' 6000' reels
400	37	203.00	1.524	0.060	0.203	0.008	20.85	0.821	1979	1330	280	335	380	500' 1000' 3000' 5000' reels
500	37	253.00	1.520	0.060	0.200	0.008	22.91	0.902	2455	1650	320	380	430	500' 1000' 2500' 4000' reels
600	61	304.00	1.778	0.070	0.229	0.009	26.70	1.051	3004	2019	355	420	475	500' 1000' 2000' 3000' reels
750	61	380.00	1.778	0.070	0.229	0.009	29.36	1.156	3670	2466	400	475	535	500' 1000' 1500' 2500' reels
1000	61	507.00	1.778	0.070	0.229	0.009	33.27	1.310	4851	3260	455	545	615	500' 1000' 2000' reels

*Allowable ampacity shown above is per the National Electrical Code. The above data is approximate and subject to normal manufacturing tolerances.

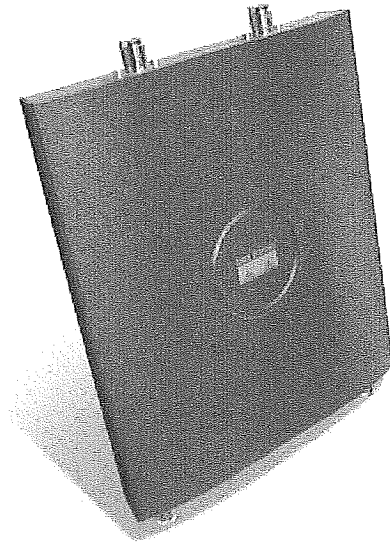
PRINT LEGEND:

STRANDED CONDUCTORS-SIZES 6 AWG THROUGH 1 AWG: ENCORE WIRE CORPORATION (size) TYPE MTW OR THHN OR THWN-2 GR II SUN-RES VW-1 600 VOLTS (UL) OR AWM OR C(UL) TYPE T90 NYLON OR TWN 75 FT1 DATE/TIME/OPER/QC

CONDUCTOR SIZES 1/0 AWG THROUGH 1000 KCMIL: ENCORE WIRE CORPORATION (size) TYPE MTW OR THHN OR THWN-2 GR II SUN-RES FOR CT USE (UL) OR C(UL) TYPE T90 NYLON OR TWN 75 FT1 DATE/TIME/OPER/QC

Cisco Aironet 1240AG Series 802.11A/B/G Access Point

Cisco® Aironet® 1240AG Series Access Points deliver the versatility, high capacity, security, and enterprise-class features demanded by WLAN customers. These IEEE 802.11a/b/g access points are designed specifically for challenging RF environments such as factories, warehouses, and large retail establishments that require the antenna versatility associated with connectorized antennas, a rugged metal enclosure, and a broad operating temperature range. The Cisco Aironet 1240AG Series provides local as well as inline power, including support for IEEE 802.3af Power over Ethernet (PoE).



The Cisco Aironet 1240AG Series is a component of the Cisco Unified Wireless Network, a comprehensive solution that delivers an integrated, end-to-end wired and wireless network. Using the radio and network management features of the Cisco Unified Wireless Network for simplified deployment, the Cisco Aironet 1240AG Series extends the security, scalability, reliability, ease of deployment, and manageability available in wired networks to the wireless LAN.

The Cisco Aironet 1240AG Series is available in two versions: unified or autonomous. Unified access points operate with the Lightweight Access Point Protocol (LWAPP) and work in conjunction with Cisco wireless LAN controllers and the Cisco Wireless Control System (WCS). When configured with LWAPP, the Cisco Aironet 1240AG Series can automatically detect the best-available Cisco wireless LAN controller and download appropriate policies and configuration information with no manual intervention. Autonomous access points are based on Cisco IOS® Software and may optionally operate with the CiscoWorks Wireless LAN Solution Engine (WLSE). Autonomous access points, along with the CiscoWorks WLSE, deliver a core set of features and may be field-upgraded to take advantage of the full benefits of the Cisco Unified Wireless Network as requirements evolve.

Award-Winning Security

The Cisco Aironet 1240AG Series has achieved National Institute of Standards and Technology (NIST) FIPS 140-2 level 2 validation and is in process for Common Criteria validation under the National Information Assurance Partnership (NIAP) program.

The Cisco Aironet 1240AG Series supports 802.11i, Wi-Fi Protected Access (WPA), WPA2, and numerous Extensible Authentication Protocol (EAP) types. WPA and WPA2 are the Wi-Fi Alliance certifications for interoperable, standards-based WLAN security. These certifications support IEEE 802.1X for user-based authentication, Temporal Key Integrity Protocol (TKIP) for WPA encryption, and Advanced Encryption Standard (AES) for WPA2 encryption. These certifications help to ensure interoperability between Wi-Fi-certified WLAN devices from different manufacturers.

The Cisco Aironet 1240AG Series hardware-accelerated AES encryption supports enterprise-class, government-grade secure encryption over the WLAN without compromising performance. IEEE 802.1X authentication helps to ensure that only authorized users are allowed on the network. Backward compatibility and support for WPA client devices running TKIP, the RC4 encryption algorithm, is also supported by the Cisco Aironet 1240AG Series.

Cisco Aironet 1240AG Series Access Points operating with LWAPP support Cisco Unified Intrusion Detection System/Intrusion Prevention System (IDS/IPS), a software feature that is part of the Cisco Self-Defending Network and is the industry's first integrated wired and wireless security solution. Cisco Unified IDS/IPS takes a comprehensive approach to security—at the wireless edge, wired edge, WAN edge, and through the data center. When an associated client sends malicious traffic through the Cisco Unified Wireless Network, a Cisco wired IDS device detects the attack and sends shun requests to Cisco wireless LAN controllers, which will then disassociate the client device.

Autonomous or unified Cisco Aironet 1240AG Series Access Points support management frame protection for the authentication of 802.11 management frames by the wireless network infrastructure. This allows the network to detect spoofed frames from access points or malicious users impersonating infrastructure access points. If an access point detects a malicious attack, an incident will be generated by the access point and reports will be gathered on the Cisco wireless LAN controller, Cisco WCS, or CiscoWorks WLSE.

Applications

Designed for rugged environments and installations that require antenna versatility, the Cisco Aironet 1240AG Series features antenna connectors for extended range or coverage versatility and more flexible installation options. Manufacturing applications, for example, can place WLANs in hazardous locations and remotely place antennas in the hazardous locations while securing the Cisco Aironet 1240AG Series Access Points. The access point without wired connection will use the 5-GHz radio to wirelessly connect to the other access point for backhaul to the network.

The metal housing and industrial-grade components of the Cisco Aironet 1240AG Series provide the ruggedness and extended operating temperature range required in factories, warehouses, "big box" retail environments, and similar facilities. High transmit power, receive sensitivity, and delay spread for both 2.4-GHz and 5-GHz radios provide the long range and large coverage area consistent with these applications. 5-GHz radios are used as wireless bridges between access points for backhaul to the network.

Access points may be placed above ceilings or suspended ceilings, allowing antennas to be discreetly placed below drop ceilings. The UL 2043 rating of the Cisco Aironet 1240AG Series allows the access points to be placed above ceilings in plenum areas regulated by municipal fire codes. Public access applications such as large hotel buildings may also present a challenging RF environment; the antenna versatility of the Cisco Aironet 1240AG Series, together with industry-leading range and coverage, provides reliable performance for the most demanding environments.

Features and Benefits

Table 1 lists the features and benefits of Cisco Aironet 1240AG Series Access Points.

Table 1. Features and Benefits of Cisco Aironet 1240AG Series Access Points

Feature	Benefit
Dual 802.11a and 802.11g Radios	Provides up to 108 Mbps of capacity in a single device for industry-leading capacity and compatibility with older 802.11b clients.
Dual RP-TNC Antenna Connectors for Both 2.4-GHz and 5-GHz Radios	Antenna connectors support a variety of Cisco 2.4-GHz and 5-GHz antennas, providing range and coverage versatility.
Link-Role Flexibility	Autonomous access points can function as an access point or bridge, whether set up as a single-band or dual-band platform, allowing each radio to be individually configured as an access point repeater, root bridge, non-root bridge, or workgroup bridge, enabling a broad array of applications.
Cisco Unified IDS/IPS	This integrated software feature is part of the Cisco Self-Defending Network and is the industry's first integrated wired and wireless security solution. When a trusted client acts maliciously, the wired IDS detects the attack and sends shun requests to Cisco WLAN controllers, which will then disassociate the client device.
Management Frame Protection	This feature provides for the authentication of 802.11 management frames by the wireless network infrastructure. This allows the network to detect spoofed frames from access points or malicious users impersonating infrastructure access points. If an access point detects a malicious attack, an incident will be generated by the access points and reports will be gathered on the Cisco wireless LAN controller, Cisco WCS, or CiscoWorks WLSE.
Security	<p>Authentication</p> <p>Security Standards</p> <ul style="list-style-type: none"> WPA WPA2 (802.11i) Cisco TKIP Cisco message integrity check (MIC) IEEE 802.11 WEP keys of 40 bits and 128 bits <p>802.1X EAP types:</p> <ul style="list-style-type: none"> EAP-Flexible Authentication via Secure Tunneling (EAP-FAST) Protected EAP-Generic Token Card (PEAP-GTC) PEAP-Microsoft Challenge Authentication Protocol Version 2 (PEAP-MSCHAP) EAP-Transport Layer Security (EAP-TLS) EAP-Tunneled TLS (EAP-TTLS) EAP-Subscriber Identity Module (EAP-SIM) Cisco LEAP <p>Encryption:</p> <ul style="list-style-type: none"> AES-CCMP encryption (WPA2) TKIP (WPA) Cisco TKIP WPA TKIP IEEE 802.11 WEP keys of 40 bits and 128 bits
Currently Supports 12 Non-Overlapping Channels, with Potentially up to 23 Channels	Lower potential interference with neighboring access points simplifies deployment. Fewer transmission errors deliver greater throughput.
Rugged Metal Housing	Metal case and rugged features support deployment in factories, warehouses, the outdoors (NEMA enclosure required), and other industrial environments.
UL 2043 Plenum Rating and Extended Operating Temperature	Supports installation in environmental airspaces such as areas above suspended ceilings.
Multipurpose and Lockable Mounting Bracket	Provides greater flexibility in installation options for site surveys, as well as theft deterrence.

Feature	Benefit
Both Local and Inline Power Supported, Including IEEE 802.1af PoE	Power can be supplied using the Ethernet cable, eliminating the need for costly electrical power line runs to remotely installed access points. The access points can be powered by IEEE 802.3af PoE, Cisco inline power switches, single port power injectors, or local power.
Hardware-Assisted AES Encryption	Provides high security without performance degradation.
Cisco Green Bulk Packaging	To reduce product packaging and preserve the environment, the Cisco Aironet 1240 Series may be ordered in a bulk package that includes 10 access points and 10 mounting kits.

Summary

Cisco Aironet 1240AG Series Access Points feature antenna connectors for greater range and coverage versatility using a broad selection of available Cisco antennas, as well as a rugged metal housing for operation over extended temperature ranges typical of industrial environments. Dual 802.11a and 802.11g radios offer a combined capacity of 108 Mbps, meeting the performance requirements of the most demanding applications, while hardware-assisted AES encryption provides uncompromised support for interoperable IEEE 802.11i and WPA2 security. The Cisco Aironet 1240AG Series delivers enterprise-class features for challenging RF environments.

Product Specifications


Table 2 lists the product specifications for Cisco Aironet 1240AG Series Access Points.

Table 2. Product Specifications for Cisco Aironet 1240AG Series Access Points

Item	Specification
Part Number for Individual Access Points	<p>AIR-AP1242AG-x-K9 AIR-LAP1242AG-x-K9</p> <p>Regulatory domains: (x = regulatory domain)</p> <ul style="list-style-type: none"> • A = FCC • C = China • E = ETSI • I = Israel • J = Japan • K = Korea • N = North America (excluding FCC) • P = Japan2 • S = Singapore • T = Taiwan <p>Customers are responsible for verifying approval for use in their individual countries. To verify approval and to identify the regulatory domain that corresponds to a particular country, please visit: http://www.cisco.com/go/aironet/compliance</p> <p>Not all regulatory domains have been approved. As they are approved, the part numbers will be available on the Global Price List.</p>
Part Number for Cisco Green Bulk Packaging	<ul style="list-style-type: none"> • AIR-AP1242-x-K9-10 (Cisco IOS Software) • AIR-LAP1242-xK9-10 (Cisco Unified Wireless Network Software) <p>Note: The Cisco Aironet 1242AG Series may be ordered with Cisco IOS Software to operate as an autonomous AP with Cisco Unified Wireless Network Software using LWAPP. When the 1242AG is operating as a lightweight AP a WLAN controller is required.</p> <ul style="list-style-type: none"> • Regulatory Domains: (x = Regulatory Domain) • A = FCC • E = ETSI <p>Customers are responsible for verifying approval for use in their individual countries. To verify approval and to identify the regulatory domain that corresponds to a particular country please visit: http://www.cisco.com/go/aironet/compliance</p>
Software	<ul style="list-style-type: none"> • Cisco IOS Software Release 12.3(8)JA or later (autonomous). • Cisco IOS Software Release 12.3(11)JX or later (Lightweight Mode). • Cisco Unified Wireless Network Software Release 4.0 or later.
Data Rates Supported	<ul style="list-style-type: none"> • 802.11a: 6, 9, 12, 18, 24, 36, 48, and 54 Mbps • 802.11g: 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, and 54 Mbps
Network Standard	<ul style="list-style-type: none"> • IEEE 802.11a, 802.11b, and 802.11g

Item	Specification	
Uplink	<ul style="list-style-type: none"> Autosensing 802.3 10/100BASE-T Ethernet 	
Frequency Band and Operating Channels	<p>Americas (FCC)</p> <ul style="list-style-type: none"> 2.412 to 2.462 GHz; 11 channels 5.15 to 5.35, 5.725 to 5.825 GHz; 12 channels <p>China</p> <ul style="list-style-type: none"> 2.412 to 2.472 GHz; 13 channels 5.725 to 5.825 GHz; 4 channels <p>ETSI</p> <ul style="list-style-type: none"> 2.412 to 2.472 GHz; 13 channels 5.15 to 5.35 GHz; 8 channels 5470 to 5725 MHz; 11 channels <p>Israel</p> <ul style="list-style-type: none"> 2.432 to 2.472 GHz; 9 channels 5.15 to 5.35 GHz; 8 channels <p>Japan</p> <ul style="list-style-type: none"> 2.412 to 2.472 GHz; 13 channels Orthogonal Frequency Division Multiplexing (OFDM) 2.412 to 2.484 GHz; 14 channels Complementary Code Keying (CCK) 5.15 to 5.25 GHz; 4 channels <p>Korea</p> <ul style="list-style-type: none"> 2.412 to 2.472 GHz; 13 channels 5.15 to 5.35, 5.46 to 5.72, 5.725 to 5.825; 19 channels <p>North America (not FCC)</p> <ul style="list-style-type: none"> 2.412 to 2.462 GHz; 11 channels 5.15 to 5.35, 5.725 to 5.825 GHz; 12 channels <p>Japan2</p> <ul style="list-style-type: none"> 2.412 to 2.472 GHz; 13 channels OFDM 2.412 to 2.484 GHz; 14 channels CCK 5.15 to 5.35 GHz; 8 channels <p>Singapore</p> <ul style="list-style-type: none"> 2.412 to 2.472 GHz; 13 channels 5.15 to 5.35, 5.725 to 5.825 GHz; 12 channels <p>Taiwan</p> <ul style="list-style-type: none"> 2.412 to 2.462 GHz; 11 channels 5.25 to 5.35, 5.725 to 5.825 GHz; 7 channels 	
Non-Overlapping Channels	<ul style="list-style-type: none"> 802.11a: 12 channels (FCC; other regulatory domains support different numbers of 802.11a channels) FCC currently supports 12 non-overlapping channels, with potentially up to 23 channels via a future firmware release depending on FCC rules 	802.11b/g: 3 channels
Receive Sensitivity (Typical)	<p>802.11a</p> <ul style="list-style-type: none"> 6 Mbps: -88 dBm 9 Mbps: -87 dBm 12 Mbps: -86 dBm 18 Mbps: -85 dBm 24 Mbps: -82 dBm 36 Mbps: -79 dBm 48 Mbps: -74 dBm 54 Mbps: -73 dBm 	<p>802.11g</p> <ul style="list-style-type: none"> 1 Mbps: -96 dBm 2 Mbps: -93 dBm 5.5 Mbps: -91 dBm 6 Mbps: -91 dBm 9 Mbps: -85 dBm 11 Mbps: -88 dBm 12 Mbps: -83 dBm 18 Mbps: -81 dBm 24 Mbps: -78 dBm 36 Mbps: -74 dBm 48 Mbps: -73 dBm 54 Mbps: -73 dBm

Item	Specification				
Available Transmit Power Settings (Maximum Power Setting will Vary by Channel and According to Individual Country Regulations)	802.11a OFDM: <ul style="list-style-type: none"> • 17 dBm (50 mW) • 15 dBm (30 mW) • 14 dBm (25 mW) • 11 dBm (12 mW) • 8 dBm (6 mW) • 5 dBm (3 mW) • 2 mW (2 dBm) • -1 dBm (1 mW) 		802.11g CCK: <ul style="list-style-type: none"> • 20 dBm (100 mW) • 17 dBm (50 mW) • 14 dBm (25 mW) • 11 dBm (12 mW) • 8 dBm (6 mW) • 5 dBm (3 mW) • 2 dBm (2 mW) • -1 dBm (1 mW) 		OFDM <ul style="list-style-type: none"> • 17 dBm (50 mW) • 14 dBm (25 mW) • 11 dBm (12 mW) • 8 dBm (6 mW) • 5 dBm (3 mW) • 2 dBm (2 mW) • -1 dBm (1 mW)
Range (Typical)	Indoor (Distance Across Open Office Environment):		Outdoor:		
	802.11a: <ul style="list-style-type: none"> • 85 ft (26 m) at 54 Mbps • 150 ft (46 m) at 48 Mbps • 210 ft (64 m) at 36 Mbps • 230 ft (70 m) at 24 Mbps • 260 ft (79 m) at 18 Mbps • 280 ft (85 m) at 12 Mbps • 310 ft (94 m) at 9 Mbps • 330 ft (100 m) at 6 Mbps 	802.11g: <ul style="list-style-type: none"> • 105 ft (32 m) at 54 Mbps • 180 ft (55 m) at 48 Mbps • 260 ft (79 m) at 36 Mbps • 285 ft (87 m) at 24 Mbps • 330 ft (100 m) at 18 Mbps • 355 ft (108 m) at 12 Mbps • 365 ft (111 m) at 11 Mbps • 380 ft (116 m) at 9 Mbps • 410 ft (125 m) at 6 Mbps • 425 ft (130 m) at 5.5 Mbps • 445 ft (136 m) at 2 Mbps • 460 ft (140 m) at 1 Mbps 	802.11a: <ul style="list-style-type: none"> • 100 ft (30 m) at 54 Mbps • 300 ft (91 m) at 48 Mbps • 425 ft (130 m) at 36 Mbps • 500 ft (152 m) at 24 Mbps • 550 ft (168 m) at 18 Mbps • 600 ft (183 m) at 12 Mbps • 625 ft (190 m) at 9 Mbps • 650 ft (198 m) at 6 Mbps 	802.11g: <ul style="list-style-type: none"> • 120 ft (37 m) at 54 Mbps • 350 ft (107 m) at 48 Mbps • 550 ft (168 m) at 36 Mbps • 650 ft (198 m) at 24 Mbps • 750 ft (229 m) at 18 Mbps • 800 ft (244 m) at 12 Mbps • 820 ft (250 m) at 11 Mbps • 875 ft (267 m) at 9 Mbps • 900 ft (274 m) at 6 Mbps • 910 ft (277 m) at 5.5 Mbps • 940 ft (287 m) at 2 Mbps • 950 ft (290 m) at 1 Mbps 	
Measured with 2.2-dBi dipole antenna for 2.4 GHz, and 3.5-dBi omnidirectional antenna for 5 GHz.					
Compliance	Standards Safety: <ul style="list-style-type: none"> • UL 60950-1 • CAN/CSA-C22.2 No. 60950-1 • UL 2043 • IEC 60950-1 • EN 60950-1 • NIST FIPS 140-2 level 2 validation Radio approvals: <ul style="list-style-type: none"> • FCC Part 15.247, 15.407 • RSS-210 (Canada) • EN 300.328, EN 301.893 (Europe) • ARIB-STD 33 (Japan) • ARIB-STD 66 (Japan) • ARIB-STD T71 (Japan) • AS/NZS 4268.2003 (Australia and New Zealand) • EMI and susceptibility (Class B) • FCC Part 15.107 and 15.109 • ICES-003 (Canada) • VCCI (Japan) • EN 301.489-1 and -17 (Europe) • EN 60601-1-2 EMC requirements for the Medical Directive 93/42/EEC Security:				

Item	Specification
	<ul style="list-style-type: none"> • 802.11i, WPA2, WPA • 802.1X • AES, TKIP Other: <ul style="list-style-type: none"> • IEEE 802.11g and IEEE 802.11a • FCC Bulletin OET-65C • RSS-102 • EN 50155 and EN 50121-3-2 (Railway)
Antenna Connectors	2.4 GHz <ul style="list-style-type: none"> • Dual RP-TNC connectors 5 GHz <ul style="list-style-type: none"> • Dual RP-TNC connectors
Status LEDs	<ul style="list-style-type: none"> • Status LED indicates operating state, association status, error/warning condition, boot sequence, and maintenance status. • Ethernet LED indicates status of activity over the Ethernet. • Radio LED indicates status of activity over the radio.
Dimensions (W x L x H)	<ul style="list-style-type: none"> • 6.6 x 8.5 x 1.1 in. (16.76 x 21.59 x 2.79 cm)
Weight	<ul style="list-style-type: none"> • 2.0 lbs
Environmental	<ul style="list-style-type: none"> • Non-operating (storage) temperature: -40 to 185°F (-40 to 85°C) • Operating temperature: -4 to 131°F (-20 to 55°C) • Operating humidity: 10 to 90 percent (non-condensing)
System Memory	<ul style="list-style-type: none"> • 32 MB RAM • 16 MB flash
Input Power Requirements	<ul style="list-style-type: none"> • 100 to 240 VAC; 50 to 60Hz (power supply) • 36 to 57 VDC (device)
Powering Options	<ul style="list-style-type: none"> • Local power • 802.3 AF switches • Cisco higher-power switches capable of supporting 13W or greater • Cisco Aironet power injectors (PWRINJ3 and PWRINJ-FIB) • Third-party PoE devices (must meet input power and power draw requirements)
Power Draw	12.95W maximum Note: 12.95W is the maximum power required at the powered device. If the access point is being used in a PoE configuration, the power drawn from the power sourcing equipment will be higher by some amount dependent on the length of the interconnecting cable. This additional power may be as high as 2.45W, bringing the total system power draw (access point and cabling) to 15.4W.
Warranty	One year
Wi-Fi Certification	

System Requirements

Table 3 lists the system requirements for Cisco Aironet 1240AG Series Access Points.

Table 3. System Requirements for Cisco Aironet 1240AG Series Access Points

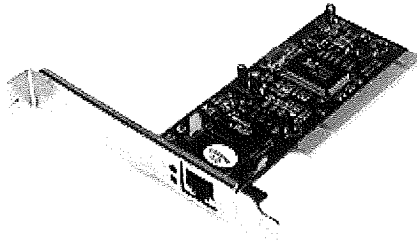
Access Method	Description
Browser	Using the Web browser management GUI requires a computer running Internet Explorer Version 6.0 or later, or Netscape Navigator Version 7.0 or later.
PoE	Power sourcing equipment compliant with Cisco inline power or IEEE 802.3af, and providing at least 12.94W at 48 VDC

Ordering Information

To place an order, visit the Cisco Ordering Website at: <http://www.cisco.com/en/US/ordering/index.shtml>

1 Port PCI 10/100/1000 32 Bit Gigabit Ethernet Network Adapter Card

StarTech ID: ST1000BT32



This PCI-based 10/100/1000 Mbps Gigabit Ethernet Network Adapter Card provides a simple connection to a Gigabit Ethernet network, and is fully compatible with IEEE 802.3, 802.3u, 802.3ab and 802.3x standards.

Suitable for any PCI-enabled client, server or workstation, the Gigabit Ethernet Network Adapter Card supports high performance dual channel networking and maximum data transfer speeds of 1000Mbps in each direction (2000 Mbps total) - up to ten times faster than 10/100 Ethernet.

Compatible with a broad range of operating systems, including Linux, Windows 98SE, ME, 2000, XP, XP-64bit, Vista, Vista-64bit, 7, 7-64bit as well as Mac OS 10+, this high quality PCI Gigabit NIC includes an optional low profile bracket that makes it easy to install the card in a small form factor/low profile computer case/server.

Applications

- Add an additional Ethernet port to a workstation or server computer for redundancy
- Upgrade a computers 10/100 Ethernet port to a 1000 compatible port
- Add networking capabilities to an old system with no Ethernet port

Features

- A single 10/100/1000Mbps compatible RJ45 Ethernet port
- Network Link/Activity and 10/100/1000 Mbps LED indicators
- Fully Compliant with IEEE 802.3, IEEE 802.3u, IEEE 802.3x, and IEEE 802.3ab, and supports IEEE 802.1Q VLAN tagging
- Full and half duplex support
- Supports Wake-on-LAN function
- Crossover Detection & Auto-Correction (Auto MDI/MDI-X)
- Includes a low profile installation bracket

Technical Specifications

Warranty	Lifetime
Ports	1
Bus Type	PCI/PCI-X (5 / 3.3V)
Card Type	Standard Profile (LP bracket incl.)
Industry Standards	IEEE 802.3, IEEE 802.3ab, IEEE 802.11u PCI 2.1, 2.2
Chipset ID	Realtek - RTL8110SC
Connector Type(s)	1 - PCI/PCI-X (Universal 3.3 & 5V; 32-bit) Male
External Ports	1 - RJ-45 Female
Maximum Data Transfer Rate	1000 Mbps
Compatible Networks	10/100/1000 Mbps
Full Duplex Support	Yes
Supported Protocols	CSMA/CD
OS Compatibility	Windows 98SE/ ME/ NT/ 2000/ XP(32/64 bit)/ Server 2003(32/64 bit)/ Vista(32/64 bit)/ 7(32/64 bit)/ Server 2008 R2, Netware Server 5.x, Netware ODI for DOS, Linux and Unix
Product Length	4.8 in [123 mm]
Product Width	0.8 in [20 mm]
Product Height	2.5 in [63 mm]
Product Weight	1.9 oz [54 g]
LED Indicators	1 - 10/100/1000 Mbits/sec Link/Activity
Operating Temperature	05/8/2012eg;C to 55/8/2012eg;C (32/5/8/2012eg;F to 131/5/8/2012eg;F)
Humidity	10% ~ 95% RH
Note	IRQ Line & I/O Address allocated by system
Package Quantity	1
Shipping (Package) Weight	0.3 lb [0.1 kg]
Included in Package	1 - Gigabit Ethernet PCI Card

- Included in Package 1 - Low Profile bracket
- Included in Package 1 - Driver CD
- Included in Package 1 - Instruction Manual

Certifications, Reports and Compatibility

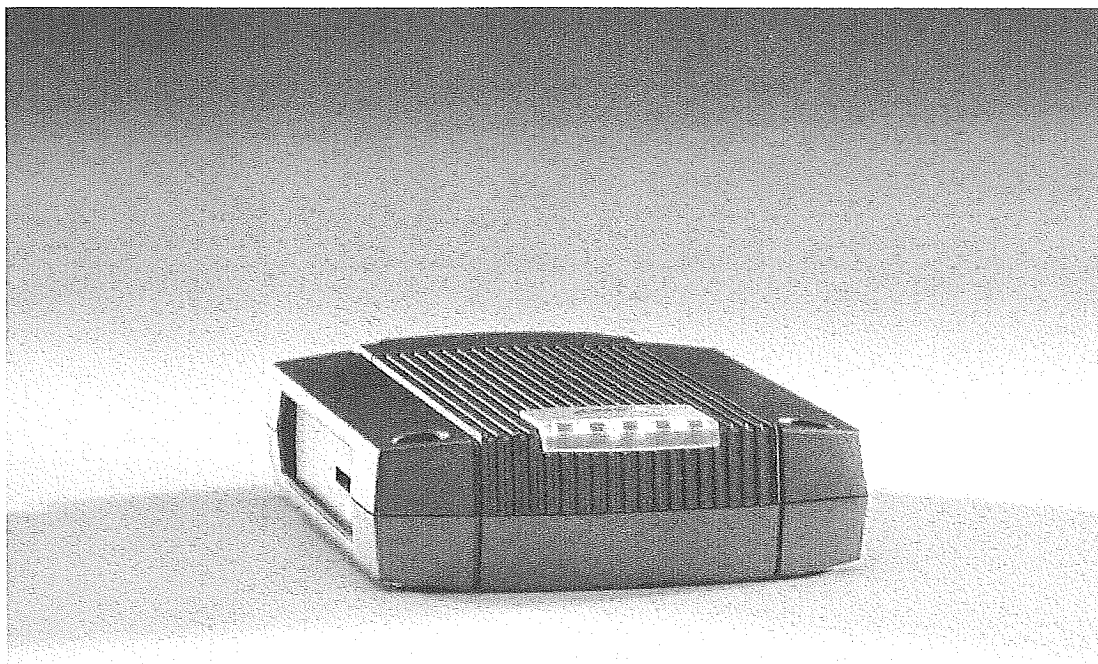


 **RoHS Compliant**
Available



AXIS Q7401 Video Encoder

Full-featured video surveillance with outstanding H.264 performance.



- > Superb video quality
- > Multiple H.264 streams
- > Image setting adjustment
- > Intelligent video capabilities
- > Power over Ethernet
- > Audio support
- > Local storage

AXIS Q7401 Video Encoder is a high performance, single channel solution that integrates an analog camera into an IP-based video surveillance system. With outstanding video processing capabilities, AXIS Q7401 delivers superb video quality and significant savings in bandwidth and storage.

AXIS Q7401 offers the highly efficient H.264 video compression, which drastically reduces bandwidth and storage requirements without compromising image quality. Motion JPEG is also supported for increased flexibility.

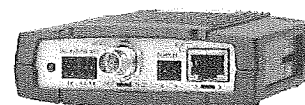
AXIS Q7401 can deliver multiple, individually configurable video streams simultaneously at full frame rate in all resolutions up to D1 (720x480 in NTSC, 720x576 in PAL). This means that several video streams can be configured with different compression formats, resolutions and frame rates for different needs.

The video encoder also enables users to adjust image settings such as contrast, brightness and saturation to improve images before encoding takes place.

AXIS Q7401 includes intelligent capabilities such as enhanced video motion detection, active tampering alarm and audio detection. The encoder's external inputs and outputs can be connected to devices such as sensors and relays, enabling the system to react to alarms and activate lights or open/close doors.

Support for Power over Ethernet (IEEE802.3af) enables the unit, as well as the analog camera that is connected to it, to receive power through the same cable as for data transmission. This makes for easy installation since no power outlet is needed.

AXIS Q7401 also supports two-way audio and has an SD/SDHC memory card slot for local storage.



ONVIF

Technical specifications – AXIS-Q7401 Video Encoder

Video encoding	
Video compression	H.264 (MPEG-4 Part 10/AVC) Motion JPEG
Resolutions	176x120 to 720x576
Frame rate H.264	30/25 (NTSC/PAL) fps in all resolutions
Frame rate Motion JPEG	30/25 (NTSC/PAL) fps in all resolutions
Video streaming	Multi-stream H.264 and Motion JPEG: 3 simultaneous, individually configured streams in max. resolution at 30/25 fps; more streams if identical or limited in frame rate/resolution Controllable frame rate and bandwidth VBR/CBR H.264
Image settings	Compression, color, brightness, contrast Rotation: 90°, 180°, 270° Aspect ratio correction Mirroring of images Text and image overlay Privacy mask Enhanced deinterlace filter
Pan/Tilt/Zoom	Wide range of analog PTZ cameras supported (drivers available for download at www.axis.com) 100 presets, guard tour, PTZ control queue Supports Windows compatible joysticks

Audio	
Audio streaming	Two way, full duplex
Audio compression	AAC-LC 8 kHz 32 kbit/s, 16 kHz 64 kbit/s G.711 PCM 8 kHz 64 kbit/s G.726 ADPCM 8 kHz 32 or 24 kbit/s
Audio input/output	External microphone input or line input Line level output

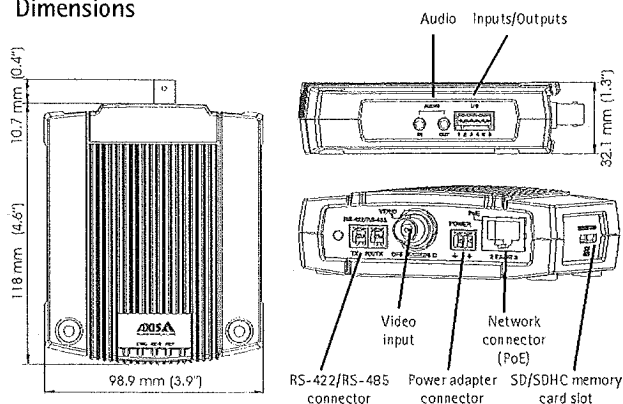
Security	
Security	Password protection, IP address filtering, HTTPS encryption, IEEE 802.1X network access control, digest authentication, user access log
Supported protocols	IPv4/v6, HTTP, HTTPS, QoS layer 3 DiffServ, FTP, SMTP, Bonjour, UPnP, SNMPv1/v2c/v3(MIB-II), DNS, DynDNS, NTP, RTSP, RTP, TCP, UDP, IGMP, RTCP, ICMP, DHCP, ARP, SOCKS

System integration	
Application Programming Interface	Open API for software integration, including VAPIX® from Axis Communications available at www.axis.com AXIS Camera Application Platform from Axis Communications; specifications available at www.axis.com Includes the ONVIF specification available at www.onvif.org Support for AXIS Video Hosting System (AVHS) with One-Click Camera connection
Intelligent video	Video motion detection, active tampering alarm, audio detection Support for AXIS Camera Application Platform enabling installation of additional applications
Alarm triggers	Intelligent video, external inputs, video loss, disk full
Alarm events	File upload via FTP, HTTP and email Notification via email, HTTP and TCP External output activation PTZ presets Local storage
Video buffer	64 MB pre- and post-alarm




General	
Casing	Metal casing. Standalone or wall mount
Processor and memory	ARTPEC-3, 128 MB RAM, 128 MB Flash
Power	8–20 V DC, max. 7.2 W or Power over Ethernet IEEE 802.3af Class 2/3
Connectors	Analog composite video BNC input, NTSC/PAL auto-sensing RJ-45 10BaseT/100BaseTX PoE DC terminal block: power in 8–20 V DC, max. 7.2 W or power out 12 V DC, max. 5 W I/O terminal block for four configurable inputs/outputs 3.5 mm mic/line in, 3.5 mm line out RS-485/ RS-422
Local storage	SD/SDHC memory card slot (Card is not included)
Operating conditions	0 °C – 50 °C (32 °F – 122 °F) Humidity 20–80% RH (non-condensing)
Approvals	EN 55022 Class B, EN 61000-3-2, EN 61000-3-3, EN 55024, EN 61000-6-1, EN 61000-6-2, FCC Part 15 Subpart B Class B, ICES-003 Class B, VCCI Class B, C-tick AS/NZS CISPR 22, EN 60950-1 Power supply PS-T: EN 60950-1, CSA, C/US Power supply PS-K: EN 60950-1, UL, cUL
Weight	335 g (0.7 lb.)
Included accessories	Power supply, mounting and connector kits, Installation Guide, CD with installation and management tools, software and User's Manual, 1 Windows decoder user license

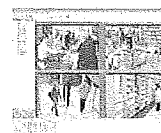
More information is available at www.axis.com

Dimensions



Optional accessories

<p>AXIS T8310 Video Surveillance Control Board</p> 	<p>Power over Ethernet midspan</p> 	<p>AXIS T91A02 DIN Rail Clip 77mm</p> 
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For information on AXIS Camera Station and video management software from Axis' Application Development Partners, see www.axis.com/products/video/software/

line 8

VIP X2 Dual-channel Video Encoder



Security Systems



- Dual-channel encoder
- High-quality MPEG-4 @ 4CIF/2CIF/Half D1/CIF/QCIF
- Storage-efficient Dual Streaming
- Ultra-compact size
- Multicast & Internet streaming
- Alarm inputs & relay output
- FastEthernet interface
- Serial data port

The VIP X2 features 2 DVD like quality MPEG-4 video signals, at up to 30 images per second, per channel, over IP networks. This unit supports PAL/NTSC (CCIR/EIA) sources.

The video signals can be received and displayed with a standard web browser or VIDOS video management software. Using the VIP XD or any other Bosch MPEG-4 decoder, you can integrate point-to-point connections into your system, to display video from any VIP or VideoJet encoder on analog monitors.

The VIP X2 provides Dual Streaming. It will generate in total 4 MPEG-4 video streams (2 per input).

The VIP X2 is ultra-compact, so it is perfect for any application that depends on space-saving solutions.

2 | VIP X2 Dual-channel Video Encoder

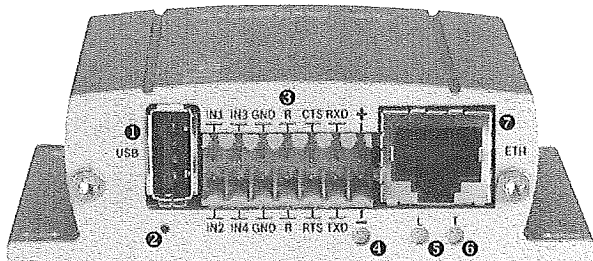
Parts Included

Quantity	Component
1	VIP X2 encoder
1	international plug-in power supply
1	RS-232 null modem cable
1	Quick Installation Guide
1	CD-ROM containing manual, software and tools

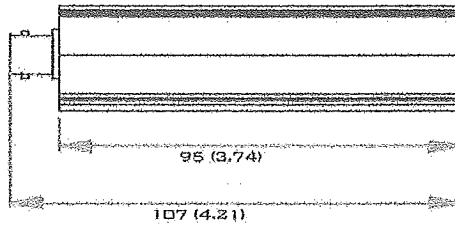
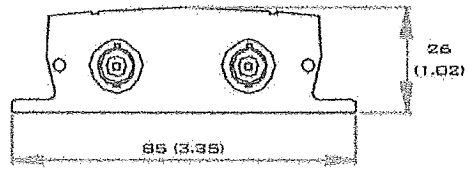
Installation/Configuration Notes



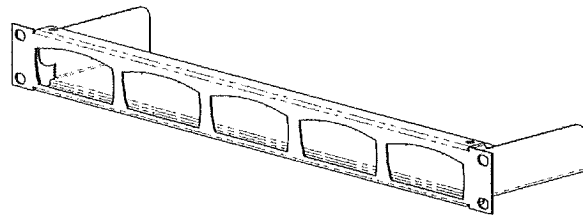
- 1 Video In 1 2 Video In 2



- | | |
|--|-------------------------------|
| 1 USB port | 5 LED Link |
| 2 Reset: Factory Default | 6 LED Traffic |
| 3 Alarm in, Relay out, Power, COM (RS 232/422/485) | 7 10/100 Base-T Fast Ethernet |
| 4 LED Power | |



Dimensions in mm (inches)



Rack mount kit (optional)

Technical Specifications	
Electrical	
Video Standards	MPEG-4
Video Data Rate	9.6 kbps - 6 Mbps per channel
Video Resolution	704 x 576/480 (D1/4CIF: 25/30 IPS) 704 x 288/240 (2CIF: 25/30 IPS) 352 x 576/480 (Half D1: 25/30 IPS) 352 x 288/240 (CIF: 25/30 IPS) 176 x 144/120 (QCIF: 25/30 IPS)
GOP Structure	I, IP
Overall Delay (IP)	MPEG-4: 120 ms
Network Protocols	RTP, Telnet, UDP, TCP, IP, HTTP, IGMP V2, ICMP, ARP, SNMP
Software Update	Flash ROM, remote programmable
Configuration	Via web browser, built-in web server

Interfaces	
Video In	2x analog composite: NTSC/PAL; BNC connector 75 Ohm switchable, 0.7 - 1.2 Vp-p
Alarm In	4x (non-isolated closure contact type), max. activation resistance 10 Ohm
Relay Out	1x, 30 Vp-p, 2 A
Connectors	10 position spring clamp contact for alarm, relay and COM port
COM Port	1x RS-232/422/485, spring clamp contacts
USB Port	1x 2.0 external interface*
Ethernet	10/100Base-T, auto-sensing, half/full duplex, RJ-45

Environmental	
Input Voltage	12 - 24 VDC, spring clamp contact
Power Consumption	Approx. 10 VA
Power Supply Unit	VIPXPS111022 included in the box
Weight	Approx. 0.2 kg (0.44 lb)
Operating Temperature	0°C - 40°C (32°F - 104°F) ambient temperature
Humidity	20 - 80%, atmospheric humidity (not cond.)
Complies with	CE: IEC 60950; UL 1950; AS/NZS 3548; EN 55103-1, -2; EN 50130-4; EN 55022; EN 55024; EN 61000-3-2; EN 61000-3-3; FCC 47 CFR Ch.1 Part 15

*future use

Ordering Information	
VIP X2 2-CH ENC	8622 780 55041
MPEG-4 dual-stream 2 ch encoder, USB, serial io, alarm in and relay	
VIPRMK1HU	8622 780 42681
VIP X/10/1000 Rack Mount Kit (5 units in 1HU)	
VIPXPS111022	8622 780 55381
Power supply	

Americas:

Bosch Security Systems
130 Peninton Parkway
Fairport, New York, 14450, USA
Phone: +1 585 223 4060
+1 800 289 0096
security.sales@us.bosch.com
<http://www.boschsecurity.us>

Europe, Middle East, Africa:

Bosch Security Systems B.V.
P.O. Box 80002
5600 JB Eindhoven, The Netherlands
Phone: +31 (0) 40 27 83955
Fax: +31 (0) 40 27 86668
emea.securitysystems@bosch.com
<http://www.boschsecurity.com>

Asia-Pacific:

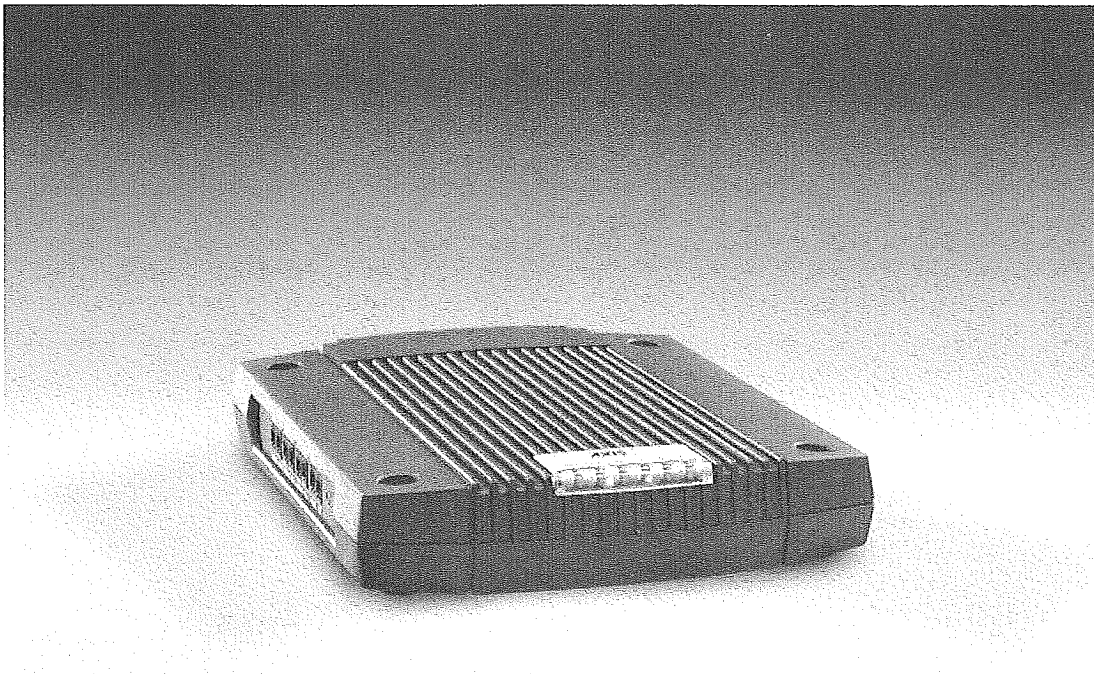
Bosch Security Systems Pte Ltd
38C Jalan Pemimpin
Singapore 577180
Phone: +65 6319 3450
Fax: +65 6319 3499
apr.securitysystems@bosch.com
<http://www.boschsecurity.com>

BOSCH

line 9

AXIS Q7404 Video Encoder

High-performance, full-featured video encoder with H.264.



- > Superb video quality
- > Multiple H.264 streams per channel
- > Full frame rate in all resolutions
- > Intelligent video capabilities
- > Two-way audio on one channel
- > PTZ support

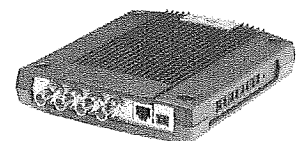
AXIS Q7404 Video Encoder is a high performance, four-channel standalone solution that integrates four analog cameras at a time into an IP-based video surveillance system. AXIS Q7404 delivers superb video quality and significant savings in bandwidth and storage with H.264.

AXIS Q7404 offers the highly efficient H.264 video compression, which drastically reduces bandwidth and storage requirements without compromising image quality. Motion JPEG is also supported for increased flexibility.

AXIS Q7404 can deliver multiple video streams simultaneously from each video channel at full frame rate in all resolutions up to D1 (720x480 in NTSC, 720x576 in PAL). The video streams can be individually configured with different compression formats, resolutions and frame rates for different needs.

AXIS Q7404 offers intelligent video capabilities such as video motion detection, active tampering alarm and audio detection. Each video channel has two configurable inputs/outputs for connections to external devices such as sensors and relays, which enable the system to receive and respond to alarms. High-quality, two-way audio is provided on one video channel.

All four video channels support pan/tilt/zoom control for PTZ and PTZ dome cameras. It is also possible to control daisy-chained cameras from one RS-485/RS-422 serial port as long as they operate on the same protocol.



Technical specifications – AXIS Q7404 Video Encoder

Video encoding	
Video compression	H.264 (MPEG-4 Part 10/AVC) Motion JPEG
Resolutions	NTSC: 720x480 to 176x120 PAL: 720x576 to 176x144
Frame rate H.264	30/25 (NTSC/PAL) fps in all resolutions
Frame rate Motion JPEG	30/25 (NTSC/PAL) fps in all resolutions
Video streaming	Multiple, individually configurable streams per channel in H.264 and/or Motion JPEG: 3 simultaneous streams in max. resolution at 30/25 fps from each channel; more streams if identical or limited in frame rate/resolution Controllable frame rate and bandwidth VBR/CBR H.264
Image settings	Compression, color, brightness, contrast Rotation: 90°, 180°, 270° Aspect ratio correction Mirroring of images Text and image overlay Privacy mask Enhanced deinterlace filter

Audio	
Audio streaming	Two way, half-duplex on Channel 1
Audio compression	AAC-LC 8 kHz 32 kbit/s, 16 kHz 64 kbit/s G.711 PCM 8 kHz 64 kbit/s G.726 ADPCM 8 kHz 32 or 24 kbit/s
Audio input/output	External microphone input or line input Line level output

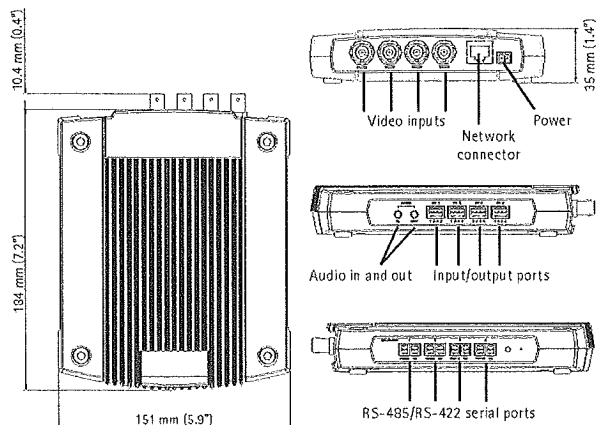
Network	
Security	Password protection, IP address filtering, HTTPS* encryption, IEEE 802.1X* network access control, digest authentication, user access log
Supported protocols	IPv4/v6, HTTP, HTTPS*, IEEE 802.1X*, QoS layer 3 DiffServ, FTP, SMTP, Bonjour, UPnP, SNMPv1/v2c/v3(MIB-II), DNS, DynDNS, NTP, RTSP, RTP, TCP, UDP, IGMP, RTCP, ICMP, DHCP, ARP, SOCKS

Web interface	
Application Programming Interface	Open API for software integration, including VAPIX® from Axis Communications available at www.axis.com AXIS Camera Application Platform from Axis Communications; specifications available at www.axis.com
Intelligent video	Video motion detection, active tampering alarm, audio detection
Alarm triggers	Intelligent video, external inputs, video loss
Alarm events	File upload via FTP, HTTP and email Notification via email, HTTP and TCP External output activation PTZ presets
Video buffer	64 MB pre- and post-alarm per channel
Pan/Tilt/Zoom	Wide range of analog PTZ cameras supported (drivers available for download at www.axis.com) 100 presets, guard tour, PTZ control queue Supports Windows compatible joysticks

General	
Casing	Metal casing. Standalone or wall mount
Processor and memory	4x ARTPEC-3, 4x 128 MB RAM, 4x 128 MB Flash
Power	8-20 V DC, max. 16.1 W
Connectors	4 analog composite video BNC inputs, NTSC/PAL auto-sensing RJ-45 10BASE-T/100BASE-TX/1000BASE-T DC terminal block: power in 8-20 V DC, max. 16.1 W 4 I/O terminal blocks with 2 configurable inputs/outputs per channel 3.5 mm mic/line in, 3.5 mm line out 4 RS-485/RS-422 serial ports
Operating conditions	0 °C - 45 °C (32 °F - 113 °F) Humidity 20-80% RH (non-condensing)
Approvals	EN 55022 Class B, EN 61000-3-2, EN 61000-3-3, EN 55024, EN 61000-6-1, EN 61000-6-2, FCC Part 15 Subpart B Class B, ICES-003 Class B, VCCI Class B, C-tick AS/NZS CISPR 22, EN 60950-1 Power supply PS-P: EN 60950-1, UL, CSA
Weight	796 g (1.75 lb.)
Included accessories	Power supply, mounting and connector kits, Installation Guide, CD with installation and management tools, software and User's Manual, 4 Windows decoder user licenses

* This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit. (www.openssl.org)

Dimensions



More information is available on www.axis.com

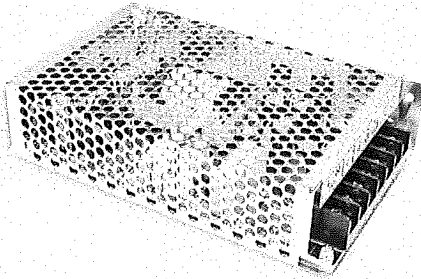
Optional accessories

AXIS 295 Video Surveillance Joystick

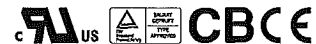


For information on AXIS Camera Station and video management software from Axis' Application Development Partners, see www.axis.com/products/video/software/

line 10



- Features :
 - Universal AC input / Full range
 - Protections: Short circuit / Overload / Over voltage
 - Cooling by free air convection
 - LED indicator for power on
 - 100% full load burn-in test
 - All using 105°C long life electrolytic capacitors
 - Withstand 300VAC surge input for 5 second
 - High operating temperature up to 70°C
 - Withstand 5G vibration test
 - High efficiency, long life and high reliability
 - 3 years warranty

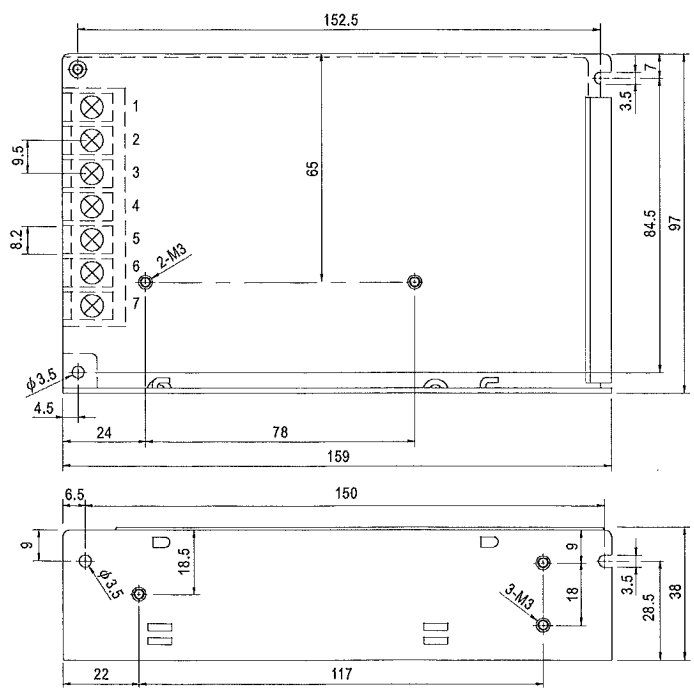


SPECIFICATION

MODEL		RS-100-3.3	RS-100-5	RS-100-12	RS-100-15	RS-100-24	RS-100-48
OUTPUT	DC VOLTAGE	3.3V	5V	12V	15V	24V	48V
	RATED CURRENT	20A	16A	8.5A	7A	4.5A	2.3A
	CURRENT RANGE	0 ~ 20A	0 ~ 16A	0 ~ 8.5A	0 ~ 7A	0 ~ 4.5A	0 ~ 2.3A
	RATED POWER	66W	80W	102W	105W	108W	110.4W
	RIPPLE & NOISE (max.) Note.2	80mVp-p	80mVp-p	120mVp-p	120mVp-p	120mVp-p	200mVp-p
	VOLTAGE ADJ. RANGE	3.2V ~ 3.5V	4.75 ~ 5.5V	11.4 ~ 13.2V	14.25 ~ 16.5V	22.8 ~ 26.4V	45.6 ~ 52.8V
	VOLTAGE TOLERANCE Note.3	±3.0%	±2.0%	±1.0%	±1.0%	±1.0%	±1.0%
	LINE REGULATION Note.4	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
	LOAD REGULATION Note.5	±2.0%	±1.0%	±0.5%	±0.5%	±0.5%	±0.5%
	SETUP, RISE TIME	500ms, 20ms/230VAC 1200ms, 30ms/115VAC at full load					
HOLD UP TIME (Typ.)	100ms/230VAC 18ms/115VAC at full load						
INPUT	VOLTAGE RANGE	88 ~ 264VAC 125 ~ 373VDC (Withstand 300VAC surge for 5sec. Without damage)					
	FREQUENCY RANGE	47 ~ 63Hz					
	EFFICIENCY (Typ.)	74%	77%	81%	82%	84%	84%
	AC CURRENT (Typ.)	2.5A/115VAC 1.5A/230VAC					
	INRUSH CURRENT (Typ.)	COLD START 40A/230VAC					
LEAKAGE CURRENT	<2mA / 240VAC						
PROTECTION	OVERLOAD	110 ~ 150% rated output power Protection type : Hiccup mode, recovers automatically after fault condition is removed					
	OVER VOLTAGE	3.8 ~ 4.45V	5.75 ~ 6.75V	13.8 ~ 16.2V	17.25 ~ 20.25V	27.6 ~ 32.4V	55.2 ~ 64.8V
ENVIRONMENT	WORKING TEMP.	-25 ~ +70°C (Refer to output load derating curve)					
	WORKING HUMIDITY	20 ~ 90% RH non-condensing					
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95% RH					
	TEMP. COEFFICIENT	±0.03%/°C (0 ~ 50°C)					
	VIBRATION	10 ~ 500Hz, 5G 10min./1cycle, period for 60min. each along X, Y, Z axes					
SAFETY & EMC (Note 6)	SAFETY STANDARDS	UL60950-1, TUV EN60950-1 approved					
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC I/P-FG:1.5KVAC O/P-FG:0.5KVAC					
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25°C / 70% RH					
	EMI CONDUCTION & RADIATION	Compliance to EN55022 (CISPR22) Class B					
	HARMONIC CURRENT	Compliance to EN61000-3-2, -3					
OTHERS	EMTBF	260.8Khrs min. MIL-HDBK-217F (25°C)					
	DIMENSION	159*97*38mm (L*W*H)					
	PACKING	0.6Kg; 24pcs/15.4Kg/0.7CUFT					
NOTE	<ol style="list-style-type: none"> 1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor. 3. Tolerance : includes set up tolerance, line regulation and load regulation. 4. Line regulation is measured from low line to high line at rated load. 5. Load regulation is measured from 0% to 100% rated load. 6. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives. For guidance on how to perform these EMC tests, please refer to "EMI testing of component power supplies." (as available on http://www.meanwell.com) 7. Length of set up time is measured at cold first start. Turning ON/OFF the power supply very quickly may lead to increase of the set up time. 						

Mechanical Specification

Case No. 901C Unit:mm

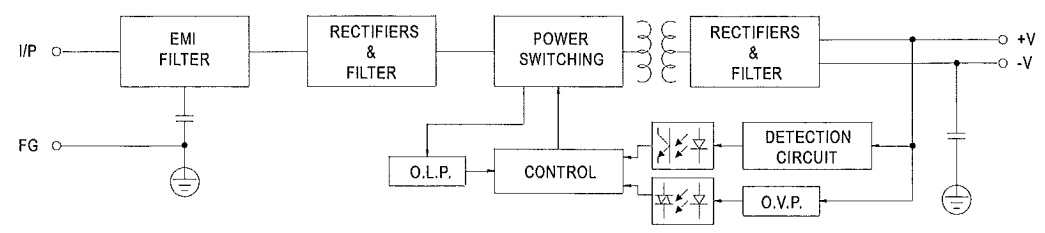


Terminal Pin No. Assignment

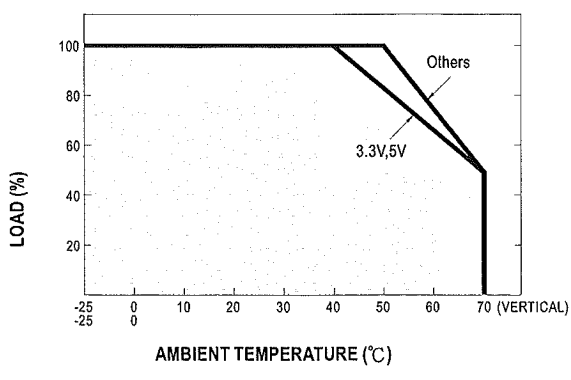
Pin No.	Assignment	Pin No.	Assignment
1	AC/L	4,5	DC OUTPUT -V
2	AC/N	6,7	DC OUTPUT +V
3	FG \perp		

Block Diagram

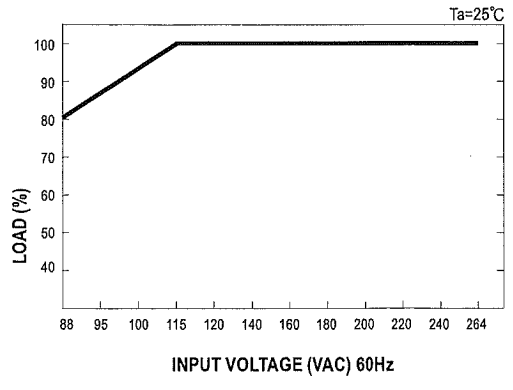
fosc : 60KHz



Derating Curve



Static Characteristics

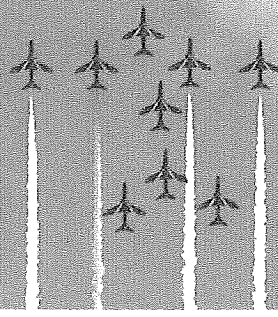


File Name:RS-100-SPEC 2010-10-18

POWER SONIC

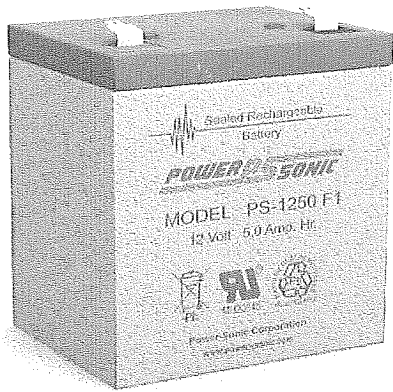
PS-1250 12 Volt 5.0 AH

Rechargeable Sealed Lead Acid Battery



We've Got The Power.™

line 11



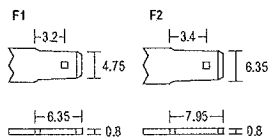
Features

- Absorbent Glass Mat (AGM) technology for superior performance
- Valve regulated, spill proof construction allows safe operation in any position
- Power/volume ratio yielding unrivaled energy density
- Rugged impact resistant ABS case and cover (UL94-HB)
- Approved for transport by air. D.O.T., I.A.T.A., F.A.A. and C.A.B. certified
- U.L. recognized under file number MH 20845

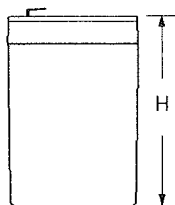
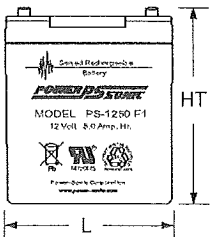
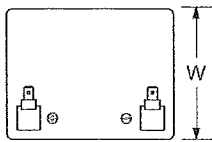
Terminals

(mm)

- F1 - Quick disconnect tabs, 0.187" x 0.032" - Mate with AMP. INC. FASTON "187" series
— OR —
- F2 - Quick disconnect tabs, 0.250" x 0.032" - Mate with AMP. INC. FASTON "250" series



Physical Dimensions: in (mm)



L: 3.54 (90) W: 2.76 (70) H: 3.98 (101) HT: 4.21 (107)

Tolerances are +/- 0.04 in. (+/- 1mm) and +/- 0.08 in. (+/- 2mm) for height dimensions. All data subject to change without notice.

Performance Specifications

Nominal Voltage 12 volts (6 cells)

Nominal Capacity

20-hr. (250mA to 10.50 volts)	5.00 AH
10-hr. (450mA to 10.50 volts)	4.50 AH
5-hr. (750mA to 10.20 volts)	3.75 AH
1-hr. (2.85A to 9.00 volts)	2.85 AH
15-min. (9A to 9.00 volts).....	2.25 AH

Approximate Weight 3.50 lbs. (1.59 kg)

Energy Density (20-hr. rate) 1.54 W-h/in³ (94.16 W-h/l)

Specific Energy (20-hr. rate) 17.14 W-h/lb (37.79 W-h/kg)

Internal Resistance (approx.) 40 milliohms

Max Discharge Current (7 Min.) 15.0 amperes

Max Short-Duration Discharge Current (10 Sec.)..... 50.0 amperes

Shelf Life (% of nominal capacity at 68°F (20°C))

1 Month	97%
3 Months.....	91%
6 Months	83%

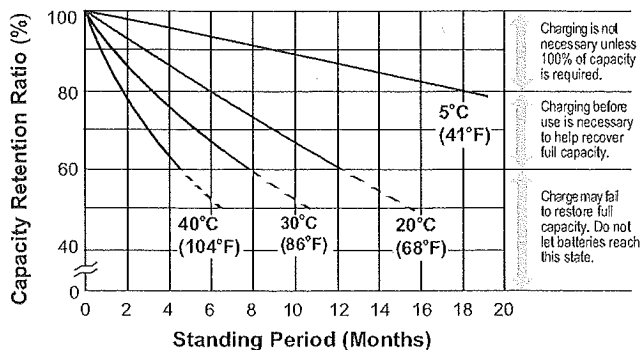
Operating Temperature Range

Charge.....	-4°F (-20°C) to 122°F (50°C)
Discharge.....	-40°F (-40°C) to 140°F (60°C)

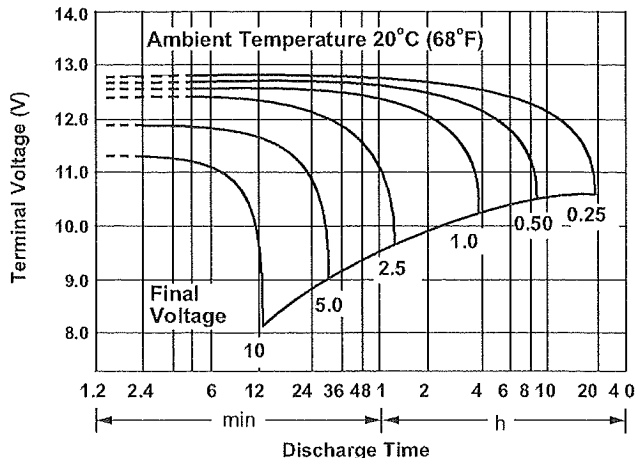
Case ABS Plastic

Power-Sonic Chargers PSC-12500A

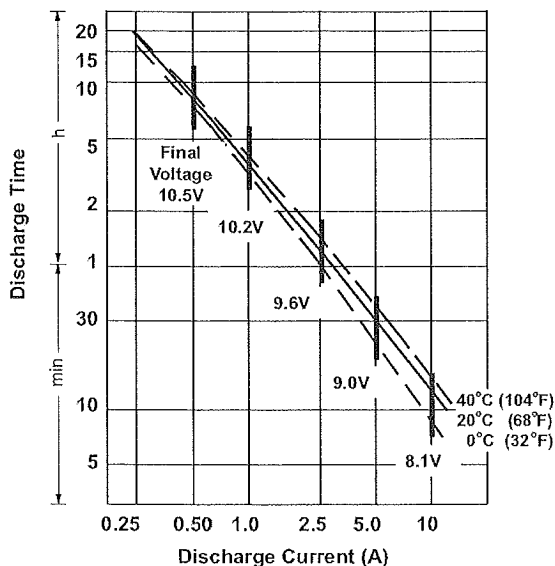
Shelf Life & Storage



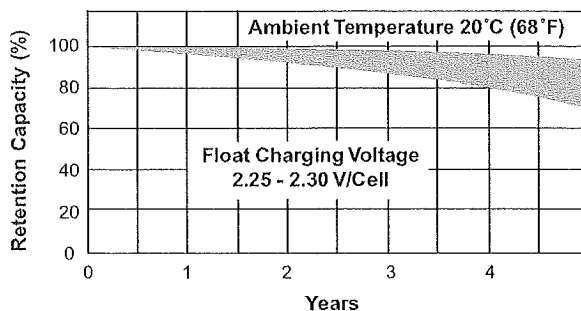
Discharge Characteristics



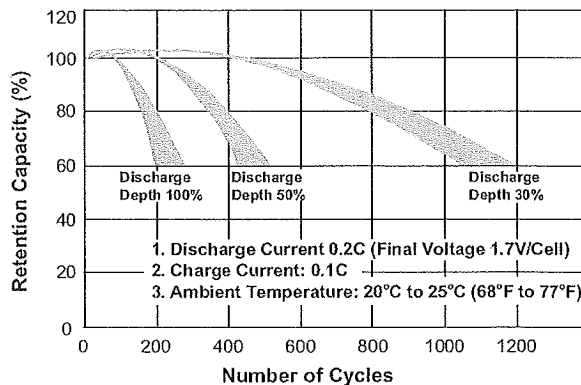
Discharge Time vs. Discharge Current



Life Characteristics in Stand-By Use



Life Characteristics in Cyclic Use



Charging

Cycle Applications: Limit initial current to 1.2A. Charge until battery voltage (under charge) reaches 14.4 to 14.7 volts at 68°F (20°C). Hold at 14.4 to 14.7 volts until current drops to under 50mA. Battery is fully charged under these conditions, and charger should be disconnected or switched to "float" voltage.

"Float" or "Stand-By" Service: Hold battery across constant voltage source of 13.5 to 13.8 volts continuously. When held at this voltage, the battery will seek its own current level and maintain itself in a fully charged condition.

Note: Due to the self-discharge characteristics of this type of battery, it is imperative that they be charged within 6 months of storage, otherwise permanent loss of capacity might occur as a result of sulfation.

Chargers

Power-Sonic offers a wide range of chargers suitable for batteries up to 100AH. Please refer to the Charger Selection Guide in our specification sheets for "C-Series Switch Mode Chargers" and "Transformer Type A and F Series". Please contact our Technical department for advice if you have difficulty in locating suitable models.

Further Information

Please refer to our website www.power-sonic.com for a complete range of useful downloads, such as product catalogs, material safety data sheets (MSDS), ISO certification, etc..

Contact Information

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national_sales@power-sonic.com

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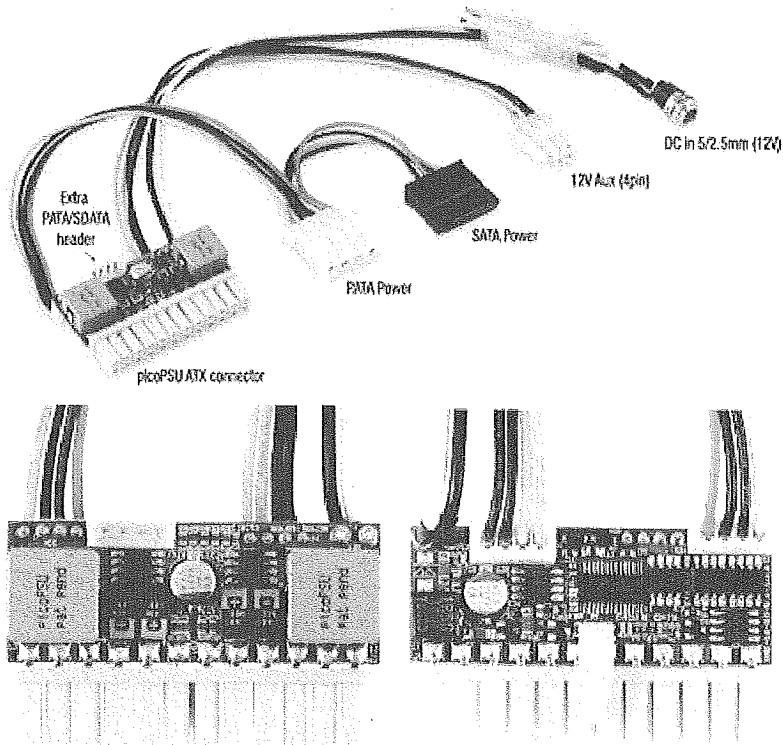
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support@power-sonic.com

INTERNATIONAL SALES

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Fax: +1-650-366-3662
international_sales@power-sonic.com

47.95 EUR
incl. 19% VAT, plus shipping



- Tiny size !!!
- 24pin ATX !
- 150W !

Support:  [Manual \[EN\]](#)

The PicoPSU-150-XT ATX power supply is comparable with PicoPSU-120, but can provide 30W more power and is capable to power CPUs with a TDP of up to 65W.

- for VIA mini-ITX boards with C3 or C7 processors, P3, P4, Pentium-M, and AMD processors.
- 150 watts
- Dimensions : 31 x 44 x 21 mm
- Power Input : 12VDC (11.5-13.0VDC)
- Power connectors : 1x Floppy, 1x SATA, 1x 3.5" HDD

Introducing picoPSU-150-XT, world's tiniest 12V DC-DC ATX power supply unit (PSU)

Compact design, less cables. The picoPSU-150-XT is the smallest snap-in 12V ATX dc-dc power supply. The picoPSU is compatible with an entire range of mini-itx motherboards as well as regular boards. The picoPSU-150-XT provides a cool, silent 150 Watts of power for small PC designs using a single 12V power source.

By using Patent Pending HyperWatt[™] technologies , picoPSU-150-XT packs an impressive amount of power relative with its very small footprint. PicoPSU-150-XT has several key advantages over traditional power supplies:

- Very small, can build ultra-compact PC enclosures and slim server enclosures.
- Fits any motherboard equipped with a 24pin ATX connector.
- 100% silent, fanless, no moving parts.
- Operates at only 12V.
- Highly efficient design, does not produce a lot of heat.
- Ideal for low power Intel Core Duo as well as all VIA C3/C7 motherboards.

Small computer projects start with small power supplies. PicoPSU-150-XT is a crucial key component that unleashes the ultimate power solution for general purpose computing platforms. PicoPSU-150-XT is fully ATX compliant PSU, making it an excellent candidate for any silent, fanless and small 12V DC-DC ATX PC power supply project.

Reduce space. Eliminate 20 unnecessary wires by plugging in directly into the motherboard ATX connector. The picoPSU-150-XT 12V dc-dc ATX converter was designed from ground up to fit small form factor ATX boards, allowing enclosure designers to save space while not compromising power requirements.

Cool power. Operating at only 12V, the picoPSU-150-XT dc-dc ATX power supply delivers 150 Watts of power. picoPSU provides

plenty of power (via ATX connector and HDD cable harness) for CPU and an entire range of peripherals.

100% Silent The picoPSU-150-XT mini PSU is a 100% silent fanless dc to dc solution. No fans, no noise, just power for small and silent PCs.

picoPSU-150-XT is a fully compliant DC-DC ATX PC PSU. It can power VIA mini-ITX boards with C3 or C7 processors, P3, P4, Pentium-M, Core Duo Mobile or Desktop versions and low power AMD processors.

picoPSU-150-XT ATX DC-DC converter is very small, measuring just 31x45x20mm, about the size of two AA batteries, picoPSU-150-XT is also 1U ServerRack compliant.

CE / FCC / VCCI Certifications: EN55024, EN55022 Class B (CE certification), Australia / New Zealand (using CISPR 22, EN55022), Japan (VCCI: using CISPR 22, ANSI C63.4), United States (FCC Part 15, Subpart B, Class B), Canada (ICES-003 using CISPR 22, ANSI C63.4).

Note : picoPSU-150-XT is not intended for being powered directly from a car battery. Instead you can take M3-ATX (same size) or M1-ATX, M2-ATX(-HV), M4-ATX.

Reason : Car battery gives out 9-18VDC, but PicoPSU can only handle 12V +-10% !

line 13

IS50/IS51 Series Camclosure® 2 Camera System

RUGGED OUTDOOR MINI DOME, SURFACE AND FLUSH MOUNT

Product Features

- Vandal-Resistant Heavy Duty Outdoor Enclosure with Camera and Lens
- 3 Camera Options
 - Super Dynamic 5 (SD5)™ Day/Night Wide Dynamic Range (WDR)
 - Day/Night High Resolution
 - High Resolution Color
- Varifocal Lens
- Shipped Completely Assembled, Easy to Install
- 24 VAC or 12 VDC Operation, Autosensing
- Manual, 3-Axis (Pan/Tilt/Rotation) Positioning Allows Adjustment for Optimum Camera Rotation and Placement
- Service Connector for Video Output
- Available in Surface or Flush Mount Models with Smoked or Clear Domes
- Built-in Heater for Outdoor Environments



IS51-DWSV6S MODEL

- Dehumidifier to Prevent Condensation (DWS Series Only)
- Auto Image Stabilizer to Compensate for External Vibration (DWS Series Only)

The **IS50/IS51 Series Camclosure® 2 Camera System** integrates a camera and lens package into a small, versatile rugged enclosure that can be mounted directly to, or recessed into, a ceiling or wall. The **IS50/IS51 Series** features a three-axis camera and lens positioning system that is capable of a wide variety of pan and tilt angles.

The **IS50/IS51 Series** offers three high resolution camera options suitable for a variety of outdoor environments:

- **Super Dynamic 5 (SD5)™ day/night wide dynamic range (WDR):** Features a high resolution (650 TVL) color camera with auto iris, varifocal lens, and auto back focus. Application examples include environments with difficult lighting that require extremely high sensitivity and dynamic range.
- **True day/night:** Features a high resolution (540 TVL) color camera with auto iris and varifocal lens. Application examples include environments that require color images during the day but use monochrome images at night with or without supplemental IR lighting.
- **Color:** Features a high resolution (540 TVL) color camera with auto iris, simple day/night functions, and varifocal lens. For use in all general-purpose environments.

All cameras in the **IS50/IS51 Series** offer adaptive black stretch (ABS) to provide optimal image quality in dark areas by increasing the visibility in those areas without sacrificing the image quality in brighter areas. In addition, in some cameras the **IS50/IS51 Series** features Super Dynamic 5 (SD5) technology, ensuring the best picture

quality even in challenging environments. The Super Dynamic 5 (SD5) day/night WDR camera is equipped with auto back focus (ABF) and intelligent motion detection (i-VMD). The ABF feature automatically adjusts the camera's CCD position when installing or changing from color to black-white mode, saving time during setup and optimizing focus. The i-VMD feature is an intelligent built-in video motion detector that provides more efficient and reliable surveillance, while eliminating the loss of notification in vital scenes. Using advanced motion analytics provides the ability to accurately detect motion within a targeted area. The i-VMD analytics include three behaviors: motion detection, object abandonment/removal, and scene change detection.

The **IS50/IS51 Series** is shipped completely assembled, making installation fast and easy. To surface-mount the unit, remove it from the box, attach it to the mounting surface, and connect video and power. For recessed installations, use the supplied mounting bracket to install the unit inside a ceiling or wall.

The **IS50/IS51 Series** also features a complete line of optional mounting accessories. The IS50-P pendant mount allows the IS50/IS51 surface mount cameras to be adapted for pendant installations. The IS50-P can also be combined with the SWM-SR compact wall mount for wall mount installations. In addition, the IS50-FK flush mount kit allows a surface mount unit to be installed in a ceiling if the installation type should change after the original deployment.



by Schneider Electric



C3473 / REVISED 1-3-12

TECHNICAL SPECIFICATIONS

CAMERA/OPTICS

	IS50/IS51-DWS Series Super Dynamic (SD5) Day/Night Wide Dynamic Range Models	IS50/IS51-DN Series True Day/Night Models	IS50/IS51-CH Series Color Models with Simple Day/Night
Image Sensor	1/3-inch interline transfer CCD	1/3-inch interline transfer CCD	1/3-inch interline transfer CCD
Effective Pixels NTSC PAL	976 (H) x 494 (V) 976 (H) x 582 (V)	768 (H) x 494 (V) 752 (H) x 582 (V)	768 (H) x 494 (V) 752 (H) x 582 (V)
Scanning Area	0.19-inch (H) x 0.14-inch (V) (4.8 x 3.6 mm)	0.19-inch (H) x 0.15-inch (V) (4.9 x 3.7 mm)	0.19-inch (H) x 0.15-inch (V) (4.9 x 3.7 mm)
Scanning System	2:1 interlace	2:1 interlace	2:1 interlace
Scanning Lines NTSC PAL	525 lines 625 lines	525 lines 625 lines	525 lines 625 lines
Scanning Frequency NTSC PAL	Horizontal, 15.734 kHz Vertical, 59.94 Hz Horizontal, 15.625 kHz Vertical, 50.00 Hz	Horizontal, 15.734 kHz Vertical, 59.94 Hz Horizontal, 15.625 kHz Vertical, 50.00 Hz	Horizontal, 15.734 kHz Vertical, 59.94 Hz Horizontal, 15.625 kHz Vertical, 50.00 Hz
Synchronization	Internal LL (phase adjustable power supply synchronization)	Internal	Internal
Horizontal Resolution	650 TV lines, typical (color mode) 700 TV lines or more (B-W mode)	540 TV lines (color mode, at center) 570 TV lines (B-W mode)	540 TV lines (at center)
Minimum Illumination	0.1 lux (color mode) 0.003 lux (sensitivity up x32) 0.01 lux (B-W mode) 0.0003 lux (sensitivity up x32)	0.06 lux (color mode) 0.05 lux (B-W mode)	0.6 lux (color mode) 0.4 lux (B-W mode)
Dynamic Range	54 dB/128X	Adaptive Black Stretch	Adaptive Black Stretch
Day/Night Type	IR filter removal	IR filter removal	Simple
Video Output	1.0 Vp-p, NTSC/PAL composite, 75 ohms, BNC connector	1.0 Vp-p, NTSC/PAL composite, 75 ohms, BNC connector	1.0 Vp-p, NTSC/PAL composite, 75 ohms, BNC connector
White Balance	Auto Tracking White Balance/Automatic White Balance Control	Auto Tracking White Balance/Automatic White Balance Control	Auto Tracking White Balance/Automatic White Balance Control
Signal-to-Noise Ratio	50 dB (equivalent to AGC Off, weight On)	50 dB (equivalent to AGC Off, weight On)	50 dB (equivalent to AGC Off, weight On)
Lens	2X varifocal lens	3.6X varifocal lens	3.6X varifocal lens
Focal Length	3.8 ~ 8.0 mm	2.8 ~ 10.0 mm	2.8 ~ 10.0 mm
F-Number	f/1.4 (WIDE) to f/1.8 (TELE)	f/1.3 (WIDE) to f/3.1 (TELE)	f/1.3 (WIDE) to f/3.1 (TELE)
Focus Range	∞ to 3.9 ft (1.2 m)	∞ to 3.9 ft (1.2 m)	∞ to 3.9 ft (1.2 m)
Angle of View Horizontal Vertical	73.6° wide zoom; 35.6° telephoto zoom 53.4° wide zoom; 26.6° telephoto zoom	100.2° wide zoom; 27.4° telephoto zoom 73.3° wide zoom; 20.3° telephoto zoom	100.2° wide zoom; 27.4° telephoto zoom 73.3° wide zoom; 20.3° telephoto zoom
Adjusting Angle Panning Range Tilting Range Rotation Range	±170° ±75° ±100°	+180° to -140° ±75° ±100°	+180° to -140° ±75° ±100°
Exposure (Shutter) NTSC PAL	SD5 Off: 1/60, 1/100, 1/250, 1/500, 1/1,000, 1/2,000, 1/4,000, and 1/10,000 SD5 On: 1/60 and 1/100 SD5 Off: 1/50, 1/120, 1/250, 1/500, 1/1,000, 1/2,000, 1/4,000, and 1/10,000 SD5 On: 1/50 and 1/120	Auto Light Control (ALC) Auto Light Control (ALC)	Auto Light Control (ALC) Auto Light Control (ALC)

TECHNICAL SPECIFICATIONS

GENERAL

Construction		
Enclosure	Aluminum die cast	
Bubble	Polycarbonate resin	
Finish	Light gray	
Weight		
Super Dynamic 5 (SD5) WDR Models	Unit	Shipping
Surface Mount	3.76 lb (1.71 kg)*	6 lb (2.70 kg)*
Flush Mount	4.53 lb (2.05 kg) [†]	11 lb (4.89 kg) [†]
Color and Day/Night Models		
Surface Mount	3.20 lb (1.45 kg)	6 lb (2.40 kg)
Flush Mount	3.97 lb (1.80 kg)	11 lb (4.59 kg)
Effective Projected Area (EPA)	9.09 square inches (without mount)	
Multilingual		
On-Screen Display	English, French, Spanish, German, Portuguese, Russian, Japanese	

ELECTRICAL

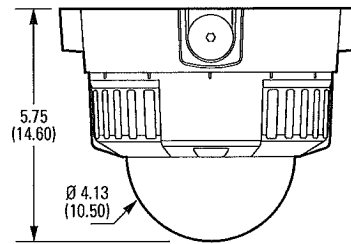
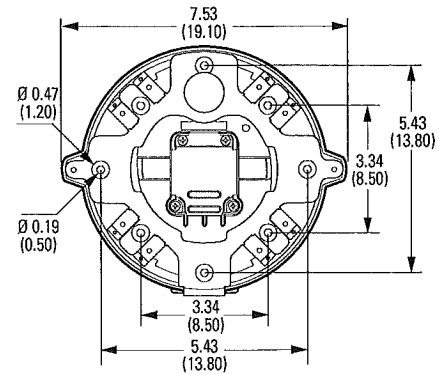
Power Source [‡]		
Super Dynamic 5 (SD5) WDR Models	NTSC	PAL
	24 VAC, 60 Hz	24 VAC, 50 Hz
	12 VDC [§] , 280 mA	12 VDC [§] , 280 mA
Color and Day/Night Models	NTSC	PAL
	24 VAC, 60 Hz	24 VAC, 50 Hz
	12 VDC [§] , 220 mA	12 VDC [§] , 220 mA
Power Consumption		
Super Dynamic 5 (SD5) WDR Models	NTSC	PAL
Without Heater	3.4 W	3.4 W
With Heater	14 W	14 W
Color and Day/Night Models	NTSC	PAL
Without Heater	2.9 W	2.9 W
With Heater	13.1 W	13.1 W

ENVIRONMENTAL

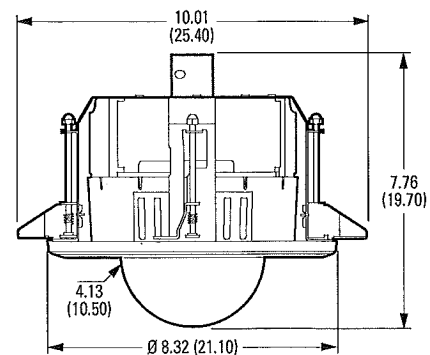
Environment	Outdoor
Ambient Temperature	
Without Heater	14° to 122°F (-10° to +50°C)
With Heater	-22° to 122°F (-30° to +50°C)
Ambient Humidity	Less than 90%
Impact Resistance	IEC 60068-2-75 Test Eh (50J)

CERTIFICATIONS/RATINGS/PATENTS

- CE, Class A
- FCC, Class A
- UL/cUL Listed
- C-Tick
- Meets IP66 standards, IEC60529



SURFACE MOUNT



FLUSH MOUNT

*The total surface mount weight includes 0.22 lb (0.1 kg) for the camera attachment.

[†]The total flush mount weight includes 1.54 lb (0.7 kg) for ceiling mount bracket assembly.

[‡]Power source specifications include ±10% tolerance.

[§]When using 12 VDC power supply, the heater is not available.

NOTE: VALUES IN PARENTHESES ARE CENTIMETERS; ALL OTHERS ARE INCHES.

TECHNICAL SPECIFICATIONS

MODELS

Camera Type	Mount Type	Bubble	NTSC	PAL
Super Dynamic 5 (SD5) Day/Night WDR (DWS Series)	Surface	Clear	IS51-DWSV8S	IS51-DWSV8SX
		Smoke	IS50-DWSV8S	IS50-DWSV8SX
	Flush	Clear	IS51-DWSV8F	IS51-DWSV8FX
		Smoke	IS50-DWSV8F	IS50-DWSV8FX
Day/Night (DN Series)	Surface	Clear	IS51-DNV10S	IS51-DNV10SX
		Smoke	IS50-DNV10S	IS50-DNV10SX
	Flush	Clear	IS51-DNV10F	IS51-DNV10FX
		Smoke	IS50-DNV10F	IS50-DNV10FX
Color (CH Series)	Surface	Clear	IS51-CHV10S	IS51-CHV10SX
		Smoke	IS50-CHV10S	IS50-CHV10SX
	Flush	Clear	IS51-CHV10F	IS51-CHV10FX
		Smoke	IS50-CHV10F	IS50-CHV10FX

RECOMMENDED MOUNTS

IS50-P	Pendant mount, outdoor; compatible with all models
IS50-CM	Corner mount, indoor or outdoor; compatible with all models
SWM-SR	Compact wall mount, light gray finish; can be used with IS50-P for wall-mount installations; can also be adapted for corner or pole applications
WMVE-SR	Wall mount, light gray; can be used with IS50-P for wall-mount installations that require increased vandal resistance or surface mount conduit
IS50-FK	Flush mount kit; compatible with surface mount models only
SWM-PA-GY	Pole adapter with stainless steel hardware; gray finish
SWM-CA	Corner adapter; gray finish
SWM-CA24	Same as SWM-CA except includes internal transformer to convert 120 or 230 VAC input to 24 VAC

RECOMMENDED POWER SUPPLIES

TF2000	Power supply for one 24 VAC camera, 20 VA
MCS Series	Multiple 24 VAC camera power supply, indoor
WCS Series	Single/multiple 24 VAC camera power supply, outdoor

OPTIONAL ACCESSORIES

TW3001PC	Passive twisted wire transmission for use in unshielded twisted pair (UTP) installations
13VD15-50	15 to 50 mm lens; compatible with DWS models only

Pelco by Schneider Electric
 3500 Pelco Way, Clovis, California 93612-5699 United States
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International Tel +1 (559) 292-1981 Fax +1 (559) 348-1120
www.pelco.com

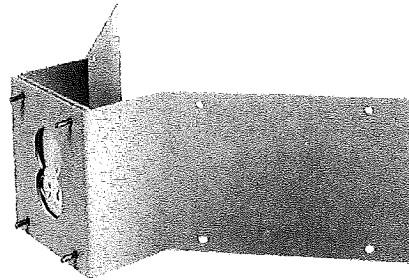
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CM400 Mount

CORNER MOUNT, SPECTRA® AND LEGACY® ADAPTER

Product Features

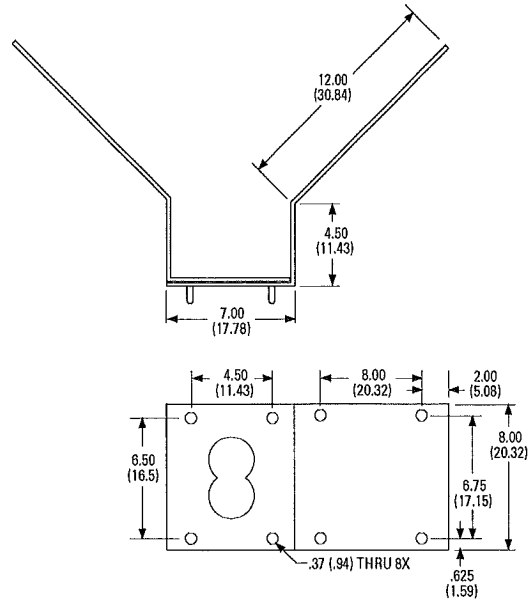
- Low Cost
- Rugged Construction
- Supports up to 75 Pounds (34 kg)
- Corner Mount Adapter for Spectra® and Legacy® Wall Mounts (IWM Series, IDM4018, and LWM41)
- Design Includes Mounting Studs for Quick, Simple, Installation of Wall Mount



The **CM400** is a corner mount adapter designed for use with Spectra® and Legacy® wall mounts. For Spectra, DF5, or DF8 Series pendant domes, use the IWM Series or IDM4018 wall mount. For Legacy positioning systems, use the LWM41 wall mount.

The LWM41, IWM Series, or IDM4018 wall mount is secured to the **CM400** by four 5/16-inch mounting studs; nuts and split lock washers are supplied.

Constructed from aluminum, the **CM400** is capable of supporting up to 75 pounds (34 kg) and features a cable feedthrough hole for easy routing of video and power cables. A block-off plate is included for non-feedthrough outdoor applications.



NOTE: VALUES IN PARENTHESES ARE CENTIMETERS; ALL OTHERS ARE INCHES.



TECHNICAL SPECIFICATIONS

MODEL

CM400 Corner mount adapter for IWM Series, IDM4018, and LWM41 wall mounts

RELATED PRODUCTS

IWM Series Wall mount with cable feedthrough for use with Spectra®, DF5, and DF8 Series pendant style domes.

IDM4018 Wall mount with removable front end cap and cable feedthrough for use with Spectra, DF5, and DF8 Series pendant style domes.

LWM41 Legacy® wall mount. For use with Legacy integrated positioning systems.

EA4348 EWM adapter plate. Allows an EWM wall mount to be installed on a CM400 for use with an Esprit® Series integrated positioning system.

MECHANICAL

Adapter Mounting Four 5/16-inch mounting studs (nuts and split lock washers supplied) for attaching LWM41, IDM4018, EA4348, or IWM Series mount

Mounting Method Secure with eight fasteners suitable for mounting surface (minimum 1/4-inch recommended, not supplied)

GENERAL

Construction 6061 T6 aluminum, 0.125-inch (3.18mm) thick

Finish Gray polyester powder coat

Maximum Load 75 lb (34 kg)

Unit Weight 3 lb (1.36 kg)

Shipping Weight 8 lb (3.62 kg)



Pelco, Inc. Worldwide Headquarters:
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What is the minimum and maximum pole diameter for mounting the PA101?

Pole diameter specification:

Minimum	3 inches	7.62 centimeters
Maximum	8 inches	20.32 centimeters

FA86178 | 1.0 | Published date: 16-Dec-2010

Spectra® IV IP Series Network Dome System

H.264, DIGITAL PAN/TILT/ZOOM HIGH-SPEED DOME

line 14

Product Features

- Ability to Control and Monitor Video Over IP Networks
- Simultaneous IP and Analog Video and Control
- H.264, MPEG-4, and MJPEG Compression
- Supported Protocols: TCP/IP, UDP/IP (Unicast, Multicast IGMP), UPnP, DNS, DHCP, RTP, RTSP, NTP, IPv4, SNMP, QoS, HTTP, HTTPS, LDAP (client), SSH, SSL, SMTP, FTP, and 802.1x (EAP)
- Multilevel Password Protection
- 3 Autofocus, High Resolution Integrated Camera/Optics Packages
- Autotracking
- Horizontal Zone and Window Blanking
- Sensitivity Down to 0.00015 lux PAL (35X Models)
- On-Screen Compass and Tilt Display
- Up to 2 Simultaneous Video Streams
- Web Viewing, up to 16 Cameras Simultaneously
- Open IP Standards

Spectra® IV IP dome systems incorporate all of the features and functions of Spectra IV (including analog), while allowing you to control and monitor video over an IP network from virtually anywhere in the world. Spectra IV IP is a high-speed dome with a built-in 100Base-TX network interface for live streaming to any network application.

Spectra IV IP supports two simultaneous video streams. The two streams can be compressed in MJPEG, MPEG-4, and H.264 formats across several resolution configurations. The streams can be configured in a variety of frame rates, bit rates, and group of pictures (GOP) structures for additional bandwidth administration. The H.264 compression video files are up to 20 times smaller than MJPEG, making network video storage more affordable.

Spectra IV IP allows you to view and control analog video while viewing, recording, and controlling network IP video. There is no need to abandon your current analog infrastructure if you are making the move to network video as a recording solution. Continue to monitor and control video in the analog domain while recording video in the network domain, and let Spectra IV IP's professional compression method do the work for you without the need for external encoders.

Spectra IV IP dome system consists of a back box, a dome drive, and a lower dome. These three system components are interchangeable with other Spectra IV IP dome systems, making retrofitting and application adjustments simple.

Spectra IV IP features several back box options. All back boxes feature built-in memory, which can be used to store camera and



- ONVIF v1.02 Conformant
- Bidirectional Full-Duplex Audio

location-specific dome settings, including labels, presets, patterns, and zones.

All cameras in **Spectra IV IP** dome drives feature an EXview HAD™ imager for increased sensitivity and LowLight™ technology allowing the cameras to compensate for scenes where minimal light is present. Both the 27X and the 35X cameras feature built-in motion detection and advanced 128X wide dynamic range (WDR) that enables the system to compensate for scenes where dramatic contrasts in lighting are present. The 35X day/night camera's electronic image stabilization digitally reduces blurring of the camera image due to vibration caused by external sources, such as wind and traffic.

Web Interface

Spectra IV IP uses a standard Web browser for powerful remote setup and administration. Up to 16 cameras can be viewed on the same network.

Network protocols such as Secure Sockets Layer (SSL) configuration for security certificates, Secure Shell (SSH) for remote logon, and Quality of Service (QoS) for priority or guarantee data flow can be managed using a Web browser.

Video Systemization

Spectra IV IP easily connects to Pelco IP and hybrid systems such as Endura® version 1.5 (or later), MPEG-4; Endura version 2.0 (or later), H.264; Digital Sentry® version 7.3 (or later); DX8100 version 2.0 (or later); and DVR5100 version 1.5.4 (or later). The camera also features open architecture connectivity to third-party software. Pelco offers an

PELCO

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International Standards
Organization Registered Firm;
ISO 9001 Quality System



C3468 / REVISED 3-21-12

TECHNICAL SPECIFICATIONS

application programming interface (API) and software developer's kit (SDK) for interfacing with Pelco's IP cameras.

CAMERA/OPTICS

	Day/Night (35X)	Day/Night (27X)	Day/Night (23X)
Signal Format	NTSC (DD4CBW35) PAL (DD4CBW35-X)	NTSC (DD427) PAL (DD427-X)	NTSC (DD423) PAL (DD423-X)
Scanning System	Interlace/Progressive selectable	Interlace/Progressive selectable	2:1 Interlace
Image Sensor	1/4-inch EXview HAD™	1/4-inch EXview HAD	1/4-inch EXview HAD
Effective Pixels			
NTSC	768 (H) X 494 (V)	768 (H) X 494 (V)	768 (H) X 494 (V)
PAL	752 (H) X 582 (V)	752 (H) X 582 (V)	752 (H) X 582 (V)
Horizontal Resolution			
NTSC	>540 TV Lines	>540 TV Lines	540 TV Lines
PAL	>540 TV Lines	>540 TV Lines	540 TV Lines
Lens	f/1.4 (focal length, 3.4 ~ 119 mm)	f/1.4 (focal length, 3.4 ~ 91.8 mm)	f/1.6 (focal length, 3.6 ~ 82.8 mm)
Zoom	35X optical, 12X digital	27X optical, 12X digital	23X optical, 12X digital
Zoom Speed (optical range)	3.2/4.6/6.6 seconds	3.2/4.6/6.6 seconds	2.9/4.2/5.8 seconds
Horizontal Angle of view	55.8° at 3.4 mm wide zoom; 1.7° at 119 mm telephoto zoom	55.8° at 3.4 mm wide zoom; 2.3° at 91.8 mm telephoto zoom	54° at 3.6 mm wide zoom; 2.5° at 82.8 mm telephoto zoom
Focus	Automatic with manual override	Automatic with manual override	Automatic with manual override
Maximum Sensitivity at 35 IRE			
NTSC/EIA	0.55 lux at 1/60 sec (color) 0.018 lux at 1/2 sec (color) 0.00018 lux at 1/2 sec (B-W)	0.55 lux at 1/60 sec (color) 0.018 lux at 1/2 sec (color) 0.00018 lux at 1/2 sec (B-W)	0.65 lux at 1/60 sec (color) 0.15 lux at 1/60 sec (B-W)
PAL/CCIR	0.45 lux at 1/50 sec (color) 0.015 lux at 1/1.5 sec (color) 0.00015 lux at 1/1.5 sec (B-W)	0.45 lux at 1/50 sec (color) 0.015 lux at 1/1.5 sec (color) 0.00015 lux at 1/1.5 sec (B-W)	0.55 lux at 1/50 sec (color) 0.12 lux at 1/50 sec (B-W)
Sync System	Internal/AC line lock, phase adjustable using remote control, V-Sync	Internal/AC line lock, phase adjustable using remote control, V-Sync	Internal/AC line lock, phase adjustable using remote control, V-Sync
White Balance	Automatic with manual override	Automatic with manual override	Automatic with manual override
Shutter Speed	Automatic (electronic iris)/Manual	Automatic (electronic iris)/Manual	Automatic (electronic iris)/Manual
NTSC	1/2 ~ 1/30,000	1/2 ~ 1/30,000	1/2 ~ 1/30,000
PAL	1/1.5 ~ 1/30,000	1/1.5 ~ 1/30,000	1/1.5 ~ 1/30,000
Iris Control	Automatic iris control with manual override	Automatic iris control with manual override	Automatic iris control with manual override
Gain Control	Automatic/OFF	Automatic/OFF	Automatic/OFF
Video Output	1 Vp-p, 75 ohms	1 Vp-p, 75 ohms	1 Vp-p, 75 ohms
Video Signal-to-Noise	>50 dB	>50 dB	>50 dB
Wide Dynamic Range	128X	128X	—
Electronic Image Stabilization	Integrated/Selectable	—	—
Image Enhancement	Integrated/Selectable	—	—
Video Motion Detection	Integrated	Integrated	—

TECHNICAL SPECIFICATIONS

VIDEO

Video Encoding H.264 base profile, MPEG-4, and MJPEG
 Video Streams Up to 2 simultaneous streams; the second stream is variable based on the setup of the primary stream
 Frame Rate Up to 30, 25, 24, 15, 12.5, 12, 10, 8, 7.5, 6, 5, 4, 3, 2, 1 (dependent upon coding, resolution, and stream configuration)

Available Resolutions	Resolution			MJPEG		H.264 Base Profile		MPEG-4	
	Width	Height	Format	Maximum IPS	Recommended Bit Rate	Maximum IPS	Recommended Bit Rate	Maximum IPS	Recommended Bit Rate
	704	480	NTSC	30 ips	5.4 Mbps	30 ips	1.9 Mbps	30 ips	2.0 Mbps
	352	240	NTSC	30 ips	1.3 Mbps	30 ips	0.5 Mbps	30 ips	0.6 Mbps
	704	576	PAL	25 ips	5.4 Mbps	25 ips	1.9 Mbps	25 ips	2.0 Mbps

Supported Protocols TCP/IP, UDP/IP (Unicast, Multicast IGMP), UPnP, DNS, DHCP, RTP, RTSP, NTP, IPv4, SNMP, QoS, HTTP, HTTPS, LDAP (client), SSH, SSL, SMTP, FTP, and 802.1x (EAP)

Users

Unicast Up to 20 simultaneous users depending on resolution settings (2 guaranteed streams)

Multicast Unlimited users H.264 or MPEG-4

Security Access Password protected

Software Interface Web browser view and setup, up to 16 cameras

Pelco System Integration Endura 1.5 or later (MPEG-4) or Endura 2.0 or later (H.264); Digital Sentry 7.3 IP bundle 3 or later; DX8100 Series 2.0 or later; and DVR5100 version 1.5.4 or later

Open API Pelco API or ONVIF v1.02

Minimum System Requirements

Processor Intel® Pentium® 4 microprocessor, 1.6 GHz
 Operating System Microsoft® Windows® XP, Windows Vista®, Windows 7, or Mac® OS X 10.4 (or later)
 Memory 512 MB RAM
 Network Interface Card 100 megabits (or greater)
 Monitor Minimum of 1024 x 768 resolution, 16- or 32-bit pixel color resolution
 Web Browser* Internet Explorer® 7.0 (or later) or Mozilla® Firefox® 3.0 (or later)
 Media Player¹ Pelco Media Player or QuickTime® 7.6.5 for Windows XP, Windows Vista, or QuickTime 7.6.4 for Mac OS X 10.4

*Internet Explorer is not supported by Mac OS X 10.4.

¹This product is not compatible with QuickTime version 7.6.4 for Windows XP or Windows Vista. If you have this version installed on your PC, you will need to upgrade to QuickTime version 7.6.5.

TECHNICAL SPECIFICATIONS

DOMES DRIVE FEATURES

35X and 27X Models

- 256 Presets
- $\pm 0.1^\circ$ Preset Accuracy
- Electronic Image Stabilization (35X model)
- Image Enhancement (35X model)
- Multilingual Menus (English, Spanish, Portuguese, Italian, French, German, Russian, Polish, Turkish, and Czech)
- RJ-45 Data Port for Software Update and Setup
- On-Screen Compass, Tilt, and Zoom Display
- Password Protection
- 400°/sec Pan Preset Speed and 200°/sec Tilt Preset Speed
- Rotating Discreet Liner with Sealed Fixed Bubble
- Window Blanking: Up to 8, Four-Sided, User-Defined Shapes
- 8 Zones (configurable in size) Can Be Labeled with up to 20 Characters Each or Set to Output Blank Video
- 7 Alarm Inputs
- 1 Auxiliary (Form C) Relay Output and 1 Open Collector Auxiliary Output (can be alternately configured to operate upon alarm)
- Configurable Locations of Labels and On-Screen Displays
- Action on Alarm: Alarms Can Be Individually Configured for 3 Priority Levels, to Initiate a Stored Pattern, or to Go to an Associated Preset When Received
- Resume After Alarm: Allows the Dome to Return to a Previously Configured State After Alarm Acknowledgement or to its Previous Position Before Alarm
- Multiple Park and Power-Up Action
- Patterns: Up to 8, On-Screen, User-Defined Configurable Patterns; Includes Pan, Tilt, Zoom, and Preset Functions
- Proportional Pan/Tilt: Continually Decreases Pan/Tilt Speeds in Proportion to Depth of Zoom
- Variable Scan Speed: Scan Speed Can Be Configurable Between 1 to 40°/sec
- Pan Motion Allows 0.1° to 150°/sec Pan Speed
- Configurable Limit Stops for Auto/Random/Frame Scan Modes
- Autosensing Protocol (Coaxitron®, RS-422 Pelco P and Pelco D, Sensormatic®, Vicon®); Accepts Other Control Protocols with Optional Translator Card
- Digital Position and Zoom Control and Feedback Through Pelco D Protocol
- Built-in Menu System for Setup of Configurable Functions
- "Auto Flip" Rotates Dome 180° at Bottom of Tilt Travel
- Configurable Zoom Speeds
- Freeze Frame During Presets

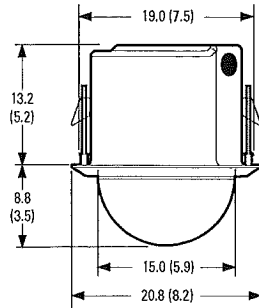
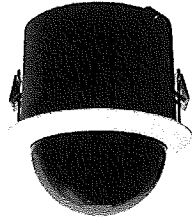
23X Models

- 64 Presets
- $\pm 0.1^\circ$ Preset Accuracy
- Multilingual Menus (English, Spanish, Portuguese, Italian, French, German, Russian, Polish, Turkish, and Czech)
- RJ-45 Data Port for Software Update and Setup
- On-Screen Compass, Tilt, and Zoom Display
- Password Protection
- 400°/sec Pan Preset Speed and 200°/sec Tilt Preset Speed
- Rotating Discreet Liner with Sealed Fixed Bubble
- Window Blanking: Up to 4, Four-Sided, User-Defined Shapes
- 8 Zones (configurable in size) Can Be Labeled with up to 20 Characters Each or Set to Output Blank Video
- 1 Alarm Input
- 1 Auxiliary (Form C) Relay Output
- Configurable Locations of Labels and On-Screen Displays
- Patterns: 1 On-Screen, User-Defined Configurable Pattern; Includes Pan, Tilt, Zoom, and Preset Functions
- Proportional Pan/Tilt: Continually Decreases Pan/Tilt Speeds in Proportion to Depth of Zoom
- Variable Scan Speed: Scan Speed Can Be Configurable Between 1 to 40°/sec
- Pan Motion Allows 0.1° to 150°/sec Pan Speed
- Autosensing Protocol (Coaxitron, RS-422 Pelco P and Pelco D, Sensormatic, Vicon); Accepts Other Control Protocols with Optional Translator Card
- Digital Position and Zoom Control and Feedback through Pelco D Protocol
- Built-in Menu System for Setup of Configurable Functions
- "Auto Flip" Rotates Dome 180° at Bottom of Tilt Travel
- Freeze Frame During Presets

TECHNICAL SPECIFICATIONS

BACK BOX FEATURES

 NOTE: VALUES IN PARENTHESES ARE INCHES; ALL OTHERS ARE CENTIMETERS.

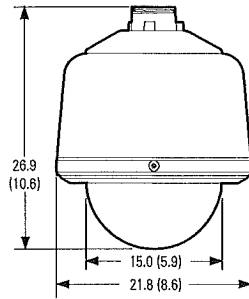


In-Ceiling (Indoor)

- Built-in Memory Stores Camera/Dome Settings
- Single Back Box for Suspended or Hard Ceiling Applications
- Requires 13.35 cm (5.25 in.) Space Above Ceiling and 8.25 cm (3.25 in.) Below
- Minimum Ceiling Thickness 1.27 cm (0.50 in.); Maximum 4.45 cm (1.75 in.)
- Quick Disconnect to Dome Drive
- Aluminum Construction
- Suitable for Use in Environmental Air Handling Spaces

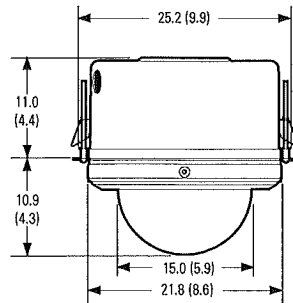
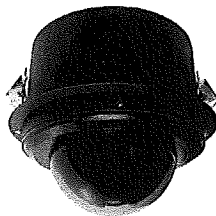


(ENVIRONMENTAL DOME WITH SUN SHROUD SHOWN)



Standard and Environmental Pendant

- Standard and Environmental Models
- Built-in Memory Stores Camera/Dome Settings
- Standard Pendant Available in Black or Gray Finish; Environmental Pendant Gray Finish Only
- Quick Disconnect to Dome Drive
- Aluminum Construction
- Environmental Model Includes Sun Shield, Fan, and Heater



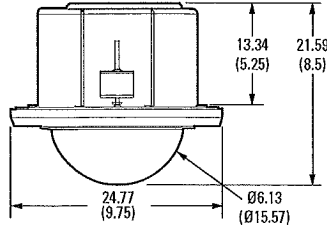
Environmental In-Ceiling

- Built-in Memory Stores Camera/Dome Settings
- Single Back Box for Hard Ceiling Applications
- Requires 11.18 cm (4.40 in.) Space Above Ceiling and 10.92 cm (4.30 in.) Below
- Includes Heater and Fan
- Minimum Ceiling Thickness 1.27 cm (0.50 in.); Maximum 4.45 cm (1.75 in.)
- Quick Disconnect to Dome Drive
- Aluminum Construction

TECHNICAL SPECIFICATIONS

BACK BOX FEATURES

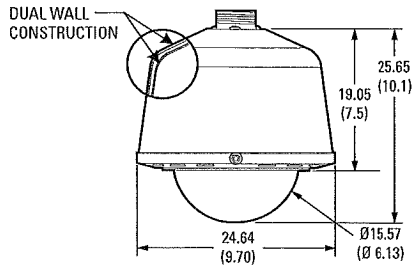
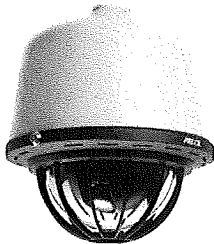
 NOTE: VALUES IN PARENTHESES ARE INCHES; ALL OTHERS ARE CENTIMETERS.



Heavy-Duty In-Ceiling (Indoor)

Available only with 27X and 35X models

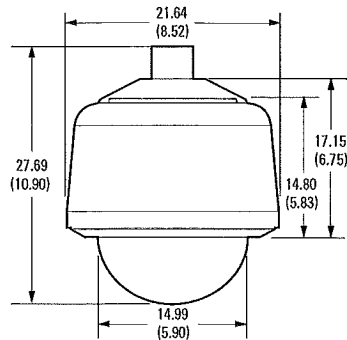
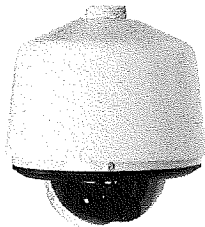
- Built-in Memory Stores Camera/Dome Settings
- Single Back Box for Hard Ceiling Applications
- Requires 13.35 cm (5.25 in.) Space Above Ceiling and 8.25 cm (3.25 in.) Below
- Quick Disconnect to Dome Drive
- Reinforced Mounting System
- Heavy-Duty Polycarbonate Dome Bubble
- Aluminum Trim Ring with Barrel-Type Key Locks
- Optional Protective Cage



Heavy-Duty Pendant

Available only with 27X and 35X models

- Standard and Environmental Models
- Built-in Memory Stores Camera/Dome Settings
- Quick Disconnect to Dome Drive
- Dual Wall Construction
- Heavy-Duty Polycarbonate Dome Bubble
- Aluminum Trim Ring with Barrel-Type Key Locks
- Optional Protective Cage
- Environmental Model Includes Sun Shield, Fan, and Heater



Stainless Steel Pendant

Available only with 27X and 35X models

- Standard and Environmental Models
- Built-in Memory Stores Camera/Dome Settings
- Quick Disconnect to Dome Drive
- All Stainless Steel Construction
- Includes Sun Shield, Fan, and Heater

TECHNICAL SPECIFICATIONS

GENERAL

Construction	
Back Box	
In-Ceiling	Aluminum
Pendant	Aluminum
Heavy-Duty	Aluminum
Stainless Steel	316 stainless steel; gray, polyurethane powder coated finish
Dome Drive	Aluminum, thermo plastic
Lower Dome	
In-Ceiling	Acrylic
Pendant	Acrylic
Heavy-Duty	Polycarbonate, 0.09-inch thick
Stainless Steel	Acrylic
Light Attenuation	
Smoked	f/0.5 light loss
Clear	Zero light loss
Chrome	f/2.0 light loss
Gold	f/2.0 light loss
Cable Entry (back box)	
In-Ceiling	0.75-inch conduit fitting
Pendant	Through 1.5-inch NPT pendant mount
Weight (approximate)	
	<u>Unit</u> <u>Shipping</u>
In-Ceiling	2.4 kg (5.2 lb) 3.6 kg (8 lb)
Environmental In-Ceiling	2.8 kg (6.2 lb) 4.5 kg (10 lb)
Standard Pendant	3.0 kg (6.5 lb) 5.0 kg (11 lb)
Environmental Pendant	3.5 kg (7.6 lb) 5.4 kg (12 lb)
Heavy-Duty In-Ceiling*	3.3 kg (7.3 lb) 5.4 kg (12 lb)
Heavy-Duty Pendant*	4.5 kg (9.8 lb) 7.3 kg (16 lb)
Heavy-Duty Environmental Pendant*	4.5 kg (9.8 lb) 7.3 kg (16 lb)
Stainless Steel	4.6 kg (10.1 lb) (7.3 kg (16 lb))
Environment	
In-Ceiling	Indoor
Environmental In-Ceiling Pendant, Standard and Environmental	Indoor/outdoor
Heavy-Duty In-Ceiling	Indoor
Heavy-Duty Pendant, Standard & Environmental	Indoor/outdoor
Stainless Steel	Indoor/outdoor
Operating Temperature	
In-Ceiling	0° to 50°C (32° to 122°F)
Standard Pendant	(Assumes no wind chill factor)
Maximum	45°C (113°F) absolute maximum; 35°C (95°F) sustained maximum
Minimum	-4°C (25°F) sustained minimum
Environmental In-Ceiling and Environmental Pendant	(Assumes no wind chill factor)
Maximum	60°C (140°F) absolute maximum; 50°C (122°F) sustained maximum
Minimum	-51°C (-60°F) absolute minimum; prevents icing at sustained minimum of -45°C (-50°F); de-ices 2.5 mm (0.1 inch) within 3 hours after power-up
Heavy-Duty In-Ceiling	0° to 50°C (32° to 122°F)
Heavy-Duty Pendant	0° to 50°C (32° to 122°F) absolute maximum; 0° to 50°C (32° to 122°F) sustained maximum

Heavy-Duty Environmental Pendant	
Maximum	(Assumes no wind chill factor) 60°C (140°F) absolute maximum; 50°C (122°F) sustained maximum
Minimum	-51°C (-60°F) absolute minimum; minimal icing at sustained minimum of -45°C (-50°F); prevents icing at sustained minimum of -40°C (-40°F); de-ices 2.5 mm (0.1 inch) within 3 hours after power-up
Stainless Steel	
Maximum	(Assumes no wind chill factor) 60°C (140°F) absolute maximum; 50°C (122°F) sustained maximum
Minimum	-51°C (-60°F) absolute minimum; minimal icing at sustained minimum of -45°C (-50°F); prevents icing at sustained minimum of -40°C (-40°F); de-ices 2.5 mm (0.1 inch) within 3 hours after power-up
Effective Projected Area (EPA)	132.257 sq cm (20.5 sq in.) without mount; 303.225 sq cm (47 sq in.) with IWM Series mount

MECHANICAL

(Dome Drive Only)

Pan Movement	360° continuous pan rotation
Vertical Tilt	Unobstructed +2° to -92°
Manual Pan/Tilt Speeds	
Pan	0.1° to 80°/sec manual operation, 150°/sec Turbo
Tilt	0.1° to 40°/sec manual operation
Preset Speeds	
Pan	400°/sec
Tilt	200°/sec
	For variable-speed operation, an appropriate controller is required; (with nonvariable speed control, Spectra IV IP pan/tilt speed is 20°/sec)

AUDIO

Streaming	Bidirectional: full or half duplex
Input/Output	Terminal block, analog for microphone and speaker; 600-ohm differential; 1 Vp-p maximum signal level
Compression	G.711 PCM 8 bit, 8 kHz mono at 64 kbit/sec

ELECTRICAL

Ports	RJ-45 connector for 100Base-TX Auto MDI/MDI-X Autonegotiate/Manual setting
Cabling Type	Cat5 or better for 100Base-TX
Input Voltage	18 to 32 VAC; 24 VAC nominal 22 to 27 VDC; 24 VDC nominal
Input Power	
24 VAC	23 VA nominal (without heater); 73 VA nominal (with heater)
24 VDC	0.7 A nominal (without heater); 3 A nominal (with heater)
Fuse	1.25 A
Auxiliary Outputs	2
Alarm Inputs	7

*Add 0.90 kg (2 lb) to the total weight if the system includes a lower dome cage.

RELATED PRODUCTS

CERTIFICATIONS/RATINGS/PATENTS

- CE, Class B
- FCC, Class B
- UL/cUL Listed
- C-Tick
- U.S. Patents 5,931,432; 6,793,415 B2; 6,802,656 B2; 6,821,222 B2; 7,161,615 B2
- Meets NEMA Type 4X, IP66 when installed properly (BB4E-F-E, BB4E-PB, BB4E-PG, BB4E-PG-E, BB4EHD-PG, BB4EHD-PG-E, and BB4E-PSG-E)
- Meets NEMA Type 1, IP40 (BB4E-F and BB4EHD-F)
- ONVIF 1.02

OPTIONAL ACCESSORIES

HD-KEYS	1 set of keys for heavy-duty lower dome
IPS-CABLE	Remote monitor cable and software kit consisting of the Spectra IV remote monitor interface cable and necessary software for use with a PC; refer to www.pelco.com for a list of compatible devices
IPS-RDPE-2	Remote data port; 24 VAC, wall/pole mount video/data breakout box; allows ground-level control/configuration when used with the IPS-CABLE

RECOMMENDED MOUNTS

In-Ceiling Domes

SD5-P	2' x 2' drop ceiling panel, aluminum construction; replaces 2"bx 2" ceiling tile
SCA1	Support rails for BB4N-F; for use in ceiling tile applications

Pendant Domes

BB5-PCA-BK	Pendant conduit adapter, black
BB5-PCA-GY	Pendant conduit adapter, gray
IWM Series	Wall mount, with or without integral 24VAC, 100 VA transformer; black or gray finish; can be adapted for corner, parapet or pole application
MRCA	Ceiling mount, black
PP4348	Parapet roof mount
PP350/PP351	Parapet wall/roof mount
SWM Series	Compact wall mount, black or gray finish; can be adapted for corner or pole applications
IDM4012SS	Stainless steel wall mount with feedthrough capabilities

RECOMMENDED POWER SUPPLIES

MCS Series	Indoor, 24 VAC power supply
WCS Series	Outdoor, 24 VAC power supply

Refer to individual power supply specifications for more information.

SYSTEM AND COMPONENT MODELS

SYSTEM MODEL NUMBERS

Type	Back Box Color	Lower Dome	Cage	35X Day/Night		27X Day/Night		23X Day/Night	
				NTSC	PAL	NTSC	PAL	NTSC	PAL
In-Ceiling, Indoor	Black	Smoked		SD4E35-F0	SD4E35-F0-X	SD4E27-F0	SD4E27-F0-X	SD4E23-F0	SD4E23-F0-X
		Clear		SD4E35-F1	SD4E35-F1-X	SD4E27-F1	SD4E27-F1-X	SD4E23-F1	SD4E23-F1-X
		Chrome		SD4E35-F2	SD4E35-F2-X	SD4E27-F2	SD4E27-F2-X	SD4E23-F2	SD4E23-F2-X
		Gold		SD4E35-F3	SD4E35-F3-X	SD4E27-F3	SD4E27-F3-X	SD4E23-F3	SD4E23-F3-X
In-Ceiling, Environmental*	Black	Smoked		SD4E35-F-E0	SD4E35-F-E0-X	SD4E27-F-E0	SD4E27-F-E0-X	SD4E23-F-E0	SD4E23-F-E0-X
		Clear		SD4E35-F-E1	SD4E35-F-E1-X	SD4E27-F-E1	SD4E27-F-E1-X	SD4E23-F-E1	SD4E23-F-E1-X
		Chrome		SD4E35-F-E2	SD4E35-F-E2-X	SD4E27-F-E2	SD4E27-F-E2-X	SD4E23-F-E2	SD4E23-F-E2-X
		Gold		SD4E35-F-E3	SD4E35-F-E3-X	SD4E27-F-E3	SD4E27-F-E3-X	SD4E23-F-E3	SD4E23-F-E3-X
Pendant, Standard	Black	Smoked		SD4E35-PB-0	SD4E35-PB-0-X	SD4E27-PB-0	SD4E27-PB-0-X	SD4E23-PB-0	SD4E23-PB-0-X
		Clear		SD4E35-PB-1	SD4E35-PB-1-X	SD4E27-PB-1	SD4E27-PB-1-X	SD4E23-PB-1	SD4E23-PB-1-X
		Chrome		SD4E35-PB-2	SD4E35-PB-2-X	SD4E27-PB-2	SD4E27-PB-2-X	SD4E23-PB-2	SD4E23-PB-2-X
		Gold		SD4E35-PB-3	SD4E35-PB-3-X	SD4E27-PB-3	SD4E27-PB-3-X	SD4E23-PB-3	SD4E23-PB-3-X
	Light Gray	Smoked		SD4E35-PG-0	SD4E35-PG-0-X	SD4E27-PG-0	SD4E27-PG-0-X	SD4E23-PG-0	SD4E23-PG-0-X
		Clear		SD4E35-PG-1	SD4E35-PG-1-X	SD4E27-PG-1	SD4E27-PG-1-X	SD4E23-PG-1	SD4E23-PG-1-X
		Chrome		SD4E35-PG-2	SD4E35-PG-2-X	SD4E27-PG-2	SD4E27-PG-2-X	SD4E23-PG-2	SD4E23-PG-2-X
		Gold		SD4E35-PG-3	SD4E35-PG-3-X	SD4E27-PG-3	SD4E27-PG-3-X	SD4E23-PG-3	SD4E23-PG-3-X
Pendant, Environmental*	Light Gray	Smoked	SD4E35-PG-E0	SD4E35-PG-E0-X	SD4E27-PG-E0	SD4E27-PG-E0-X	SD4E23-PG-E0	SD4E23-PG-E0-X	
		Clear	SD4E35-PG-E1	SD4E35-PG-E1-X	SD4E27-PG-E1	SD4E27-PG-E1-X	SD4E23-PG-E1	SD4E23-PG-E1-X	
Heavy-Duty In-Ceiling, Indoor	Light Gray	Smoked	No	SD4E35-HF0	SD4E35-HF0-X	SD4E27-HF0	SD4E27-HF0-X		
			Yes	SD4E35-HCF0	SD4E35-HCF0-X	SD4E27-HCF0	SD4E27-HCF0-X		
Clear		No	SD4E35-HF1	SD4E35-HF1-X	SD4E27-HF1	SD4E27-HF1-X			
		Yes	SD4E35-HCF1	SD4E35-HCF1-X	SD4E27-HCF1	SD4E27-HCF1-X			
Heavy-Duty Pendant, Indoor		Smoked	No	SD4E35-HP0	SD4E35-HP0-X	SD4E27-HP0	SD4E27-HP0-X		
			Yes	SD4E35-HCP0	SD4E35-HCP0-X	SD4E27-HCP0	SD4E27-HCP0-X		
Clear		No	SD4E35-HP1	SD4E35-HP1-X	SD4E27-HP1	SD4E27-HP1-X			
		Yes	SD4E35-HCP1	SD4E35-HCP1-X	SD4E27-HCP1	SD4E27-HCP1-X			
Heavy-Duty Pendant, Environmental*	Smoked	No	SD4E35-HPE0	SD4E35-HPE0-X	SD4E27-HPE0	SD4E27-HPE0-X			
		Yes	SD4E35-HCPE0	SD4E35-HCPE0-X	SD4E27-HCPE0	SD4E27-HCPE0-X			
Clear	No	SD4E35-HPE1	SD4E35-HPE1-X	SD4E27-HPE1	SD4E27-HPE1-X				
	Yes	SD4E35-HCPE1	SD4E35-HCPE1-X	SD4E27-HCPE1	SD4E27-HCPE1-X				
Stainless Steel Pendant, Environmental*	Stainless Steel	Smoked		SD4E35-PSGE0	SD4E35-PSGE0-X	SD4E27-PSGE0	SD4E27-PSGE0-X		
		Clear		SD4E35-PSGE1	SD4E35-PSGE1-X	SD4E27-PSGE1	SD4E27-PSGE1-X		

*Environmental dome systems include a heater, fan, and sun shield.

SYSTEM AND COMPONENT MODELS

COMPONENT MODEL NUMBERS

Back Box		Dome Drive		Lower Dome [†]	
BB4E-F	In-ceiling, black, with back box memory	DD423	Day/Night (NTSC) camera (23X)	LDHQF-0	Smoked, in-ceiling
BB4E-F-E	In-ceiling, black, environmental, with back box memory	DD423-X	Day/Night (PAL) camera (23X)	LDHQF-1	Clear, in-ceiling
BB4E-PB	Pendant mount, black, standard, with back box memory	DD427	Day/Night (NTSC) camera (27X)	LD5F-2	Chrome, in-ceiling
BB4E-PG	Pendant mount, gray, standard, with back box memory	DD427-X	Day/Night (PAL) camera (27X)	LD5F-3	Gold, in-ceiling
BB4E-PG-E*	Pendant mount, gray, environmental, with back box memory	DD4CBW35	Day/Night (NTSC) camera (35X)	LDHQPB-0	Smoked, pendant, black
BB4EHD-F	Heavy-duty, in-ceiling, gray, with back box memory	DD4CBW35-X	Day/Night (PAL) camera (35X)	LDHQPB-1	Clear, pendant, black
				LD53PB-2	Chrome, pendant, black [‡]
BB4EHD-PG	Heavy-duty, pendant, gray, with back box memory			LD53PB-3	Gold, pendant, black [‡]
BB4EHD-PG-E*	Heavy-duty, environmental pendant, gray, with back box memory			LD53HDF-1	Clear, in-ceiling, heavy-duty
BB4E-PSG-E*	Stainless steel, environmental pendant, gray 316 SS, with back box memory			LD53HDCF-1	Clear, in-ceiling, heavy-duty with cage
				LD53HDPB-1	Clear, pendant, heavy-duty
				LD53HDCPB-1	Clear, pendant, heavy-duty, with cage
				LD53PSB-0	Smoked, pendant, black trim ring, 316 SS
				LD53PSB-1	Clear, pendant, black trim ring, 316 SS

Note: For environmental applications you must order an environmental back box.

*Environmental dome systems include a heater, fan, and sun shield.

[†]Use the pendant lower domes with the environmental in-ceiling and environmental pendant back boxes.

[‡]Not recommended for outdoor use due to possible light reflections.

What are the recommended wall mounts for use with the Spectra IV Pendant series?

Depending how you are going to mount the dome, there are two wall mounts you can use.

- The smaller wall mount is the **SWM-GY** which extends the dome 6 inches away from the wall.
- The larger wall mount is the **IWM-GY**, which will extend the dome 14 inches away from the wall.
- The **IDM4018** wall mount with removable front end cap and feethrough capabilities. Extends 18 inches from wall.

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