

BID NUMBER PA-03512 REBID

TO: CITY OF LONG BEACH
CITY MANAGER
ATTN: CITY CLERK
333 West Ocean Boulevard, Plaza Level
Long Beach, California 90802



INVITATION TO BID

TRAFFIC SIGNAL EQUIPMENT

CONTRACT NO. 32756

- 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.
- 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.
- 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 Bidder.
- 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.
- 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: Vista California ON THE 7th DAY OF June, 2012.
CITY STATE MONTH

COMPANY NAME: McCain, Inc. TIN: 33-0262207
(FEDERAL TAX IDENTIFICATION NUMBER)

STREET ADDRESS: 2365 OAK Ridge WAY CITY: Vista STATE: CA ZIP: 92081

PHONE: 760-727-8100 FAX: 760-734-5064

S/ Theresa Schaeffer Corporate Treasurer
(SIGNATURE) (TITLE)

Theresa Schaeffer tschaeffer@mccain-inc.com
(PRINT NAME) (EMAIL ADDRESS)

S/ Bob Ann Mills VP of Human Resources
(SIGNATURE) (TITLE)

Bob Ann Mills jmills@mccain-inc.com
(PRINT NAME) (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.

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

9/21/12
Date

APPROVED AS TO FORM 9-13, 2012
ROBERT E. SHANNON
CITY ATTORNEY
[Signature]
Deputy



Corporate Resolution: Purchase Agreements or Contracts

Resolved, that this corporation, **McCain, Inc.**, proposes to enter into purchase agreements or contracts from time to time.

BE IT FURTHER RESOLVED, that any **one** of the following individuals:

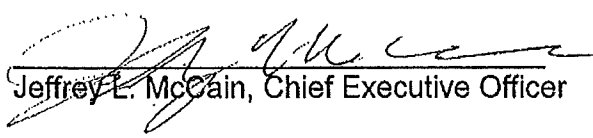
Jeffrey L. McCain, Theresa Schaeffer, Ann Hart, Christine Jersey, Jo Ann Mills, Rani Macavinta, Jeffrey A. McCain, and Travis Bryant

Of this corporation be and they are hereby authorized and empowered for and on behalf of and in the name of this corporation and as its corporate act and deed:

- a) Enter into purchase agreements or contracts on behalf of the company.

CERTIFICATION

I, Jeffrey L. McCain, President and Chief Executive Officer of McCain, Inc., a corporation created and existing under the laws of the State of California, do hereby certify and declare that the foregoing is a full, true copy of the resolutions duly passed and adopted by the Board of Directors and said corporation, by written consent of all Directors of said corporation or at a meeting of said Board duly and regularly called noticed and held on July 22, 2010, at which meeting a quorum of the Board of Directors was present and voted in favor of said resolutions; that said resolutions are now in full force and effect; that there is no provision in the Articles of Incorporation or Bylaws of said corporation, or any shareholder agreement, limiting the power of the Board of Directors of said corporation to pass the foregoing resolutions and that such resolution are in conformity with the provisions of such Articles of Incorporation and Bylaws; and that no approval by the shareholders of, or of the outstanding shares of, said corporation is required with respect to the matters which are the subject of the foregoing resolutions.


Jeffrey L. McCain, Chief Executive Officer Date 10-10-11

BID NUMBER PA-03512 REBID

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 California
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

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/dlsr> 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 informalities 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: N/A
 Address: N/A

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: June 12, 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)
LENORE BLUEFORD (562) 570-5384
 BUYER TELEPHONE NUMBER

B. TECHNICAL (SPECIFICATIONS, DRAWINGS, ETC.)
MIKE SICKLES (562) 570-3264
 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 16.

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.

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. 95-73 0502K 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.

CONTRACT – GENERAL CONDITIONS

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.

CONTRACT – GENERAL CONDITIONS

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.

CONTRACT – GENERAL CONDITIONS

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 \$10 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.

BID SECTION

CONTRACT PERIOD

Twelve months after date of award or from the expiration of the current contract, whichever is the earlier. This Contract may be extended by mutual agreement for up to two additional periods of one (1) year each in accordance with terms and conditions stated herein.

In addition, it is agreed that if the City intends to exercise its extension option for the two additional one year periods, the City shall so notify the Contractor 90 days prior to the expiration date. Contractor shall be required to submit any price increases to the City Purchasing Agent for approval at least 60 days prior to expiration of Contract. The City reserves the right to accept or reject any price increase and to cancel the extension notice if price increases are not acceptable. Any notice of price increase shall show item number, price, contract number, and blanket purchase order number.

- a. Price increase shall not exceed 15 % during the first renewal period.
- b. Price increase shall not exceed 15 % during the second renewal period.

RIGHT TO REJECT BID

The City reserves the right, in its discretion, to reject any and all Bids and, to the extent not prohibited by law, to waive any minor irregularity or informality in any Bid that does not affect the validity of the Bid or does not give the bidder a competitive advantage over other bidders.

BASIS OF AWARD

Quantities will not be considered in making this award. The award will be based on the unit prices given.

REFERENCES

Bidder shall furnish a list of five (5) current customers, including company name, street address, telephone number and contact person, for whom bidder has provided similar products. The City intends to contact these customers to determine reliability, bidder's performance, service, and other information.

INVENTORY

The City reserves the right to inspect the bidder's inventory at the bidder's place of business prior to award of a contract.

BID ANALYSIS

Bids will be analyzed using **estimated quantities** listed in the bid multiplied by the unit prices listed in the bid for each bid item. The City will award to the lowest responsible bidder based on this analysis.

BID SECTION

QUANTITIES

Quantities listed are estimates only. Bidder is cautioned not to rely on past usage for quantities. The City reserves the right to increase or decrease the quantities to be purchased in accordance with actual needs and funds available.

MAINTENANCE OF ADEQUATE STOCK

Contractor shall be required to maintain adequate stock to make deliveries in accordance with "scheduled order" shipments, and emergency or fill-in orders, as needed by the City. "Scheduled order" shipments may be established by the using department at the beginning of the contract period. These "scheduled order" shipments may be altered at any time during the contract period.

SAMPLES

Contractor may be required to provide samples of items upon request by the City for use as 'Control Samples' throughout the duration of the Contract. The samples must be labeled with the brand name and manufacturer's stock or product number and must meet the specification requirements. All items shall be subject to approval and acceptance by the City.

DELIVERY

Prices quoted shall include all delivery and unloading charges to the City of Long Beach Public Works Department, Public Service Traffic Signals Section at 1601 San Francisco Avenue, Long Beach, CA 90813. The City reserves the right to make award based on delivery time quoted. City of Long Beach staff or designee will unload the trucks at the above address (Public Service Yard).

DELIVERY SCHEDULE

Delivery shall be made within sixty to ninety (60-90) calendar days after receipt of order. The **ability to deliver sooner** may be a factor in award.

Please state delivery time: 60 Days ARO

City requires 30 days delivery for "In Stock" equipment and mounting hardware.

Please state delivery time: 30 Days ARO

City requires 15 days for delivery for "emergency in stock" poles and mounting hardware.

Please state delivery time: N/A

If your company has will call, please list the location and hours below:

2365 OAK Ridge way, Vista CA 92081

Failure to meet the required delivery schedule may disqualify your bid.

BID SECTION

DISCOUNT AND MISCELLANEOUS PURCHASES

Please specify percentage discount the City will receive from catalog prices:

N/A % discount Catalog dated : N/A

City departments shall be authorized to purchase miscellaneous items not listed herein up to a maximum of \$5,000.00 per order.

PRICE AGREEMENT CONDITIONS

Prices charged to the City shall be based on percentage discounts from the manufacturer's published price lists. Percentage discounts remain firm for the duration of the contract, but said manufacturer's price lists may be subject to fluctuation in accordance with changes issued by the manufacturer. Price lists submitted with bid must be current at time of bid opening and shall not be subject to change for a period of six months after bid opening. If the prices on the price lists are raised, the City reserves the right to accept such raises or to cancel such items from the contract. Contractor shall notify the City of such price increase immediately. The City shall be given benefit of any decline in prices upon the manufacturer's effective date of such decline. Change in price shall be effective on the date the notice of change is received by the City Purchasing Agent, or at a later date designated by the Contractor. Increases in price lists shall not be retroactive. Specifications and conditions herein shall supersede any conflicting conditions in price lists. Contractor must submit a copy of new or revised price lists immediately to the City Purchasing Agent. Price list shall show Contractor's name, City Contract Number, and blanket purchase order (BPO) number.

PRICING

No "minimum orders" will be permitted. Bids indicating "minimum order" will be rejected.

ALTERNATES:

Whenever material or equipment is specified using a brand name the specifications are intended to establish the type, function and quality required. Although not stated, in every instance where a brand name or product is identified shall also include "or approved equal". If quoting an "equal" item, bidder shall submit all data supporting its claim that material or equipment is an "equal" at the time of bid submission. Failure to provide supporting data may disqualify bid. Continuously perforated square tube poles will not be allowed as alternate.

The phrase "or approved equal" means that the City Purchasing Agent or designee, shall make the determination, in her sole discretion, whether or not material or equipment offered as an "equal" is the same in form, function, performance, reliability, quality and features as the brand name or product from a particular supplier.

BID SECTION

If the manufacture can demonstrate enhanced value and/or increased performance with on minor modifications, manufacture must attach as a separate document the following information:

1. Identify the item of bid to which they are submitting an alternate.
2. Provide a description and justification of the enhanced value and/or performance.

Bidders acknowledge and agree that use of an approved equal creates a risk that the material or equipment may not actually meet the functional performance requirements when used under field conditions. Bidders further acknowledge and agree that the City's approval of an "approved equal" product does not relieve the vendor from its duty to meet the functional and performance requirements in the specifications so that the vendor may ultimately be required to replace the "approved equal" product with material or equipment that was originally specified by brand name or by the name of a particular supplier, at no additional cost to the City, if the City makes a request for replacement. By submitting a bid, bidders accept these risks and the liability associated with these risks, and waives all claims against the City for costs related to supplying replacements.

ILLUSTRATIVE AND TECHNICAL DATA

Bidder shall submit illustrative and technical data on bid items. If quoting an "alternate" or "equal" item, a product specification sheet must be submitted with bid for the item. Failure to provide technical information may disqualify bid.

PAYMENT REQUIREMENTS

Contractor shall submit upon delivery or pick-up of each order an invoice describing each item purchased. Cost of each item shall be indicated as per unit of measurement less the discount offered in the Bid Section items.

Additional Document Submittals:

- 1 EBO Certification of Compliance form
- 2 Electronic media copy (USB drive, CD or other readable media) containing a Excel spreadsheet with unit pricing & extended pricing formatted as bid spec. Download blank file.
- 3 Reference List
- 4 Vendor Application
- 5 W-9 form

NOTE: Bidders that do not include the above check listed items with their bids will be deemed unresponsive and their bids will be rejected.

BID SECTION

BID FOR FURNISHING AND DELIVERING TRAFFIC SIGNAL EQUIPMENT FOR THE CITY OF LONG BEACH.

SALES TAX: UNIT AND EXTENSION PRICES STATED THEREIN SHALL NOT INCLUDE SALES TAX.

Quantities are estimated amounts for one-year period. Items listed are for bid comparison only. Actual items ordered may vary from those listed.

ITEM	QTY	UOM	DESCRIPTION	UNIT PRICE	EXTENSION PRICE
1	40	ea	12" vehicle head no optics w/ tunnel visors, 5" mtl backplate, MAS Framework, Bronze OGR	\$ 222.40	\$ 8896.-
2	15	ea	12" vehicle head no optics w/ tunnel visors, 5" mtl backplate, MAS-4B Framework, Brnz, OGR	\$ 266.13	\$ 3991.95
3	20	ea	12" vehicle head no optics w/ tunnel visors, 5" mtl backplate, MAS-5A Cluster Framework, Brnz, OGR	\$ 396.30	\$ 7926.-
4	45	ea	12" vehicle head no optics w/ tunnel visors, 5" mtl backplate, SV-1-T,T3,T3 Bronze OGR	\$ 364.11	\$ 16384.95
5	100	ea	12" vehicle head no optics w/ tunnel visors, 5" mtl backplate, SV-2-T,T3,T3 Bronze OGR	\$ 543.10	\$ 54310.-
6	12	ea	12" vehicle head no optics w/ tunnel visors, 5" mtl backplate, SV-2-T,T3(LOD),T3(ROD) Bronze OGR	\$ 543.10	\$ 6517.20
7	50	ea	12" vehicle head no optics w/ tunnel visors, 5" mtl backplate, TV-1-T, (LOD)T3, Brnz OGR	\$ 410.82	\$ 20541.-
8	12	ea	12" vehicle head no optics w/ tunnel visors, 5" mtl backplate, TV-2-T, T3,T3 Bronze OGR	\$ 584.88	\$ 7018.56
9	12	ea	12" vehicle head no optics w/ tunnel visors, 5" mtl backplate, TP-1-T (LOD), Bronze OGR; LED ready pedestrian signal	\$ 309.07	\$ 3708.84
10	100	ea	Offset Slipfitter for 1-way Signal - Bronze; Powder coated / painted dark green	\$ 66.60	\$ 6660.-
11	50	ea	Offset Slipfitter for 1-way Signal - Aluminum; Powder coated / painted dark green	\$ NO BID	\$ NO BID
12	100	ea	Slipfitter for 4-way Signal - Bronze; Powder coated / painted dark green	\$ 63.75	\$ 6375.-
13	100	ea	1.5" Serrated Elbow grn; Iron; Powder coated / painted dark green	\$ 7.-	\$ 700.-
14	100	ea	1.5" Standard Elbow; Iron; Powder coated / painted dark green	\$ 5.25	\$ 525.-
15	100	ea	1.5" Standard Signal "T" (2 threaded ends and one setscrew) Iron; Powder coated / painted dark green	\$ 5.15	\$ 515.-
16	200	ea	12" 3-Section Alum, No Optics, OG/OG, No Visors	\$ 116.35	\$ 23270.-
17	24	ea	12" 4-Section Alum, No Optics, OG/OG, No Visors	\$ 153.95	\$ 3694.80
18	12	ea	12" 5-Section Alum Cluster, No Optics, OG/OG, No Visors	\$ 381.63	\$ 4579.56
19	12	ea	8" 3-Section Alum, No Optics, OG/OG, Tunnel Visors, 5" mtl backplate FBK	\$ 135.-	\$ 1620.-
20	100	ea	12" Tunnel Visors Alum w/tabs OGR/FBK	\$ 11.-	\$ 1100.-
21	100	ea	12" Tunnel Visors Alum w/slots OGR/FBK	\$ NO BID	\$ NO BID
22	36	ea	8" Tunnel Visors Alum w/tabs OGR/FBK	\$ 9.-	\$ 324.-
23	36	ea	8" Tunnel Visors Alum w/slots OGR/FBK	\$ NO BID	\$ NO BID
24	50	ea	12" Full Circle Visors Alum w/tabs OGR/FBK	\$ 10.-	\$ 500.-
25	50	ea	12" Full Circle Visors Alum w/slots OGR/FBK	\$ NO BID	\$ NO BID
26	12	ea	8" Full Circle Visors Alum w/tabs OGR/FBK	\$ 9.-	\$ 108.-
27	12	ea	8" Full Circle Visors Alum w/slots OGR/FBK	\$ NO BID	\$ NO BID
28	86	ea	Backplate Assy Alum T3, Std, 5" Brd, FBK	\$ 18.50	\$ 1591.-
29	40	ea	Backplate Assy Alum T3, EP, 5" Brd, FBK	\$ 19.25	\$ 770.-
30	12	ea	Backplate Assy Alum SE3, Std, 5" Brd, FBK	\$ 22.50	\$ 270.-
31	6	ea	Backplate Assy Alum Clstr, EP, 5" Brd, 17" CTC FBK	\$ 53.-	\$ 318.-

BID SECTION

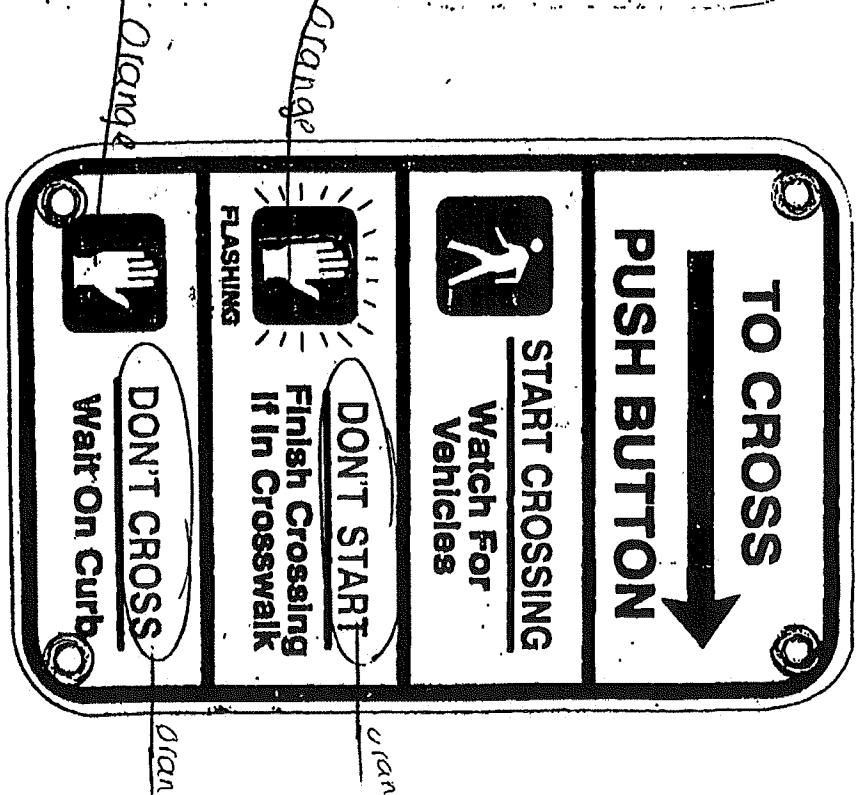
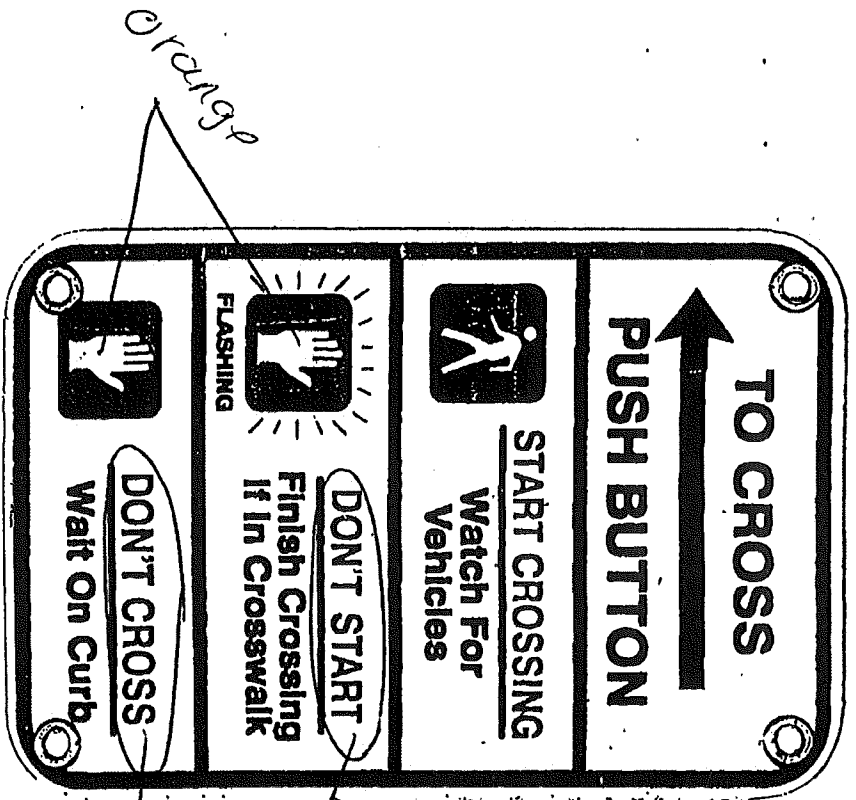
32	2	ea	Backplate Assy Alum T4, EP, 5" Brd, FBK	\$ 53.-	\$ 106.-
33	200	ea	Pedestrian Head Clamshell hardware only; 2 Kit Ptd, Olive Green	\$ 39.80	\$ 7960.-
34	200	ea	PB cap Assy ADA, round, green	\$ 32.90	\$ 6580.-
35	200	ea	5"x7" Adj. PPB Assy, green	\$ 30.-	\$ 6000.-
36	200	ea	5"x7" PPB Cap Sign - LEFT	\$ 22.-	\$ 4400.-
37	200	ea	5"x7" PPB Cap Sign - RIGHT	\$ 22.-	\$ 4400.-
38	200	ea	5"x7" PPB Cap Sign - BOTH	\$ 32.90	\$ 6580.-
39	100	ea	Detector, Rack Mount	\$ 58.60	\$ 5860.-
40	26	ea	242 DC Isolator, 2 Channel, Rack Mount CT	\$ 30.-	\$ 780.-
41	24	ea	#204 Flasher, Rack Mount Caltrans	\$ 22.85	\$ 548.40
42	65	ea	#200 Loadswitch, Rack Mount Caltrans	\$ 20.50	\$ 1332.50

NOTE: 332 & 336 Cabinets are full cabinets with racks but no plug-in equipment. White powder-coated aluminum, Best locks, two interior fluorescent lights, PDA-2 wired for red fail connector and panel w/p-20. The shells are the same cabinets but without the racks.

43	12	ea	332 Cabinet Per CLB Specs (White Alum, two cab lights P-20, best locks)	\$ 4750.-	\$ 57,000.-
44	6	ea	332 Cabinet SHELL ONLY Per CLB Specs (White Alum, two cab lights P-20, best locks)	\$ 1670	\$ 10,020.-
45	2	ea	336 Cabinet Per CLB Specs (White Alum, two cab lights P-20, best locks)	\$ 4700.-	\$ 9400.-
46	6	ea	Power Distribution Assembly Unit	\$ 385.-	\$ 2310.-
47	12	ea	Power Supply Unit for PDA2 332 cabinet 206	\$ 315.-	\$ 3780.-
48	12	ea	332 Output file	\$ 649.-	\$ 7788.-
49	6	ea	Auxiliary Output File for 332 cabinet	\$ 275.-	\$ 1650.-
50	12	ea	170-E Controller / w Manual (4800 BPS Modem)	\$ 1519.-	\$ 18,228.-
51	12	ea	2070-L Controller / w Manual (4800 BPS Modem)	\$ 2600.-	\$ 31,200.-
52	50	ea	Eberle 2010 conflict monitor (NO ALTERNATES)	\$ 510.-	\$ 25500.-
53	50	ea	Eberle 210 conflict monitor (NO ALTERNATES)	\$ 378.-	\$ 18900.-
54	12	ea	Modem for 170 controller	\$ 185.-	\$ 2220.-
55	12	ea	Modem for 170 controller	\$ 382.-	\$ 4584.-
56	12	ea	Modem for 170 controller	\$ 357.-	\$ 4284.-
57	50	ea	3M Opticom 2-channel phase selector (NO ALTERNATES)	\$ 3082.-	\$ 154100.-
58	100	ea	3M Opticom 2-channel, 2 output, detector (NO ALTERNATES)	\$ 757.-	\$ 75700.-
59	25	ea	3M Opticom 2-channel, 1output, detector (NO ALTERNATES)	\$ 543.-	\$ 13575.-
60	25	ea	3M Opticom 1-channel, 1-output detector (NO ALTERNATES)	\$ 477.-	\$ 11925.-
61	2	ea	3M Opticom Emitter (NO ALTERNATES)	\$ 1300.-	\$ 2600.-
62	1000	ft	3M Opticom 4-conductor cable (NO ALTERNATES)	\$.75	\$ 750.-
63	1000	ft	IMSA 5-Conductor Cable (R-Y-Br-W-BK) No Filler 14 ga. 20-1 (PE outer casing) per Caltrans 86-2.08D 2006 spec.	\$ NO BID	\$ NO BID
64	1000	ft	IMSA 28-Conductor Cable No Filler 14 ga/10 ga cmn; 20-1 (PE outer casing) per Caltrans 86-2.08D 2006 spec.	\$	\$
65	1000	ft	IMSA 9-Conductor Cable No Filler 14 ga; 20-1 (PE outer casing) per Caltrans 86-2.08D 2006 spec.	\$	\$
66	1000	ft	IMSA 3-Conductor Cable No Filler 14 ga; 20-1 (PE outer casing) per Caltrans 86-2.08D 2006 spec.	\$	\$
67	1000	ft	IMSA 2-Conductor DLC Cable No Filler 14 ga	\$	\$
68	1000	ft	PE-22 Interconnect cable (12 pair #19) air-filled	\$	\$
69	75	ea	GE 250W HPS fixture w/ cutoff optics	\$ 245.-	\$ 18375.-
70	25	ea	GE 250W HPS fixture w/ cutoff optics with photoelectric receptacle	\$ 220.-	\$ 5500.-

TOTAL: \$ 706,150.76

PAYMENT TERM: Net 30



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.

Bid Protest Procedures

Section 1: Who May Protest

Only a bidder who has actually submitted a bid proposal is eligible to protest a bid. The City will not accept or entertain bid protests from manufacturers, vendors, suppliers, subcontractors or the like. A bidder may not rely on the bid protest submitted by another bidder, but must timely pursue its own protest.

Section 2: Time for Protest

A bidder desiring to protest a bid shall file the protest within five (5) business days following the date on which bids were opened. The City Engineer must receive the protest by the close of business on the fifth (5th) business day following the bid opening.

Section 3: Form of Protest

The protest must be in writing and signed by the individual who signed the bid or, if the bidder is a corporation, by an officer of the corporation, and addressed to the City Engineer. A protest shall not be made by e-mail or fax and the City will not accept such. A protest must set forth a complete and detailed statement of the grounds for the protest and include all relevant information to support the grounds stated, must refer to the specific portion(s) of the Contract Documents upon which the protest is based, and shall include a valid e-mail address, street address and phone number sufficient to ensure the City's response will be received.

Section 4: Additional Information

Once the protest is received by the City Engineer, the City will not accept additional information on the protest unless the City itself requests it. In that case, the additional information must be submitted within three (3) business days after the request is made and must be received by the City Engineer by the close of business on the third (3rd) business day.

Section 5: City Response to Protest

The City Engineer or designee will respond, by e-mail and regular mail to the addresses provided in the protest, with a decision regarding the protest within ten (10) business days following receipt of the protest or, if applicable, the receipt of requested additional information. This decision shall be final.

Section 6: Limitation of Remedy

The procedure and time limits set forth herein are mandatory and are the bidder's sole and exclusive remedy in the event of bid protest. The bidder's failure to comply with these procedures shall constitute a waiver of any right to further pursue a bid protest, including filing a Government Code Claim or Initiation of legal proceedings.

Issued: _____

Director of Public Works

Date: _____

8/17/11

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ORDINANCE NO. ORD-09-0036

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF LONG BEACH AMENDING THE LONG BEACH MUNICIPAL CODE BY ADDING CHAPTER 2.73 ESTABLISHING AN "EQUAL BENEFITS ORDINANCE" REQUIRING CONTRACTORS ON CITY CONTRACTS TO PROVIDE EMPLOYEE BENEFITS TO THEIR EMPLOYEES WITH DOMESTIC PARTNERS EQUIVALENT TO THOSE PROVIDED TO THEIR EMPLOYEES WITH SPOUSES

WHEREAS, employee benefits comprise a significant portion of total employee compensation; and

WHEREAS, discrimination in the provision of employee benefits between employees with domestic partners and employees with spouses results in unequal pay for equal work; and

WHEREAS, the City of Long Beach prohibits discrimination based on marital status and/or sexual orientation; and

WHEREAS, contractors with the City of Long Beach are required to comply with the City's nondiscrimination laws; and

WHEREAS, the City Council finds and determines that the public, health, safety and welfare will be furthered by requiring that public funds be expended in such a manner as to prohibit discrimination in the provision of employee benefits by City contractors between employees with spouses and employees with domestic partners, and between domestic partners and spouses of such employees;

NOW, THEREFORE, the City Council of the City of Long Beach ordains as follows:
///

**OFFICE OF THE CITY ATTORNEY
ROBERT E. SHANNON, City Attorney
333 West Ocean Boulevard, 11th Floor
Long Beach, CA 90802-4664**

OFFICE OF THE CITY ATTORNEY
ROBERT E. SHANNON, City Attorney
333 West Ocean Boulevard, 11th Floor
Long Beach, CA 90802-4664

1 Section 1. Chapter 2.73 is added to the Long Beach Municipal Code to
2 read as follows:

3 Chapter 2.73

4 EQUAL BENEFITS TO EMPLOYEES OF CITY CONTRACTORS

5
6 2.73.010 Title and purpose.

7 This ordinance shall be known as the "Long Beach Equal Benefits
8 Ordinance". The purpose of this Chapter is to protect the public health,
9 safety and welfare by requiring that public funds be expended in such a
10 manner as to prohibit discrimination in the provision of employee benefits by
11 City contractors between employees with spouses and employees with
12 domestic partners, and/or between domestic partners and spouses of such
13 employees.

14
15 2.73.020 Definitions.

16 A. "Contractor" shall mean any person or persons, firm,
17 partnership, corporation, or combination thereof, who enters into a contract
18 with the City.

19 B. "Domestic partner" shall mean any person who has a currently
20 registered domestic partnership with a governmental body pursuant to state
21 or local law authorizing such registration or with his or her employer or his or
22 her domestic partner's employer.

23 C. "Non-profit" shall mean a non-profit organization described in
24 Section 501(c)(3) of the Internal Revenue Code of 1954 which is exempt
25 from taxation under Section 501(c)(3) of that Code, or any nonprofit
26 educational organization qualified under Section 23701(d) of the Revenue
27 and Taxation Code.

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- 1 2.73.030 Contractors subject to requirements.
- 2 A. The following contractors are subject to this Chapter:
- 3 1. For-profit entities which enter into an agreement with
- 4 the City for public works or improvements to be performed, or for goods or
- 5 services to be purchased, for an amount of One Hundred Thousand Dollars
- 6 (\$100,000) or more; and
- 7 2. For-profit entities which generate Three Hundred Fifty
- 8 Thousand Dollars (\$350,000) or more in annual gross receipts and which
- 9 occupy City property pursuant to a written agreement for the exclusive use
- 10 or occupancy of said property for a term exceeding twenty-nine (29) days in
- 11 any calendar year.
- 12 B. The requirements of this Chapter shall only apply to those
- 13 portions of a contractor's operations that occur (i) within the City; (ii) on real
- 14 property outside the City if the property is owned by the City or if the City
- 15 has a right to occupy the property, and if the contractor's presence at that
- 16 location is connected to a contract with the City; and (iii) elsewhere in the
- 17 United States where work related to a City contract is being performed. The
- 18 requirements of this Chapter shall not apply to subcontracts or
- 19 subcontractors of any contract or contractor.
- 20 C. The City Manager or designee will provide a report to the City
- 21 Council regarding the implementation of this ordinance no later than one
- 22 year following the effective date of this Ordinance, and will consider among
- 23 other items, whether the dollar thresholds set forth in subsections (A) and
- 24 (B) should be modified.
- 25
- 26 2.73.040 Non-discrimination in provision of benefits.
- 27 A. No contractor subject to this Chapter pursuant to Section
- 28 2.73.030 shall discriminate in the provision of bereavement leave, family

1 medical leave, health benefits, membership or membership discounts,
2 moving expenses, pensions and retirement benefits or travel benefits or in
3 the provision of any benefits other than bereavement leave, family medical
4 leave, health benefits, membership or membership discounts, moving
5 expenses, pensions and retirement benefits or travel benefits between
6 employees with domestic partners and employees with spouses, and/or
7 between the domestic partners and spouses of such employees except as
8 set forth in Subsections 2.73.040.A.1 and 2 below;

9 1. In the event that the contractor's actual cost of
10 providing a particular benefit for the domestic partner of an employee
11 exceeds that of providing it for the spouse of an employee, or the
12 contractor's actual cost of providing a particular benefit for the spouse of an
13 employee exceeds that of providing it for the domestic partner of an
14 employee, the contractor shall not be deemed to discriminate in the
15 provision of employee benefits if the contractor conditions providing such
16 benefit upon the employee agreeing to pay the excess costs.

17 2. The contractor shall not be deemed to discriminate in
18 the provision of employee benefits if, despite taking reasonable measure to
19 do so, the contractor is unable to extend a particular employee benefit to
20 domestic partners, so long as the contractor provides the employee with a
21 cash equivalent.

22 B. Provided that a contractor does not discriminate in the
23 provision of benefits between employees with spouses and employees with
24 domestic partners, a contractor may:

25 1. Elect to provide benefits to individuals in addition to
26 employees' spouses and employees' domestic partners;

27 2. Allow each employee to designate a legally domiciled
28 member of the employee's household as being eligible for spousal

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equivalent benefits; or

3. Provide benefits neither to employees' spouses nor to employees' domestic partners.

C. A contractor will not be deemed to be discriminating in the provision of benefits where the implementation of policies ending discrimination in benefits is delayed following the first award of a City contract to a contractor after the effective date of this Chapter:

1. Until the first effective date after the first open enrollment process following the date the contract with the City is executed, provided that the contractor submits evidence that it is making reasonable efforts to end discrimination in benefits. This delay may not exceed two (2) years from the date the contract with the City is executed and only applies to benefits for which an open enrollment process is applicable.

2. Until administrative steps can be taken to incorporate nondiscrimination in benefits in the contractor's infrastructure. The timer allotted for these administrative steps shall apply only to those benefits for which administrative steps are necessary and may not exceed three (3) months. An extension of this time may be granted at the discretion of the City Manager upon the written request of a contractor, setting forth the reasons that additional time is required.

3. Until the expiration of a contractor's current collective bargaining agreement(s) where all of the following conditions have been met:

a. The provision of benefits is governed by one or more collective bargaining agreement(s); and

b. The contractor takes all reasonable measures to end discrimination in benefits by either requesting that the union(s) involved agree to reopen the agreement(s) in order for the contractor to take

1 whatever steps are necessary to end discrimination in benefits or by ending
2 discrimination in benefits without reopening the collective bargaining
3 agreement(s); and

4 c. In the event that the contractor cannot end
5 discrimination in benefits despite taking all reasonable measure to do so,
6 the contractor provides a cash equivalent to eligible employees for whom
7 benefits are not available. Unless otherwise authorized, in writing by the
8 City Manager, this cash equivalent payment must begin at the time the
9 union(s) refuse to allow the collective bargaining agreement(s) to be
10 reopened, or in any case no longer than three (3) months from the date the
11 contract with the City was executed. This cash equivalent payment shall not
12 be required where it is prohibited by federal labor law.

13 D. Employers subject to this Chapter pursuant to Section
14 2.73.030 shall give written notification to each current and new employee of
15 his or her potential rights under this Chapter in a form specified by the City.
16 Such notice shall also be posted prominently in areas where it may be seen
17 by all employees.

18
19 2.73.050 Required contract provisions.

20 Every contract subject to this Chapter shall contain provisions
21 requiring it to comply with the provisions of this Chapter as they exist on the
22 date when the contractor entered the contract with the City or when such
23 contract is amended. Such contract provisions may include but need not be
24 limited to the contractor's duty to promptly provide to the City documents
25 and information verifying its compliance with the requirements of this
26 Chapter and sanctions for noncompliance.

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1 2.73.060 Waivers and exemptions.

2 A. The City may waive the requirements of this Chapter where
3 the City Manager makes one or more of the following findings:

- 4 1. Award of a contract or amendment is necessary to
5 respond to an emergency;
- 6 2. The contractor is a sole source;
- 7 3. The contractor is a non-profit entity as defined in
8 Section 2.73.020, above;
- 9 4. Non compliant contractors are capable of providing
10 goods or services that respond to the City's requirements;
- 11 5. The contractor is a public entity;
- 12 6. The requirements of this Chapter are inconsistent with
13 a grant, subvention or agreement with a public agency;
- 14 7. The City is purchasing through a cooperative or joint
15 purchasing agreement;
- 16 8. The contract involves specialized legal services such
17 that it would be in the best interests of the City to waive the requirements of
18 this Chapter, as determined by the City Attorney;
- 19 9. The contract involves investment of trust moneys or
20 agreements relating to the management of trust assets, City moneys
21 invested in U.S. government securities or under pre-existing investment
22 agreements, or the investment of City moneys where no person, entity or
23 financial institution doing business with the City which is in compliance with
24 this Chapter is capable of performing the desired transactions or the City will
25 incur financial loss if the requirements of this Chapter are enforced;
- 26 10. After taking all reasonable measures to find an entity
27 that complies with this Chapter, the City may waive any or all requirements
28 of this Chapter for any contract or bid package advertised and made

1 available to the public, or any competitive or sealed bids received by the
2 City as of the effective date of this Chapter under the following
3 circumstances:

4 a. There are no qualified responsive bidders or
5 prospective contractors who comply with this Chapter and the contract is for
6 goods, a service or a project that is essential to the City or City residents; or

7 b. The requirements of this Chapter would result in
8 the City's entering into a contract with an entity that was set up, or is being
9 used for the purpose of evading the intent of this Chapter.

10 B. The requirements of this Chapter shall not be applicable to
11 contracts executed or amended prior to the effective date of this Chapter, or
12 to bid packages advertised and made available to the public, or any
13 competitive or sealed bids received by the City prior to the effective date of
14 this Chapter, unless and until such contracts are amended after the effective
15 date of this Chapter and would otherwise be subject to this Chapter.

16 C. The City Manager or designee may issue regulations from
17 time to time implementing the provisions of this ordinance.

18 D. The City Manager shall report to the City Council annually on
19 the status of waivers and exemptions.

20
21 2.73.070 Retaliation and discrimination prohibited.

22 A. No employer shall retaliate or discriminate against an
23 employee in his or her terms and conditions of employment by reason of the
24 person's status as an employee protected by the requirements of this
25 Chapter.

26 B. No employer shall retaliate or discriminate against a person in
27 his or her terms and conditions of employment by reason of the person
28 reporting a violation of this Chapter or for prosecuting an action for

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enforcement of this Chapter.

2.73.080 Employee complaints to City.

A. An employee who alleges violation of any provision of the requirements of this Chapter may report such acts to the City. The City Manager may establish a procedure for receiving and investigating such complaints and take appropriate enforcement action.

B. The City shall have the power to examine contractors' benefit programs covered by this Chapter.

C. Any complaints received shall be treated as confidential matters, to the extent permitted by law. Any complaints received and all investigation documents related thereto shall be deemed exempt from disclosure pursuant to California Government Code Sections 6254 and 6255.

2.73.090 Remedies.

A. Upon a finding by the City Manager that a contractor has violated the requirements of this Chapter, the City shall have the rights and remedies described in this Section, in addition to any rights and remedies provided at law or in equity.

1. The City Manager shall be authorized to terminate said contract and bar the contractor from bidding on future contracts with the City for three (3) years from the effective date of the contract termination.

2. In the City Manager's sole discretion, a contractor found to have willfully violated the requirements of this Chapter may be required to pay liquidated damages.

3. The City may seek recovery of reasonable attorneys' fees and costs necessary for enforcement of this Chapter.

OFFICE OF THE CITY ATTORNEY
ROBERT E. SHANNON, City Attorney
333 West Ocean Boulevard, 11th Floor
Long Beach, CA 90802-4664

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B. Notwithstanding any provision of this Chapter or any other Chapter to the contrary, no criminal penalties shall attach for any violation of this Chapter.

C. No remedy set forth in this Chapter is intended to be exclusive or a prerequisite for asserting a cause of action to enforce any rights hereunder in a court of law. This Chapter shall not be construed to limit an employee's right to bring a common law cause of action for wrongful termination.

D. Nothing in this Chapter shall be interpreted to authorize a right of action against the City.

Section 2. The City Clerk shall certify to the passage of this ordinance by the City Council and cause it to be posted in three (3) conspicuous places in the City of Long Beach, and it shall take effect on the thirty-first (31st) day after it is approved by the Mayor.

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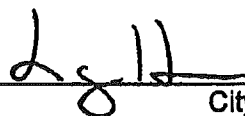
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I hereby certify that the foregoing ordinance was adopted by the City Council of the City of Long Beach at its meeting of December 8, 2009, by the following vote:

Ayes: Councilmembers: Garcia, Lowenthal, DeLong,
O'Donnell, Schipske, Andrews,
Reyes Uranga, Gabelich, Lerch.


Noes: Councilmembers: None.

Absent: Councilmembers: None.



City Clerk

Approved: 12/11/09
(Date)



Mayor

OFFICE OF THE CITY ATTORNEY
ROBERT E. SHANNON, City Attorney
333 West Ocean Boulevard, 11th Floor
Long Beach, CA 90802-4664

ATTACHMENT "2"

EQUAL BENEFITS ORDINANCE DISCLOSURE FORM

As a condition of being awarded a contract with the City of Long Beach ("City"), the selected Contractor/Vendor ("Contractor") may be required during the performance of the Contract, to comply with the City's nondiscrimination provisions of the Equal Benefits Ordinance ("EBO") set forth in the Long Beach Municipal Code section 2.73 et seq. The EBO requires that during the performance of the contract, the Contractor shall provide equal benefits to its employees with spouses and employees with domestic partners. Benefits include but are not limited to, health benefits, bereavement leave, family medical leave, member ship and membership discounts, moving expenses, retirement benefits and travel benefits. A cash equivalent payment is permitted if an employer has made all reasonable efforts to provide domestic partners with access to benefits but is unable to do so. A situation in which a cash equivalent payment might be used if where the employer has difficulty finding an insurance provider that is willing to provide domestic partner benefits.

The EBO is applicable to the following employers:

- For-profit employers that have a contract with the City for the purchase of goods, services, public works or improvements and other construction projects in the amount of \$100,000 or more
- For-profit entities that generate \$350,000 or more in annual gross receipts leasing City property pursuant to a written agreement for a term exceeding 29 days in any calendar year

Contractors who are subject to the EBO must certify to the City before execution of the contract that they are in compliance with the EBO by completing the EBO Certification Form, attached, or that they have been issued a waiver by the City. Contractors must also allow authorized City representatives access to records so the City can verify compliance with the EBO.

The EBO includes provisions that address difficulties associated with implementing procedures to comply with the EBO. Contractors can delay implementation of procedures to comply with the EBO in the following circumstances:

- 1) 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
- 2) 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

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

Compliance with the EBO

If a contractor has not received a waiver from complying with the EBO and the timeframe within which it can delay implementation has expired but it has failed to comply with the EBO, the Contractor may be deemed to be in material breach of the Contract. In the event of a material breach, the City may cancel, terminate or suspend the City agreement, in whole or in part. The City also may deem the Contractor an irresponsible bidder and disqualify the Contractor from contracting with the City for a period of three years. In addition, the City may assess liquidated damages against the Contractor which may be deducted from money otherwise due the Contractor. The City may also pursue any other remedies available at law or in equity.

By my signature below, I acknowledge that the Contractor understands that to the extent it is subject to the provisions of the Long Beach Municipal Code section 2.73, the Contractor shall comply with this provision.

Printed Name: JoAnn Mills Title: VP of Human Resources
Signature: [Handwritten Signature] Date: 06/07/12
Business Entity Name: McCain, Inc.

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

Section 1. CONTRACTOR/VENDOR INFORMATION

Name: McCain, Inc Federal Tax ID No. 33-0262207
Address: 2365 OAK Ridge Way
City: VISTA State: CA ZIP: 92081
Contact Person: Leanne Arnold Telephone: 760-734-5057
Email: LARNOLD@MCCAIN-INC.CO Fax: 760-734-5064

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 7th day of June, 2012, at Vista, CA

Name JoAnn Mills Signature JoAnn Mills

Title VP of Human Resources Federal Tax ID No. 33-0262207

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) McCain, Inc	
Business name, if different from above	
Check appropriate box: <input type="checkbox"/> Individual/Sole proprietor <input checked="" type="checkbox"/> Corporation <input type="checkbox"/> Partnership <input type="checkbox"/> Limited liability company. Enter the tax classification (D=disregarded entity, C=corporation, P=partnership) ▶ <input type="checkbox"/> Exempt payee <input type="checkbox"/> Other (see instructions) ▶	
Address (number, street, and apt. or suite no.) 2365 Oak Ridge Way	Requester's name and address (optional)
City, state, and ZIP code Vista, CA 92081	
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
Employer identification number
33 0262207

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 ▶ *Liuh Trinh*

Date ▶ *4-17-12*

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,

Vendors are generally added within 48 hours of receipt. If there is a compelling reason this needs to be added immediately, check the RUSH box and specify the reason. RUSH

REASON:

Company Name
(same as line 1 on W9):

DBA Name
(same as line 2 on W9): leave blank if not applicable

Federal Tax ID Number (or SSN): required (this number is a fed tax id: ssn:)

Web Address: leave blank if not applicable

Purchase Order Address:

Attn:

City:

State: Zip Code:

Contact Name:

E-mail:

Phone Number: i.e. 562-555-1234

Fax: i.e. 562-555-5678

Toll Free: i.e. 800-555-2468

If 'remit to' address is the same as the purchase order address; put SAME in first box only.

'Remit to' Address:

Attn:

City:

State: Zip Code:

Contact Name:

E-mail:

Phone Number: i.e. 562-555-1234

Fax: i.e. 562-555-5678

Toll Free: i.e. 800-555-2468

Type of Ownership:

Individual Partnership Corporation LLC Nonprofit Government

Composition of Ownership (At least 51% of ownership of the organization) (check all that apply)

MBE WBE Local DBE Certified SBE Certified Micro

State certification number:

COMMODITY CODE(S): THIS IS A REQUIRED FIELD

(at least one 5-digit code must be entered; look up on screen 1100 in ADPICs)

PRICING SPREADSHEET

COMPANY NAME: McCain, Inc., 2365 Oak Ridge Way, Vista, CA 92081 PH:760-734-5057 FX:760-734-5064 / QUOTE Z060612LA1 JOB 11695

ITEM#	EST.QTY	DESCRIPTION	UNIT COST	EXTENDED COST
1	40	12" vehicle head no optics w/ tunnel visors, 6" mtl backplate, MAS Framework, Bronze OGR	\$ 222.40	\$ 8,896.00
2	15	12" vehicle head no optics w/ tunnel visors, 6" mtl backplate, MAS-4B Framework, Brnz, OGR	\$ 266.13	\$ 3,991.95
3	20	12" vehicle head no optics w/ tunnel visors, 6" mtl backplate, MAS-5A Cluster Framework, Brnz, OGR	\$ 396.30	\$ 7,926.00
4	45	12" vehicle head no optics w/ tunnel visors, 6" mtl backplate, SV-1-T,T3,T3 Bronze OGR	\$ 364.11	\$ 16,384.95
5	100	12" vehicle head no optics w/ tunnel visors, 6" mtl backplate, SV-2-T,T3,T3 Bronze OGR	\$ 543.10	\$ 54,310.00
6	12	12" vehicle head no optics w/ tunnel visors, 6" mtl backplate, SV-2-T,T3(LOD),T3(ROD) Bronze OGR	\$ 543.10	\$ 6,517.20
7	50	12" vehicle head no optics w/ tunnel visors, 6" mtl backplate, TV-1-T, (LOD)T3, Brnz OGR	\$ 410.82	\$ 20,541.00
8	12	12" vehicle head no optics w/ tunnel visors, 6" mtl backplate, TV-2-T, T3,T3 Bronze OGR	\$ 584.88	\$ 7,018.56
9	12	12" vehicle head no optics w/ tunnel visors, 6" mtl backplate, TP-1-T (LOD), Bronze OGR	\$ 309.07	\$ 3,708.84
10	100	Offset Slipfitter for 1-way Signal - Bronze	\$ 66.60	\$ 6,660.00
11	50	Offset Slipfitter for 1-way Signal - Aluminum	no bid	no bid
12	100	Slipfitter for 4-way Signal - Bronze	\$ 63.75	\$ 6,375.00
13	100	1.5" Serrated Elbow grn	\$ 7.00	\$ 700.00
14	100	1.5" Standard Elbow grn	\$ 5.25	\$ 525.00
15	100	1.5" Standard Signal "T" (2 threaded ends and one setscrew) grn	\$ 5.15	\$ 515.00
16	200	12" 3-Section Alum, No Optics, OG/OG, No Visors	\$ 116.35	\$ 23,270.00
17	24	12" 4-Section Alum, No Optics, OG/OG, No Visors	\$ 153.95	\$ 3,694.80
18	12	12" 5-Section Alum Cluster, No Optics, OG/OG, No Visors	\$ 381.63	\$ 4,579.56
19	12	8" 3-Section Alum, No Optics, OG/OG, Tunnel Visors, 5" mtl backplate FBLK	\$ 135.00	\$ 1,620.00
20	100	12" Tunnel Visors Alum w/tabs OGR/FBK	\$ 11.00	\$ 1,100.00
21	100	12" Tunnel Visors Alum w/slots OGR/FBK	no bid	no bid
22	36	8" Tunnel Visors Alum w/tabs OGR/FBK	\$ 9.00	\$ 324.00
23	36	8" Tunnel Visors Alum w/slots OGR/FBK	no bid	no bid
24	50	12" Full Circle Visors Alum w/tabs OGR/FBK	\$ 10.00	\$ 500.00
25	50	12" Full Circle Visors Alum w/slots OGR/FBK	no bid	no bid
26	12	8" Full Circle Visors Alum w/tabs OGR/FBK	\$ 9.00	\$ 108.00
27	12	8" Full Circle Visors Alum w/slots OGR/FBK	no bid	no bid
28	86	Backplate Assy Alum T3, Std, 5" Brd, FBK	\$ 18.50	\$ 1,591.00
29	40	Backplate Assy Alum T3, EP, 5" Brd, FBK	\$ 19.25	\$ 770.00
30	12	Backplate Assy Alum SE3, Std, 5" Brd, FBK	\$ 22.50	\$ 270.00
31	6	Backplate Assy Alum Clstr, EP, 5" Brd, 17" CTC FBK	\$ 53.00	\$ 318.00
32	2	Backplate Assy Alum T4, EP, 5" Brd, FBK	\$ 53.00	\$ 106.00
33	200	Pedestrian Head Clamshell 2 Kit Ptd, Olive Green	\$ 39.80	\$ 7,960.00
34	200	PB cap Assy ADA, round, green	\$ 32.90	\$ 6,580.00
35	200	5"x7" Adj. PPB Assy, green	\$ 30.00	\$ 6,000.00
36	200	5"x7" PPB Cap Sign - LEFT	\$ 22.00	\$ 4,400.00
37	200	5"x7" PPB Cap Sign - RIGHT	\$ 22.00	\$ 4,400.00
38	200	5"x7" PPB Cap Sign - BOTH	\$ 32.90	\$ 6,580.00
39	100	Detector, Rack Mount	\$ 58.60	\$ 5,860.00
40	26	242 DC Isolator, 2 Channel, Rack Mount CT	\$ 30.00	\$ 780.00
41	24	#204 Flasher , Rack Mount Caltrans	\$ 22.85	\$ 548.40
42	65	#200 Loadswitch, Rack Mount Caltrans	\$ 20.50	\$ 1,332.50
43	12	332 Cabinet Per CLB Specs (White Alum, two cab lights P-20, best locks)	\$ 4,750.00	\$ 57,000.00
44	6	332 Cabinet SHELL ONLY Per CLB Specs (White Alum, two cab lights P-20, best locks)	\$ 1,670.00	\$ 10,020.00
45	2	336 Cabinet Per CLB Specs (White Alum, two cab lights P-20, best locks)	\$ 4,700.00	\$ 9,400.00
46	6	Power Distribution Assembly Unit	\$ 385.00	\$ 2,310.00
47	12	Power Supply Unit for PDA2 332 cabinet	\$ 315.00	\$ 3,780.00
48	12	332 Output file	\$ 649.00	\$ 7,788.00
49	6	Auxiliary Output File for 332 cabinet	\$ 275.00	\$ 1,650.00
50	12	170-E Controller / w Manual (4800 BPS Modem)	\$ 1,519.00	\$ 18,228.00
51	12	2070-L Controller / w Manual (4800 BPS Modem)	\$ 2,600.00	\$ 31,200.00
52	50	Eberle 2010 conflict monitor (NO ALTERNATES)	\$ 510.00	\$ 25,500.00
53	50	Eberle 210 conflict monitor (NO ALTERNATES)	\$ 378.00	\$ 18,900.00
54	12	Modem for 170 controller	\$ 185.00	\$ 2,220.00
55	12	Modem for 170 controller	\$ 382.00	\$ 4,584.00
56	12	Modem for 170 controller	\$ 357.00	\$ 4,284.00
57	50	3M Opticom 2-channel phase selector (NO ALTERNATES)	\$ 3,082.00	\$ 154,100.00
58	100	3M Opticom 2-channel, 2 output, detector (NO ALTERNATES)	\$ 757.00	\$ 75,700.00
59	25	3M Opticom 2-channel, 1output, detector (NO ALTERNATES)	\$ 543.00	\$ 13,575.00
60	25	3M Opticom 1-channel, 1-output detector (NO ALTERNATES)	\$ 477.00	\$ 11,925.00
61	2	3M Opticom Emitter (NO ALTERNATES)	\$ 1,300.00	\$ 2,600.00
62	1000	3M Opticom 4-conductor cable (NO ALTERNATES)	\$ 0.75	\$ 750.00
63	1000	IMSA 5-Conductor Cable (R-Y-Br-W-BK) No Filler 14 ga.	no bid	no bid
64	1000	IMSA 28-Conductor Cable No Filler 14 ga/10 ga cmn	no bid	no bid
65	1000	IMSA 9-Conductor Cable No Filler 14 ga	no bid	no bid
66	1000	IMSA 3-Conductor Cable No Filler 14 ga	no bid	no bid
67	1000	IMSA 2-Conductor DLC Cable No Filler 14 ga	no bid	no bid

PRICING SPREADSHEET

68	1000	PE-22 Interconnect cable (12 pair #19) air-filled	no bid	no bid
69	75	GE 250W HPS fixture w/ cutoff optics	\$ 245.00	\$ 18,375.00
70	25	GE 250W HPS fixture w/ cutoff optics with photoelectric receptacle	\$ 220.00	\$ 5,500.00
			TOTAL:	\$ 706,150.76
		PAYMENT TERMS: Net 30		
		Lead Time: 30-60 Days ARO		
		FOB Destination, Freight Allowed & Paid		



REFERENCES

City of Los Angeles

111 E. 1st Street
Room 110
Los Angeles, CA 90012
Raul DeAnda
213-847-2943

County of Los Angeles

Internal Services Department
ISD – Central Purchasing
1100 N. Eastern Ave.
Los Angeles, CA 90063
Yvonne Parker
323-881-5152

City of Oceanside

4925 Oceanside Blvd
Oceanside, CA 92056
Stephen Elliott
760-435-5192

City of Corona

400 S. Vicentia Ave
Corona, CA 92882
Gabriel Hernandez
951-279-3709

City of Riverside

Traffic Engineering
8095 Lincoln Ave
Riverside, CA 92504
Charlene McNair
951-955-1858

Phone 760-727-8100

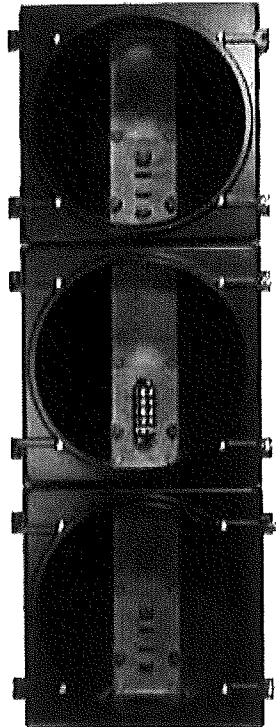
Fax 760-727-8184

www.McCain-Inc.com

2365 Oak Ridge Way // Vista, California 92081 // USA

12" Signal Housing

Aluminum
Green Housing
Black Door
5-Position Terminal Block
1 to 5 Sections



Cabinets
Controllers
Signals
Signs
Software
Specialty

Product Description

McCain's die cast aluminum Signal Housing offers a low maintenance and durable housing compatible with standard LED modules as well as McCain incandescent optical assemblies. The housing is also compatible with McCain aluminum and polycarbonate backplates. Serrated top and bottom ports allow installation into many framework mounting assemblies.

McCain signals are compliant with multiple agency standards including the Institute of Transportation Engineers (ITE), Caltrans, Arizona DOT, Nevada DOT, and most other state Departments of Transportation.

Each section is cast in one piece to provide strength and positive locking with other sections and mounting hardware. Two integral hinge lugs on the housing with stainless steel roll pins provide effective door hinges. Positive latching of doors is achieved with stainless steel eyebolts and wing nut assemblies. A positive seal is assured with an E.P.D.M. rubber gasket fitted into the gasket channel cast in the perimeter of the door creating a moisture and dust tight atmosphere.

The signal doors feature four threaded bosses for attaching McCain aluminum or polycarbonate visors.

All housings have a cast boss provided for mounting a terminal block. The words, red, amber, and green are cast next to each boss to identify socket lead wire attachment. One or two five-position terminal blocks are installed depending on the number of sections.

General Specifications

Dimensions:	Signal Housing (each section): 13.3" H x 14.75" W x 6.7" D
Material:	Housing: Aluminum type 360, reduced corrosion, increased powder coat adhesion Hardware: Stainless steel, series 300
Finishes:	Housing: Green powder coat Door: Black powder coat
Shipping Weight:	7.7 lbs per section

Part Numbers

Part numbers are assigned according to the number of sections required in the assembly.

8" Signal Housing

Aluminum
Black Housing
Green Door
5-Position Terminal Block
1 to 5 Sections

Cablers
Controllers
Signals
Signs
Software
Sensors

Product Description

McCain's die cast aluminum Signal Housing offers a low maintenance and durable housing compatible with standard LED modules as well as McCain incandescent optical assemblies. The housing is also compatible with McCain aluminum and polycarbonate backplates. Serrated top and bottom ports allow installation into many framework mounting assemblies.

McCain signals are compliant with multiple agency standards including the Institute of Transportation Engineers (ITE), Caltrans, Arizona DOT, Nevada DOT, and most other state Departments of Transportation.

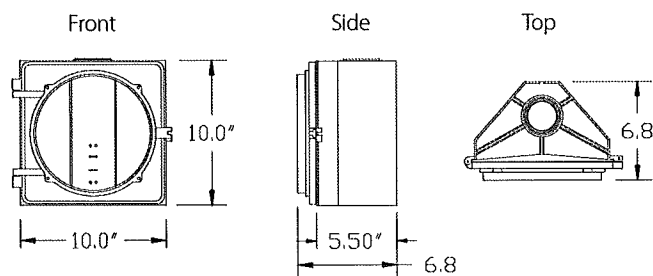
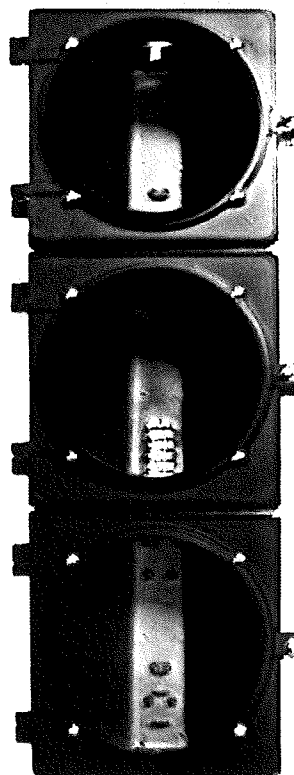
Each section is cast in one piece to provide strength and positive locking with other sections and mounting hardware. Two integral hinge lugs on the housing with stainless steel roll pins provide effective door hinges. Positive latching of doors is achieved with stainless steel eyebolts and wing nut assemblies. A positive seal is assured with an E.P.D.M. rubber gasket fitted into the gasket channel cast in the perimeter of the door creating a moisture and dust tight atmosphere.

The signal doors feature four threaded bosses for attaching McCain aluminum or polycarbonate visors.

All housings have a cast boss provided for mounting a terminal block. The words, red, amber, and green are cast next to each boss to identify socket lead wire attachment. One or two five-position terminal blocks are installed depending on the number of sections.

General Specifications

- Dimensions: Signal Housing (each section):
10.0" H x 10.0" W x 6.8" D
- Material: Housing: Aluminum type 360, reduced corrosion, increased powder coat adhesion
Hardware: Stainless steel, series 300
- Finishes: Housing: Green powder coat
Door: Black powder coat
- Shipping Weight: 6 lbs per section



Part Numbers

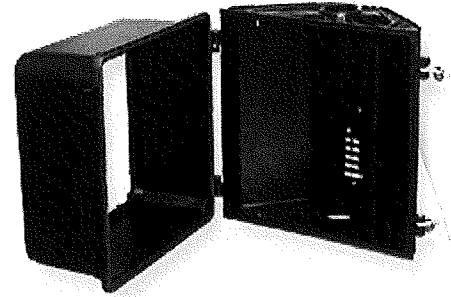
Part numbers are assigned according to the number of sections required in the assembly.

Pedestrian Signal Housing

12" Housing
16" Housing
Aluminum
Polycarbonate



16 inch housing
shown in Federal yellow



12 inch housing
shown in black

Cabinets
Controllers
Signals
Signs
Software
Specialty

Overview

McCain's Pedestrian Signal Housings are designed to be used in conjunction with standard or LED pedestrian signal modules to promote pedestrian safety at intersections. McCain housings exceed the Institute of Transportation Engineers (ITE) standards, offering a low maintenance and durable housing in either die cast aluminum or injection molded polycarbonate resin. They are available in 12" or 16" styles, and the 12" housings are available in 1-section or 2-section varieties. The 12" polycarbonate housings are reinforced with a 10 percent fiberglass fill for superior strength and durability unmatched by standard polycarbonate resins. The fiberglass fill is optional on the 16" polycarbonate housings.

Benefits

- 12" or 16" styles
- Rugged aluminum or polycarbonate construction
- Designed for standard symbol or word pedestrian signal modules including LED
- Door-hinge hardware can be removable and reversible or permanently attached
- Highly customizable including a variety of fabrication, mounting, and visor options
- 16" available with *Vantage Visor™* for increased visibility and impact protection

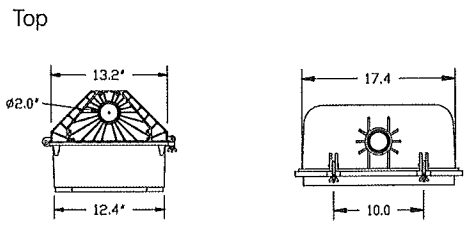
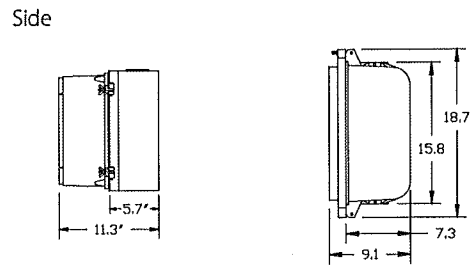
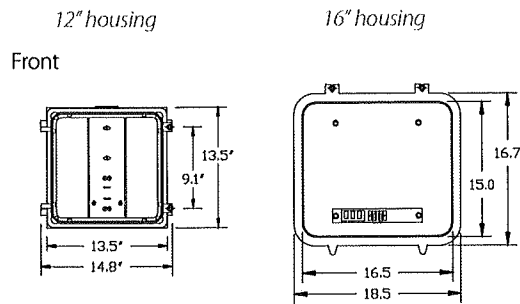
Product Description

The McCain Pedestrian Signal Housing is available in 12" and 16" styles and a variety of configurations including aluminum or polycarbonate construction, with a number of options (see Options for details).

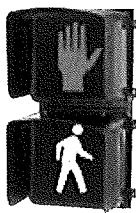
The door is attached with stainless steel detent-type clevis or roll pins and eye bolt/wing nut assemblies. Two equally spaced mounting lugs, integrally cast into the top and bottom of the 16" and the sides of the 12", allow the doors to hinge from either direction. When clevis pins are used, the door and eye bolt assemblies can be removed and rotated without the use of any tools, facilitating maintenance.

All interior mounting locations on the 16" housing are symmetrically positioned, allowing the rotation of components when using the bi-directional McCain Clamshell Mount to mount to the right or left side.

Pedestrian Signal Housing



Dimensions rounded to the nearest 0.1"



12" 2-section with tunnel visors

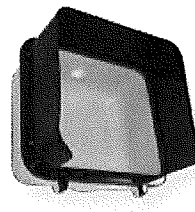


16" with Vantage Visor

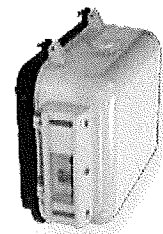
Hand/Man modules (sold separately)



16" Vantage Visor (sold separately)



16" Tunnel visor (sold separately)



16" Clamshell mount (sold separately)

Standard Features

- Stainless steel hardware includes hinge pins (detent-type clevis or roll) and eye bolt/wing nuts (latch)
- Terminal block with quick-disconnect fittings on one side of each terminal position and screw clamps on the other side

General Specifications

Dimensions*:	12" Housing	16" Housing
Housing:	13.2" H x 13.2" W x 5.7" D	15.8" H x 17.4" W x 7.3" D
Door (incl. tabs):	13.5" H x 15.0" W x 5.6" D	18.7" H x 18.5" W x 1.8" D
Overall:	14.0" H x 15.0" W x 11.3" D	18.7" H x 18.5" W x 9.1" D
Material:	Polycarbonate: Ultraviolet and heat stabilized, flame retardant, permanently colored, 10% fiberglass reinforcement (12" standard, 16" optional) Aluminum: Type 360, reduced corrosion, increased powder coat adhesion	
Finish(es):	Polycarbonate: Colored resins integral to housing Aluminum: Powder coated	
Color(s):	Federal yellow, signal green, black, or custom colors	
Access:	Front door (1), 16": hinged top or bottom 12": hinged left or right	
Latching System:	Eye bolt assemblies	
Mounting:	Standard signal hardware	
Environmental:	Operating temperature: -37°C to +74°C Humidity: 0 to 95% (non-condensing)	
Shipping Weight:	12": Poly 5 lbs, Al 9 lbs 16": Poly 9 lbs, Al 10 lbs	

Options

- Polycarbonate 10% fiberglass fill for added durability (optional on 16", standard on 12")
- Modules: LED or incandescent; international Hand/Man symbol, "WALK"/"DON'T WALK" words
- Visors: Vantage Visor (16" only), tunnel, or cap (12" only)
- Clamshell mount (16" only - housing available pre-drilled for mount)
- Custom terminal blocks
- Door hardware permanent (roll pins) or removable (clevis pins)

* Dimensions are approximate and vary based on material used

To learn more about McCain's Integrated Traffic Solutions, please contact

1-800-368-3333 or call 714-977-3333



2365 OAK RIDGE WAY VISTA, CALIFORNIA 92081 USA WWW.MCCAIN-INC.COM

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Vehicle Signal Mount Mast Arm

MAS Offset
Green
Bronze



Caltrans
Controllers
Signals
Signs
Software
Security

Description

This Vehicle Signal Mount is installed between two signal sections, typically the red and yellow sections. Attaches vehicle signal to tenon on the traffic signal pole mast arm. Serrations on the arm matches signal housing serrations to lock signal in place. Three set screws on the outer ring provide firm attachment to the mast arm. A safety bolt provides additional security. Also includes three threaded screw holes on the inner ring for additional set screws (optional). Fabricated from bronze alloy and powder coated green. Includes set screws (3), safety bolt, jamb nuts, and washers. Meets Caltrans requirements for MAS, and ADOT requirements for Type II.

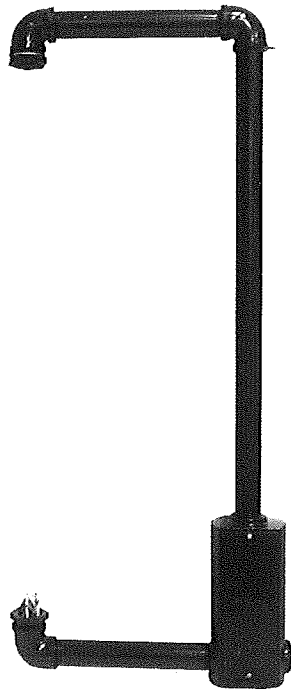
Part Number

M18284

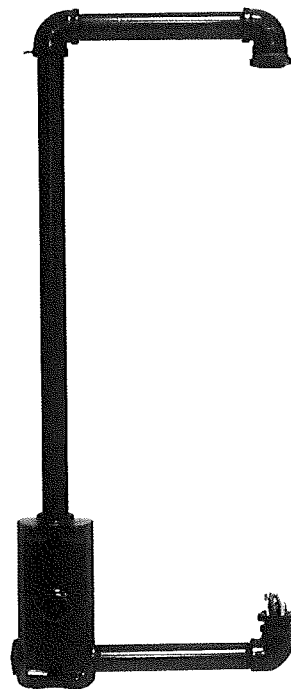
Vehicle Signal Mount Side of Pole

1-Way, Left of Door
Terminal Compartment, Bronze
Green
Caltrans SV-1-T

Caltrans
Controllers
Signals
Signs
Software
Support



Front View



Back View

Description

This Vehicle Signal Mount attaches to the side of a traffic signal pole. The signal is mounted to the left side of the terminal compartment door (LOD). Fabricated from steel pipe and fittings and a bronze terminal compartment. Horizontal pipe length is approximately 12". Powder coated green. Includes terminal compartment door, terminal block, and wire harness. Meets Caltrans requirements for SV-1-T.

Part Number

M18384

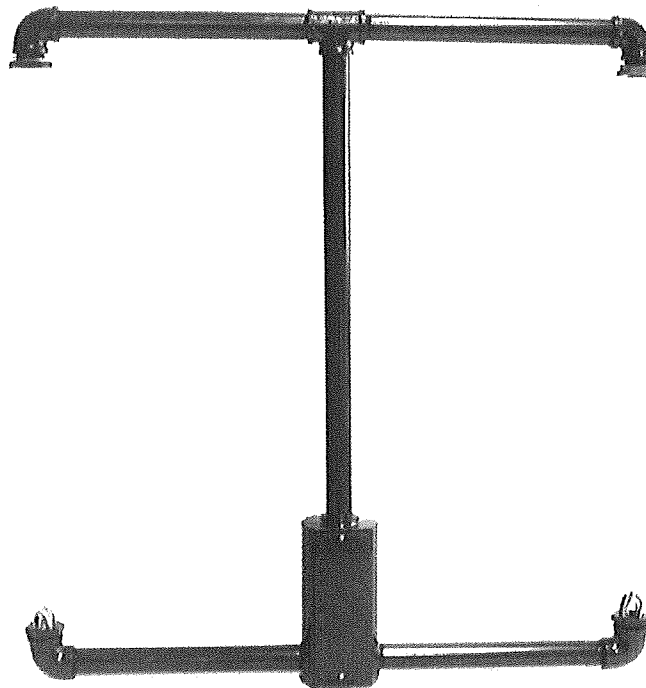
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Vehicle Signal Mount Side of Pole, Type A

2-Way, Left of Door, Right of Door
Terminal Compartment, Bronze
Green
Caltrans SV-2-TA



Description

This Vehicle Signal Mount attaches two signals to the side of a traffic signal pole. One signal is mounted to the left side of the terminal compartment door (LOD) and the other signal is mounted to the right side of the terminal compartment door (ROD). Fabricated from steel pipe and fittings and a bronze terminal compartment. Horizontal pipe length is approximately 17". Powder coated green. Includes terminal compartment door, terminal block, and wire harness. Meets Caltrans requirements for SV-2-TA.

Part Number

M18409

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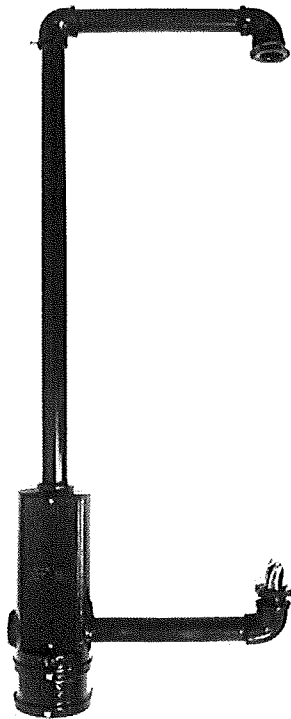
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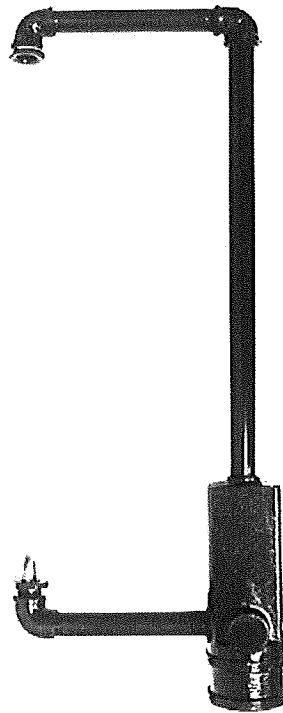
Cabinets
Covers/Flags
Signals
Signs
Software
Support/Info

Vehicle Signal Mount Pole Top

1-Way, Right of Door
Terminal Compartment, Bronze
Green
Caltrans TV-1-T



Front View



Back View

Description

This Vehicle Signal Mount attaches to the top of a traffic signal pole. The signal is mounted to the right side of the terminal compartment door (ROD). Fabricated from steel pipe and fittings and a bronze terminal compartment. Pipe length is approximately 12". Powder coated green. Includes terminal compartment door, terminal block, and wire harness. Meets Caltrans requirements for TV-1-T.

Part Number

M25659

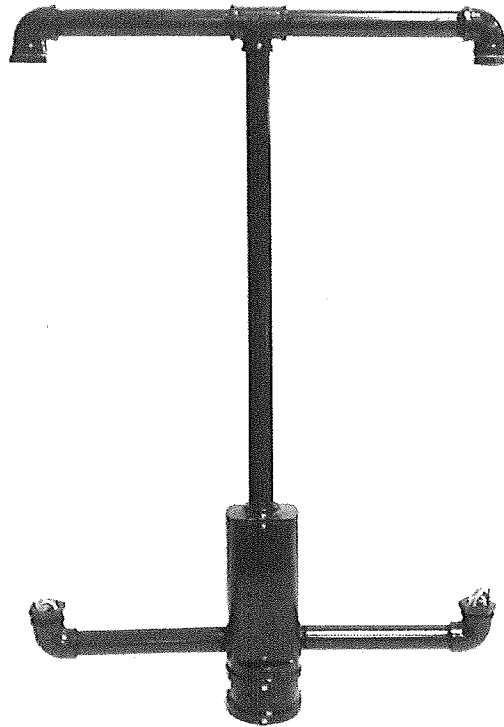
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Vehicle Signal Mount Pole Top

2-Way, Left of Door, Right of Door
Terminal Compartment, Bronze
Green
Caltrans TV-2-T



Description

This mount attaches two vehicle signals to the top of a traffic signal pole. One signal is mounted to the left side of the terminal compartment door (LOD) and the other signal is mounted to the right of the terminal compartment door (ROD). Fabricated from steel pipe and fittings and a bronze terminal compartment. Pipe length is approximately 12". Powder coated green. Includes terminal compartment door, terminal block, wire harness, and two rows of three set screws to secure mount to the top of the pole. Meets Caltrans requirements for TV-2-T.

Part Number

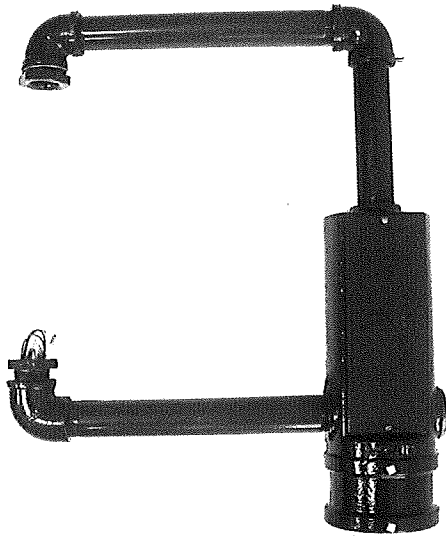
M18558

Cabinets
Controllers
Signals
Sensors
Software
Specialty

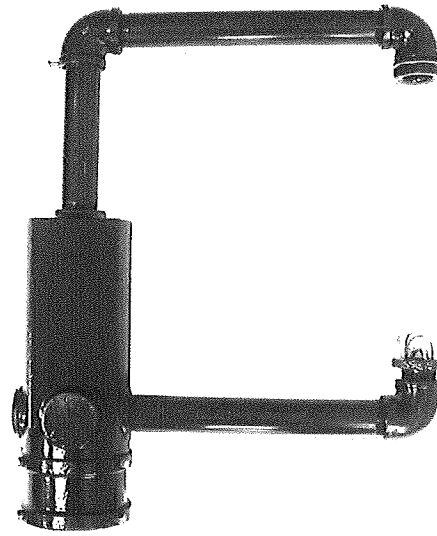
Pedestrian Signal Mount Pole Top

1-Way, Left of Door
Terminal Compartment, Bronze
Green
Caltrans TP-1-T

Cabinets
Controllers
Signals
Signs
Software
Specialty



Front View



Back View

Description

This mount attaches a Pedestrian Signal to the top of a traffic signal pole. The signal is mounted to the left side of the terminal compartment door (LOD). Fabricated from steel pipe and fittings and a bronze terminal compartment. Pipe length is approximately 14". Powder coated green. Includes terminal compartment door, terminal block, wire harness, and two rows of three set screws to secure mount to the top of the pole. Meets Caltrans requirements for TP-1-T.

Part Number

M18513

Signal Mount Pole Top

1-Way

Bronze

Green

Caltrans TP-1 and TV-1



Description

This Signal Mount attaches a pedestrian or vehicle signal to the top of a 4" to 4½" diameter signal pole. The single port on the top of this mount is serrated and offset. Fabricated from bronze alloy. Powder coated green. Includes two rows of three set screws to secure the mount to the top of the pole. Also included are a lock nut and aluminum washer. Meets Caltrans specifications for a TP-1 and TV-1.

Part Number

M18511

Caltrans

Controllers

Signals

Signs

Software

Specialty

Tee, Standard

1½"
Iron



Note: Item shown with optional powder coat finish

Description

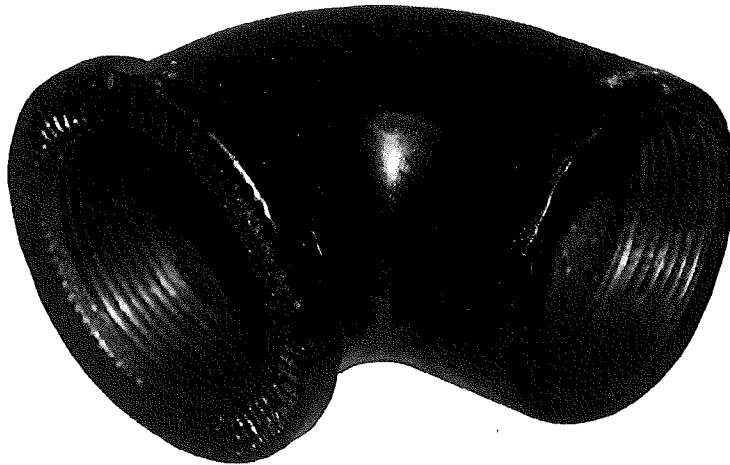
Ductile Iron tee fits 1½" standard iron pipe (1½ NPT, schedule 40). Used in various signal framework assemblies. All three ports are threaded.

Part Number

M18773

Elbow One Serrated Port

1½"
Iron



Note: Item shown with optional powder coat finish

Description

Ductile Iron elbow with one serrated port has both ports threaded and fits 1½" standard iron pipe fittings (1½ NPT, schedule 40). The serrated port has 72 teeth which lock into matching serrations on bottom of signal housing. The other port is smooth for installation into pipework.

Part Number

M18761

Elbow, Standard

1½"

Iron



Note: Item shown with optional powder coat finish

Description

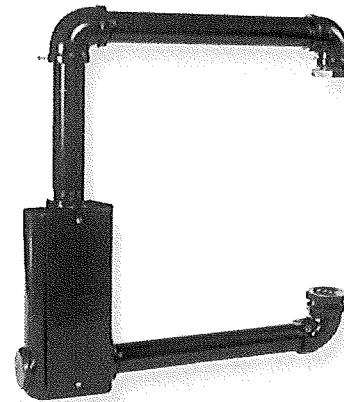
Standard iron elbow fits 1½" standard iron pipe fittings (1 1½ NPT, schedule 40). Used to create right angle in signal framework.

Part Number

M18758

Signal Framework

Side Pole
Post Top
Overhead
Mast Arm
Pedestrian
Pipe Fittings
Pole Hardware
Special / Custom



Cabinets
Controllers
Signals
Signs
Software
Specialty

Overview

McCain's Signal Framework collection covers the gamut of your signal needs including, side-of-pole and post top mountings, overhead mounting, mast arm mounts, post top and side-of-pole pedestrian framework, pipe fittings, hardware, and special/custom mounting options. All of McCain's framework options are built to McCain's high-quality standards and manufactured from high-grade materials providing you with a dependable and rugged product.

Benefits

- Compatible with standard signals, programmable signals, and pedestrian housings
- Standard 1½-11½ NPT, schedule 40
- Complete line of fittings, pole mounts, pipe and nipples, terminal compartments, and more
- Wide variety of mounting types and configurations

Product Description

The McCain Signal Framework collection is a long-lasting compliment to our complete line of signal heads and pedestrian signals.

8" and 12" signal heads can be combined in the same mountings, and are available in many standard configurations. Commonly featuring one to four signal heads per mount, framework is available for top-of-pole, side-of-pole, span wire, or mast arm, and with or without terminal compartments.

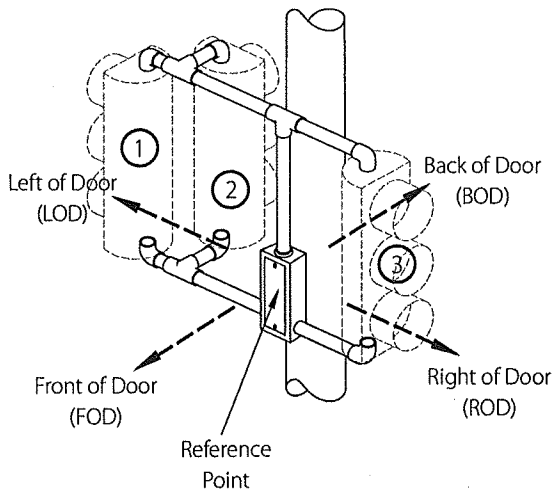
Based on a 1½-11½ NPT, schedule 40, McCain framework is industry-standard compatible. Pre-assembled frames come fully wired with 14 AWG wire for your convenience.

All framework is powder coated in standard or custom colors.

Framework Nomenclature and Description

Reference point for all framework designations is the door of the terminal compartment

Examples:



Example designation for unsymmetrical framework shown above:

Head No. 1	Offset LOD, outboard
Head No. 2	Offset LOD, inboard BOD
Head No. 3	Offset ROD

Standard Features

- 1½-11½ NPT
- 14 AWG THHN stranded wire

General Specifications

Dimensions:	Varies based on selected framework
Wall Thickness:	Schedule 40
Thread:	1½-11½ NPT (1½' diameter, 11½ threads per inch)
Material:	Steel, aluminium, or bronze, (specific materials may not be available for all framework items)
Finish:	Powder coated
Color(s):	Federal yellow, signal green, black, or custom colors
Mounting:	Side of pole, top of pole, mast arm
Environmental:	Operating temperature: -37° C to +74° C Humidity: 0 to 95% (non-condensing)
Shipping Weight:	Varies based on selected framework

Options

- Clamshell mount for pedestrian housings
- Other configurations and parts meeting specifications of many state Departments of Transportation are available. Please contact your McCain representative for further information

Details to Include When Ordering:

1. Material type for frame elements - steel, aluminium, or bronze (pole adaptor, slip fitting, terminal compartment, pole plate, etc.)
2. Signal face size (8", 12", or combo) and manufacturer of signal module (LED)
3. Designation (e.g., TV-2-T) indicating framework type
4. Orientation (left or right of door) of signal head mountings
5. Nipple lengths
6. Color

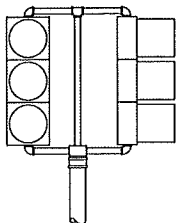
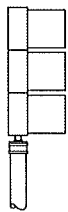
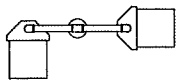
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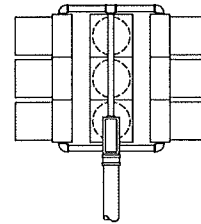
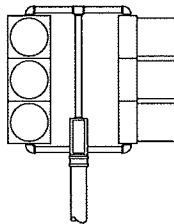
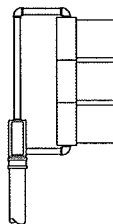
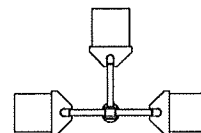
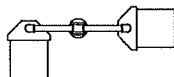
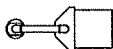
Top-of-Pole Mountings Without Terminal Compartments



Caltrans: TV-1
 ADOT: Type III

Caltrans: TV-2

Top-of-Pole Mountings With Terminal Compartments



Caltrans: TV-1-T
 ADOT: Type IV

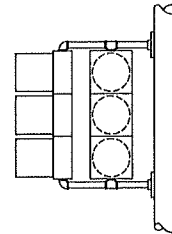
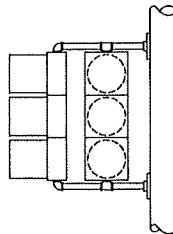
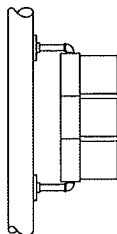
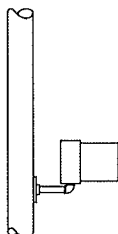
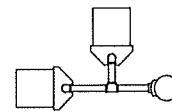
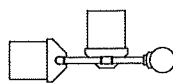
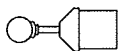
Caltrans: TV-2-T
 ADOT: Type VI

Caltrans: TV-3-T
 ADOT: Type IX

Side-of-Pole Mountings Without Terminal Compartments

One Way

Two Way



Caltrans: SV

Caltrans: SV-1
 ADOT: Type XI

Caltrans: SV-2A

Caltrans: SV-2B

Note: All signals shown without backplates for clarity

Signal Framework, Pg 4

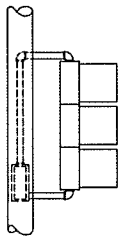
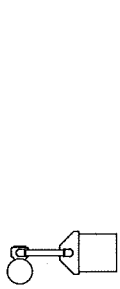
Side-of-Pole Mountings With Terminal Compartments

One Way

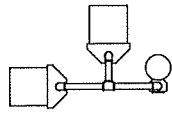
Two Way

Three Way

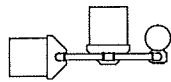
Four Way



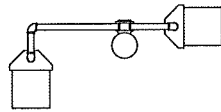
Caltrans: SV-1-T
ADOT: Type V
NDOT: B-1



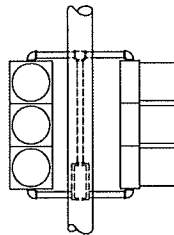
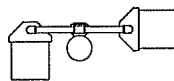
Caltrans: SV-2-TD
ADOT: Type VIII
NDOT: B-2b



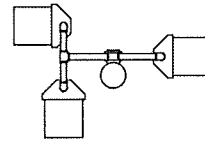
Caltrans: SV-2-TC
NDOT: B-2b



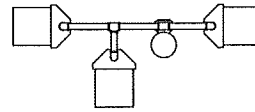
Caltrans: SV-2-TB



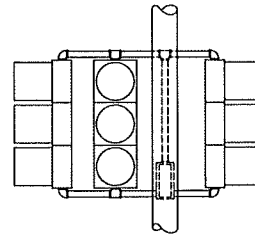
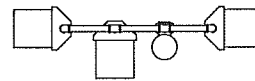
Caltrans: SV-2-TA
ADOT: Type VII



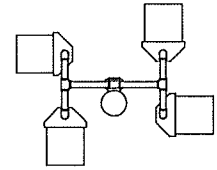
Caltrans: SV-3-TC
NDOT: B-3a



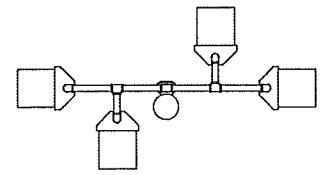
Caltrans: SV-3-TB
NDOT: B-3c



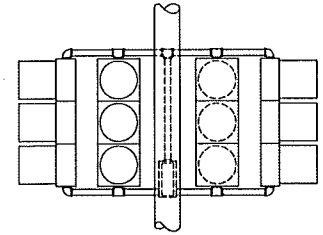
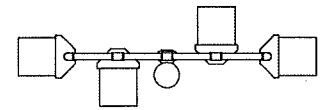
Caltrans: SV-3-TA
NDOT: N-3b



Caltrans: SV-4-TC



Caltrans: SV-4-TB



Caltrans: SV-4-TA

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Note: All signals shown without backplates for clarity

McCain

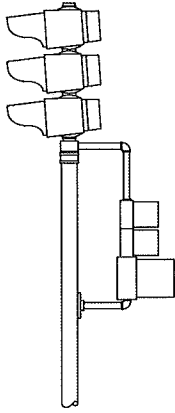
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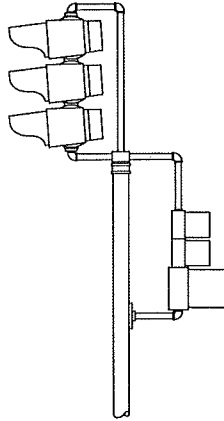
Left Turn Mountings

- Cabinets
- Controllers
- Signals**
- Signs
- Software
- Specialty

No Terminal Compartment

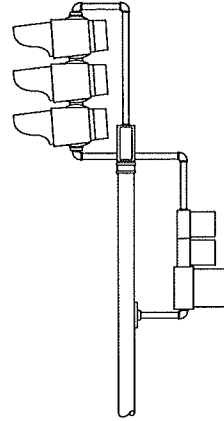


Caltrans: LT-2-A



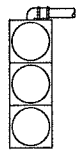
Caltrans: LT-2-B

With Terminal Compartment

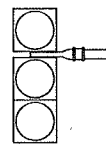


Caltrans: LT-2-T
ADOT: Type: X

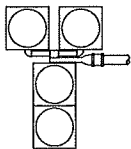
Mast Arm Mountings



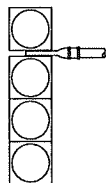
Caltrans: MAT
ADOT: Type I



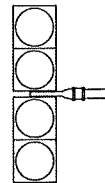
Caltrans: MAS
ADOT: Type II



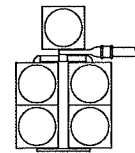
Caltrans: MAS-4A



Caltrans: MAS-4B



Caltrans: MAS-4C



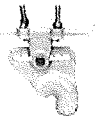
Caltrans: MAS-5A

Note: All signals shown without backplates for clarity

Signal Framework, Pg 6

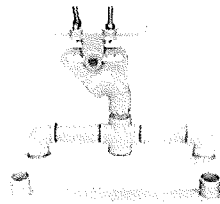
Span Wire Mountings

One Way



Caltrans: SW-1

Two Way



Caltrans: SW-2

Three Way



Caltrans: SW-3

Four Way



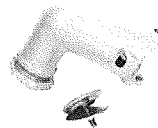
Caltrans: SW-4

Mast Arm Mountings

One Way

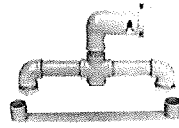


Caltrans: MAS



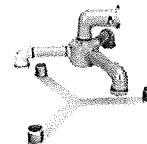
Caltrans: MAT-1

Two Way



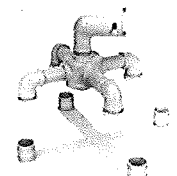
Caltrans: MAT-2

Three Way



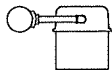
Caltrans: MAT-3

Four Way

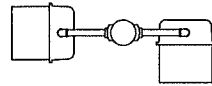


Caltrans: MAT-4

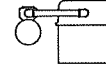
Pedestrian Side-of-Post Mountings



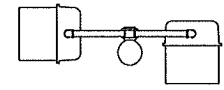
Caltrans: SP-1
ADOT: Type XI



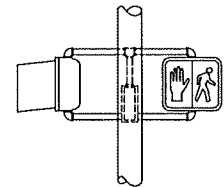
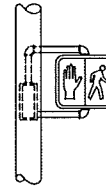
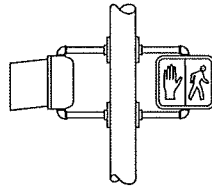
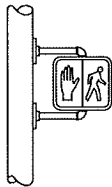
Caltrans: SP-2



Caltrans: SP-1-T
ADOT: Type V
NDOT: WS-1 (modified)



Caltrans: SP-2-T
ADOT: Type VII
NDOT: WS-2



Note: ADOT Type VIII ped same configuration as Caltrans SV-2-TD signal

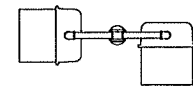
Pedestrian Top-of-Post Mountings



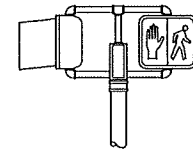
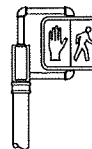
Caltrans: TP-1
NDOT: WT-1



Caltrans: TP-1-T
ADOT: TYPE IV



Caltrans: TP-2-T
ADOT: Type VI
NDOT: WT-2



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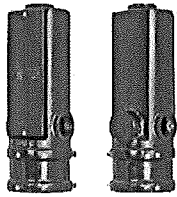


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Adaptors and Mounts - Top-of-Pole

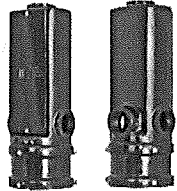
Cabinets
 Controllers
Signals
 Signs
 Software
 Specialty



Adapter, terminal compartment,
 top-of-pole, 2-way
 (includes 12-position terminal block,
 door, & gasket)

Aluminum
 M18810 (black)

Bronze
 M18812 (green)
 M68965 (black)



Adapter, terminal compartment,
 top-of-pole, 3-way
 (includes 12-position terminal block,
 door, & gasket)

M18816 (green)
 M68964 (black)

M18817 (green)
 M68966 (black)



Adapter, top-of-pole,
 offset mount, serrated
 (includes lock nipple)

M18510 (green)
 M31351 (black)

M18511 (green)
 M33300 (black)



Adapter, top-of-pole,
 offset mount, serrated,
 1 side port (includes lock nipple)

M34536 (green)

M18805-1 (green)



Adapter, top-of-pole,
 center mount, plain,
 2 side ports 180°

M18806

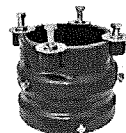
M18807



Adapter, top-of-pole,
 center mount, plain,
 4 side ports 90°

M45667 (green)
 M45669 (black)

M45668 (green)
 M45670 (black)



Adapter, cabinet pedestal,
 top-of-pole, 4½" O.D. pole

M18872

M15323 (silver)

Notes:

1. All slip fittings furnished with set screws.
2. Bronze refers to compartment material. Doors are aluminum.
3. Customer must specify a color for part numbers not associated with a specific color as noted.
4. Colors other than those noted are available. Please contact your McCain representative.
5. na = not available.

Adaptors and Mounts - Side-of-Pole

		Aluminum	Bronze
	Adapter, terminal compartment, side-of-pole, 2-way, saddle back with cable guide (center of back) and mounting holes (includes 12-position terminal block, door, & gasket)	M18822	M18824 (green) M68967 (black)
	Adapter, terminal compartment, side-of-pole, 2-way, saddle back with cable guide (bottom of back) and mounting holes (includes 12-position terminal block, door, & gasket)	na	M18826 (green)
	Adapter, terminal compartment, side-of-pole, 2-way, flat back with cable entrance (center of back) and mounting holes (includes 12-position terminal block, door, & gasket)	M18877	M18879
	Terminal Compartment Door	M68962 (green) M68963 (black)	na
	Pole Plate without cable guide	na	M31251 (green)
	Pole Plate with cable guide	na	M30926 (green)
	Pole Plate, bandable	M18791	na

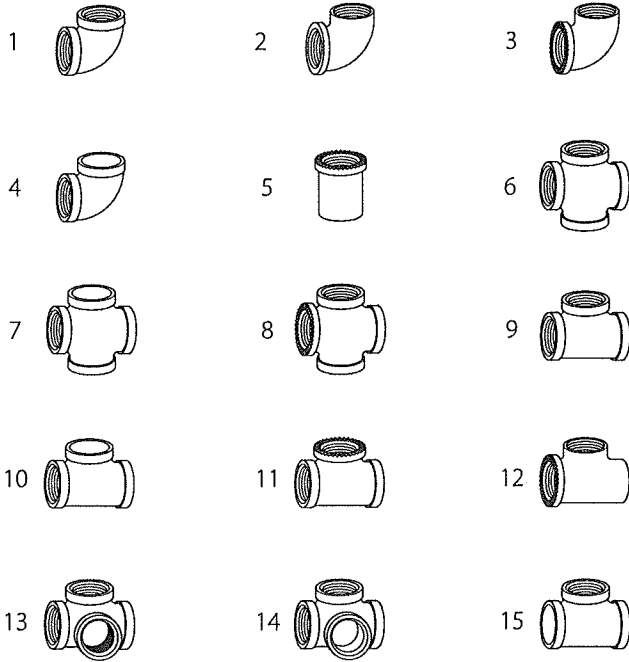
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See notes previous page



Pipe Fittings, 1½-1½ NPT

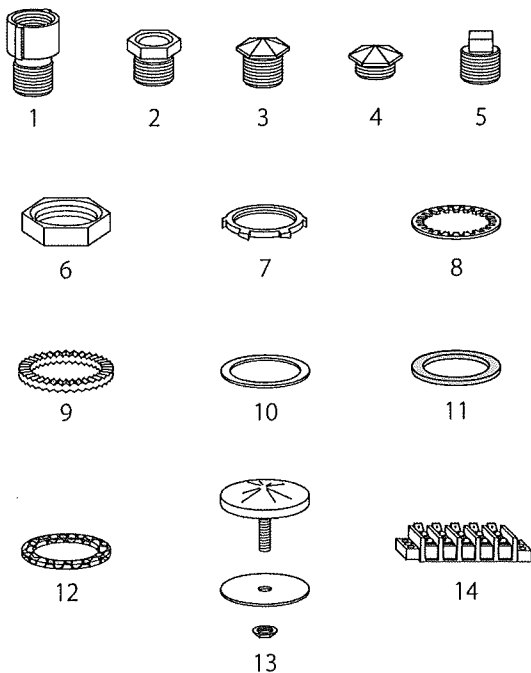
Cabinets
 Controllers
Signals
 Signs
 Software
 Specialty



1. Elbow, standard
2. Elbow, flanged 1 port
3. Elbow, serrated one port
4. Elbow, slip fit one port
5. Coupling, serrated one port
6. Cross, standard
7. Cross, slip fit one port
 Slip cross, slip fit two opposite ports
8. Cross, serrated 1 port
9. Tee, standard
10. Tee, slip fit side port
11. Tee, serrated side port
12. Tee, serrated run 1 port
13. Tee, side outlet
14. Tee, slip fit side outlet
15. Slip tee, slip fit on run 2 ports
 Tee, slip fit on run 1 port

Note: All slip fittings furnished with set screws

Framework Parts, 1½-1½ NPT



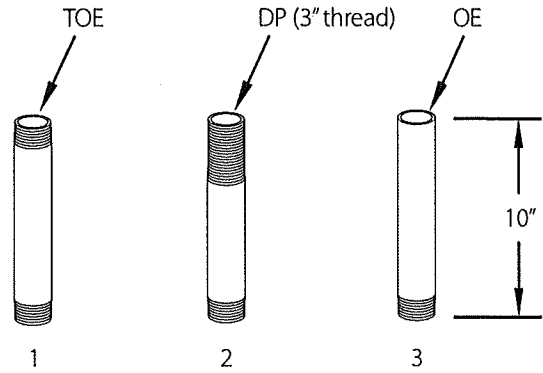
1. Extender, flanged
 Extender, Shurlock
2. Lock nipple
3. Cap, ornamental, long, 1½"
4. Cap, ornamental, short, ½"
5. Plug, square head, 1½"
6. Locknut, malleable iron
7. Locknut, conduit, cadmium plated
8. Lock washer, internal tooth, cadmium plated
9. Lock ring, serrated
10. Washer, flat, aluminum
11. Washer, neoprene
12. Washer, cork
13. Cap, stud, mono (available in yellow, green, and black only)
14. Terminal block, 5-position (other sizes also available)

Pipe and Nipples

Details to Include When Ordering:

1. Length
2. Color
3. Type of ends
 - OE = Open End (not threaded)
 - TOE = Threaded On End
 - DP = Drop Pipe (3" threads)

Examples:



Designations for pipe above:

Pipe No. 1	10", color, TOE, TOE
Pipe No. 2	10", color, TOE, DP
Pipe No. 3	10", color, TOE, OE

Framework Bolts and Hardware

Hot-Dipped Galvanized, Extended Thread Length

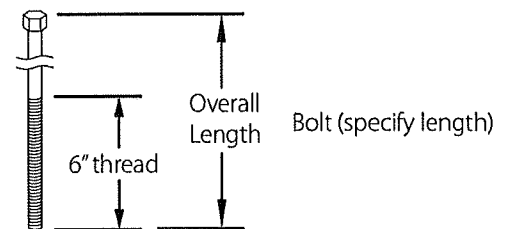
Bolts available in 1/2-13 UNC and 5/8-11 UNC (City of LA):

6", 8", 9", 10", 12", 14", 16", and 18" lengths

Additional available lengths in 1/2" only:

7", 20", 22", and 24"

Bolt Assembly:



- Flat Washers (2)
- Curved Washer
- Lock Washer
- Hex Nut

A complete bolt assembly consists of 2 flat washers, a curved washer, a lock washer, a hex nut, and a bolt of a specified length

To learn more about
McCain's Integrated Traffic
Solutions, please contact
info@mccain-inc.com or
call (760) 727-8100



Visor, Tunnel

12" Diameter, 11" Length
Aluminum
Black



Description

12" Aluminum Tunnel Visor fits McCain aluminum and polycarbonate 12" traffic signals. Visor length is 11". Fabricated from 0.050" aluminum. Visor has a downward tilt between 3° and 7°. Four slotted mounting tabs allow easy installation onto signal (secured with four stainless steel screws normally furnished with signal). Powder coated black inside and out.

Part Number

M19263

Cabinets
Controllers
Signals
Signs
Software
Specialty

Visor, Tunnel

8" Diameter, 8" Length
Aluminum
Black



Description

8" Aluminum Tunnel Visor fits McCain aluminum and polycarbonate 8" traffic signals. Visor length is 8". Fabricated from 0.050" aluminum. Four slotted mounting tabs allow easy installation onto signal (secured with four stainless steel screws normally furnished with signal). Powder coated black inside and out.

Part Number

M19479

Cabinets
Controllers
Signals
Signs
Software
Specialty

Visor, Full Circle

12" Diameter
Aluminum
Black



Description

12" Aluminum Full Circle Visor fits McCain aluminum and polycarbonate 12" traffic signals. Visor length is 11". Four slotted mounting tabs allow easy installation onto signal (secured with four stainless steel screws normally furnished with signal). Visor is powder coated black inside and out.

Part Number

M19300

Cabinets
Controllers
Signals
Signs
Software
Supplies

Visor, Full Circle

8" Diameter
Aluminum
Black



Description

8" Aluminum Full Circle Visor fits McCain aluminum and polycarbonate 8" traffic signals. Visor length is 8". Four slotted mounting tabs allow easy installation onto signal (secured with four stainless steel screws normally furnished with signal). Visor is powder coated black inside and out.

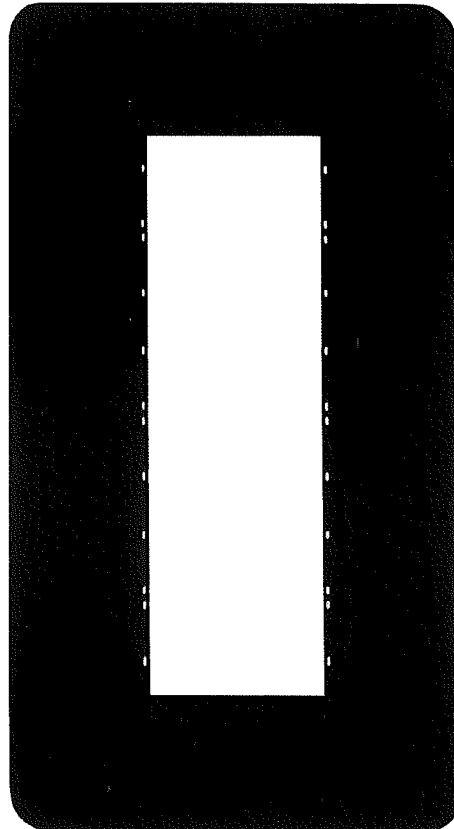
Part Number

M19503

Cabinets
Controllers
Signals
Signs
Software
Supplies

Backplate - Traffic Signal 8-Inch, 3-Section

Aluminum, Black
8-Inch Border
Standard Mounting



Description

Fabricated from sheet aluminum, powder coated black. Fits McCain (8", three-section) aluminum or polycarbonate traffic signal using standard mounting. Border width is 8". Includes mounting screws for aluminum signals.

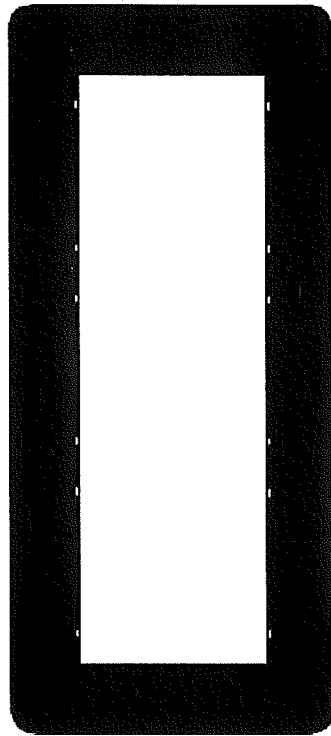
Part Number

M17784

Cabinets
Controllers
Signals
Signs
Software
Specialty

Backplate - Traffic Signal 12-Inch, 3-Section

Aluminum, Black
5-Inch Border
Standard Mounting



Description

Fabricated from sheet aluminum, powder coated black. Fits McCain (12", three-section) aluminum or polycarbonate traffic signal using standard mounting. Border width is 5". Includes mounting screws for aluminum signals.

Part Number

M17915

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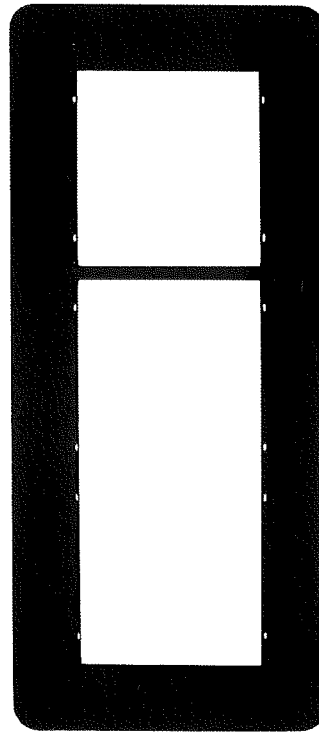
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Cabinets
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Specialty

Backplate - Traffic Signal 12-Inch, 3-Section

Aluminum, Black
5-Inch Border
MAS Mounting



Description

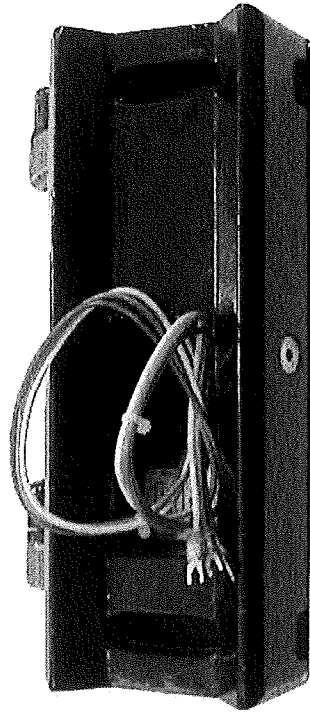
Fabricated from sheet aluminum, powder coated black. Fits McCain (12", three-section) aluminum or polycarbonate traffic signal using MAS (elevator plumbizer) mounting. Border width is 5". Includes mounting screws for aluminum signals and batten plate.

Part Number

M17906

Clamshell Mount

2-Piece Assembly
3-Position Terminal Block
Wire Harness
Green



Shown from side that
attaches to pole

Description

Two-piece clamshell mounting assembly attaches pedestrian signal directly to signal pole, without pipe framework. The clamshell consists of a two-part mounting assembly. The hinge pins are made of stainless steel and the housing itself is made of die cast aluminum alloy. Two parts un hinge for easy installation. Includes vandal-resistant lock screw, terminal block, and wire harness. Powder coated green.

Part Number

M27166

2365 OAK RIDGE WAY VISTA, CALIFORNIA 92081 USA WWW.MCCAIN-INC.COM

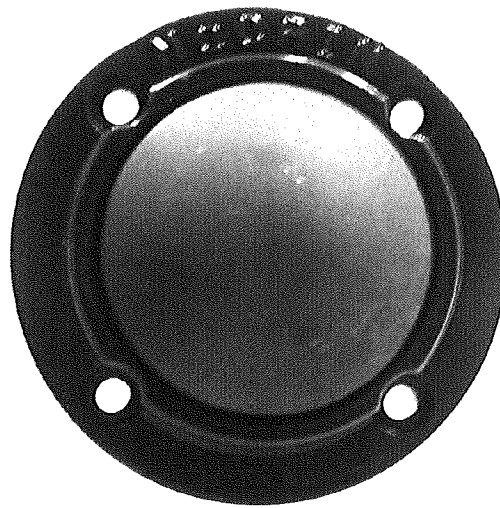
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McCainSM
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Subways
Countdowns
Signals
Signs
Software
Specialty

Pedestrian Push Button Cap and Switch

2 Inch
Anodized Aluminum Plunger
Stainless Steel Components
Aluminum Housing
Green
ADA



Description

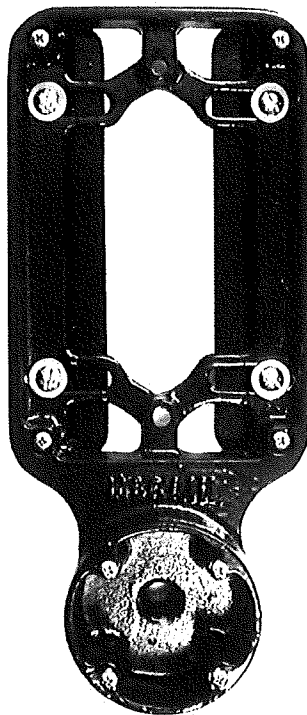
Pedestrian Push Button features a 2" anodized aluminum plunger with stainless steel components and an aluminum housing. Push button features a telescoping, tamper-proof design. There are four mounting holes to allow installation on most push button frames. The micro-switch component is dustproof, water resistant, and the switch has been tested to 10 million cycles. Housing is powder coated green. Meets or exceeds all ADA accessibility guidelines.

Part Number

M19728

Pedestrian Push Button Frame Assembly

5" x 7"
Adjustable
Green



Description

Pedestrian Push Button Frame houses a pedestrian push button cap and switch and a pedestrian push button sign. Fits traffic signal poles with diameter of 4" and greater. After attachment to pole, two adjustable rails are slid inward and locked into place, providing a rigid installation. Housing accommodates most standard 5" x 7" pedestrian push button signs as well as most brands of pedestrian push buttons. Manufactured of die cast aluminum. Powder coated green. Includes Phillips head mounting screws.

Part Number

M19711

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Pedestrian Push Button Sign

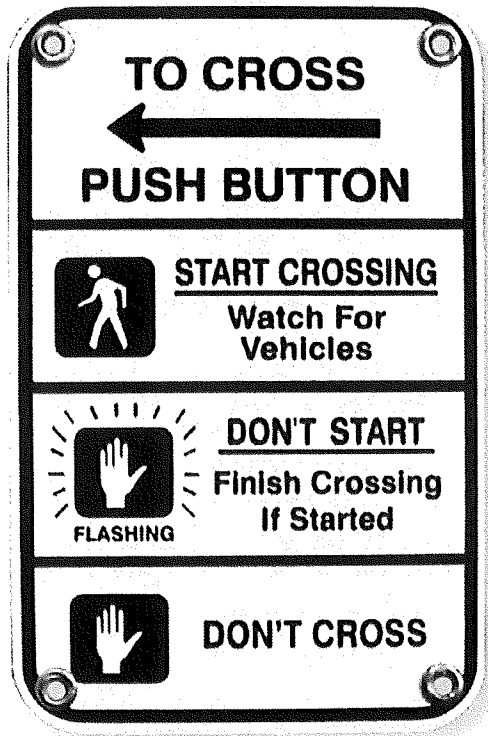
4-Part Message with Instructions

Left Arrow

5" x 7"

Black on White

City of Los Angeles



Description

Pedestrian Push Button sign, 4-part message (TO CROSS PUSH BUTTON/steady walking man/flashing hand/steady hand) with left arrow and instructions. Fits standard 5" x 7" pedestrian push button frames. Fabricated from porcelain enameled steel with brass grommets. Black images on white background. Meets City of Los Angeles, CA specifications.

Manufacturer

Western Highway Products

Part Number

M31791

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Pedestrian Push Button Sign

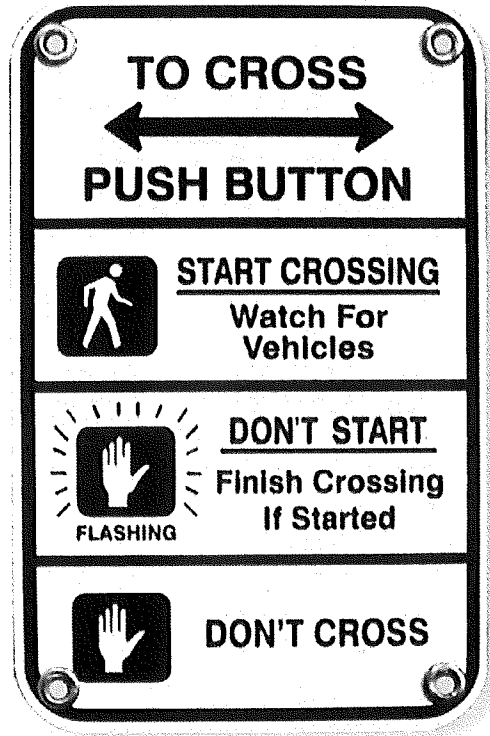
4-Part Message with Instructions

Left/Right Arrow

5" x 7"

Black on White

City of Los Angeles



Description

Pedestrian Push Button sign, 4-part message (TO CROSS PUSH BUTTON/steady walking man/flashing hand/steady hand) with combination left and right arrow and instructions. Fits standard 5" x 7" pedestrian push button frames. Fabricated from porcelain enameled steel with brass grommets. Black images on white background. Meets City of Los Angeles, CA specifications.

Manufacturer

Western Highway Products

Part Number

M31790

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Pedestrian Push Button Sign

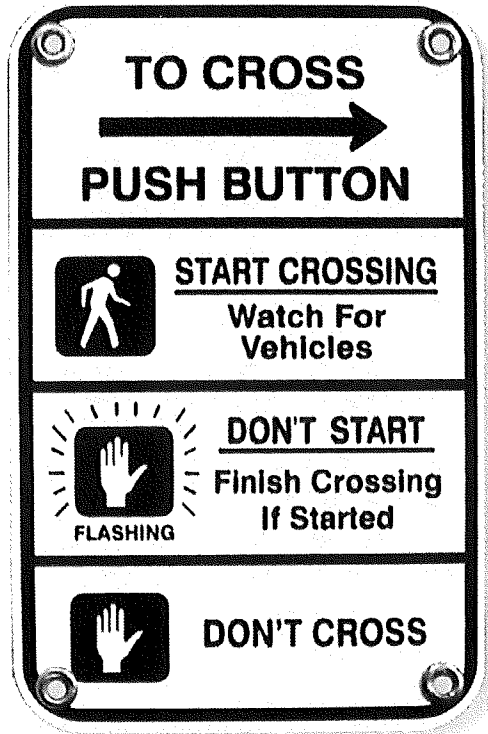
4-Part Message with Instructions

Right Arrow

5" x 7"

Black on White

City of Los Angeles



Description

Pedestrian Push Button sign, 4-part message (TO CROSS PUSH BUTTON/steady walking man/flashing hand/steady hand) with right arrow and instructions. Fits standard 5" x 7" pedestrian push button frames. Fabricated from porcelain enameled steel with brass grommets. Black images on white background. Meets City of Los Angeles, CA specifications.

Manufacturer

Western Highway Products

Part Number

M31792

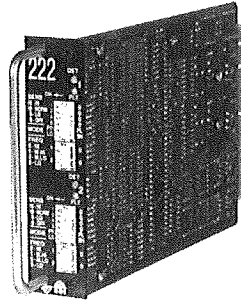
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LM 222 SERIES

TWO CHANNEL LOOP MONITOR™



LM 222

The LM series of Loop Monitors™ from Eberle Design take vehicle detection one step further. They not only indicate vehicle presence with great accuracy and reliability, but also monitor the condition of the loop for diagnostic purposes.

The LM222 Series meet or exceed all standards specified in NEMA publication TS 1-1989 part 15 (Inductive Loop Detectors) and Caltrans TSCES January 1989.

DETECTION FEATURES

Automatic Tuning

No manual tuning is required.

Environmental Tracking

Ensures reliable operation by continuously adjusting for changes in ambient conditions.

8 Levels of Sensitivity

Allows users to fine tune the Loop Monitor™ to their application.

Four Loop Frequencies and Sequential Scanning

Together, these features greatly reduce the incidence of crosstalk.

Three Selectable Modes

Pulse: For counting and volume.

Short Presence: For normal detection.

Long Presence: For sites where loops may be occupied for extended periods of time.

DIAGNOSTIC FEATURES

Separate Detect/Fault LEDs

Eliminates the confusion encountered with other detectors that use only one LED to display both faults and detection. The Fault LED displays the type of fault: Short, Open or 25% change of inductance. Each type of fault is indicated by a unique sequence of flashes allowing the user to diagnose loop failures at a glance.

Fault Memory

Records previous fault information. If a problem self-heals, the LM222 will resume normal operation. The contents of the memory will be displayed on the Fault LED. This feature can be used to isolate the source of intermittent loop failures.



12. Specifications

Power Supply:

24 VDC \pm 20%, 40 mA max, 25mA quiescent.

Loop Input:

The loop inputs incorporate lightning and transient protection devices and the loop oscillator circuitry is transformer isolated. The lightning protection will withstand the discharge of a 10 μ F capacitor charged to 2,000V across the loop inputs or between any loop input and earth ground. The transformer isolation allows operation with loops which are grounded at a single point.

Tuning:

Each channel of the 222 series will automatically tune to any loop and lead-in combination within the tuning range upon application of power or when a valid reset signal is received. A channel may be retuned by adjusting mode, sensitivity or frequency and resetting to the desired value.

Tuning Range:

50 to 1000 microhenry with a Q factor greater than 5.

Lead-in Length:

The unit will operate with lead-in (feeder) lengths over 1,000 feet with appropriate loops and proper lead-in cable.

Environmental Tracking:

The 222 series automatically and continuously compensates for component drift and environmental effects throughout the tuning range and across the entire temperature range.

Grounded Loop Operation:

The 222 series will operate when connected to poor quality loops including those that have a short to ground at a single point.

Sequential Scanning:

Only one channel is energized at any given time, thus reducing the possibility of crosstalk between adjacent loops connected to the same unit.

Fault Monitoring:

The Loop Monitor™ continuously checks the integrity of the loop. The system is able to detect shorted or open circuit loops, or sudden changes in inductance exceeding 25% of the nominal value. If a fault is detected on a channel, the Detect and FLT LEDs will flash and the channel output will remain in either the detect (call) or no-call state depending on the fault output option selected.

If the fault condition is removed, the detect LED and the output will return to normal operation. The FLT Led will continue to flash indicating that a fault had occurred.

High Intensity LED Indicators:

Each channel is fitted with a high intensity RED detect Led indicator and a Yellow Fault Led.

Front Panel Controls:

Front panel mounted DIP switches allow the user to set up sensitivity, operational mode, frequency and channel OFF/ON independently on each channel.

Sensitivity:

One of eight settings may be selected to optimize detection on varying loop and lead-in configurations. Sensitivity is stated in terms of $\Delta L/L$ i.e. the minimum percentage change in the total inductance (loop plus lead-in) to which the unit will respond at the given level setting.

Level 7	.01%	Level 3	.16%
Level 6	.02%	Level 2	.32%
Level 5	.04%	Level 1	.64%
Level 4	.08%	Level 0	1.28%

Channel ON/OFF:

Selecting Channel OFF will disable the channel. In this condition, the loop oscillator is de-energized, and the output will remain in the no-call state.

Operational Modes:

Pulse: 125ms \pm 25ms momentary output.

Pres.(SH): 30minutes.

Pres.(LG): 120minutes

Note: When operating in pulse mode, a vehicle remaining over a loop will inhibit further pulse outputs from being issued for a period of 2 seconds after which time vehicles passing over the uncovered portion of the loop will be detected.

Frequency:

One of four settings may be selected to alleviate interference which may occur when loops connected to different detectors are located adjacent to one another.

Reset Input:

The 222 series may be reset by applying a ground true logic level to the reset input Pin C for a period exceeding 15 microseconds.

Response Times:

The following are typical response times at different sensitivity levels. Note: the times indicated are valid when both channels are set to the same sensitivity.

Level 7	22 +/- 5ms	Level 3	5 +/- .5ms
Level 6	11 +/- 3ms	Level 2	5 +/- .5ms
Level 5	6 +/- 2ms	Level 1	5 +/- .5ms
Level 4	6 +/- 1ms	Level 0	5 +/- .5ms

Output Ratings:

Optically Isolated Output Versions: The output transistor is rated for a maximum collector voltage of 80 VDC. Maximum collector current is 100mA. In the saturated condition the collector voltage will be less than 1.5 VDC with a collector current of 50mA. Maximum off state leakage current is 1 microampere. Isolation exceeds 7,500 VAC.

Mechanical:

Dimensions: 1.12" W x 4.5" H x 7.0" L.

(Excluding Handle)

Weight: 7 oz.

Environmental:

Temperature Range:

Storage: -55°C to +85°C (-67°F to 185°F).

Operating: -40°C to +80°C (-40°F to 176°F).

Humidity: 0 to 95% relative.

Connections:

Edge Connector mates with connector type Cinch 50-44A-30.

PIN

A
B
C
D & 4
E & 5
F
H
J & 8
K & 9
L
W
X

FUNCTION

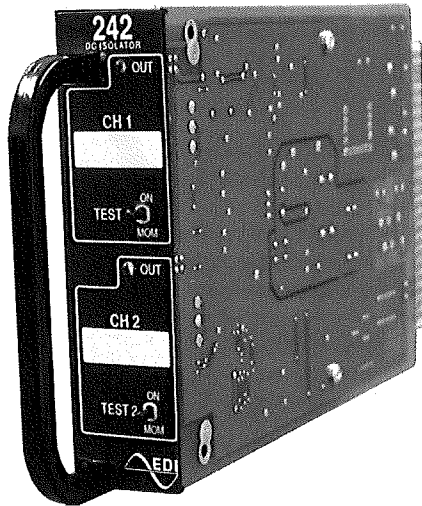
Logic Ground
+24 V d.c.
Reset
Loop Input CH 1
Loop Input CH 1
CH 1 O/P Collector
CH 1 O/P Emitter
Loop Input CH 2
Loop Input CH 2
Chassis Ground
CH 2 O/P Collector
CH 2 O/P Emitter

Pins M & 11, N & 12, P & 13, R & 14, S & 15, T & 16, U & 17, V & 18, Y & 21, Z & 22 have no connection.

Model 242

DC ISOLATOR SERIES

- DUAL CHANNEL – RACK MOUNT
- CALTRANS APPROVED



For over 25 years Eberle Design, Inc. (EDI), has provided technicians and engineers with reliable, high quality mission critical component products that improve the performance and lifecycle of traffic control systems.

EDI's wide range of traffic control vehicle detection products help technicians save valuable time and bank budgeted dollars by quickly installing, accurately troubleshooting, and reliably maintaining traffic control systems with easy to use hi-tech vehicle detectors.

The Model 242 and Model 242E DC Isolator has been specifically designed to deal with all traffic applications and meets or exceeds all requirements of:

- Caltrans QPL, TSCES January 1989
- Caltrans QPL, TEES March 2009

The Model 242E adds additional Fault Output indicators to alert a technician to problems with the Model 242E outputs, cabinet wiring or associated Controller Unit inputs. Three separate Input Pulse filter settings provide a mechanism to screen out transient input pulses that may be the result of noise conditions or signal bounce.

STANDARD FEATURES

Rugged Handle Assembly:



The Model 242 series handle assembly is made of GE Lexan™, which is a super durable polycarbonate resin. The design of this assembly strengthens and protects the whole PCB assembly much better than conventional metal face plates.

Reliable Off-Line Power Supply:

The Model 242 series uses a reliable and efficient isolated off-line switching power supply to provide the DC voltages of the unit.

Enhanced I/O Transient Protection:

Both the DC inputs and outputs are protected from damage due to transient voltages. AC Main protection is provided by an MOV and a fuse option is available.

100 ms Minimum Output Pulse Option:

The Model 242 series can be programmed to provide output pulse widths of 100ms minimum.

Polarity Option:

The input polarity for each channel can be inverted.

Model 242 Product Options:

Model 242-J: provides two-pin post jumpers for the minimum pulse width option and the polarity option.

Model 242-NY: operates from a 24VDC power supply. Meets requirements of New York State DOT for 179 cabinets.

MODEL 242E ENHANCED FEATURES

True Electrical Output Monitoring:

The Model 242E adds a FAULT indicator for each channel that reports when the true output isolated electrical state is not consistent with the intended output state of the isolator. This may result from a cabinet wiring problem, damaged isolator output or defective CU input.

Separate Output & Fault LEDs:

For each channel, separate Red and Yellow LED indicators are provided for the Output and Fault status respectively.

Programmable Input Pulse Filtering:

Pulse filters may be programmed for each channel to reject input pulses that do not meet minimum values for leading edge and trailing edge pulse widths

Polarity Option:

The input polarity for each channel can be inverted.

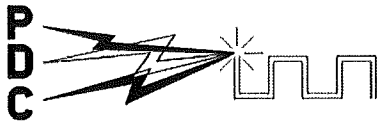
Patent Pending
LEXAN Resin is a trademark of General Electric

EBERLE DESIGN INC.

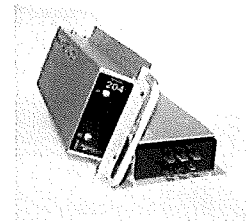
3819 East La Salle Street
Phoenix, AZ 85040 USA
www.EDITraffic.com

Tel (480) 968-6407
Fax (602) 437-1896





DATA SHEET : SSF-88



Solid State Flasher:

Description:

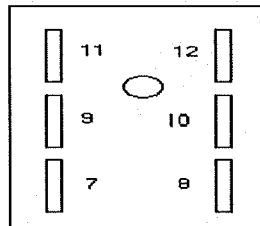
The PDC model SSF-88 solid state flasher is a dual circuit flasher designed for the Traffic Control Industry, specifically to meet California Department of Transportation Model 204 specifications. This unit is conservatively rated up to 15 A per circuit. The flash rate is 56.25 flashes per minute and does not vary due to voltage or temperature variations.

Installation:

The flasher intermates with the model 332 cabinet. It is easily installed or removed by grasping the handle. Connector pinouts are shown in FIG 1. The connector mates with a Beau P-5406-LAB or equivalent.

FIG 1.

Pin	Function
7	Load #1
8	Load #2
9	Chassis ground
10	AC-
11	AC+
12	Spare



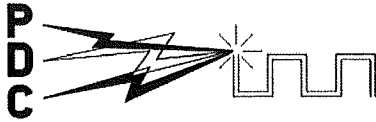
General Characteristics:

Load	Voltage.....	120 VAC
	Current (max).....	15.0 Amps (Tungsten filament load)
Flash Rate	Flashes /min.....	56
	Duty cycle.....	50%
Switching	1 st alteration after signal is applied	+10 degrees of line voltage
	Zero crossover point
	Succeeding alterations.....	+5 degrees of line voltage
Off State	Dv/dt.....	100 V per microsecond
	Line to load resistance.....	15K ohms min.
	Leakage current.....	Less than 20 MA
Isolation	Voltage.....	2500 VDC min.
	Resistance.....	10,000 meg ohms min.
Surge Current	One cycle.....	175 Amps RMS min.
	One second.....	40 Amps RMS min.
Life	Operations.....	30 million min.
Mechanical	Length.....	8.40 inches
	Width.....	1.70 inches
	Height.....	4.185 inches
	Weight.....	1.5 lbs

Adjustments: The model SSF-88 flasher has no adjustment controls.

Theory of Operation:

General – The model SSF-88 flasher can be broken down into three functions, as shown in FIG 2.



DATA SHEET : SSF-88

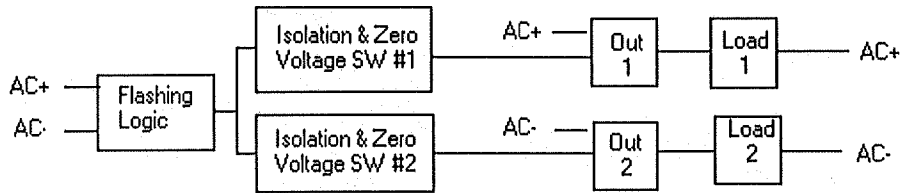
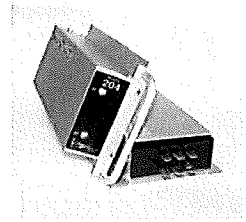


FIG 2.

Flashing Logic – the flashing logic circuit counts the incoming AC line and switches control between circuits 1 and 2, one each ½ second.

Isolation & Zero Voltage Switch –This portion of the flasher is an optocoupler which provides a high degree of electrical isolation between the input signal and the output triac. A LED light source within the optocoupler is used to switch on a photo-triac. The optocoupler contains the zero voltage switching circuitry which turns the output triac on or off within five degrees of the line voltage zero voltage point.

Output – The output circuit consists of a triac and the load circuit. The triac is a simple bi-directional switch whose on-off state is controlled by the zero voltage switch.

Detailed Description of Circuit Operation:

Referring to the schematic diagram, FIG 3., the flashing logic circuit consists of C1, C2, C3, CR1, R2, R3, R5, R12, IC1, Q1, Q2, & Q3. The flashing logic circuit is a free running circuit as long as the AC+ is applied. The heart of the flashing logic circuit is the 4024 (7 stage cmos counter) IC1. IC1 counts the AC line presented at pin1 via the components C2, R3, & C3. IC1 counts the AC on pin 1 and every 32 counts changes the status of the output at pin 4 (533 m sec.) When pin 4 is in the (+) state q# is energized activating circuit #1. When pin 4 is at ground, Q2 activates circuit #2. The output of the flashing logic circuit drives 2 identical optocouplers (IC2 & IC3). When Q3 saturates, IC3 switches on due to the current flow through its photo diode. The photo triac in IC3 has a zero voltage sense circuit built in which will allow the photo triac to turn on or off only within 5 degrees of 0 volts on the AC sine wave. When the photo triac turns on the main power triac TR2 is turned on. TR2 will remain on until the photo triac turns off. I1 & I2 are LEDs that come on with their respective outputs.

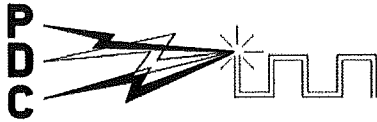
Note that regardless of when the input signal (GND) is applied or removed the load is not switched on or off until the pulsating AC voltage drops to zero. With an incandescent lamp load the line voltage and current are in phase and the possibility of RFI due to switching transients is reduced drastically because actual load switching occurs at nearly zero voltage and current. The zero voltage switching action also helps reduce the surge current as the tungsten filament is turned on.

Maintenance:

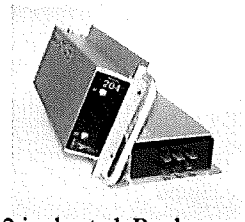
Preventative Maintenance: The flasher may be stored in any non-corrosive environment until needed. Once installed and operating the flasher unit needs no preventive maintenance during normal operation.

Trouble Analysis: If the flasher does not operate properly, follow outline I., II., and III to isolate the problem.

- I. Perform the following preliminary checks:
 - A. Check for 115 VAC at the input of the flasher.
 - B. Check for 115 VAC flashing on pins 7 & 8 of the flasher connector (while flasher is operating).
 - C. Check flasher indicators
 - D. Check flasher wiring external to P1.
 - E. Check for burned out load lamp.
 - F. Check for broken wires or component leads inside the flasher.
- II. If steps A through D of outline are normal, the problem is within the flasher. Select either problems 1 or 2 depending on the fault condition present. For example purposes the isolation procedures shown assume that load #1 section of the flasher is faulty.
 - A. Problem 1 – Load #1 stays on all the time & load #2 flashes normally.
Probable cause – TR2, IC3, or Q3 is shorted on.



DATA SHEET : SSF-88

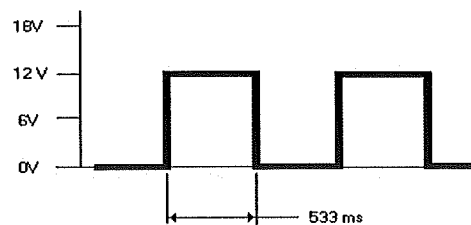
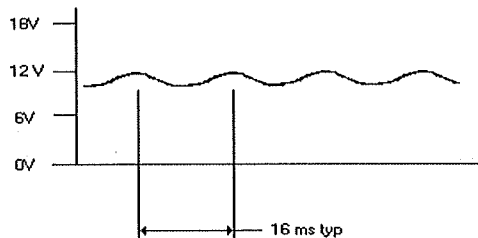


1. Isolation procedure :
 - a. Disconnect gate lead to TR21 and one end of R14. If load stays on, TR2 is shorted. Replace TR2. If the load turns off, reconnect R14.
 - b. Disconnect one end of R4. If load stays on, IC3 is shorted. Replace IC3. If the load turns off then Q3 is shorted. Replace Q3.
- B. Problem 2 – Load #1 does not turn on.
 1. Probable cause – either TR2, IC3, or Q3 is open.
 2. Isolation procedure:
 - a. Jumper pins 4 & 6 of IC3. Output should come on solid. If output stays off TR2 is open. Replace TR2. Remove jumper.
 - b. Jumper Q3 collector to emitter. Output should come on solid. If output stays off, IC3 is open. Replace IC3. If output comes on Q3 is open. Replace Q3.
- III. If the flasher has an erratic flash rate or no flashing outputs the problem is in the logic section of the flasher. Select either problem 3 or 4 depending on the fault condition present.
 - A. Problem 3 – Flash rate erratic.
 1. Probable cause – IC1 or C1
 2. Isolation procedure:
 - a. Check DC power at C1. Voltage levels should be between 8 & 18 volts (see waveform a). If voltage levels are proper proceed to step 3, if not, change C1.
 - b. Check output of IC1, pin 4 (see wave form b). If output is not 533 milliseconds change IC1.
 - B. Problem 4 – No flashing outputs.
 1. Probable cause – C1, CR1, IC1 & C2.
 2. Isolation Procedure:
 - a. Check DC power at C1. Voltage levels should be between 8 & 18 volts (see wave form a)
 - i. If waveform is proper proceed to step 3.
 - ii. If voltage is zero change CR1
 - b. Check output of IC1, pin 4.
 - i. If the output is not changing, replace IC1.
 - ii. If after changing out IC1 the output is changing, then replace R4.

Trouble Shooting Sequence Chart:

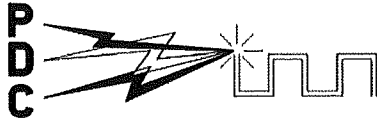
	Problem	Solution
A	No flashing output	Try another flasher to verify if the flasher is defective. If still no output go to trouble analysis section I. If output then go to trouble analysis section III.
B	Only one circuit flashing	Try another flasher to verify if the flasher is defective. If only one circuit is flashing go to trouble analysis section I. If both flash then go to trouble analysis section III.
C	One output stays on all the time	Try another flasher to verify if the flasher is defective. If output stays on go to trouble analysis section I. If output flashes normal go to trouble analysis section II.

Wave Forms

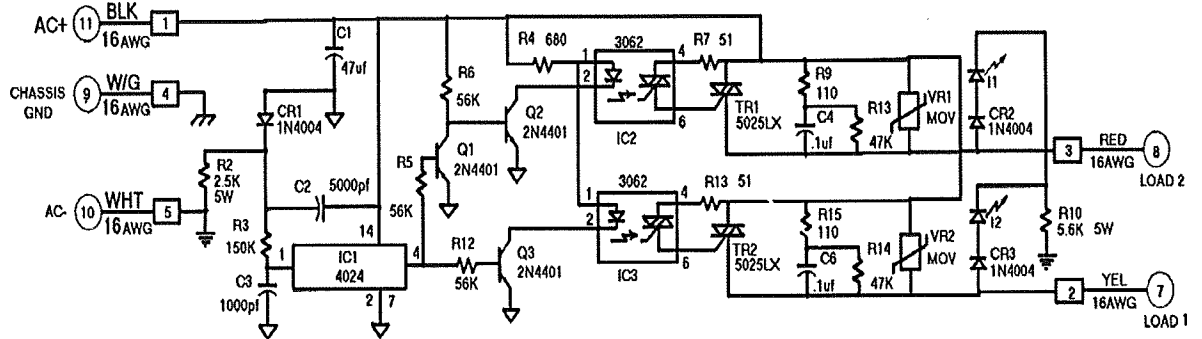
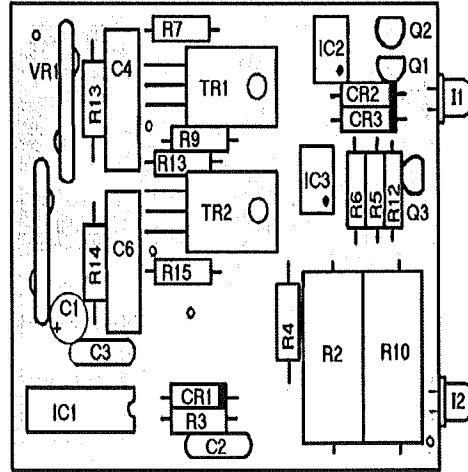
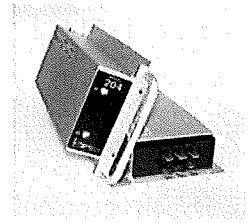


Q)

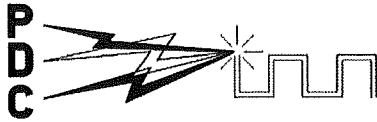
Voltage Measurements: Voltage measurements are shown under “Maintenance” section I.
Alignment procedure: There is no alignment procedure required for the operation of the flasher.
Guarantee: The flasher is guaranteed against all failures due to manufacturing defects to two years.



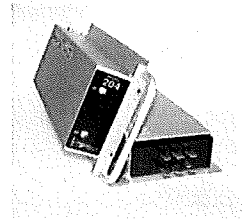
DATA SHEET : SSF-88



SCHEMATIC DIAGRAM

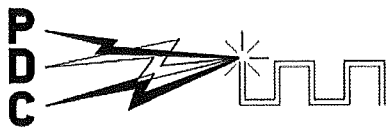


DATA SHEET : SSF-88

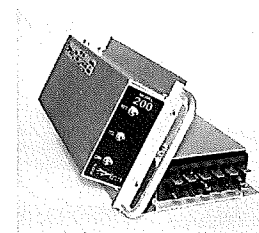


Item	qty	description	PDC P/N	MFG	MFG P/N	RefDes
1	1	Label, S/N	00043	PDC	00043	
2	1	Chassis	00328	PDC	00328	
3	1	Cover	00206	PDC	00206	
4	1	Bar, Triac Mounting	00212	PDC	00212	
5	1	Label, front panel	00345-2	PDC	00345-2	
6	1	P.C. Board Fab.	00340	PDC	00340	
7	1	Handle	00333-1	PDC	00333-1	
8	1	Bar, handle support	00334	PDC	00334	
9	1	Wire kit, SSF-88	00351	PDC	00351	W1-W5
10	1	Capacitor, 47uf 16V	C0001	Panasonic	ECE16V47	C1
11	1	Capacitor, 5000pf, 1000V	C0002	RMC	.005500V	C2
12	1	Capacitor, 1000pf, 500V	C0013	RMC	.001500V	C3
13	2	Capacitor, .1uf 400V	C0003	Thomson CSF	MC104K4G	C4,5
14	3	Diode, 1N4004	CR0006	Fairchild	1N4004	CR1,2,3
15	2	Spacer, ¼ OD x .165 ID x 3/16 lg	H0062			
16	2	Nut, keps 6-32	H0038			
17	6	Screw, PH PN HD #6 x 3/8	H0064			
18	2	Screw, PH PN HD 6-32 x 3/8	H0041			
19	2	Screw, PH PN HD 6-32 x 1 3/16	H0043			
20	2	Pop Rivet .125 x 3/8	H0063			
21	1	I.C. C'MOS 4024	IC0002	RCA	CD4024BE	IC1
22	2	Opto Triac	IC0023	Sharp	S21MD4	IC2,3
23	1	Connector, 6 pin	J0057	Beau	P5406LAB	J1
24	2	L.E.D. Clear Red	LD0004	G.I.	MV 5020	I1,2,3
25	1	Resistor, 12K ohm ¼ W	R0014	Dale		R6
26	2	Resistor, 56K ohm ¼ W	R0018	Dale		R5,12
27	1	Resistor, 150K ohm ¼ W	R0020	Dale		R3
28	2	Resistor, 47K ohm ½ W	R0024	Dale		R13,14
29	1	Resistor, 680 ohm ½ W	R0025	Dale		R4
30	2	Resistor, 110 ohm ¼ W	R0046	Dale		R9,15
31	2	Resistor, 51 ohm ¼ W	R0051	Dale		R7,13
32	2	Resistor, 5.6K ohm 5W	R0048	TRW	PW5-5.6	R2,10
33	3	Transistor 2N4401	Q0004	G.E.	2N4401	Q1,2,3
34	2	Triac, 25A 500V	TR0012	Teccor	Q5025LX	Tr1,2
35	1	Tie Wrap	TW0001	Panduit	PLT-1M	
36	2	Varistor	VR0001	NEC	NV240D19	VR1

PDC has developed second and third sources for all our purchased parts. Substitute parts are used upon occasion when market conditions do not allow for the first source to be used. A listing of second and third sources is available upon request for any item that is on the above parts list.



DATA SHEET :SSS-88



Solid State Loadswitch:

Description:

The PDC SSS-88 Solid State Loadswitch is a tri-pack solid state relay package designed specifically for the Traffic Control Industry. This unit meets NEMA specification TS1-1983, section 5 as well as the California Department of Transportation "Model 200" specifications.

Each switch will turn it's rated load ON or OFF within 10 deg. of the first zero cross-over point & within 5 deg. on succeeding alterations randomly timed input command signal.

The electronics are enclosed in a dust resistant, metal enclosure providing mechanical protection and excellent heat sinking for the heat generating components in the circuit. The electronic components are easily accessible by removing the cover with a screwdriver.

Installation:

The switchpac inter mates with any standard NEMA loadbay or with the model 332 cabinet output file. It is easily installed or removed by grasping the handle. Connector P1 pin outs are shown in FIG 1. The connector mates with a PDC BCS-12 or equal.

PIN	FUNCTION
1	+115VAC, 60 Hz
2	Chassis Ground
3	A Output (Red, Don't Walk)
4	Not Assigned
5	B Output
6	A Input (Red, Don't Walk)
7	C Output (Green, Walk)
8	B Input (Yellow)
9	+24 VDC
10	C Input (Green, Walk)
11	Not Assigned
12	Not Assigned

(P1 as viewed from the outside of the product looking directly at the connector)

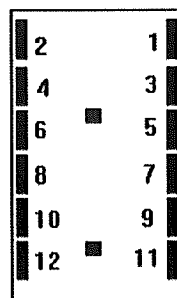


FIG 1.

General Characteristics:

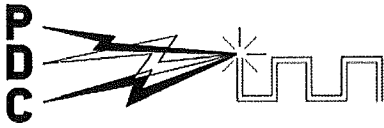
Load	voltage.....	120 VAC
	current (max).....	15.0 Amps
(Tungsten Filament Load)		
Control Signal	voltage.....	+24VDC
	current	20.0 MA (max)
Switching	1st alternation after.....	±10 Degrees of line voltage at the zero signal is applied. crossover point.
	Succeeding alterations.....	±5 Degrees of line voltage at the zero crossover point.
	Off State	dv/dt.....
Isolation	line to load resistance.....	15 K Ohms Min
	leakage current.....	less than 20 MA
	voltage.....	2500 VDC Min
Surge Current	resistance.....	10 Meg Ohms Min
	one cycle.....	175 Amps RMS Min
Life	one second.....	40 Amps RMS Min
	operations.....	30 million Min
Mechanical	length.....	8.40 inches
	width.....	1.74 inches
	height.....	4.185 inches
	weight.....	1.135 LBS

Guarantee: The SSS-88 is fully guaranteed against all failures due to manufacturing defects for two years.

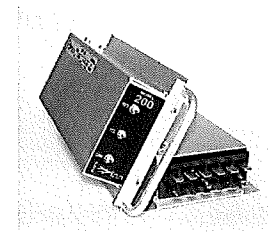
Adjustments: The switchpac has no adjustments

Theory of operation:

P.O. Box 7172 #205 Stateline, NV. 89449 • PH (925) 455-7711 • FAX (925) 455-7714

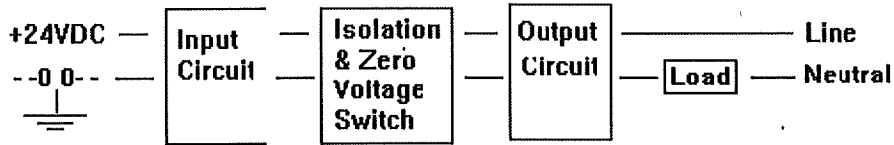


DATA SHEET :SSS-88



General - The switchpac is an AC zero voltage switch which can be broken down into three (3) separate functions. The functions are illustrated in Fig 2.

Input - The input circuit is analogous to the coil of an electromechanical relay. CR1 is a reverse voltage protection diode. CR2,



CR3, CR4, R1, R5, & R10 provide the proper voltage range for switch turn on.

Isolation & Zero Voltage Switch - Isolation and zero voltage switching is performed by IC1, IC2, & IC3 which are optically isolated zero voltage turn on triacs.

Output - The output circuit consists of a triac and the load circuit. The triac is a simple bi-directional switch whose on - off state is controlled by the zero voltage switch circuit.

Detailed Description of Circuit Operation
See above "Theory of Operation"

Maintenance:

If the switchpac does not function properly, follow the outline I and II to isolate the problem.

I. Perform the following preliminary checks:

- A. Check for 115VAC and 24 VDC at the input of switchpac.
- B. Check the control signal input circuit (which is part of the traffic control system)
- C. Check switchpac wiring external to P1.
- D. Check for burned out load lamp.
- E. check for broken component leads inside the switchpac.

II. If steps A through E of outline I are normal, the problem is within the switchpac. Select either problems 1 or 2 depending on the fault condition present. For example purposes, the isolation procedures shown in problem 1 assumes that the load A section of the switchpac is faulty.

A. Problem 1.

Switchpac stays on all the time, even in absence of a control signal.

Probable Cause - Either IC1 or TR1 is shorted.

Isolation Procedure- Remove one side of R3. If switchpac is still shorted change TR1. If not , change IC1.

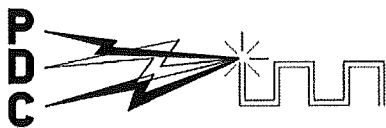
B. Problem 2.

Switchpac does not turn on when signal is applied.

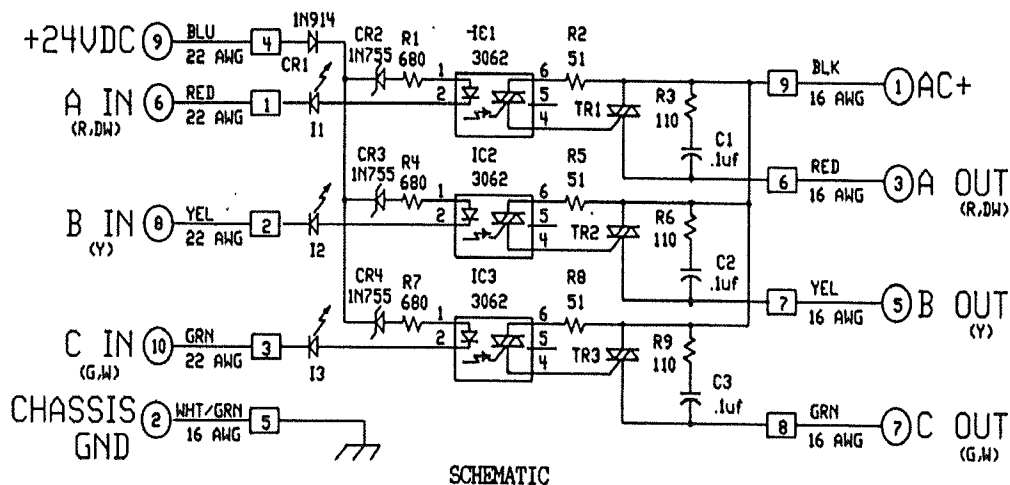
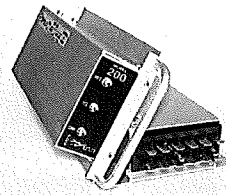
Probable cause - I1,CR2,IC1,or TR1 is open. If TR1 is open, R2 would be burnt.

Isolation Procedure-

1. Lift one side of R1 and put ammeter in series. Switchpac should draw approximately 20MA. If current measures approximately 20MA, change IC1.
2. If no current, then jumper CR2. If current flow is over 20MA, change CR2.
3. Jumper I1. If current flow of 20MA or more , change I1.
4. Measure resistance of R1. If it is not 510 ohms, change R1



DATA SHEET :SSS-88



SSS-88 Partslist Assembly NO. 00325

Item No.	QTY	DESC.	PDC PN	MFG	MFG PN	REF DES
1	1	Label,S/N		OOO43	PDC	OOO43
2	1	Chassis		OO328	PDC	OO328
3	1	Cover		OO206	PDC	OO206
4	1	Bar, Triac		OO212	PDC	OO212
5	1	Label, Front		OO345	PDC	OO345
6	1	PC Board		OO325	PDC	OO325
7	3	Cap .1uf 400v		COO03	Thomson	MC104K4G C1,2,3
8	3	Diode, 1N753A, Zener		CR0005	Fairchild	1N753A CR2,3,4
9	1	Diode, 1N914		CRO007	Fairchild	1N914 CR1
10	2	Spacer		H0015		
11	3	Nut, 6-32		H0038		
12	4	Screw, #5x3/8		H0040		
13	2	Screw, 6-32x3/8		H0041		
14	3	Screw, 6-32x15/16, Fill		H0042		
15	2	Screw, 6-32x1 3/16		H0043		
16	3	Opto Triac		IC0023	Sharp	S21MD4 IC1,2,3
17	1	Conn, 12 pin		J0002	Beau	P5412-S J1
18	3	L.E.D.		LD0004	G.I.	MV5020 I1,2,3
19	3	Res, 680 ohm 1/2W		R0004	Dale	R1,5,9
20	3	Res, 2.2K ohm 1/4W		R0010	Dale	R2,6,10
21	2	Res, 0 ohm		R0052	Dale	R3,7
22	3	Triac, 500V, 25Amp		TR0012	Teccor	Q5025LX TR1,2,3

332/334 Standard Bare Cabinet

Cabinets

Controllers

Signals

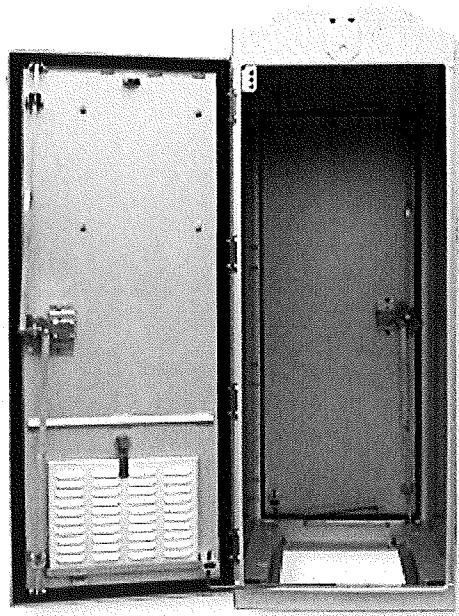
Signs

Software

Specialty

Anodized

P/K Long Beach
White



Description

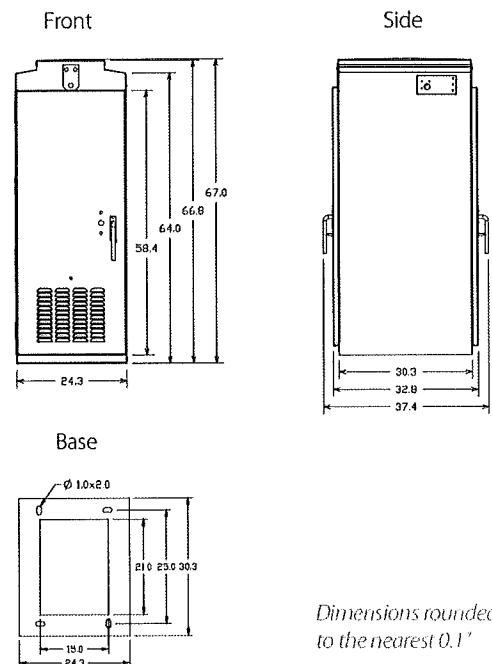
The 332/334 cabinet shell is set up as a empty cabinet. It includes a 19" rack. Locks may be ordered as the standard state type (Corbin #2) or Best Locks. This cabinet will fit on a standard 332/334 foundation.

General Specifications

- Dimensions: 67" H x 24" W x 30" D (rounded to the nearest inch)
- Material: 5052-H32 aluminum, 0.125" thick
- Finishes: Anodized
- Access: Front door (1), back door (1), both full size
- Latching System: 3-point, choice of Corbin or Best locks
- Handles: 3/4" round, stainless steel, with padlock feature
- Door Stops: 90° ($\pm 10^\circ$), each door, top
90° and 180° ($\pm 10^\circ$), each door, bottom
- Rack Assembly: Removable 19" EIA rack
- Mounting: Base mounted

Part Number

M70002

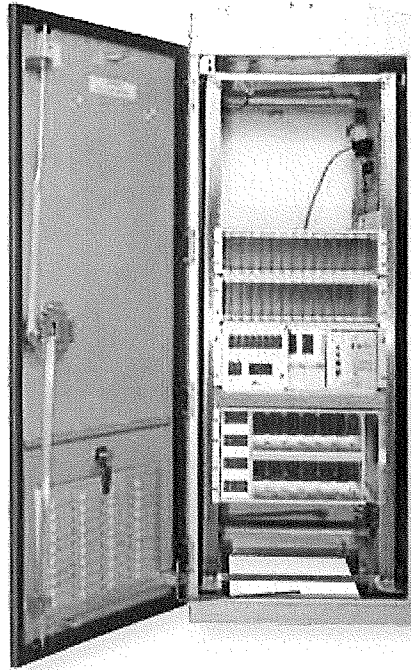


Dimensions rounded to the nearest 0.1"

332 Controller Cabinet

332A Panel Termination
332B Panduit Ducts
332S Stretch

P/c Long Beach
white



Cabinets

Controllers

Signals

Signs

Software

Specialty

Overview

McCain's 332 Controller Cabinet is an industry standard 170/2070 style cabinet. Meeting all Federal Highway Administration (FHWA) and Caltrans Transportation Electrical Equipment Specifications (TEES) and Caltrans Traffic Signal Control Equipment Specifications (TSCES) specifications, the quality materials used and its rugged construction make it an excellent traffic controller cabinet when dependable and low-maintenance installation is required. Its 19-inch Electronics Industry Alliance (EIA) rack and modular design allow for the easy interchange of standard assemblies and components.

Benefits

- Rugged and dependable industry standard cabinet
- Standard assemblies assure interchangeability between manufacturers
- Full size doors (front and back) provide easy access to the cabinet's large interior
- Three-point latching system with industry standard locks for maximum security
- Available anti-graffiti coating reduces the effects of vandalism

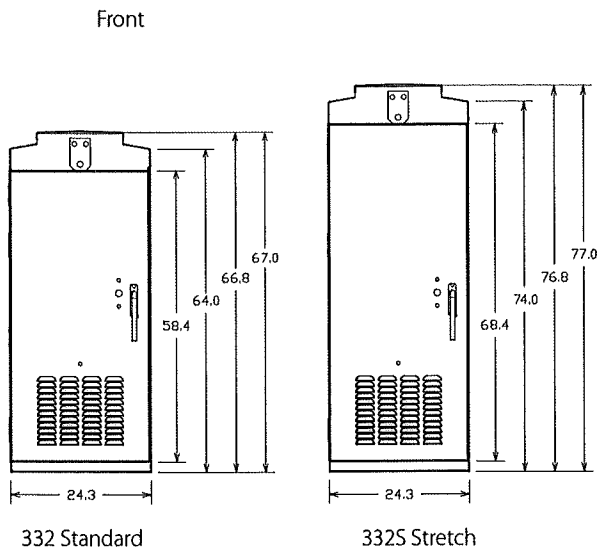
Product Description

The McCain 332 Controller Cabinet is designed to house the 170 or 2070 controllers. This robust cabinet is constructed from marine-grade aluminum and is accessed via a front and back door making it durable and easily maintained. The cabinet comes equipped with industry standard features such as a 19-inch EIA rack, two 14-position input files, and a 12-position output file.

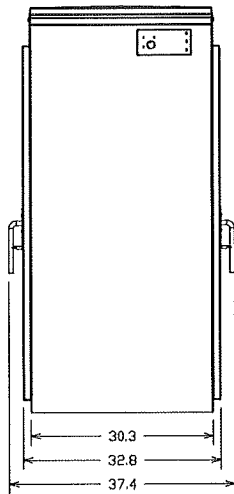
The standard cabinet offers an eight-phase, four-pedestrian operation with two right turn overlaps. Its 36 detector channel capability can be utilized with two-channel or four-channel detector modules.

The cabinet is secured via a three-point latching system and protected with a padlock providing secure installations and easy access for maintenance.

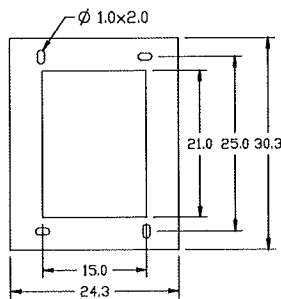
332 Controller Cabinet



Side



Base



Dimensions rounded to the nearest 0.1"

Standard Features

- 8-phase, 4-pedestrian operation (2 right turn overlaps available)
- 36 detector channel capability (3 per left turn, 6 per through movement)
- 2-channel or 4-channel industry standard detection modules
- Input panel with termination blocks (332A & 332S) or Panduit ducts (332B)
- Railroad preemption inputs (2)
- Emergency vehicle preemption inputs (4)
- Programmable "Yellow/Red" or "All Red" flashes through the use of flash plugs
- DC isolation inputs for pedestrian push buttons and special functions
- 210 Signal Monitor slot

Assemblies

- 14-position input files (2)
- 12-position output file
- Model PDA-2 combined power supply and Power Distribution Assembly or Model PDA-1 Power Distribution Assembly and separate 24 VDC power supply
- Flash transfer relay sockets (4)
- Dual-circuit flasher sockets (2)
- Input panel
- Service panel
- Police panel with signal "On/Off" and "Auto/Flash" switches

General Specifications

- Dimensions: Standard: 67" H x 24" W x 30" D
Stretch: 77" H x 24" W x 30" D
(Dimensions rounded to the nearest inch)
- Material: 5052-H32 aluminum, 0.125" thick
- Finishes: Natural, powder coat (standard, anti-graffiti, and custom colors), anodized
- Access: Front door (1), back door (1), both full size
- Latching System: 3-point, choice of Corbin or Best locks
- Handles: 3/4" round, stainless steel, with padlock feature
- Door Stops: 90° (±10°), each door, top
90° and 180° (±10°), each door, bottom
- Rack Assembly: Removable 19" EIA rack
- Ventilation: Thermostatically controlled 100 CFM fan
Louvered air intake in door, pleated filter
- Mounting: Base mounted
- Shipping Weight: Standard: 300 lbs Stretch: 325 lbs
(weight without plug-ins or controller(s))

Options

- 3/4" x 16" anchor bolts for mounting (4)
- Fluorescent light(s)
- Sunshields
- Drawer assembly(s)
- Underwriters Laboratories Listing (cabinet housing)

To learn more about McCain's Integrated Traffic Solutions, please contact info@mccain-inc.com or call (760) 727-8100

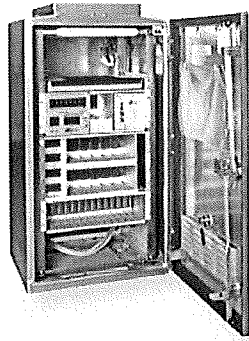
McCain[®]

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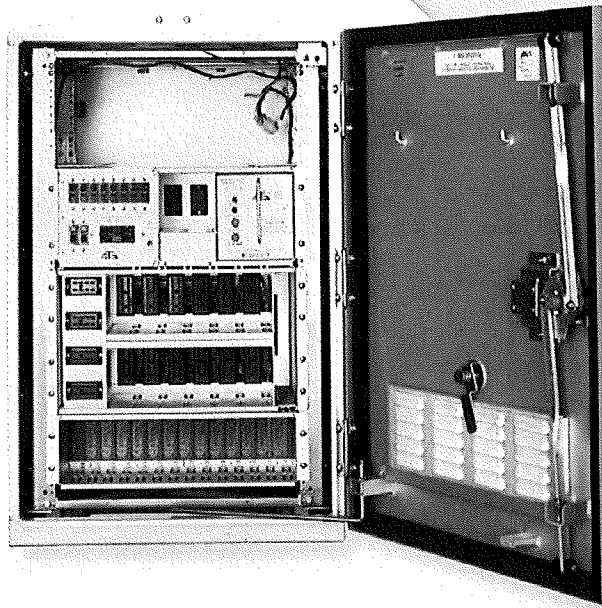
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336 Controller Cabinet

336A Standard
336S Stretch



Stretch



Standard

Cabinets

Controllers

Signals

Signs

Software

Specialty

Overview

McCain's 336 Controller Cabinet is a versatile, compact, and rugged cabinet that can be either base, pedestal or pole mounted. This cabinet meets all Caltrans and Federal Highway Administration (FHWA) requirements. Convenient access to all interior assemblies and field terminations is available through two access doors, one front and one back. The cabinet is compatible with 170 or 2070 controllers and comes equipped with a 19-inch Electronics Industry Alliance (EIA) rack. The 336 cabinet shares many of the features of larger cabinets but with the added benefit of its small and compact design. The cabinet is also available in a taller version (336S) that provides approximately six inches of additional rack space.

Benefits

- Compact size and versatile standard features promote maximum flexibility for intersection planning
- Standard assemblies assure interchangeability between manufacturers
- Variety of mounting positions increases flexibility and options for intersection design
- Available anti-graffiti coating reduces the effects of vandalism
- Available in standard (336A) and stretch (336S) models to meet your housing needs

Product Description

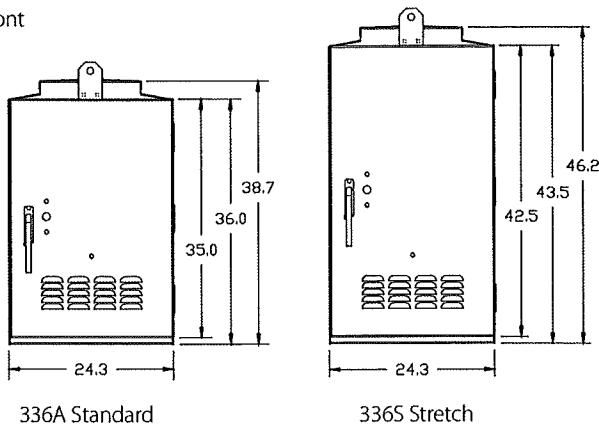
The McCain 336 Controller Cabinet provides a unique advantage over its larger counterparts through its compact and versatile design. This cabinet can house all of the equipment necessary to control an eight phase, four pedestrian operation with two overlaps while still offering flexible mounting options.

Its 12 loadswitch positions can all be programmed ("Yellow/Red", "All Red", or "No Flash") and a police panel comes standard with "On/Off" and "Auto/Flash" switches. This cabinet also features two railroad and four emergency vehicle preemption inputs, provides 16 detector channels (one per left turn, three per through movement), and is compatible with two-channel or four-channel detectors.

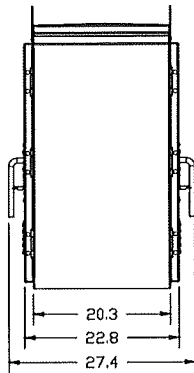
Flexible assembly set-up allows the 24 VDC power supply and Power Distribution Assembly (PDA) to be combined as one assembly or left as separate assemblies.

336 Controller Cabinet

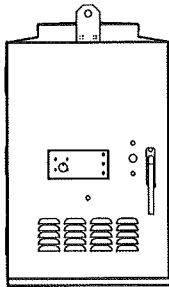
Front



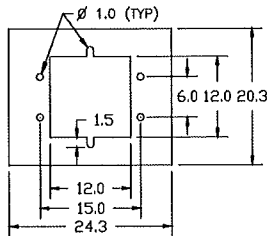
Side



Back



Base



Base dimensions are the same on the standard and stretch models.

Dimensions rounded to the nearest 0.1"

Standard Features

- 8-phase, 4-pedestrian operation (2 overlaps)
- 16 detector channels (1 per left turn, 3 per through movement)
- 2-channel or 4-channel industry standard detection modules
- Railroad preemption inputs, AC isolation (2)
- Emergency vehicle preemption inputs (4)
- Programmable "Yellow/Red", "All Red" or "No Flash" available for all loadswitch positions
- DC isolation inputs for pedestrian push buttons and special functions
- 210 Signal Monitor slot

Assemblies

- 14-position input file
- 12-position output file
- 24 VDC power supply
- Power Distribution Assembly (PDA-2) with combined power supply
- Flash transfer relay sockets (4)
- Dual-circuit flasher positions (2)
- Service panel
- Police panel with signal "On/Off" and "Auto/Flash" switches
- Controller shelf

General Specifications

- Dimensions: 39" H x 24" W x 20" D (rounded to the nearest inch)
- Material: 5052-H32 aluminum, 0.125" thick
- Finishes: Natural, powder coat (standard, anti-graffiti, and custom colors), anodized
- Access: Front door (1), back door (1), both full size
- Latching System: 3-point, choice of Corbin or Best locks
- Handles: 3/4" round, stainless steel, with padlock feature
- Door Stops: 90° and 180° (±10°), each door, bottom
- Rack Assembly: Removable 19" EIA rack
- Ventilation: Thermostatically controlled 100 CFM fan
Louvered air intake in door, pleated filter
- Mounting: Base, pedestal, or side of pole mounting
- Shipping Weight: 265 lbs without plug-ins or controller(s)

Options

- Mounting equipment: anchor bolts for base mounting (4), brackets for side pole mounting, and hardware for pedestal mounting
- Removable aluminum hex key door handle
- 336S stretch option available:
Dimensions: 46" H x 24" W x 20" D (rounded to the nearest inch)
Shipping Weight: 280 lbs without plug-ins or controller(s)
- Auxiliary output file (336S only)
- Various additional options available, please contact McCain

To learn more about McCain's Integrated Traffic Solutions, please contact info@mccain-inc.com or call (760) 727-8100

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Lock Mount Assembly

332/334/336 Cabinets

Best Lock

Left/Right Universal Mount

Cabinets

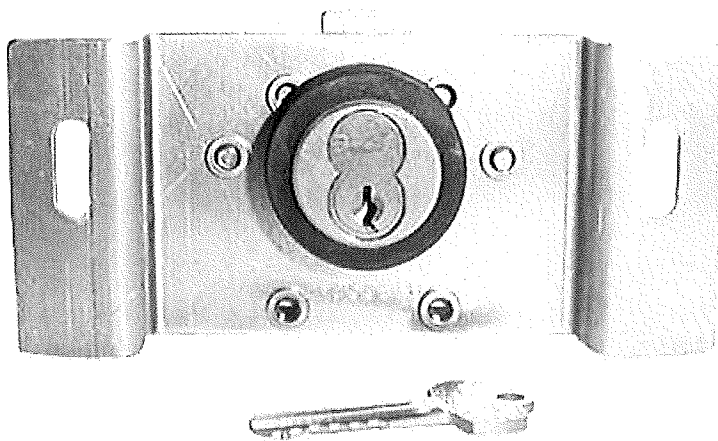
Controllers

Signals

Signs

Software

Specialty



Description

Meets both County and City of Los Angeles DOT Specifications. The lock has a rectangular spring-loaded bolt. The bolt has a 0.281" throw and is 0.75" wide by 0.375" thick. Pin tumbler can be master keyed. The key is removable in locked position only.

Part Number

M61216

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Red Monitor Assembly

Cabinets

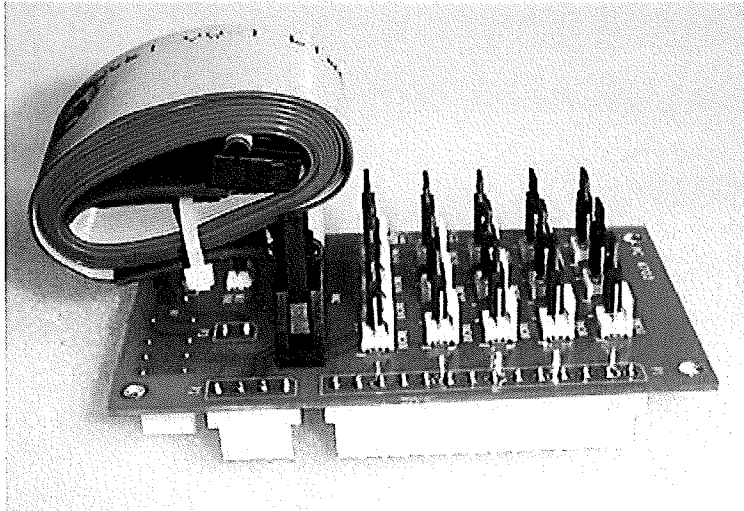
Controllers

Signals

Signs

Software

Specialty



Description

The Red Monitor Kit is an integral part of the output assembly to monitor the absence of red. It has capability of monitoring sixteen channels. Each channel can be programmed by means of a removable jumper. The monitoring of red is selected by means of another jumper.

Part Numbers

M15545

Lamp Kit

21 Inch Fluorescent
Rear Door Switch

Cabinets

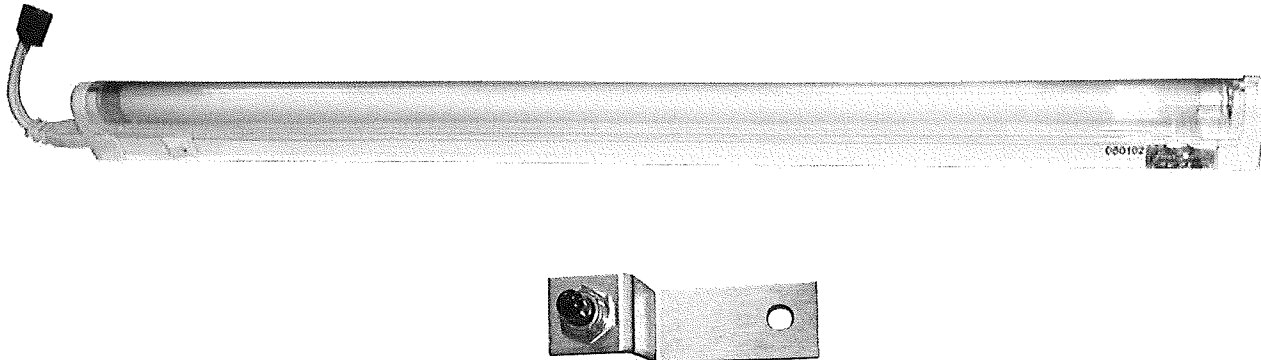
Controllers

Signals

Signs

Software

Specialty



Description

This fluorescent lighting fixture is used in a 332 cabinet if requested. The fixture includes a cool white 18" fluorescent lamp, lamp cover, ballast, and a rear door normally-closed, single-pole, push button switch and switch bracket. The unit is U.L. approved.

Part Number

M32360

Lamp Bracket for 332/334 Controller Cabinets

Cabinets

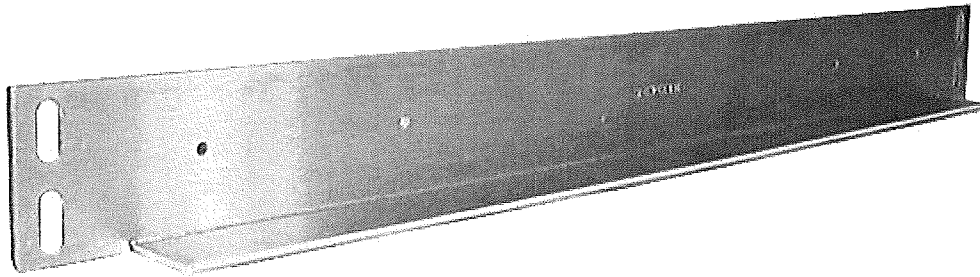
Controllers

Signals

Signs

Software

Specialty



Description

This bracket, designed to fit a 332 or 334 cabinet 19" EIA rack, holds a fluorescent lamp. Fabricated from .090" thick aluminum.

Part Number

M13343

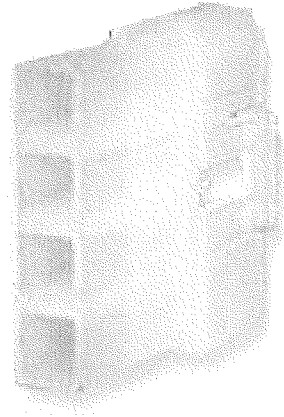
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Connector, Plug

Free Hanging
4-Position
1/4" Spacing



Cabinets
Controllers
Signals
Signs
Software
Specialty

Description

Four-position, free-hanging plug connector with 1/4" spacing. Accepts .093" diameter pins and sockets. Fabricated from nylon (UL 94V-2). Mates with PN M24783. Typically used on traffic controllers and cabinets.

Manufacturer

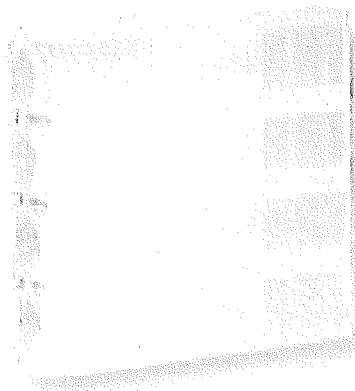
Tyco Amp

Part Number

M24784

Connector, Receptacle

Free Hanging
4-Position
¼" Spacing



Cabinets
Controllers
Signals
Signs
Software
Specialty

Description

Four-position, free-hanging receptacle connector with ¼" spacing. Accepts .093" diameter pins and sockets. Fabricated from nylon (UL 94V-2). Mates with PN M24784. Typically used on traffic controllers and cabinets.

Manufacturer

Tyco Amp

Part Number

M24783

#2 Power Distribution Assembly

Cabinets

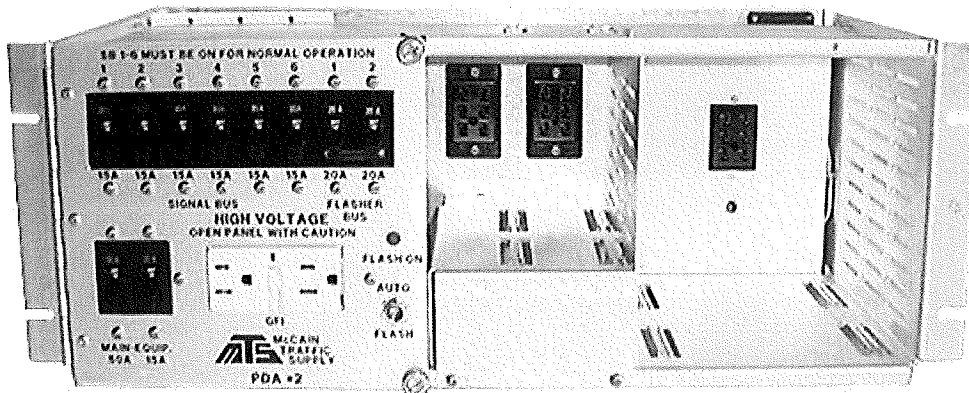
Controllers

Signals

Signs

Software

Specialty



Description

Meets Caltrans specifications. It is used in the Caltrans 332 and 336 cabinet. It is equipped with a duplex receptacle, GFI, 50 amp circuit breaker, six 15 amp circuit breakers, two ganged 20 amp circuit breakers, and mercury contactor. It has a compartment to house the 206 power supply and flashers.

Part Numbers

M15491

206 Power Supply Standard

Cabinets

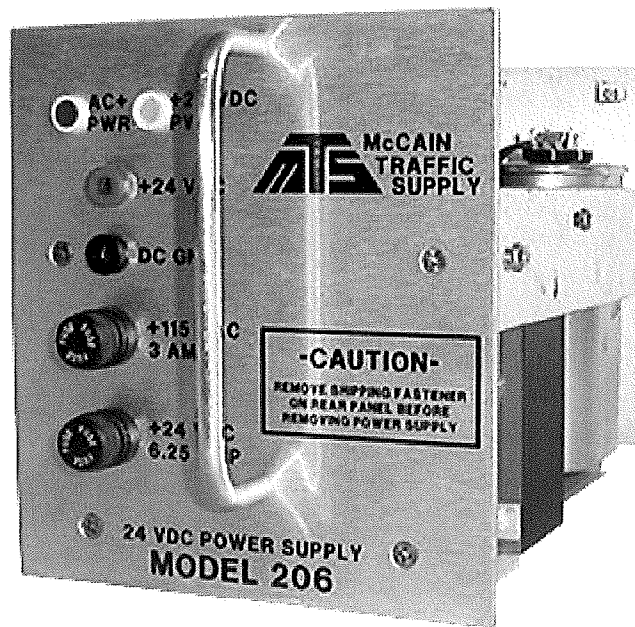
Controllers

Signals

Signs

Software

Specialty



Description

Supplies 24VDC. Ferro-resonant design and rated for a full load current of 5 Amps. Equipped with indicators, test points, and a handle. Fits into a Caltrans PDA2. Meets Caltrans requirements.

Part Number

M15059

332 Standard Output File

Cabinets

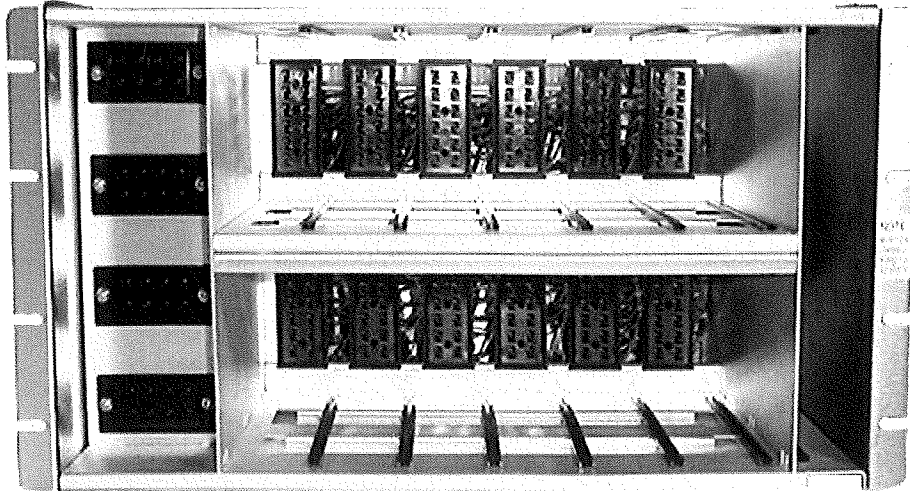
Controllers

Signals

Signs

Software

Specialty



Description

The 332 standard output file is capable of containing twelve Model 200 switch packs and four flash transfer relays. The red and yellow output circuits of switch packs No. 1, 2, 4, 5, 6, 7, 9, and 10 are made available at a Molex receptacle/plug connection for flash select ability. The output file is mounted on the cabinet 19" EIA rails and meets Caltrans requirements.

Part Number

M15156

Auxiliary Output File

Cabinets

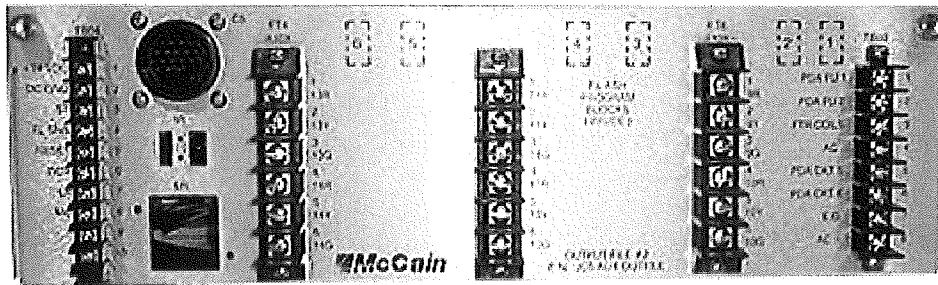
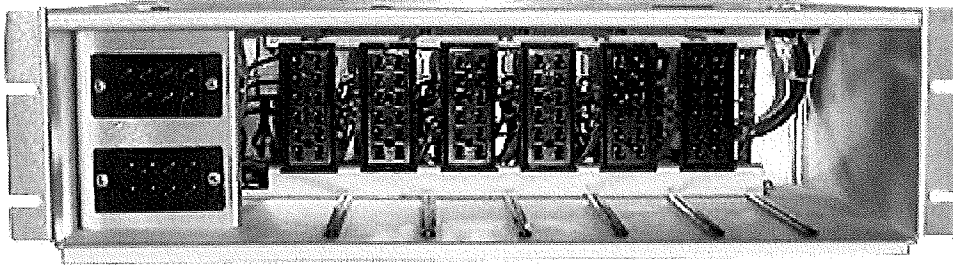
Controllers

Signals

Signs

Software

Specialty



Description

The Model 420 auxiliary output file is capable of containing six Model 200 switch packs and two flash transfer relays. The red and yellow output circuits of switch packs No. 1, 2, 4, and 5 are made available at a Molex receptacle/plug connection for flash select ability. It is mounted on the cabinet 19" EIA rails. It meets Caltrans requirements.

Part Number

M11551

170E-2 Controller

Cabinets

Controllers

Signals

Signs

Software

Specialty



Overview

McCain's 170E-2 Controller is an industry standard controller in compliance with applicable Caltrans Transportation Electrical Equipment Specification (TEES) standards. Built to McCain's high quality standards, the controller's rugged and dependable construction is reliable and capable of operating in harsh environments. The controller's 19-inch Electronics Industry Alliance (EIA) rack mount form allows it to easily fit any standard EIA-based cabinet. Built on a modular design, McCain's 170E-2 controller easily accommodate the interchange of modules and components.

Benefits

- Multi-purpose microcomputer
- Operates in harsh environments
- Vertical board design
- Accepts two plug-in communications modules
- Low maintenance
- Low wattage, removable power supply

Part Number

M11346

Product Description

The McCain 170E-2 controller's primary design function is to operate eight-phase dual ring intersections. Based on the software control package utilized (not included), the 170E-2's control applications can expand to include: ramp metering, variable message signs, sprinklers, pumps, and changeable lane control.

McCain's proven and reliable 170E-2 controller is used extensively throughout the United States and abroad. The controller is economically designed, allowing for large scale deployment at reasonable rates. The printed circuit boards (PCBs) are mounted vertically, maximizing usable space and ease of maintenance.

McCain offers a variety of compatible software programs that integrate 170 controllers into an overall Intelligent Transportation System (ITS) solution.

170E-2 Controller

Standard Features

Operating System

- None

Modules (standard, included)

- CPU Module
- Input Module
- Output Module
- Front Panel Module
- Power Supply

Microprocessor

- 6802 operating at 3 or 6 MHz

Memory

- EPROM: 32 KB*
- RAM: 32 KB

Applicable standards

- Compatible with applicable Caltrans TEES standards

* The 170E-2 has the capability to address 32 KBs of EPROM. The EPROM can reside either on the CPU board which has a 32 KB EPROM socket or on a PROM module (PROM module and EPROMs sold separately)

Interfaces

Communication interfaces

- RS232 serial ports (4)
- Modem slots (2)

Front panel interface:

- Display: 6 seven segment LED display plus 10 call active LEDs
- Keyboard: 4 x 4 keypad

Cabinet interfaces

- Rear connectors C1S, C2S, C20S, C30S, C40S, and T1

Software

Compatible with McCain's 233 intersection control, 245 arterial master control, 242 ramp metering control, and 247 reversible lane control software. Also compatible with 170 compliant third party software. (See separate data sheets for details on McCain's software control programs).

General Specifications

Dimensions:	19" W x 7" H x 13" D (rounded to the nearest inch)			
Form Factor:	EIA rack mount compatible			
Power:	120VAC, 60Hz (typical), 40 watts			
	+5 V	Logic	± 0.1 V	2.4 A
	+5 V	External	± 0.25 V	300 mA
	+5 V	Front Panel	± 0.25 V	500 mA
	-5 V	Spare	± 0.25 V	300 mA
	+12 V	Modern	± 0.6 V	1.0 A
	-12 V	Modern	± 0.6 V	300 mA
Environment:	Operating Temperature: -37°C to +74°C Humidity: 0 to 95% (non-condensing)			
Weight:	± 15 lbs (based on final module selection)			

Options

- McCain control software
- Available modules
 - 412F PROM module
 - 412C PROM module
 - Ethernet module
 - GPS (Global Positioning System) module
 - Modem module
- Diagnostic software
- Loop-back cables (used with diagnostic software)

To learn more about McCain's Integrated Traffic Solutions, please contact info@mccain-inc.com or call (760) 727-8100



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2070L Controller

Cabinets

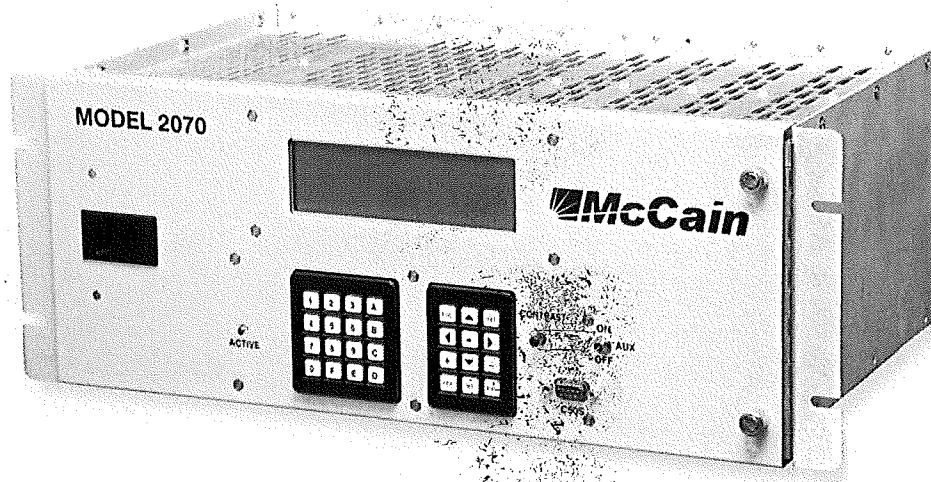
Controllers

Signals

Signs

Software

Specialty



Overview

The 2070L Controller is an exciting addition to McCain's traffic controller product offering; an advanced, next-generation version of the Caltrans type controllers. Designed in full compliance with Caltrans Transportation Electrical Equipment Specifications (TEES), the 2070L is interchangeable with standard 170 controllers. This allows end users to upgrade existing intersections to a modern high-performance platform without replacing cabinet hardware. The 2070L is an advanced, ruggedized, multi-tasking field processor and communications system that is easily configurable for a variety of traffic management applications.

Benefits

- The controller's multitasking operating system supports a variety of applications
- Easily upgrades current intersection hardware
- Open architecture insures compatibility with off-the-shelf products
- OS-9 real-time operating system is compatible with standard software modules from different vendors
- Interchangeable with standard 170 controllers without the need to replace cabinet hardware

Product Description

The primary design function of the McCain 2070L is to control traffic intersections, but can be used for a multitude of applications. Based on the software control package utilized, the control applications can expand to include: ramp metering, variable message signs, sprinklers, pumps, and changeable lane control.

The 2070L modular design allows various configurations based on the desired application.

The controller's OS-9 real-time operating system affords a robust, flexible, and expandable platform that is compatible with multi-vendor application control software. McCain offers a variety of compatible software programs that integrate the 2070L into an overall Intelligent Transportation System (ITS).

2070L Controller

Standard Features

Operating system

- Microware OS-9 real-time operating system (RTOS)

Modules (standard, included)

- 2070-1B CPU Module
- 2070-2A Field I/O Module
- 2070-3B LCD/Front Panel Module
- 2070-4A Power Supply

Microprocessors

- CPU Module: Freescale MC68EN360, 32 Bit, 24.576 MHz microprocessor
- I/O Module: Freescale MC68LC302 microprocessor, running at 20 MHz

Memory

- 8MB Flash memory (expandable to 16MB)
- 8MB PSRAM
- 2MB non-volatile SRAM

Backup real-time clock (RTC)

Applicable standards

- Meets or exceeds Caltrans TEES 2002 standards including ERRATA 1 and 2

Interfaces

Communication interfaces

- SDLC ports (2)
- ACIA ports (5)
- 10 Base-T Ethernet
- Datakey removable storage device

Front panel interface

- Display: 8 lines x 40 characters
- Keyboards: 3 x 4 navigation and 4 x 4 data entry keypads

Cabinet interfaces

- Rear connectors C1S, C11S, and C12S

Software

Compatible with McCain's 2033 intersection control, 2045 arterial master control, and 2042 ramp metering control software. Also compatible with any 2070L compliant third party software. (See separate data sheets for details on McCain's software control programs).

General Specifications

Dimensions:	19" W x 7" H x 13" D (rounded to the nearest inch)
Form Factor:	EIA rack mount compatible
Power:	95 VAC to 135 VAC, 60 Hz (\pm 3 Hz) +5.0 VDC 1.0 A 10.0 A +12.0 VDC Serial 0.1 A 0.5 A -12.0 VDC Serial 0.1 A 0.5 A +12.0 VDC ISO 0.1 A 1.0 A
Environment:	Operating Temperature: -37°C to +74°C Humidity: 0 to 95% (non-condensing)
Weight:	\pm 12.5 lbs (based on final module selection)

Options

- McCain control software
- Available modules
 - 2070-2B field I/O module for ITS (SP5) / NEMA (SP3) cabinet applications
 - 2070-3A large 4 x 40 character display
 - 2070-4A-220 International Power Supply: 190 VAC to 253 VAC, 50 Hz (\pm 3 Hz)
 - 2070-6A dual 1200 baud modem
 - 2070-6B dual 9600 baud modem
 - 2070-7A dual RS232 serial ports
 - 2070-7B dual RS485 serial ports
 - 2070-8 NEMA adapter

To learn more about
McCain's Integrated Traffic
Solutions, please contact
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call (760) 727-8100

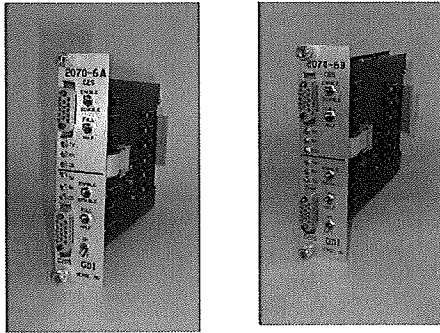


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Model 2070 Series Modems



FEATURES

- * 1200 to 19,200 bps
- * Two modems per card
- * Front Panel Switches, enable/disable & Power
- * 170 compatible M14 Connectors
- * Front Panel LED indicators
- * Compatible with GDI 400 (2070-6A) , 404 (2070-6AE), 496 (2070-6B) and 419 (2070-6BE) series modems

Description

The GDI models 2070-6A, 2070-6AE, 2070-6B and 2070-6BE are designed to plug into the H1 slot of the 2070 controller and meet or exceed the May 1996 TEES from CALTRANS. These modems consists of two 1200 baud (2070-6A), two 2400 baud (2070-6AE), two 9600 baud (2070-6B), or two 19,200 baud (2070-6BE) modems on one module. The front panel has two 170 type M14 connectors for easy access. The pin out is exactly the same as the C2 and C20 connectors on the 170 Controller. The front panel Enable/Disable switches allow the EIA-232 ports to be used without interference from the modem.

Specifications — General

Environmental Operating Ranges

Temperature Range -37 to +74°C

Humidity 95% non-condensing

Physical Plugs into the H1 slot of the 2070 Controller

Connector Pin-out Same as the pin-out for the 170 Controller for the C2 and C20 connectors

Power Requirements +5V, +12V, -12V from 2070 Controller

GDI Communications LLC
PO Box 1330, Verdi, NV 89439
Ph: 775-345-8000 Fax: 775-345-8010 E-mail: sales@sgdi.net



Model 2070 Series Modems

Models, Frequencies & Data Rates

Model	Mark Hz	Space Hz	Soft Carrier Hz	Data Rate
2070-6A	1200	2200	900	0-1200
2070-6AE	2400	4400	1800	0-2400
2070-6B	11200	17600	7800	0-9600
2070-6BE	19200	38400	13800	0-19200

Indicators (for each modem)

XMT	Transmit Data
RCV	Receive Data
DCD	Carrier Detect

Switches (for each modem)

Power	ON/OFF
Duplex Operation	FULL/HALF
Modem	ENABLE/DISABLE

On Board Switches (for each modem)

Anti-Streaming	ON/OFF
Soft-Carrier Turn-off timing	5/10 \pm 2ms
Local Echo	ENABLE/DISABLE

Timing (Switch Selectable)

RTS—CTS	12mS \pm 2mS
CAR Delay	8mS \pm 2mS
Soft Carrier Off	5/10mS \pm 2mS
Revr Squelch	6.5mS \pm 2mS

Receiver Characteristics

Dynamic Range	+3dBm to -48dBm
Carrier Detect Threshold	-42 \pm 3 dBm
Carrier Detect Hysteresis	3dB
Demodulator Distortion	<10% peak
Receiver Frequency Tolerance	2% of operating frequency (minimum)

Transmit Level

-8 dBm to 0 dBm continuously adjustable.
Factory setting 0 dBm (600 ohms)

Serial Interface

Front Panel Connectors	EIA-232C
2070 Interface	EIA-422

Line Interface

Model	Distance (Private Metallic Wire)
2070-6A	10 to 20 miles
2070-6AE	8 to 15 miles
2070-6B	8 to 10 miles
2070-6BE	5 to 8 miles

Model Numbers for Ordering

Card Model	Speed
2070-6A	0-1200 bps
2070-6AE	0-2400 bps
2070-6B	0-9600 bps
2070-6BE	0-19200 bps

Specifications subject to change without notice

GDI Communications LLC
PO Box 1330, Verdi, NV 89439
Ph: 775-345-8000 Fax: 775-345-8010 E-mail: sales@sgdi.net

2010ECL

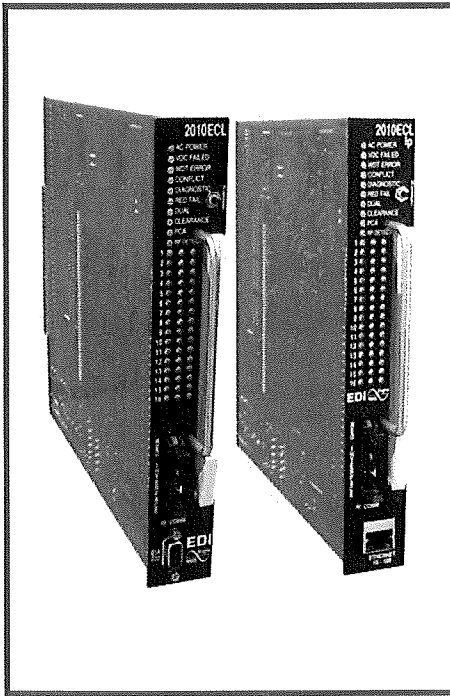
Type 170 / 179 / 2070 Signal Monitor

INTRODUCING A NEW STANDARD OF SAFETY AND DIAGNOSTIC CAPABILITIES IN TYPE 170 / 2070 ENHANCED SIGNAL MONITORS

The EDI model 2010ECL Signal Monitor is designed to upgrade the capabilities of the basic 210 monitor used in Type 170 / 179 Output Files. The unit is fully compatible with the requirements of the 170, 179, and 2070 Controller Units. The 2010ECL Signal Monitor utilizes enhanced monitoring functions to increase cabinet fault coverage, providing additional assurance that cabinet equipment malfunctions will be detected and diagnosed properly.

Model Options:

2010ECL	16 channel capability with EIA-232 Port
2010ECLip	16 channel capability with Ethernet Port
2018ECL	18 channel capability with EIA-232 Port
2018ECLip	18 channel capability with Ethernet Port
2018KCL	18 channel capability with Datakey Programming



2010ECL FEATURES

Enhanced 210 Monitoring Functions:	The 2010ECL meets all requirements of the Caltrans "TSCE Specifications 1/89". Basic fault coverage includes Conflict, 24Vdc, and CU Watchdog monitoring. Red Monitoring senses the absence of signals on a channel. Dual Indication Monitoring detects simultaneous active signals on a channel. Clearance Monitoring ensures sequencing of signals with a proper minimum yellow clearance interval. AC Line Monitoring detects and responds to low AC Line voltages as well as interruptions with a minimum flash interval.
Event Logging:	The 2010ECL monitor maintains a 100 record nonvolatile event log which contains records of fault events showing the complete intersection status as well as AC Line events, configuration changes, monitor resets, cabinet temperature and true RMS voltages. A real time clock time stamps each log event with time and date.
RYG Full Intersection Display:	The Full Intersection display uses Red, Yellow, and Green LEDs to show active colors of all channel inputs simultaneously for real-time intersection status.
EDI RMS-Engine™:	A DSP coprocessor converts ac input measurements to True RMS voltages, virtually eliminating false sensing due to changes in frequency, phase, or sine wave distortion.
Recurrent Pulse Detection:	Recurrent Pulse Detection works in conjunction with the RMS-Engine to detect faults that are pulsing or intermittent in nature.
LEDguard™:	This EDI innovative signal thresholding technique is used to increase the level of monitoring protection when using LED based signal heads.
Communications to Laptop PC or Remote Traffic Management Center:	An EIA-232 or optional Ethernet port provides access by a local PC or remote TMC running ECom™ Windows based software for status, event log review, and archival.
Signal Sequence History Display:	Five Signal Sequence History logs stored in nonvolatile memory each graphically display 30 seconds of signal status prior to each fault event. The resulting display eases diagnosing of intermittent and transient faults by viewing the exact signal states that the monitor sensed.
Configuration Monitor:	Detects potentially unsafe programming changes and Red Interface cable problems.
Flashing Yellow Arrow PPLT:	Two operational modes are built-in for support of the MUTCD Flashing Yellow Arrow PPLT operation depending on the number of load switches in the cabinet.

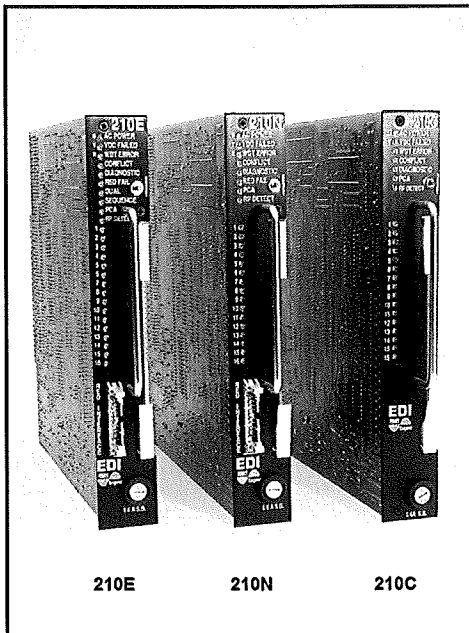
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EBERLE DESIGN INC.

3819 East La Salle Street
Phoenix, AZ 85040 USA
www.EDITraffic.com

Tel (480) 968-6407
Fax (602) 437-1996





210 SERIES

TYPE 170 / 179 SIGNAL MONITOR

INTRODUCING A NEW STANDARD OF SAFETY AND DIAGNOSTIC CAPABILITIES IN TYPE 170 / 179 SIGNAL MONITORS

The 210 Series Signal Monitors are designed to provide the conflict and voltage detection function required in the Output File of a Type 170 or 179 Cabinet Assembly. Three levels of functionality are provided to meet any application. The model 210C is approved and listed on the Caltrans QPL.

The 210N and 210E models provide enhanced monitoring functions for increased fault coverage. For 2070 CU compatibility please refer to the EDI model 2010 and 2010ECL products.

Each monitor is put through a vigorous three part Total Quality Assurance program and tested under the extreme environmental conditions experienced on the street. It is this commitment to quality and performance that EDI products are known for, providing years of trouble free operation.

210 SERIES OPERATIONAL FEATURES

Basic 210 Monitoring Functions: All EDI 210 Signal Monitors meet or exceed the requirements of the Caltrans Traffic Signal Control Equipment Specifications of January 1989. Basic fault coverage includes Conflict, 24Vdc, CU Watchdog, and AC Line monitoring.

EDI RMS-Engine: A Digital Signal Processor (DSP) accurately converts AC input measurements to True RMS voltages, virtually eliminating false sensing and nuisance tripping due to changes in frequency, phase or sine wave distortion.

Recurrent Pulse Detection Function: The Recurrent Pulse (RP) Detection function supplements the normal Conflict, Red Fail, and Dual Indication detection algorithms. RP Detection works in conjunction with the RMS-Engine to detect faults which are intermittent or pulsing in nature.

Configuration Change Monitoring Function: All configuration programming including the Program Card settings are continuously monitored for unintentional changes. As an additional safety measure, the unit can report a fault, preventing intersection operation with improper monitor programming.

Diagnostic Displays: Two Diagnostic display modes show active colors of channels for both real-time intersection status and latched fault status of the current and two previous fault events.

Red Monitoring (210E & 210N): Red Monitoring senses the absence of signal on all three inputs of a channel and requires the output file to be wired for Red signals. Two Special Function inputs disable Red Fail Monitoring to accommodate RR preempt or TOD flash sequences.

Dual Indication Monitoring (210E): GYR Dual Indication Monitoring detects simultaneous active signals on a channel. GY Dual Indication monitoring provides Dual Indication sensing capabilities for 5 section signal heads.

Sequence Monitoring (210E): Sequence Monitoring ensures sequencing of signals with a proper minimum yellow clearance interval (Short Yellow or Absence of Yellow).

Option Programming: Programmable options include:

- | | |
|-----------------------------------|-------------------------------------|
| ✓ Watchdog Fault Timing | ✓ Configuration Change Fault Enable |
| ✓ Watchdog Latch Enable | ✓ AC Line Brownout/Restore Levels |
| ✓ GY Dual Indication Enable | ✓ Red Fail Fault Time |
| ✓ Minimum Yellow Interval Length | ✓ Minimum Flash Enable |
| ✓ Special Function Input Polarity | ✓ Red Interface Cable Check Enable |

EBERLE DESIGN INC.

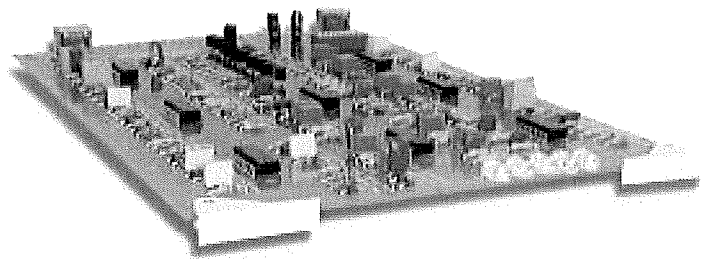
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tel +1-480-968-6407 www.editraffic.com



Modems

SERIES 400

MODELS 400, 400F,
400NY, 404, 496, 419
CARDS AND STANDALONES



The GDI Series 400 modems are the most versatile models for private wire and Telco 3002 interconnect. There are 11 versions of standalones and cards for different applications. Begin with the industry standard Model 400 at 1200 bps, add anti-streaming for the Model 400F/400NY and 2400 bps for Model 404. Then raise the speed to 9600 or 19,200 bps for Models 496 and 419 respectively. They are temperature tested rugged modems designed for the traffic industry. Directly connected to traffic controllers or variable message signs, they communicate at 1200 bps over leased telephone lines or higher speeds via private wire interconnect. Both point-to-point and multi-drop the GDI Series 400 modems offer data rates of 1200 to 19,200 bps. The internal fused power supply on the standalone model eliminates the common "Brick" external transformer.

- 1200 to 19,200 BPS
- Integral Power Supply
- RS232 Interface
- 2 & 4 Wire Switchabl
- Rugged Metal Enclosure
- Switch Selectable Timings
- Anti-Streaming Optional
- Bell 202T Type (400 only)
- Model 170/179 Style Card
- Temperature Hardened

Specifications — General

ENVIRONMENTAL OPERATING RANGES

Temperature Range	-37 to +74 C
Humidity	95% non-condensing

MODEM

Modulation	Frequency Shift Keying
Data Interface	RS-232C compatible via DB-9S for standalone and Model 400 for card.
Mechanical	Standalone case 1.5"H x 5.5"W x 8.5"D. Card Model 400 standard.



Models, Frequencies and Data Rates

Model	Mark Hz	Space Hz	Soft Carrier Hz	Data Rate
400	1200	2200	900	0-1200
400F	1200	2200	900	0-1200
400NY	1300	2100	900	0-1800
404	2400	4400	1800	0-2400
496	11200	17600	7800	0-9600
419	19200	38400	13800	0-19200

Power Requirements

STANDALONE:

Voltage 90 to 130 VAC (Standard)
180 to 260 VAC (Optional)

Frequency 47 Hz to 63 Hz

Power 4 Watts Max

CARD:

+12 volts and -12 volts \pm 5% at 75 MA

Indicators

XMT	Transmit Data
RCV	Receive Data
RTS	Request to Send
CTS	Clear to Send
DCD	Carrier Detect
MR	Modem Ready (standalone only)

Timing (Switch Selectable)

FUNCTION	MODEL 400	ALL OTHER MODELS
RTS-CTS	12mS \pm 2mS	6 or 12mS \pm 2mS
CAR Delay	8mS \pm 2mS	4 or 8mS \pm 2mS
Soft Carrier off	10mS \pm 2mS	5 or 10mS \pm 2mS
Rcvr Squelch	6.5mS \pm 2mS	3 or 6.5mS \pm 1mS
Anti-streaming	None	switchable on/off

Receiver Characteristics

Dynamic Range	+3dbm to -48dbm
Carrier Detect Threshold	-42 \geq 3dbm
Carrier Detect Hysteresis	3db
Demodulator Distortion	<10% peak

Transmit, Level & Duplex

-8 dbm to 0 dbm potentiometer adjustable

2 wire half duplex, 4 wire full duplex switch select

Transmit Frequency Tolerance + 1%

Multidrop Capability

Recommend a maxim of 8 units per line. More can be used if the line is short, low noise or controller software configuration allows.

Line Interface

4 WIRE INTERCONNECT POSITIONS

PIN	FUNCTION	DIRECTION
1	Data Tip Rec.	In
2	Data Ring Rec.	Return
3	Data Tip Tran.	In/Out
4	Data Ring Tran.	Return

All Models above Model 400 are enhanced replacements designed to take advantage of newer traffic controllers and other products capable of higher speeds. System communications with our Series 400 modems can be improved due to the selectable timing, anti-streaming and transmitter options.

Model Numbers for ordering

CARD MODEL	STANDALONE MODEL
400, 400F	400SA
400NY	400NYS
404	404SA
496	496SA
419	419SA

FOR INQUIRIES ABOUT OUR COMPLETE LINE OF COMMUNICATION PRODUCTS "MADE FOR TRAFFIC" AND YOUR LOCAL DISTRIBUTOR CALL:

800-426-0523 or **775-345-8000**
Visit our website at www.sgd1.com E-mail traffic@sgd1.net

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280 I-80, Exit 1, PO Box 1330
Verdi, NV 89439

Document #0014 0300

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C2 Cable 4 Feet Long

Cabinets

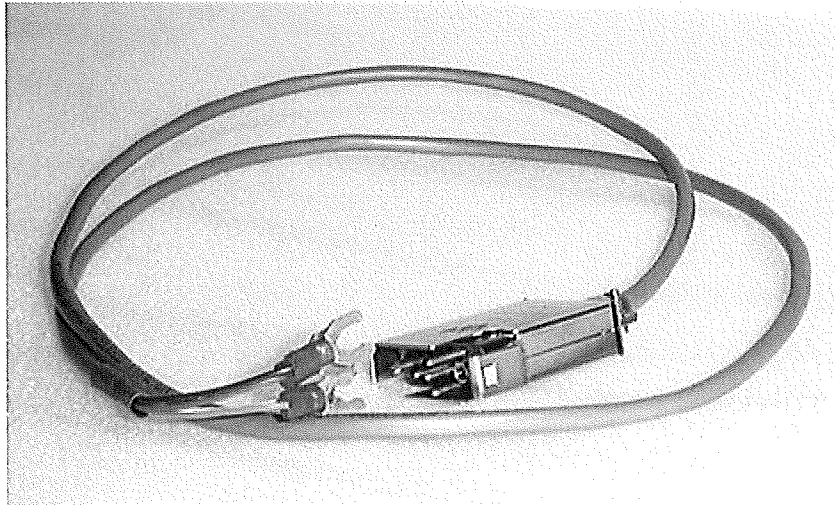
Controllers

Signals

Signs

Software

Specialty



Description

Plugs into C2 connector on 170 controller and to Communication Terminal Block on 332 type cabinet. Typically used for Hard Wired Communication with Type 400 Modem.

Part Numbers

M15924

3M

Opticom™

Priority Control System

Phase Selector Models 752 and 754

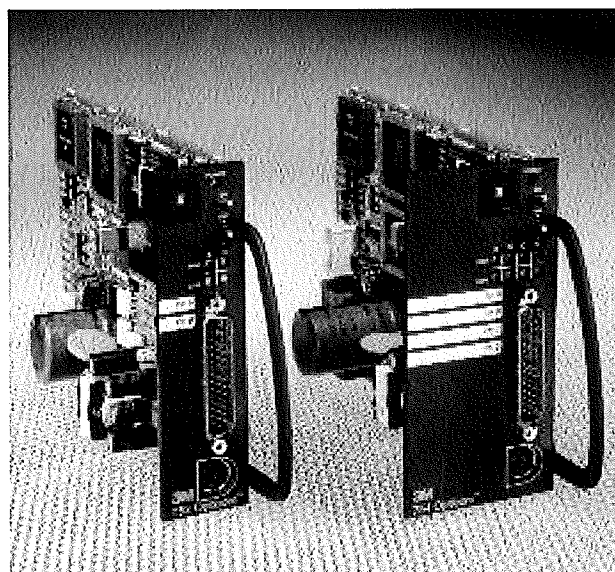
Reporter Series: Opticom™ System Matched Component Products

Description

The Model 752 phase selector is a plug-in *two channel*, dual priority, encoded signal device designed for use with 3M™ Opticom™ Priority Control System emitters and detectors. The Model 754 phase selector is a plug-in *four channel*, dual priority, encoded signal device designed for use with Opticom emitters and detectors. Both can be installed directly into the input file of Type 170 traffic controllers equipped with priority phase selection software and in virtually any other traffic controller equipped with priority phase selection inputs and related software. Phase selectors are powered from AC mains and contain their own internal power supply to support Opticom detectors.

The Model 760 Card Rack is required when input file space is not available. Certain electromechanical controller units may require a Model 5168 interface card.

The Models 752 and 754 Phase Selectors recognize and discriminate among three distinct Opticom emitter frequency rates via Opticom detectors: Command priority, Advantage priority and probe vehicles. Within each of these three frequency rates, the phase selectors further discriminate among 10 classes of vehicle identification codes, with 1000 individual vehicle codes per class — 10,000 total per frequency rate.



—Models 752 and 754

The Models 752 and 754 internally record each activation of the system. Each entry contains the:

- Intersection name
- Date and time of the activity
- Vehicle class code of the activating vehicle
- Activating vehicle's ID number
- Channel called
- Priority of the activity
- Final green signal indications displayed at the end of the call
- Time spent in the final greens
- Duration of the activation
- Near intersection location information

Models 752 and 754 also include RS232 interface capability to communicate with computers or controllers. Optional 752/754 interface software is available for system setup and maintenance.

The primary Opticom detector inputs and power outputs are on the card edge connector. Two additional auxiliary detector inputs are available for each channel through a front panel connector. The connector also contains signal indication sensing inputs.

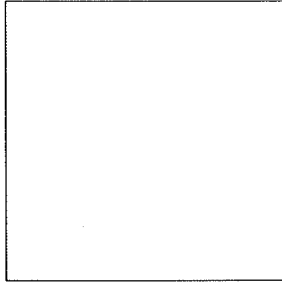
Each channel delivers a constant output for Command (high priority) activation and a pulsed output for Advantage (low priority) activation. A high priority signal received on any channel will override any low priority activation.

The probe vehicle frequency does not place a call request to the signal controller, but does log vehicles by ID number when they are in range.

Features

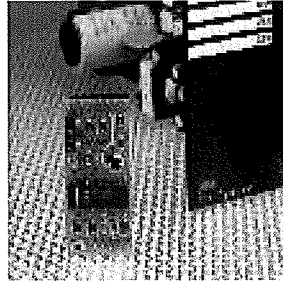
- Four channels of detection with the 754
- Two channels of detection with the 752
- Two auxiliary detectors per channel
- Green sensing
- Solid state circuitry for long life and reliability
- Compatible with encoded signal and non-encoded signal Opticom emitters
- Command and Advantage priority as well as probe vehicle discrimination
- "First-come, first-served" priority within each priority level
- Priority by class can be implemented via the interface software
- Plugs directly into CA/NY Type 170 input files
- Signal intensity threshold can be automatically set using an encoded emitter
- User adjustable signal intensity threshold from 200 to 2500 feet of operation
- Easy installation
- Compatible with most traffic controllers
- Computer-based interface
 - RS232 communications front port, and rear backplane
 - User-selected communications baud rate 1200 to 9600 bits per second
 - Customizable signal intensity thresholds
 - Customizable ID code validation
 - Flexible programming options for priority control parameters
 - Detailed current Opticom system parameter information
 - History log of most recent Opticom system activities (1,000 entries)
- 30,000 frequency/class/vehicle code ID combinations
- Front panel switches and diagnostic indicators for testing
- Erasable write-on pads for phase or movement labeling
- Unit can be operated without computer configuration
- Crystal controlled circuitry
 - Accurate optical signal recognition circuitry
 - Precise output pulse
 - Definitive call verification
- Regulated detector power supply
- Optically isolated outputs
- Multi-function test switch
 - High and low test calls
 - Reset to default parameters
 - Range setting
 - Diagnostic test
- Advanced built-in diagnostics and testing
- Tested to NEMA and CalTrans environmental and electrical test specifications

Accessories



Interface Software Package

- IS Link Interface software package
- Opticom communications daughter board



Communications Daughter Board

Pin Index

- Card Edge - 44 pin STD on the main PCB

Pins	Function
A	Ground
D	Channel A primary detector input
E	Detector 24 VDC power output
F	Channel A output, collector (+)
H	Channel A output, emitter (-)
J	Channel B primary detector input
K	Detector Ground
L	Earth Ground
M	AC - (In)
N	AC + (In)
P	Channel C primary detector input (Not used 752)
R	Detector 24 VDC power output
S	Channel C output collector (+) (Not used 752)
T	Channel C output emitter (-) (Not used 752)
U	Channel D primary input (Not used 752)
V	Detector ground
W	Channel B output collector (+)
19	TxD (output)
X	Channel B output emitter (-)
Y	Channel D output collector (+) (Not used 752)
21	RxD (input)
Z	Channel D output emitter (-) (Not used 752)

- Din connector - mini-6 pin female (front panel)

Pins	Function
1	RxD (data In)
2	Ground
3	TxD (data out)
4	RTS
5	CTS
6	Shield

- D-Shell connector - 44 pin male (front panel)

Pins	Function
1	Phase 1 green input
2	Phase 2 green input
3	Phase 3 green input
4	Optoisolator return
5	Optoisolator return
6	Not used
7	Not used
8	Not used
9	Not used
10	Confirmation light 1
11	Confirmation light 2
12	Preemption inhibit
13	Channel A aux. detector 2 Input
14	Channel B aux. detector 2 Input
15	Channel B aux. detector 1 Input
16	Phase 4 green input
17	Phase 5 green input
18	Phase 6 green input
19	24 VDC power output
20	24 VDC power output
21	Not used
22	Not used
23	Not used
24	Not used
25	Not used
26	Confirmation light 3
27	Confirmation light 4
28	Channel A aux. detector 1 Input
29	Channel C aux. detector 2 Input (Not used 752)
30	Channel C aux. detector 1 Input (Not used 752)
31	Phase 7 green input
32	Phase 8 green input
33	Common green input
34	Detector Ground
35	Detector Ground
36	Not used
37	Not used
38	24 VDC input
39	Not used
40	Not used
41	Not used
42	Not used
43	Channel D aux. detector 2 Input (Not used 752)
44	Channel D aux. detector 1 Input (Not used 752)

Operating Parameters

- Four dual priority, and probe frequency, channels (754)
- Two dual priority, and probe frequency, channels (752)
- “First-come, first-served” for vehicles with the same priority
- Higher priority will always override lower priority
- Opticom detector input(s)...one per channel on the card edge connector and two auxiliary per channel through the Auxiliary function harness
- Optional interface software allows flexible programming options and call history
- Solid state indicators
 - Power on
 - High signal/call per channel
 - Low signal/call per channel

- Multi function test switch enables diagnostics and test calls to each channel
- Voltage. . . 89 to 135 VAC, 60Hz
- Temperature . . . -37° C to +74° C
- Humidity. . . 5% to 95% relative

Physical Dimensions

<i>Length</i>	7.0 in. (17.8 cm)
	8.2 in. (20.8 cm)including handle
<i>Width</i>	(752) 1.1 in. (2.8 cm)
	(754) 2.3 in. (5.8 cm)
<i>Height</i>	4.5 in. (11.4 cm)
<i>Weight</i>	(752) 0.53 lbs. (240 g)
	(754) 0.57 lbs. (260 g)

Important Notice to the Purchaser

THE FOLLOWING IS MADE IN LIEU OF ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

3M will repair or replace any Opticom™ Priority Control System component found to be defective in materials or manufacture within five (5) years from the date of shipment from 3M. See “Summary of Warranty Coverage” for details of extended five year coverage under the Opticom 5/10 warranty. This warranty shall not apply to incandescent lamps or to any system component which has been (1) repaired or modified by persons not authorized by 3M; (2) subjected to misuse, neglect or accident; or (3) has been damaged by extreme atmospheric or weather-related conditions.

In no event shall 3M be liable in contract or in part for any injury, loss, or damage, whether direct, indirect, incidental, special or consequential, arising out of the use or inability to use the Opticom system or any component thereof. THE REMEDIES SET FORTH HEREIN ARE EXCLUSIVE.

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3M Safety and Security Systems Division**

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1-800-3MHELPS
519-451-2500

3M

Opticom™ Priority Control System

Detector Models 711, 721, 722

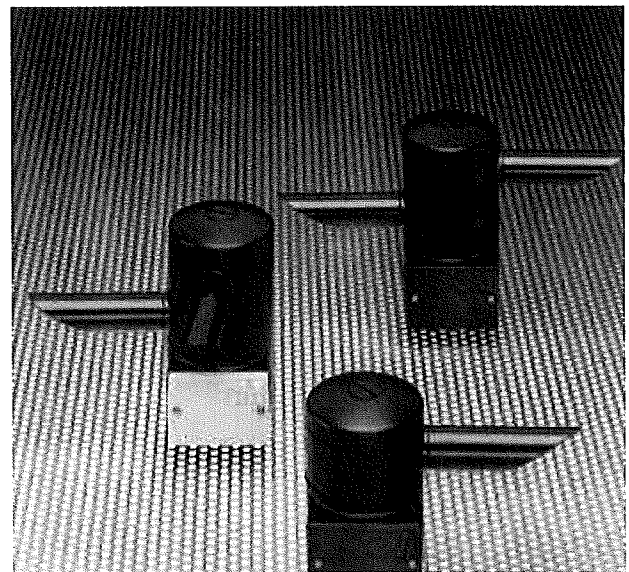
Opticom™ System Matched Component Product

Description

The 700 series Opticom detectors transform the optical energy detected from an approaching, vehicle-mounted Opticom emitter to an electrical signal. The electrical signal is transmitted along a cable to the Opticom phase selector or discriminator for processing.

Detectors are mounted at or near the intersection that permits a direct, unobstructed line-of-sight to vehicle approaches. Detectors may be mounted on span wire, mast arm, or other appropriate structures.

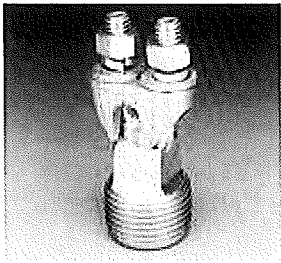
Models 711, 721 and 722 offer significant advances and flexibility for specific intersection applications. The detectors are designed for common applications in three configurations: one direction - the single channel 711; two direction - the single channel 721; and two direction, two output detection - the dual channel 722. All 700 series Opticom detectors greatly reduce installation and life cycle costs through their modular design, adjustable tubes and compatibility with existing Opticom intersection and vehicle equipment.



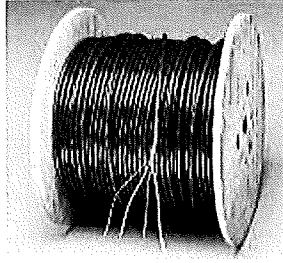
— Models 722, 721 (back) and 711

Features

- **Solid state circuitry**
- **Advanced electrical transient immunity**
- **Modular design**
- **Adjustable turret configuration ... accommodates skewed approaches**
- **Enclosure ... lightweight, durable, high impact polycarbonate construction**
- **Simplified installation ... span wire or mast arm**
- **Gray door identification of Model 722**



Span Wire Clamp



M138 Detector

Accessories

- **Span wire clamp**
- **Model 138 Detector Cable**

Operating Parameters

- Reception range ... 200 ft. (60m) adjustable up to 2500 ft. (760m)
- Electrical ... 24 to 28 VDC, 50 MA minimum
- Temperature range... -30°F (-34°C) to 165°F (74°C)
- Humidity ... 5% to 95% relative

Physical Dimensions

Model 711

Length	12.0 in. (30.5 cm)
Width	4.75 in. (12.1 cm)
Height.....	5.63 in. (14.3 cm)
Weight	0.88 lbs. (400 g)

Model 721/722

Length	12.0 in. (30.5 cm)
Width	4.75 in. (12.1 cm)
Height	7.13 in. (18.1 cm)
Weight	1. 12 lbs. (508 g)

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3M Canada Company

P.O. Box 5757
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519-451-2500

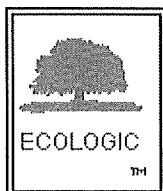
Maximum Bulb Temperature - Fahrenheit	752
Maximum Bulb Temperature - Celsius	400
Maximum Overall Length - MOL (In)	9.75
Maximum Overall Length - MOL (mm)	248
Nominal Voltage (V)	100.00
Operating Position	Universal
Warm-up Time (min)	3-4 MINUTES

Additional Product Information

Product Documents, Graphs, and Images

Compatible Ballast

Packaging Information

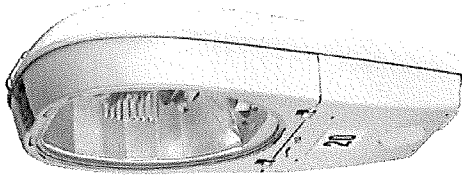


Footnotes

- Use with 4000V pulse rated sockets only.
- Passes Federal TCLP test based on NEMA LL Series Standards. TCLP data available upon request. Disposal regulations may vary depending on location. Please check your local and state/provincial regulations.
- Mean lumens measured at 50% of average rated life

| [Print Page](#) |

M-400A POWR/DOOR® LUMINAIRE WITH CUTOFF OPTICS



APPLICATIONS

- For street, highway and parking lot lighting

SPECIFICATION FEATURES

- Powr/Module ballast assembly
- Filtered optics
- Universal two or four-bolt slipfitter
- Standardized reflector
- "Dead back" tunnel type, FRP terminal board
- 2 in. pipe mounting only with MDCA
- Die-cast aluminum housing with polyester powder gray paint finish
- Adjustable mogul base socket (house side) – E39 standard
- ALGLAS® finish on reflector
- No-tool PE receptacle
- Plug-in ignitor available
- External paddle type stainless steel bail latch
- UL/ULD listed unit available— See Options
- True 90° cutoff—no light above 90° (meets RP8-2000 for full cutoff) with flat glass

ORDERING NUMBER LOGIC

MDCL	40	S	1	A	2	1	F	MC3	1	F
PRODUCT IDENT	WATTAGE	LIGHT SOURCE	VOLTAGE	BALLAST TYPE	PE FUNCTION	IGNITOR MOUNTING	LENS TYPE	IES DISTRIBUTION TYPE	FILTER	OPTIONS
XXXX	XX	X	X	X	X	X	X	XXX	X	XXX
MDCA = M-400A with Cutoff ★ Optics 4-Bolt Slipfitter	10 = 100 15 = 150 (55V) 17 = 175 20 = 200 24 = 250/400 25 = 250 31 = 310 32 = 320 35 = 350 40 = 400	E = Energy Act Compliant Pulse MH (EPMH) S = HPS P = PMH Standard: Lamp not included.	60Hz 0 = 120/208/240/277 Multivolt 1 = 120 2 = 208 3 = 240 4 = 277 5 = 480 7 = 120X240 8 = 240V Ballast 120V PE Receptacle not reconnectable D = 347 F = 120X347 T = 220 W = 230 50Hz 6 = 220 R = 230 Y = 240 NOTE: Dual voltage connected for lower voltage	See Ballast Selection Table A = Autoreg H = HPF Reactor or Lag M = Mag-reg N = NPF Reactor or Lag P = CWI with Grounded Socket Shell	1 = None 2 = PE Receptacle NOTE: Receptacle connected same voltage as unit except as noted. Order PE Control separately.	1 = Non Plug-in/ None 2 = Plug-in base and ignitor	A = Acrylic Clear Globe (250 watt Maximum) F = Flat Glass ★ G = Shallow Glass Globe L = Polycarbonate Clear Globe (250 watt) HPS only ★ = Previously IESNA Full Cutoff Optics	See Photometric Selection Table S = Short M = Medium C = Cutoff ★ 1 = Type I 2 = Type II 3 = Type III ★ = Previously IESNA Full Cutoff Optics	1 = Fiber gasket 2 = Charcoal with elastomer gasket	F = Fusing (Not available with multivolt or dual voltage) J = Line Surge Protector, Expulsion Type N = Meets ANSI C136.31 requirements for Bridge and Underpass Vibration U = UL Listed Glass Lens and (60Hz only)



PHOTOMETRIC SELECTION TABLE

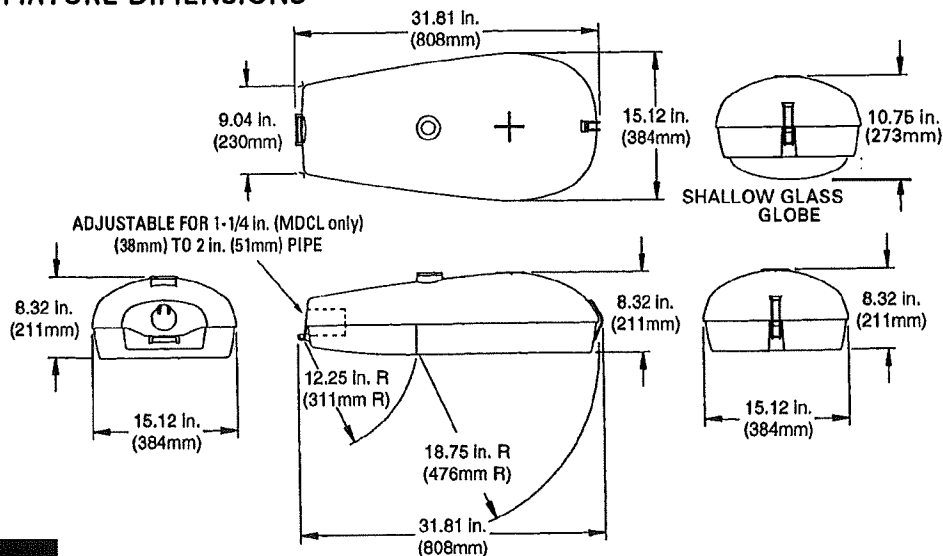
CLEAR REFRACTORS All light sources are clear.

Wattage	Light Source	IES Distribution Type Photometric Curve Number 35-45XXXX							Polycarbonate
		Flat Glass "F"			SAG Glass Globe "G"				
		MC2	MC3	MC1	SC2	SC3	MC2	MC3	
150 (55V)	HPS	0386	0387	N/A	N/A	N/A	0547	0546	C/F
200-400	HPS	1001	1002	N/A	0101	0102	1003	1004	1045** (MC3)
175, 250, 320, 350, 400	EPMH	0343	0342	N/A	N/A	N/A	0544	0545	C/F
	EPMH	*452880	*452882	0281	N/A	N/A	0280	N/A	N/A

NOTE: N/A = Not Available C/F = Contact Factory
 PMH—Contact Factory
 *Requires the use of ED-28 Lamp
 **250 watts maximum

M-400A POWR/DOOR® LUMINAIRE WITH CUTOFF OPTICS & 4 BOLT SLIPFITTER

FIXTURE DIMENSIONS



DATA

Approximate Net Weight	33-39 lbs	15-19 kgs
Effective Projected Area	1.1 sq. ft. max	.01 sq. M max
Suggested Mounting Height	30-50 ft.	9-15 M

REFERENCES

See Page R-48 for start of Accessories.
See Page R-52 for Explanation of Options and Other Terms Used.
See Pole and Bracket Section Page P-2 for pole selection.

BALLAST SELECTION TABLE

Wattage	Light Source	Multi-volt	Ballast Type/Voltage													
			60Hz									50Hz				
			120	208	240	277	480	120X240	347, 120X347	240/120 PE R	220	230	220	230	240	
150 (55V)	HPS	H,N,A	G,H,M,N	G,M	G,M	G,M	G,M	G,M	G,H,M,N	G*,H,M*,N	G,M	N/A	N/A	N/A	N/A	N/A
200	HPS	A,M,P	A,G,H,M,N,P	A,G,H,M,N,P	A,G,H,M,N,P	A,G,M,P	A,G,M	A,G,M	A,G,M,P	N/A	A,G,H,M,N	N/A	H	N/A	N/A	N/A
250	HPS	A,M,P	A,G,H,M,N,P	A,G,H,M,N,P	A,G,H,M,N,P	A,G,M,P	A,G,M,P	A,G,M,P	A,G,M,P	A,M,P	A,G,H,M,N	A,H	H	A,H,M,N	H	M
250/400	HPS	A	A	A	A	A	A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
310	HPS	A,M	A,G,M	A,G,H,M,N	A,G,H,M,N	A,G,M	A,G,M	A,G,M	A,G,M	N/A	A,G,H,M,N	N/A	H	N/A	N/A	N/A
400	HPS	A,M	A,G,M	A,G,H,M,N	A,G,H,M,N	A,G,M	A,G,M	A,G,M	A,G,M	A,G,M	A,G,H,M,N	H,A,N	H	A,H,M,N	N/A	A,H,M
175	EPMH	A	A	A	A	A	A	A	A	N/A	A	N/A	N/A	N/A	N/A	N/A
250	EPMH	A	A	A	A	A	A	A	A	N/A	A	N/A	N/A	N/A	N/A	N/A
320	EPMH	A	A	A	A	A	A	N/A	A	N/A	A	N/A	N/A	N/A	N/A	N/A
350	EPMH	A	A	A	A	A	A	N/A	A	N/A	A	N/A	N/A	N/A	N/A	N/A
400	EPMH	A	A	A	A	A	A	A	A	N/A	A	N/A	N/A	N/A	N/A	N/A

NOTE: N/A = Not Available
*Not available in 120X347 volt
C/F = Contact factory

MDCA — SUGGESTED CATALOG ORDERING NUMBERS

Catalog Number	Wattage	Light Source	Voltage (60 Hz)	Ballast Type	Refractor Type	Photometric Distribution
MDCA25S0A22FMC21	250	HPS	Multivolt	Auto-Regulator	Glass	MC2
MDCA40S0A22FMC31	400	HPS	Multivolt	Auto-Regulator	Glass	MC3

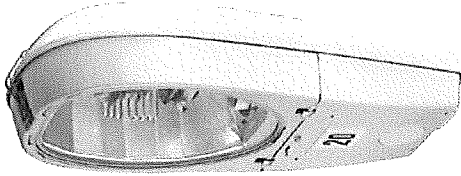
All GE suggested catalog ordering numbers come with PE receptacle. PE control must be ordered separately. Order and install SCCL-PECTL if no PE is desired.

Multivolt ballasts can be for either 120, 208, 240, or 277 volt incoming power supply.

GE Lighting Systems, Inc.
www.gelightingssystem.com



M-400A POWR/DOOR® LUMINAIRE WITH CUTOFF OPTICS



APPLICATIONS

- For street, highway and parking lot lighting

SPECIFICATION FEATURES

- Powr/Module ballast assembly
- Filtered optics
- Universal two or four-bolt slipfitter
- Standardized reflector
- "Dead back" tunnel type, FRP terminal board
- 2 in. pipe mounting only with MDCA
- Die-cast aluminum housing with polyester powder gray paint finish
- Adjustable mogul base socket (house side) – E39 standard
- ALGLAS® finish on reflector
- No-tool PE receptacle
- Plug-in ignitor available
- External paddle type stainless steel bail latch
- UL/ETL listed unit available— See Options
- True 90° cutoff—no light above 90° (meets RP8-2000 for full cutoff) with flat glass

ORDERING NUMBER LOGIC

MDCL	40	S	1	A	2	1	F	MC3	1	F
PRODUCT IDENT	WATTAGE	LIGHT SOURCE	VOLTAGE	BALLAST TYPE	PE FUNCTION	IGNITOR MOUNTING	LENS TYPE	IES DISTRIBUTION TYPE	FILTER	OPTIONS
XXXX	XX	X	X	X	X	X	X	XXX	X	XXX
MDCA = M-400A with Cutoff * Optics 4-Bolt Slipfitter	10 = 100 15 = 150 (55V) 17 = 175 20 = 200 24 = 250/400 25 = 250 31 = 310 32 = 320 35 = 350 40 = 400	E = Energy Act Compliant Pulse MH (EPMH) S = HPS P = PMH Standard: Lamp not included.	60Hz 0 = 120/208/240/277 Multivolt 1 = 120 2 = 208 3 = 240 4 = 277 5 = 480 7 = 120X240 8 = 240V Ballast 120V PE Receptacle not reconnectable D = 347 F = 120X347 T = 220 W = 230 50Hz 6 = 220 R = 230 Y = 240 NOTE: Dual voltage connected for lower voltage	See Ballast Selection Table A = Autoreg H = HPF Reactor or Lag M = Mag-reg N = NPF Reactor or Lag P = CWI with Grounded Socket Shell	1 = None 2 = PE Receptacle NOTE: Receptacle connected same voltage as unit except as noted. Order PE Control separately.	1 = Non Plug-in/ None 2 = Plug-in base and ignitor	A = Acrylic Clear Globe (250 watt Maximum) F = Flat Glass * G = Shallow Glass Globe L = Polycarbonate Clear Globe (250 watt) HPS only * = Previously IESNA Full Cutoff Optics	See Photometric Selection Table S = Short M = Medium C = Cutoff * 1 = Type I 2 = Type II 3 = Type III * = Previously IESNA Full Cutoff Optics	1 = Fiber gasket 2 = Charcoal with elastomer gasket	F = Fusing (Not available with multivolt or dual voltage) J = Line Surge Protector, Expulsion Type N = Meets ANSI C136.31 requirements for Bridge and Underpass Vibration U = UL Listed Glass Lens and (60Hz only)

PHOTOMETRIC SELECTION TABLE

CLEAR REFRACTORS All light sources are clear.

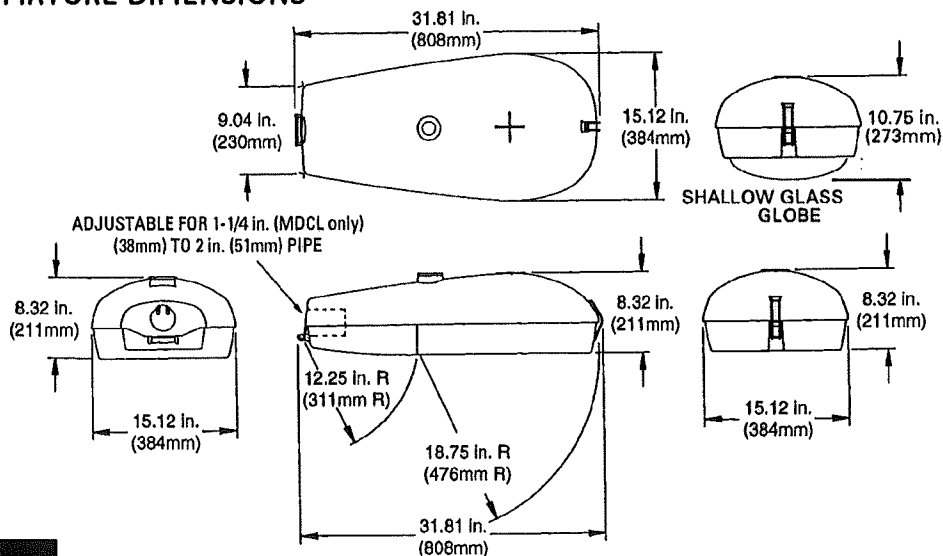
Wattage	Light Source	IES Distribution Type Photometric Curve Number 35-45XXXX							Polycarbonate
		Flat Glass "F"			SAG Glass Globe "G"				
		MC2	MC3	MC1	SC2	SC3	MC2		
150 (55V)	HPS	0386	0387	N/A	N/A	N/A	0547	0546	C/F
200-400	HPS	1001	1002	N/A	0101	0102	1003	1004	1045** (MC3)
175, 250, 320, 350, 400	EPMH	0343	0342	N/A	N/A	N/A	0544	0545	C/F
	EPMH	*452880	*452882	0281	N/A	N/A	0280	N/A	N/A

NOTE: N/A = Not Available C/F = Contact Factory
 PMH—Contact Factory
 *Requires the use of ED-28 Lamp
 **250 watts maximum



M-400A POWR/DOOR® LUMINAIRE WITH CUTOFF OPTICS & 4 BOLT SLIPFITTER

FIXTURE DIMENSIONS



DATA

Approximate Net Weight	33-39 lbs	15-19 kgs
Effective Projected Area	1.1 sq. ft. max	.01 sq. M max
Suggested Mounting Height	30-50 ft.	9-15 M

REFERENCES

See Page R-48 for start of Accessories.
See Page R-52 for Explanation of Options and Other Terms Used.
See Pole and Bracket Section Page P-2 for pole selection.

BALLAST SELECTION TABLE

Wattage	Light Source	Multi-volt	Ballast Type/Voltage												
			60Hz							50Hz					
			120	208	240	277	480	120X 240	347, 120X347	240/120 PE R	220	230	220	230	240
150 (55V)	HPS	H,N,A	G,H,M,N	G,M	G,M	G,M	G,M	G,H,M,N	G*,H,M*,N	G,M	N/A	N/A	N/A	N/A	N/A
200	HPS	A,M,P	A,G,H,M,N,P	A,G,H,M,N,P	A,G,H,M,N,P	A,G,M,P	A,G,M	A,G,M,P	N/A	A,G,H,M,N	N/A	H	N/A	N/A	N/A
250	HPS	A,M,P	A,G,H,M,N,P	A,G,H,M,N,P	A,G,H,M,N,P	A,G,M,P	A,G,M,P	A,G,M,P	A,M,P	A,G,H,M,N	A,H	H	A,H,M,N	H	M
250/400	HPS	A	A	A	A	A	A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
310	HPS	A,M	A,G,M	A,G,H,M,N	A,G,H,M,N	A,G,M	A,G,M	A,G,M	N/A	A,G,H,M,N	N/A	H	N/A	N/A	N/A
400	HPS	A,M	A,G,M	A,G,H,M,N	A,G,H,M,N	A,G,M	A,G,M	A,G,M	A,G,M	A,G,H,M,N	H,A,N	H	A,H,M,N	N/A	A,H,M
175	EPMH	A	A	A	A	A	A	A	N/A	A	N/A	N/A	N/A	N/A	N/A
250	EPMH	A	A	A	A	A	A	A	N/A	A	N/A	N/A	N/A	N/A	N/A
320	EPMH	A	A	A	A	A	A	A	N/A	A	N/A	N/A	N/A	N/A	N/A
350	EPMH	A	A	A	A	A	A	A	N/A	A	N/A	N/A	N/A	N/A	N/A
400	EPMH	A	A	A	A	A	A	A	N/A	A	N/A	N/A	N/A	N/A	N/A

NOTE: N/A = Not Available
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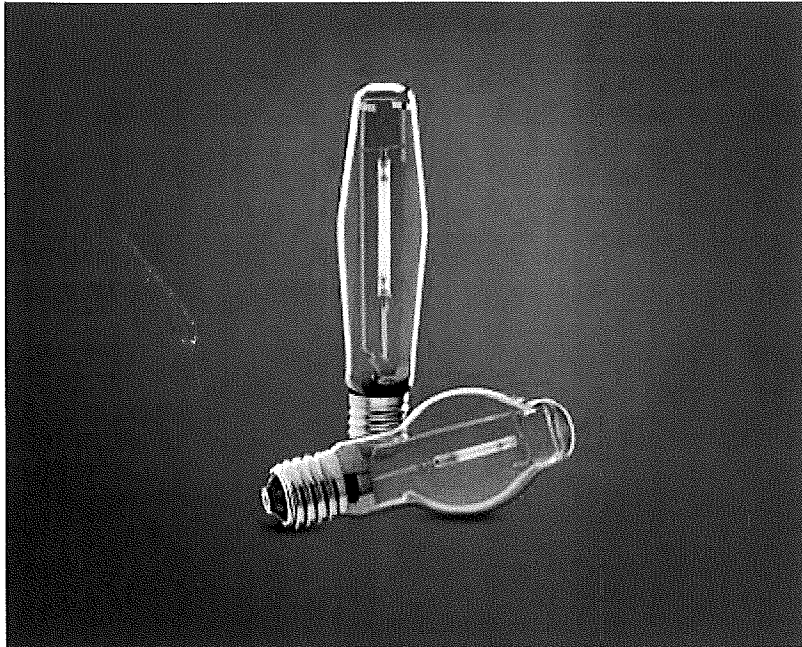
Multivolt ballasts can be for either 120, 208, 240, or 277 volt incoming power supply.

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Product Number: 67578
Order Abbreviation: LU250/ECO
General Description: 250W LUMALUX ECOLOGIC high pressure sodium HID lamp, pass Federal TCLP test, E39 based, ET18 bulb, universal burn, clear, 2100K

Product Information

Abbrev. With Packaging Info.	LU250ECO 20/CS 1/SKU
ANSI Code	S50
Approx. Lumens (Initial - horizontal)	29000
Approx. Lumens (Initial - vertical)	29000
Approx. Lumens (mean - horizontal)	26100
Approx. Lumens (mean - vertical)	26100
Arc Length (in)	2.74
Arc Length (mm)	69.6
Average Rated Life - Horizontal (hr)	40000
Average Rated Life - (hr)	40000
Avg Rated Life (hrs)	24000+
Base	E39 Mogul
Color Rendering Index (CRI)	22
Color Temperature/CCT (K)	2100
Diameter (in)	2.200
Diameter (mm)	57.00
Family Brand Name	Lumalux® ECO
Fixture Requirement	0
Hot Restrike Time (min)	1 MIN
Lamp Finish	Clear
Light Center Length - LCL (in)	5.75
Light Center Length - LCL (mm)	146
Maximum Base Temperature - Fahrenheit	482
Maximum Base Temperature - Celsius	250