



LEXINGTON

Bid 58-2022 Addendum 1

Path Master, Inc

Supplier Response

Event Information

Number: Bid 58-2022 Addendum 1
Title: Advanced Transportation Controller Cabinet (ATCC)
Type: Competitive Bid
Issue Date: 5/26/2022
Deadline: 6/9/2022 02:00 PM (ET)
Notes: ONLY ONLINE BIDS WILL BE ACCEPTED FOR THIS SOLICITATION. PRICING SHOULD BE SUBMITTED ON THE LINE ITEMS TAB ONLY. PRICING WITHIN SUBMITTALS WILL NOT BE ACCEPTED AND MAY MAKE YOUR BID NON-RESPONSIVE.

PLEASE UPLOAD YOUR DOCUMENTS AS ONE FILE.

Contact Information

Contact: Jessica Allinder
Address: Central Purchasing
Government Center Building
Room 338
200 East Main Street
Lexington, KY 40507
Phone: (859) 2583320
Fax: (859) 2583322
Email: jallinder@lexingtonky.gov

Path Master, Inc Information

Address: 1960 Midway Dr.
Twinsburg, OH 44087
Phone: (330) 425-4994
Fax: (330) 425-9338

ONLY ONLINE BIDS WILL BE ACCEPTED! By submitting your response, you certify that you are authorized to represent and bind your company and that you agree to all bid terms and conditions as stated in the attached bid/RFP/RFQ/Quote/Auction documents.

Stacia L Shanley

Signature

Submitted at 6/8/2022 2:54:22 PM

sshlanley@pathmasterinc.com

Email

Response Attachments

LFUCG Bid 58 2022 Bid Package and Addendum.pdf

Path Master, Inc. Bid Package and Addendum confirmation for Bid 58-2022 Advanced Transportation Control Cabinet (ATCC)

LFUCG Bid 58 2022 Submittals.pdf

Path Master, Inc. Literature for Bid 58-2022 Advanced Transportation Controller Cabinet (ATCC)

Bid Lines

1	Complete Assembly 32 Output/48 Input (with loop detectors/PED Detector) - No Controller, as per specifications Quantity: <u> 1 </u> UOM: <u> Each </u> Unit Price: <input type="text" value="\$26,745.00"/> Total: <input type="text" value="\$26,745.00"/>
2	Complete Assembly 32 Output/48 Input (No Detectors), as per specifications Quantity: <u> 1 </u> UOM: <u> Each </u> Unit Price: <input type="text" value="\$23,495.00"/> Total: <input type="text" value="\$23,495.00"/>
3	Econolite ATCC 352 Cabinet Assembly With Dual Output Files And Termination Panels (32 Output/48 Input), as per specifications Quantity: <u> 1 </u> UOM: <u> Each </u> Unit Price: <input type="text" value="\$15,725.00"/> Total: <input type="text" value="\$15,725.00"/>
4	ATCC High Density Switch Pack/Flasher EDI Model 2202-HV Quantity: <u> 1 </u> UOM: <u> Each </u> Unit Price: <input type="text" value="\$243.00"/> Total: <input type="text" value="\$243.00"/>
5	ATCC Cabinet Monitor Unit (CMU), 32Channel With ENET EDI Model CMUIP-2212-HV Quantity: <u> 1 </u> UOM: <u> Each </u> Unit Price: <input type="text" value="\$720.00"/> Total: <input type="text" value="\$720.00"/>
6	ATCC SIU ITS Serial Interface Unit EDI Model SIU-2218 Quantity: <u> 1 </u> UOM: <u> Each </u> Unit Price: <input type="text" value="\$273.00"/> Total: <input type="text" value="\$273.00"/>
7	ATCC DC Isolator, 4-Channel EDI Model 244L Quantity: <u> 1 </u> UOM: <u> Each </u> Unit Price: <input type="text" value="\$163.00"/> Total: <input type="text" value="\$163.00"/>

8 Loop Detector Unit, 4-Channel EDI Model LMD624H

Quantity: 1 UOM: Each Unit Price: Total:

Response Total: \$67,664.00



ADDENDUM #1

Bid Number: **58-2022**

Date: May 27, 2022

Subject: **Advanced Transportation Controller Cabinet (ATCC)**

Please address inquiries to:

Jessica Allinder, Buyer
(859) 258-3320

TO ALL PROSPECTIVE BIDDERS:

Please be advised of the following clarifications to the above referenced bid:

- 1) This is to clarify that equivalent products may be submitted.
- 2) Equivalents must meet the 32 output spec and be compatible with our existing equipment and work with our central signal system software (Q-free products – MaxTime and MaxView (which is in the process of being replaced with Kinetic Signals by Q-free).
- 3) Number 2 should read: (2.) Complete Assembly 32 Output/48 Input (No Detectors/No Controller)

A handwritten signature in black ink that reads "Todd Slatin".

Todd Slatin, Director
Division of Central Purchasing

All other terms and conditions of the Bid and specifications are unchanged. This letter should be signed, attached to and become a part of your Bid.



COMPANY NAME: Path Master, Inc.

ADDRESS: 1960 Midway Drive, Twinsburg, OH 44087

SIGNATURE OF BIDDER: Stacia Shady





LEXINGTON

Bid 58-2022
Path Master, Inc
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Stacia Stanley
Signature

sshanely@pathmasterinc.com
Email

Bid Lines

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Response Total: 0



LEXINGTON

Lexington-Fayette Urban County Government

Lexington, Kentucky
Horse Capital of the World

Division of Central Purchasing

Date of Issue: May 26, 2022

INVITATION TO BID #58-2022 Advanced Transportation Controller Cabinet (ATCC)

Bid Opening Date: June 9, 2022

Bid Opening Time: 2:00 PM

Address: All bids must be submitted on line at <https://lexingtonky.ionwave.net/>

Type of Bid: Price Contract

Pre Bid Meeting: N/A

Pre Bid Time: N/A

Address: N/A

Sealed bids will ONLY be received online at <https://lexingtonky.ionwave.net/> until **2:00 PM**, prevailing local time on **06/09/2022**. Bids must be submitted/uploaded by the above-mentioned date and time.

Bids are to include all shipping, handling and associated fees to the point of delivery (unless otherwise specified in the bid documents below) located at: Lexington, KY

<p style="text-align: center;">Check One:</p> <p><input checked="" type="checkbox"/> Bid Specifications Met _____ Exceptions to Bid Specifications. <i>Exceptions shall be itemized and attached to bid proposal submitted.</i></p>	<p>Proposed Delivery: 126 days after acceptance of bid.</p>
<p>Procurement Card Usage—The Lexington-Fayette Urban County Government may be using Procurement Cards to purchase goods and services and also to make payments. Will you accept Procurement Cards? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>	

To expedite award, the forms in this document should be completed and uploaded with your bid.

Submitted by: Path Master, Inc.
Firm Name

1960 Midway Drive
Address

Twinsburg, OH 44087
City, State & Zip

Bid must be signed: Stacia Shanley, Vice President
Signature of Authorized Company Representative – Title

Stacia L. Shanley
Representative's Name (Typed or printed)

330-425-4994, ext 116 330-425-9338
Area Code - Phone – Extension *Fax #*

sshanely@pathmasterinc.com
E-Mail Address

The Affidavit in this bid must be completed before your firm can be considered for award of this contract.

AFFIDAVIT

Comes the Affiant, Stacia L. Shanley, and after being first duly sworn under penalty of perjury as follows:

1. His/her name is Stacia L. Shanley and he/she is the individual submitting the bid or is the authorized representative of Path Master, Inc. the entity submitting the bid (hereinafter referred to as "Bidder")
2. Bidder will pay all taxes and fees, which are owed to the Lexington-Fayette Urban County Government at the time the bid is submitted, prior to award of the contract and will maintain a "current" status in regard to those taxes and fees during the life of the contract.
3. Bidder will obtain a Lexington-Fayette Urban County Government business license, if applicable, prior to award of the contract.
4. Bidder has authorized the Division of Central Purchasing to verify the above-mentioned information with the Division of Revenue and to disclose to the Urban County Council that taxes and/or fees are delinquent or that a business license has not been obtained.
5. Bidder has not knowingly violated any provision of the campaign finance laws of the Commonwealth of Kentucky within the past five (5) years and the award of a contract to the Bidder will not violate any provision of the campaign finance laws of the Commonwealth.
6. Bidder has not knowingly violated any provision of Chapter 25 of the Lexington-Fayette Urban County Government Code of Ordinances, known as "Ethics Act."
7. Bidder acknowledges that "knowingly" for purposes of this Affidavit means, with respect to conduct or to circumstances described by a statute or ordinance defining an offense, that a person is aware or should have been aware that his conduct is of that nature or that the circumstance exists.

Further, Affiant sayeth naught. Stacia Shanley

STATE OF Ohio

COUNTY OF Summit

The foregoing instrument was subscribed, sworn to and acknowledged before me by Stacia L. Shanley on this the 8th day of June, 2022.

My Commission expires: 7/11/2025



BEN A. STIDD JR.
Notary Public, State of Ohio
My Commission Expires:
7/11/2025

[Signature]
NOTARY PUBLIC, STATE AT LARGE

Please refer to Section II. Bid Conditions, Item "U" prior to completing this form.

I. GREEN PROCUREMENT

A. ENERGY

The Lexington-Fayette Urban County Government is committed to protecting our environment and being fiscally responsible to our citizens.

The Lexington-Fayette Urban County Government mandates the use of Energy Star compliant products if they are available in the marketplace (go to www.Energystar.gov). If these products are available, but not submitted in your pricing, your bid will be rejected as non-compliant.

ENERGY STAR is a government program that offers businesses and consumers energy-efficient solutions, making it easy to save money while protecting the environment for future generations.

Key Benefits

These products use 25 to 50% less energy
Reduced energy costs without compromising quality or performance
Reduced air pollution because fewer fossil fuels are burned
Significant return on investment
Extended product life and decreased maintenance

B. GREEN SEAL CERTIFIED PRODUCTS

The Lexington-Fayette Urban County Government is also committed to using other environmentally friendly products that do not negatively impact our environment. Green Seal is a non-profit organization devoted to environmental standard setting, product certification, and public education.

Go to www.Green Seal.org to find available certified products. These products will have a reduced impact on the environment and on human health. The products to be used must be pre-approved by the LFUCG prior to commencement of any work in any LFUCG facility. If a Green Seal product is not available, the LFUCG must provide a signed waiver to use an alternate product. Please provide information on the Green Seal products being used with your bid response.

C. GREEN COMMUNITY

The Lexington-Fayette Urban County Government (LFUCG) serves as a principal, along with the University of Kentucky and Fayette County Public Schools, in the Bluegrass Partnership for a Green Community. The Purchasing Team component of the Partnership collaborates on economy of scale purchasing that promotes and enhances environmental initiatives. Specifically, when applicable, each principal is interested in obtaining best value products and/or services which promote environment initiatives via solicitations and awards from the other principals.

If your company is the successful bidder on this Invitation For Bid, do you agree to extend the same product/service pricing to the other principals of the Bluegrass Partnership for a Green Community (i.e. University of Kentucky and Fayette County Schools) if requested?

Yes X No

II. Bid Conditions

- A. No bid may be withdrawn for a period of sixty (60) days after the date and time set for opening.
- B. No bid may be altered after the date and time set for opening. In the case of obvious errors, the Division of Central Purchasing may permit the withdrawal of a bid. The decision as to whether a bid may be withdrawn shall be that of the Division of Central Purchasing.
- C. Acceptance of this proposal shall be enactment of an Ordinance by the Urban County Council.
- D. The bidder agrees that the Urban County Government reserves the right to reject any and all bids for either fiscal

or technical reasons, and to award each part of the bid separately, all parts to one vendor or all parts to multiple vendors.

- E. Minor exceptions may not eliminate the bidder. The decision as to whether any exception is minor shall be entirely that of the head of the requisitioning Department or Division and the Director of the Division of Central Purchasing. The Urban County Government may waive technicalities and informalities where such waiver would best serve the interests of the Urban County Government.
- F. Manufacturer's catalogue numbers, trade names, etc., where shown herein are for descriptive purposes and are to guide the bidder in interpreting the standard of quality, design, and performance desired, and shall not be construed to exclude proposals based on furnishing other types of materials and/or services. However, any substitution or departure proposed by the bidder must be clearly noted and described; otherwise, it will be assumed that the bidder intends to supply items specifically mentioned in this Invitation for Bids.
- G. The Urban County Government may require demonstrations of the materials proposed herein prior to acceptance of this proposal.
- H. Bids must be submitted on this form and must be signed by the bidder or his authorized representative. Unsigned bids will not be considered.
- I. Bids must be submitted prior to the date and time indicated for opening. Bids submitted after this time will not be considered.
- J. All bids mailed must be submitted in the Ion Wave online portal at <https://lexingtonky.ionwave.net/>
- K. Bidder is requested to show both unit prices and lot prices. In the event of error, the unit price shall prevail.
- L. A certified check or Bid Bond in the amount of XX percent of the bid price must be attached hereto. This check must be made payable to the Lexington-Fayette Urban County Government, and will be returned when the material and/or services specified herein have been delivered in accordance with specifications. In the event of failure to perform within the time period set forth in this bid, it is agreed the certified check may be cashed and the funds retained by the Lexington-Fayette Urban County Government as liquidated damages. Checks of unsuccessful bidders will be returned when the bid has been awarded.
- M. The delivery dates specified by bidder may be a factor in the determination of the successful bidder.
- N. Tabulations of bids received may be mailed to bidders. Bidders requesting tabulations must enclose a stamped, self-addressed envelope with the bid.
- O. The Lexington-Fayette Urban County Government is exempt from Kentucky Sales Tax and Federal Excise Tax on materials purchased from this bid invitation. Materials purchased by the bidder for construction projects are not tax exempt and are the sole responsibility of the bidder.
- P. All material furnished hereunder must be in full compliance with OSHA regulations.
- Q. If more than one bid is offered by one party, or by any person or persons representing a party, all such bids shall be rejected.
- R. Signature on the face of this bid by the Bidder or his authorized representative shall be construed as acceptance of and compliance with all terms and conditions contained herein.
- S. The Entity (regardless of whether construction contractor, non-construction contractor or supplier) agrees to provide equal opportunity in employment for all qualified persons, to prohibit discrimination in employment because of race, color, religion, sex (including pregnancy, sexual orientation or gender identity), national origin, disability, age, genetic information, political affiliation, or veteran status, and to promote equal employment through a positive, continuing program from itself and each of its sub-contracting agents. This program of equal employment opportunity shall apply to every aspect of its employment policies and practices.
- T. The Kentucky Equal Employment Opportunity Act of 1978 (KRS 45.560-45.640) requires that any county, city, town, school district, water district, hospital district, or other political subdivision of the state shall include in directly

or indirectly publicly funded contracts for supplies, materials, services, or equipment hereinafter entered into the following provisions:

During the performance of this contract, the contractor agrees as follows:

- (1) *The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, age or national origin;*
- (2) *The contractor will state in all solicitations or advertisements for employees placed by or on behalf of the contractors that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, age or national origin;*
- (3) *The contractor will post notices in conspicuous places, available to employees and applicants for employment, setting forth the provisions of the non-discrimination clauses required by this section; and*
- (4) *The contractor will send a notice to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding advising the labor union or workers' representative of the contractor's commitments under the nondiscrimination clauses.*

The Act further provides:

KRS 45.610. Hiring minorities - Information required

- (1) *For the length of the contract, each contractor shall hire minorities from other sources within the drawing area, should the union with which he has collective bargaining agreements be unwilling to supply sufficient minorities to satisfy the agreed upon goals and timetable.*
- (2) *Each contractor shall, for the length of the contract, furnish such information as required by KRS 45.560 to KRS 45.640 and by such rules, regulations and orders issued pursuant thereto and will permit access to all books and records pertaining to his employment practices and work sites by the contracting agency and the department for purposes of investigation to ascertain compliance with KRS 45.560 to 45.640 and such rules, regulations and orders issued pursuant thereto.*

KRS 45.620. Action against contractor - Hiring of minority contractor or subcontractor

- (1) *If any contractor is found by the department to have engaged in an unlawful practice under this chapter during the course of performing under a contract or subcontract covered under KRS 45.560 to 45.640, the department shall so certify to the contracting agency and such certification shall be binding upon the contracting agency unless it is reversed in the course of judicial review.*
- (2) *If the contractor is found to have committed an unlawful practice under KRS 45.560 to 45.640, the contracting agency may cancel or terminate the contract, conditioned upon a program for future compliance approved by the contracting agency and the department. The contracting agency may declare such a contractor ineligible to bid on further contracts with that agency until such time as the contractor complies in full with the requirements of KRS 45.560 to 45.640.*
- (3) *The equal employment provisions of KRS 45.560 to 45.640 may be met in part by a contractor by subcontracting to a minority contractor or subcontractor. For the provisions of KRS 45.560 to 45.640, a minority contractor or subcontractor shall mean a business that is owned and controlled by one or more persons disadvantaged by racial or ethnic circumstances.*

KRS 45.630 Termination of existing employee not required, when

Any provision of KRS 45.560 to 45.640 notwithstanding, no contractor shall be required to terminate an existing employee upon proof that that employee was employed prior to the date of the contract.

KRS 45.640 Minimum skills

Nothing in KRS 45.560 to 45.640 shall require a contractor to hire anyone who fails to demonstrate the minimum skills required to perform a particular job.

It is recommended that all of the provisions above quoted to be included as special conditions in each contract.

In the case of a contract exceeding \$250,000, the contractor is required to furnish evidence that his work-force in Kentucky is representative of the available work-force in the area from which he draws employees, or to supply an Affirmative Action plan which will achieve such representation during the life of the contract.

- U. Any party, firm or individual submitting a proposal pursuant to this invitation must be in compliance with the requirements of the Lexington-Fayette Urban County Government regarding taxes and fees before they can be considered for award of this invitation and must maintain a "current" status with regard to those taxes and fees throughout the term of the contract. The contractor must be in compliance with Chapter 13 from the Code of Ordinances of the Lexington-Fayette Urban County Government. The contractor must be in compliance with Ordinance 35-2000 pursuant to contractor registration with the Division of Building Inspection. If applicable, said business must have a Fayette County business license.

Pursuant to KRS 45A.343 and KRS 45A.345, the contractor shall

- (1) *Reveal any final determination of a violation by the contractor within the previous five year period pursuant to KRS Chapters 136 (corporation and utility taxes), 139 (sales and use taxes), 141 (income taxes), 337 (wages and hours), 338 (occupational safety and health of employees), 341 (unemployment and compensation) and 342 (labor and human rights) that apply to the contractor; and*
- (2) *Be in continuous compliance with the above-mentioned KRS provisions that apply to the contractor for the duration of the contract.*

A contractor's failure to reveal the above or to comply with such provisions for the duration of the contract shall be grounds for cancellation of the contract and disqualification of the contractor from eligibility for future contracts for a period of two (2) years.

- V. Vendors who respond to this invitation have the right to file a notice of contention associated with the bid process or to file a notice of appeal of the recommendation made by the Director of Central Purchasing resulting from this invitation.

Notice of contention with the bid process must be filed within 3 business days of the bid/proposal opening by (1) sending a written notice, including sufficient documentation to support contention, to the Director of the Division of Central Purchasing or (2) submitting a written request for a meeting with the Director of Central Purchasing to explain his/her contention with the bid process. After consulting with the Commissioner of Finance the Chief Administrative Officer and reviewing the documentation and/or hearing the vendor, the Director of Central Purchasing shall promptly respond in writing findings as to the compliance with bid processes. If, based on this review, a bid process irregularity is deemed to have occurred the Director of Central Purchasing will consult with the Commissioner of Finance, the Chief Administrative Officer and the Department of Law as to the appropriate remedy.

Notice of appeal of a bid recommendation must be filed within 3 business days of the bid recommendation by (1) sending a written notice, including sufficient documentation to support appeal, to the Director, Division of Central Purchasing or (2) submitting a written request for a meeting with the Director of Central Purchasing to explain his appeal. After reviewing the documentation and/or hearing the vendor and consulting with the Commissioner of Finance and the Chief Administrative Officer, the Director of Central Purchasing shall in writing, affirm or withdraw the recommendation.

III. Procurement Contract Bid Conditions

- A. The terms of this agreement shall be for 1 year(s) from the date of acceptance of this contract by the Lexington-Fayette Urban County Government. This agreement may be automatically extended for an additional 1 year(s) renewal. This contract may be canceled by either party thirty (30) days after delivery by canceling party of written notice of intent to cancel to the other contracting party.
- B. Price Changes **(Space Checked Applies)**
 - (XXX)1. Prices quoted in response to the Invitation shall be firm prices for the first 90 days of the Procurement Contract. After 90 days, prices may be subject to revision and such changes shall be based on general industry changes. Revision may be either increases or decreases and may be requested by either party. There will be no more than one (1) price adjustment per quarter. Requests for price changes shall be received in writing at least twenty (20) days prior to the effective date and are subject to written acceptance before becoming effective. Proof of the validity of a request for revision shall be responsibility of the requesting party. The Lexington-Fayette Urban County Government shall receive the benefit of any decline that the seller shall offer his other accounts.
 - () 2. No provision for price change is made herein. Prices are to be firm for the term of this contract.
 - () 3. See bid specifications.
 - C. If any contract item is not available from the vendor, the Lexington-Fayette Urban County Government, at its option, may permit the item to be back-ordered or may procure the item on the open market.
 - D. All invoices must bear reference to the Lexington-Fayette Urban County Government Purchasing document numbers which are being billed.
 - E. This contract may be canceled by the Lexington-Fayette Urban County Government if it is determined that the Bidder has failed to perform under the terms of this agreement, such cancellation to be effective upon receipt of written notice of cancellation by the Bidder.
 - F. No substitutions for articles specified herein may be made without prior approval of the Division of Central Purchasing.

EQUAL OPPORTUNITY AGREEMENT

Standard Title VI Assurance

The Lexington Fayette-Urban County Government, (hereinafter referred to as the "Recipient") hereby agrees that as a condition to receiving any Federal financial assistance from the U.S. Department of Transportation, it will comply with Title VI of the Civil Rights Act of 1964, 78Stat.252, 42 U.S.C. 2000d-4 (hereinafter referred to as the "Act"), and all requirements imposed by or pursuant to Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, (49 CFR, Part 21) Nondiscrimination in Federally Assisted Program of the Department of Transportation – Effectuation of Title VI of the Civil Rights Act of 1964 (hereinafter referred to as the "Regulations") and other pertinent directives, no person in the United States shall, on the grounds of race, color, national origin, sex, age (over 40), religion, sexual orientation, gender identity, veteran status, or disability be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which the Recipient receives Federal financial assistance from the U.S. Department of Transportation, including the Federal Highway Administration, and hereby gives assurance that will promptly take any necessary measures to effectuate this agreement. This assurance is required by subsection 21.7(a) (1) of the Regulations.

The Law

- Title VII of the Civil Rights Act of 1964 (amended 1972) states that it is unlawful for an employer to discriminate in employment because of race, color, religion, sex, age (40-70 years) or national origin.
- Executive Order No. 11246 on Nondiscrimination under Federal contract prohibits employment discrimination by contractor and sub-contractor doing business with the Federal Government or recipients of Federal funds. This order was later amended by Executive Order No. 11375 to prohibit discrimination on the basis of sex.
- Section 503 of the Rehabilitation Act of 1973 states: *The Contractor will not discriminate against any employee or applicant for employment because of physical or mental disability.*
- Section 2012 of the Vietnam Era Veterans Readjustment Act of 1973 requires Affirmative Action on behalf of disabled veterans and veterans of the Vietnam Era by contractors having Federal contracts.
- Section 206(A) of Executive Order 12086, Consolidation of Contract Compliance Functions for Equal Employment Opportunity, states: *The Secretary of Labor may investigate the employment practices of any Government contractor or sub-contractor to determine whether or not the contractual provisions specified in Section 202 of this order have been violated.*

The Lexington-Fayette Urban County Government practices Equal Opportunity in recruiting, hiring and promoting. It is the Government's intent to affirmatively provide employment opportunities for those individuals who have previously not been allowed to enter into the mainstream of society. Because of its importance to the local Government, this policy carries the full endorsement of the Mayor, Commissioners, Directors and all supervisory personnel. In following this commitment to Equal Employment Opportunity and because the Government is the benefactor of the Federal funds, it is both against the Urban County Government policy and illegal for the Government to let contracts to companies which knowingly or unknowingly practice discrimination in their employment practices. Violation of the above mentioned ordinances may cause a contract to be canceled and the contractors may be declared ineligible for future consideration.

Please sign this statement in the appropriate space acknowledging that you have read and understand the provisions contained herein. Return this document as part of your application packet.

Bidders

I/We agree to comply with the Civil Rights Laws listed above that govern employment rights of minorities, women, veteran status, disability and age.

Stacia Shanley
Signature

Path Master, Inc.
Name of Business

GENERAL PROVISIONS OF BID CONTRACT

By signing the below, bidder acknowledges that it understands and agrees with the following provisions related to its bid response and the provision of any goods or services to LFUCG upon selection by LFUCG pursuant to the bid request:

1. Bidder shall comply with all Federal, State & Local regulations concerning this type of service or good. All applicable state laws, ordinances and resolutions (including but not limited to Section 2-33 (Discrimination due to sexual orientation or gender identity) and Chapter 13 (Licenses and Regulations) of the Lexington-Fayette Urban County Government Code of Ordinances, and Resolution No. 484-17 (Minority, Women, and Veteran-Owned Businesses)) and the regulations of all authorities having jurisdiction over the project shall apply to the contract, and shall be deemed to be incorporated herein by reference.
2. Failure to submit ALL forms and information required by LFUCG may be grounds for disqualification.
3. Addenda: All addenda and IonWave Q&A, if any, must be considered by the bidder in making its response, and such addenda shall be made a part of the requirements of the bid contract. Before submitting a bid response, it is incumbent upon bidder to be informed as to whether any addenda have been issued, and the failure of the bidder to cover any such addenda may result in disqualification of that response.
4. Bid Reservations: LFUCG reserves the right to reject any or all bid responses, to award in whole or part, and to waive minor immaterial defects in proposals. LFUCG may consider any alternative proposal that meets its basic needs.
5. Liability: LFUCG is not responsible for any cost incurred by bidder in the preparation of its response.
6. Changes/Alterations: Bidder may change or withdraw a proposal at any time prior to the opening; however, no oral modifications will be allowed. Only letters, or other formal written requests for modifications or corrections of a previously submitted proposal which is addressed in the same manner as the bid response, and received by LFUCG prior to the scheduled closing time for receipt of bids, will be accepted. The bid response when opened, will then be corrected in accordance with such written request(s), provided that the written request is contained in a sealed envelope which is plainly marked "modifications of bid response".
7. Clarification of Submittal: LFUCG reserves the right to obtain clarification of any point in a bid or to obtain additional information from any bidder.
8. Bribery Clause: By his/her signature on its response, bidder certifies that no employee of his/hers, any affiliate or subcontractor, has bribed or attempted to bribe an officer or employee of the LFUCG.
9. Additional Information: While not necessary, the bidder may include any product brochures, software documentation, sample reports, or other documentation that may assist LFUCG in better understanding and evaluating the bid response. Additional documentation shall not serve as a substitute for other documentation which is required by the LFUCG to be submitted with the bid response.
10. Ambiguity, Conflict or other Errors: If a bidder discovers any ambiguity, conflict, discrepancy, omission or other error in the bid request of LFUCG, it shall immediately notify LFUCG of such error in writing and request modification or clarification of the document if allowable by the LFUCG.
11. Agreement to Bid Terms: In submitting its bid response, the bidder agrees that it has carefully examined the specifications and all provisions relating to LFUCG's bid request, including but not limited to the bid contract. By submission of its bid response, bidder states that it understands the meaning, intent and requirements of LFUCG's bid request and agrees to the same. The successful bidder shall warrant that it is familiar with and understands all provisions herein and shall warrant that it can comply with them. No additional compensation to bidder shall be authorized for services, expenses, or goods reasonably covered under these provisions that the bidder omits from its bid response.
12. Cancellation: LFUCG may unilaterally terminate the bid contract with the selected bidder(s) at any time, with or without cause, by providing at least thirty (30) days advance written notice unless a different advance written notice

period is negotiated prior to contract approval. Payment for services or goods received prior to termination shall be made by the LFUCG provided these goods or services were provided in a manner acceptable to the LFUCG. Payment for those goods and services shall not be unreasonably withheld.

13. Assignment of Contract: The selected bidder(s) shall not assign or subcontract any portion of the bid contract with LFUCG without the express written consent of LFUCG. Any purported assignment or subcontract in violation hereof shall be void. It is expressly acknowledged that LFUCG shall never be required or obligated to consent to any request for assignment or subcontract; and further that such refusal to consent can be for any or no reason, fully within the sole discretion of LFUCG.
14. No Waiver: No failure or delay by LFUCG in exercising any right, remedy, power or privilege hereunder, nor any single or partial exercise thereof, nor the exercise of any other right, remedy, power or privilege shall operate as a waiver hereof or thereof. No failure or delay by LFUCG in exercising any right, remedy, power or privilege under or in respect of this bid proposal or bid contract shall affect the rights, remedies, powers or privileges of LFUCG hereunder or shall operate as a waiver thereof.
15. Authority to do Business: Each bidder must be authorized to do business under the laws of the Commonwealth of Kentucky and must be in good standing and have full legal capacity to provide the goods or services specified in the bid proposal. Each bidder must have all necessary right and lawful authority to submit the bid response and enter into the bid contract for the full term hereof including any necessary corporate or other action authorizing the bidder to submit the bid response and enter into this bid contract. If requested, the bidder will provide LFUCG with a copy of a corporate resolution authorizing this action and/or a letter from an attorney confirming that the proposer is authorized to do business in the Commonwealth of Kentucky. All bid responses must be signed by a duly authorized officer, agent or employee of the bidder.
16. Governing Law: This bid request and bid contract shall be governed by and construed in accordance with the laws of the Commonwealth of Kentucky. In the event of any proceedings regarding this matter, the bidder agrees that the venue shall be the Fayette County Circuit Court or the U.S. District Court for the Eastern District of Kentucky, Lexington Division and that the bidder expressly consents to personal jurisdiction and venue in such Court for the limited and sole purpose of proceedings relating to these matters or any rights or obligations arising thereunder.
17. Ability to Meet Obligations: Bidder affirmatively states that there are no actions, suits or proceedings of any kind pending against bidder or, to the knowledge of the bidder, threatened against the bidder before or by any court, governmental body or agency or other tribunal or authority which would, if adversely determined, have a materially adverse effect on the authority or ability of bidder to perform its obligations under this bid response or bid contract, or which question the legality, validity or enforceability hereof or thereof.
18. Price Discrepancy: When applicable, in case of price discrepancy, unit bid price written in words will prevail followed by unit price written in numbers then total amount bid per line item.
19. Bidder understands and agrees that its employees, agents, or subcontractors are not employees of LFUCG for any purpose whatsoever. Bidder is an independent contractor at all times related to the bid response or bid contract.
20. Contractor [or Vendor or Vendor's Employees] will not appropriate or make use of the Lexington-Fayette Urban County Government (LFUCG) name or any of its trade or service marks or property (including but not limited to any logo or seal), in any promotion, endorsement, advertisement, testimonial or similar use without the prior written consent of the government. If such consent is granted LFUCG reserves the unilateral right, in its sole discretion, to immediately terminate and revoke such use for any reason whatsoever. Contractor agrees that it shall cease and desist from any unauthorized use immediately upon being notified by LFUCG.
21. If any term or provision of this bid contract shall be found to be illegal or unenforceable, the remainder of the contract shall remain in full force and such term or provision shall be deemed stricken.


Signature

June 8, 2022
Date

WORKFORCE ANALYSIS FORM

Name of Organization: Path Master, Inc.

Categories	Total	White (Not Hispanic or Latino)		Hispanic or Latino		Black or African-American (Not Hispanic or Latino)		Native Hawaiian and Other Pacific Islander (Not Hispanic or Latino)		Asian (Not Hispanic or Latino)		American Indian or Alaskan Native (not Hispanic or Latino)		Two or more races (Not Hispanic or Latino)		Total	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Administrators	4	3	1													3	1
Professionals	11	9		1		1										11	
Superintendents	0																
Supervisors	3	3														3	
Foremen	1	1														1	
Technicians	7	3	3		1											3	4
Protective Service	0																
Para-Professionals	0																
Office/Clerical	4	1	3													1	3
Skilled Craft	2	2														2	
Service/Maintenance	4	2	2													2	2
Total:	36	24	9	1	1	1										26	10

Prepared by: Stacia L. Shanley, Vice President Date: 06 / 08 / 22

(Name and Title)

Revised 2015-Dec-15

**DIRECTOR, DIVISION OF CENTRAL PURCHASING
LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT
200 EAST MAIN STREET
LEXINGTON, KENTUCKY 40507**

**NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE
EQUAL EMPLOYMENT OPPORTUNITIES AND DBE CONTRACT PARTICIPATION**

The Lexington-Fayette Urban County Government has set a goal that not less than ten percent (10%) of the total value of this contract be subcontracted to MBE/WBE's, and set a goal that not less than three percent (3%) of the total value of this contract be subcontracted to Veteran-Owned Small Businesses. The goal for the utilization of Certified MBE/WBE's and Veteran-Owned Small Businesses as subcontractors are recommended goals. Contractors who fail to meet such goals will be expected to provide written explanations to the Director of the Division of Central Purchasing of efforts they have made to accomplish the recommended goals and the extent to which they are successful in accomplishing the recommended goals will be a consideration in the procurement process.

For assistance in locating MBE/WBE Subcontractors contact Sherita Miller at 859/258-3320 or by writing the address listed below:

Sherita Miller, Division of Central Purchasing
Lexington-Fayette Urban County Government
200 East Main Street – Room 338
Lexington, Kentucky 40507
smiller@lexingtonky.gov

Lexington-Fayette Urban County Government
MWDBE PARTICIPATION GOALS

A. GENERAL

- 1) The LFUCG request all potential contractors to make a concerted effort to include Minority-Owned (MBE), Woman-Owned (WBE), Disadvantaged (DBE) Business Enterprises and Veteran-Owned Small Businesses (VOSB) as subcontractors or suppliers in their bids.
- 2) Toward that end, the LFUCG has established 10% of total procurement costs as a Goal for participation of Minority-Owned, Woman-Owned and Disadvantaged Businesses on this contract.
- 3) **It is therefore a request of each Bidder to include in its bid, the same goal (10%) for MWDBE participation and other requirements as outlined in this section.**
- 4) The LFUCG has also established a 3% of total procurement costs as a Goal for participation for of Veteran-Owned Businesses.
- 5) **It is therefore a request of each Bidder to include in its bid, the same goal (3%) for Veteran-Owned participation and other requirements as outlined in this section.**

B. PROCEDURES

- 1) The successful bidder will be required to report to the LFUCG, the dollar amounts of all payments submitted to Minority-Owned, Woman-Owned or Veteran-Owned subcontractors and suppliers for work done or materials purchased for this contract. (See Subcontractor Monthly Payment Report)
- 2) Replacement of a Minority-Owned, Woman-Owned or Veteran-Owned subcontractor or supplier listed in the original submittal must be requested in writing and must be accompanied by documentation of Good Faith Efforts to replace the subcontractor / supplier with another MWDBE Firm; this is subject to approval by the LFUCG. (See LFUCG MWDBE Substitution Form)
- 3) For assistance in identifying qualified, certified businesses to solicit for potential contracting opportunities, bidders may contact:
 - a) The Lexington-Fayette Urban County Government, Division of Central Purchasing (859-258-3320)
- 4) The LFUCG will make every effort to notify interested MWDBE and Veteran-Owned subcontractors and suppliers of each Bid Package, including information on the scope of work, the pre-bid meeting time and location, the bid date, and all other pertinent information regarding the project.

C. DEFINITIONS

- 1) A Minority-Owned Business Enterprise (MBE) is defined as a business which is certified as being at least 51% owned, managed and controlled by persons of African American, Hispanic, Asian, Pacific Islander, American Indian or Alaskan Native Heritage.
- 2) A Woman-Owned Business Enterprise (WBE) is defined as a business which is certified as being at least 51% owned, managed and controlled by one or more women.
- 3) A Disadvantaged Business (DBE) is defined as a business which is certified as being at least 51% owned, managed and controlled by a person(s) that are economically and socially disadvantaged.

- 4) A Veteran-Owned Small Business (VOSB) is defined as a business which is certified as being at least 51% owned, managed and controlled by a veteran and/or a service disabled veteran.
- 5) Good Faith Efforts are efforts that, given all relevant circumstances, a bidder or proposer actively and aggressively seeking to meet the goals, can reasonably be expected to make. In evaluating good faith efforts made toward achieving the goals, whether the bidder or proposer has performed the efforts outlined in the Obligations of Bidder for Good Faith Efforts outlined in this document will be considered, along with any other relevant factors.

D. OBLIGATION OF BIDDER FOR GOOD FAITH EFFORTS

- 1) **The bidder shall make a Good Faith Effort to achieve the Participation Goal for MWDBE and Veteran-Owned subcontractors/suppliers. The failure to meet the goal shall not necessarily be cause for disqualification of the bidder; however, bidders not meeting the goal are required to furnish with their bids written documentation of their Good Faith Efforts to do so.**
- 2) Award of Contract shall be conditioned upon satisfaction of the requirements set forth herein.
- 3) The Form of Proposal includes a section entitled "MWDBE Participation Form". The applicable information must be completed and submitted as outlined below.
- 4) **Failure to submit this information as requested may be cause for rejection of bid or delay in contract award.**

E. DOCUMENTATION REQUIRED FOR GOOD FAITH EFFORTS

- 1) Bidders reaching the Goal are required to submit only the MWDBE Participation Form." The form must be fully completed including names and telephone number of participating MWDBE firm(s); type of work to be performed; estimated value of the contract and value expressed as a percentage of the total Lump Sum Bid Price. The form must be signed and dated, and is to be submitted with the bid.
- 2) Bidders not reaching the Goal must submit the "MWDBE Participation Form", the "Quote Summary Form" and a written statement documenting their Good Faith Effort to do so. If bid includes no MWDBE and/or Veteran participation, bidder shall enter "None" on the subcontractor / supplier form). In addition, the bidder must submit written proof of their Good Faith Efforts to meet the Participation Goal:
 - a. Advertised opportunities to participate in the contract in at least two (2) publications of general circulation media; trade and professional association publications; small and minority business or trade publications; and publications or trades targeting minority, women and disadvantaged businesses not less than fifteen (15) days prior to the deadline for submission of bids to allow MWDBE firms and Veteran-Owned businesses to participate.
 - b. Included documentation of advertising in the above publications with the bidders good faith efforts package
 - c. Attended LFUCG Central Purchasing Economic Inclusion Outreach event
 - d. Attended pre-bid meetings that were scheduled by LFUCG to inform MWDBEs and/or Veteran-Owned businesses of subcontracting opportunities

- e. Sponsored Economic Inclusion event to provide networking opportunities for prime contractors and MWDBE firms and Veteran-Owned businesses.
- f. Requested a list of MWDBE and/or Veteran subcontractors or suppliers from LFUCG and showed evidence of contacting the companies on the list(s).
- g. Contacted organizations that work with MWDBE companies for assistance in finding certified MWDBE firms and Veteran-Owned businesses to work on this project. Those contacted and their responses should be a part of the bidder's good faith efforts documentation.
- h. Sent written notices, by certified mail, email or facsimile, to qualified, certified MWDBEs and/or Veteran-Owned businesses soliciting their participation in the contract not less than seven (7) days prior to the deadline for submission of bids to allow them to participate effectively.
- i. Followed up initial solicitations by contacting MWDBEs and Veteran-Owned Businesses to determine their level of interest.
- j. Provided the interested MWDBE firm and/or Veteran-Owned business with adequate and timely information about the plans, specifications, and requirements of the contract.
- k. Selected portions of the work to be performed by MWDBE firms and/or Veteran-Owned businesses in order to increase the likelihood of meeting the contract goals. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate MWDBE and Veteran participation, even when the prime contractor may otherwise perform these work items with its own workforce
- l. Negotiated in good faith with interested MWDBE firms and Veteran-Owned businesses not rejecting them as unqualified without sound reasons based on a thorough investigation of their capabilities. Any rejection should be so noted in writing with a description as to why an agreement could not be reached.
- m. Included documentation of quotations received from interested MWDBE firms and Veteran-Owned businesses which were not used due to uncompetitive pricing or were rejected as unacceptable and/or copies of responses from firms indicating that they would not be submitting a bid.
- n. Bidder has to submit sound reasons why the quotations were considered unacceptable. The fact that the bidder has the ability and/or desire to perform the contract work with its own forces will not be considered a sound reason for rejecting a MWDBE and/or Veteran-Owned business's quote. Nothing in this provision shall be construed to require the bidder to accept unreasonable quotes in order to satisfy MWDBE and Veteran goals.
- o. Made an effort to offer assistance to or refer interested MWDBE firms and Veteran-Owned businesses to obtain the necessary equipment, supplies, materials, insurance and/or bonding to satisfy the work requirements of the bid proposal
- p. Made efforts to expand the search for MWBE firms and Veteran-Owned businesses beyond the usual geographic boundaries.

q. Other--any other evidence that the bidder submits which may show that the bidder has made reasonable good faith efforts to include MWDBE and Veteran participation.

Note: Failure to submit any of the documentation requested in this section may be cause for rejection of bid. Bidders may include any other documentation deemed relevant to this requirement which is subject to review by the MBE Liaison. Documentation of Good Faith Efforts must be submitted with the Bid, if the participation Goal is not met.



MINORITY BUSINESS ENTERPRISE PROGRAM

Sherita Miller, MPA
Minority Business Enterprise Liaison
Division of Central Purchasing
Lexington-Fayette Urban County Government
200 East Main Street
Lexington, KY 40507
smiller@lexingtonky.gov
859-258-3323

OUR MISSION: The mission of the Minority Business Enterprise Program is to facilitate the full participation of minority and women owned businesses in the procurement process and to promote economic inclusion as a business imperative essential to the long term economic viability of Lexington-Fayette Urban County Government.

To that end the city council adopted and implemented Resolution 484-2017 – A Certified Minority, Women and Disadvantaged Business Enterprise ten percent (10%) minimum goal and a three (3%) minimum goal for Certified Veteran-Owned Small Businesses and Certified Service Disabled Veteran – Owned Businesses for government contracts.

The resolution states the following definitions shall be used for the purposes of reaching these goals (a full copy is available in Central Purchasing):

Certified Disadvantaged Business Enterprise (DBE) – a business in which at least fifty-one percent (51%) is owned, managed and controlled by a person(s) who is socially and economically disadvantaged as defined by 49 CFR subpart 26.

Certified Minority Business Enterprise (MBE) – a business in which at least fifty-one percent (51%) is owned, managed and controlled by an ethnic minority (i.e. African American, Asian American/Pacific Islander, Hispanic Islander, Native American/Native Alaskan Indian) as defined in federal law or regulation as it may be amended from time-to-time.

Certified Women Business Enterprise (WBE) – a business in which at least fifty-one percent (51%) is owned, managed and controlled by a woman.

Certified Veteran-Owned Small Business (VOSB) – a business in which at least fifty-one percent (51%) is owned, managed and controlled by a veteran who served on active duty with the U.S. Army, Air Force, Navy, Marines or Coast Guard.

Certified Service Disabled Veteran Owned Small Business (SDVOSB) – a business in which at least fifty-one percent (51%) is owned, managed and controlled by a disabled veteran who served on active duty with the U.S. Army, Air Force, Navy, Marines or Coast Guard.

The term “Certified” shall mean the business is appropriately certified, licensed, verified, or validated by an organization or entity recognized by the Division of Purchasing as having the appropriate credentials to make a determination as to the status of the business.

To comply with Resolution 484-2017, prime contractors and minority, women and veteran owned businesses must enroll in the new Diverse Business Management Compliance system, <https://lexingtonky.diversitycompliance.com/>

We have compiled the list below to help you locate certified MBE, WBE and DBE certified businesses. Below is a listing of contacts for LFUCG Certified MWDBEs and Veteran-Owned Small Businesses in (<https://lexingtonky.ionwave.net>)

Business	Contact	Email Address	Phone
LFUCG	Sherita Miller	smiller@lexingtonky.gov	859-258-3323
Commerce Lexington – Minority Business Development	Tyrone Tyra	ttyra@commercelexington.com	859-226-1625
Tri-State Minority Supplier Diversity Council	Susan Marston	smarston@tsmsdc.com	502-365-9762
Small Business Development Council	Shawn Rogers UK SBDC	shawn.rogers@uky.edu	859-257-7666
Community Ventures Corporation	Phyllis Alcorn	palcorn@cvky.org	859-231-0054
KY Transportation Cabinet (KYTC)	Melvin Bynes	Melvin.bynes2@ky.gov	502-564-3601
KYTC Pre-Qualification	Shella Eagle	Shella.Eagle@ky.gov	502-782-4815
Ohio River Valley Women’s Business Council (WBENC)	Sheila Mixon	smixon@orvwbc.org	513-487-6537
Kentucky MWBE Certification Program	Yvette Smith, Kentucky Finance Cabinet	Yvette.Smith@ky.gov	502-564-8099
National Women Business Owner’s Council (NWBOC)	Janet Harris-Lange	janet@nwbo.org	800-675-5066
Small Business Administration	Robert Coffey	robertcoffey@sba.gov	502-582-5971
LaVoz de Kentucky	Andres Cruz	lavozdeky@yahoo.com	859-621-2106
The Key News Journal	Patrice Muhammad	production@keynewsjournal.com	859-685-8488



LFUCG MWDBE PARTICIPATION FORM

Bid/RFP/Quote Reference # 58-2022

The MWDBE and/or veteran subcontractors listed have agreed to participate on this Bid/RFP/Quote. If any substitution is made or the total value of the work is changed prior to or after the job is in progress, it is understood that those substitutions must be submitted to Central Purchasing for approval immediately. **Failure to submit a completed form may cause rejection of the bid.**

MWDBE Company, Name, Address, Phone, Email	MBE WBE or DBE	Work to be Performed	Total Dollar Value of the Work	% Value of Total Contract
1. N/A	N/A	N/A	N/A	N/A
2. N/A	N/A	N/A	N/A	N/A
3. N/A	N/A	N/A	N/A	N/A
4. N/A	N/A	N/A	N/A	N/A

The undersigned company representative submits the above list of MWDBE firms to be used in accomplishing the work contained in this Bid/RFP/Quote. Any misrepresentation may result in the termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and false claims.

Path Master, Inc.
Company

06/08/22
Date

Stacia Sharley
Company Representative

Vice President
Title



LFUCG MWDBE PARTICIPATION FORM

Bid/RFP/Quote Reference # 58-2022

The MWDBE and/or veteran subcontractors listed have agreed to participate on this Bid/RFP/Quote. If any substitution is made or the total value of the work is changed prior to or after the job is in progress, it is understood that those substitutions must be submitted to Central Purchasing for approval immediately. **Failure to submit a completed form may cause rejection of the bid.**

MWDBE Company, Name, Address, Phone, Email	MBE WBE or DBE	Work to be Performed	Total Dollar Value of the Work	% Value of Total Contract
1. N/A	N/A	N/A	N/A	N/A
2. N/A	N/A	N/A	N/A	N/A
3. N/A	N/A	N/A	N/A	N/A
4. N/A	N/A	N/A	N/A	N/A

The undersigned company representative submits the above list of MWDBE firms to be used in accomplishing the work contained in this Bid/RFP/Quote. Any misrepresentation may result in the termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and false claims.

Path Master, Inc.

Company

06/08/22

Date

Stacia Sharley
Company Representative

Vice President

Title



LEXINGTON

LFUCG MWDBE SUBSTITUTION FORM

Bid/RFP/Quote Reference # 58-2022

The substituted MWDBE and/or veteran subcontractors listed below have agreed to participate on this Bid/RFP/Quote. These substitutions were made prior to or after the job was in progress. These substitutions were made for reasons stated below and are now being submitted to Central Purchasing for approval. By the authorized signature of a representative of our company, we understand that this information will be entered into our file for this project. **Failure to submit this form may cause rejection of the bid.**

SUBSTITUTED MWDBE Company Name, Address, Phone, Email	MWDBE Formally Contracted/ Name, Address, Phone, Email	Work to Be Performed	Reason for the Substitution	Total Dollar Value of the Work	% Value of Total Contract
1. N/A	N/A	N/A	N/A	N/A	N/A
2. N/A	N/A	N/A	N/A	N/A	N/A
3. N/A	N/A	N/A	N/A	N/A	N/A
4. N/A	N/A	N/A	N/A	N/A	N/A

The undersigned acknowledges that any misrepresentation may result in termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and false claims.

Path Master, Inc.
Company
06/08/22
Date

Stacia Sharley
Company Representative
Vice President
Title



LEXINGTON

MWDBE QUOTE SUMMARY FORM

Bid/RFP/Quote Reference # 58-2022

The undersigned acknowledges that the minority and/or veteran subcontractors listed on this form did submit a quote to participate on this project. Failure to submit this form may cause rejection of the bid.

Company Name Path Master, Inc.	Contact Person Stacia L. Shanley
Address/Phone/Email 1960 Midway Drive Twinsburg, OH 44087 330-425-4994 sshanley@pathmasterinc.com	Bid Package / Bid Date 58-2022 Advanced Transportation Controller Cabinet Bid Date: 06/09/22

MWDBE Company Address	Contact Person	Contact Information (work phone, Email, cell)	Date Contacted	Services to be performed	Method of Communication (email, phone meeting, ad, event etc)	Total dollars \$\$ Do Not Leave Blank (Attach Documentation)	MBE * AA HA AS NA Female	Veteran
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

(MBE designation / AA=African American / HA= Hispanic American/AS = Asian American/Pacific Islander/ NA= Native American)

The undersigned acknowledges that all information is accurate. Any misrepresentation may result in termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and claims.

Path Master, Inc.
Company
06/08/22
Date

Stacia Shanley
Company Representative
Vice President
Title



LEXINGTON

LFUCG SUBCONTRACTOR MONTHLY PAYMENT REPORT

The LFUCG has a 10% goal plan adopted by city council to increase the participation of minority and women owned businesses in the procurement process. The LFUCG also has a 3% goal plan adopted by cited council to increase the participation of veteran owned businesses in the procurement process. In order to measure that goal LFUCG will track spending with MWDBE and Veteran contractors on a monthly basis. By the signature below of an authorized company representative, you certify that the information is correct, and that each of the representations set forth below is true. Any misrepresentation may result in termination of the contract and/or prosecution under applicable Federal and State laws concerning false statements and false claims. Please submit this form monthly to the Division of Central Purchasing/ 200 East Main Street / Room 338 / Lexington, KY 40507.

Bid/RFP/Quote # 58-2022
 Total Contract Amount Awarded to Prime Contractor for this Project TBD

Project Name/ Contract # 58-2022 advanced Transportation Controller Cabinet (ATCC)	Work Period/ From: TBD To:
Company Name: Path Master, Inc.	Address: 1960 Midway Drive Twinsburg, OH 44087
Federal Tax ID: 34-1233777	Contact Person: Stacia L. Shanley

Subcontractor Vendor ID (name, address, phone, email)	Description of Work	Total Subcontract Amount	% of Total Contract Awarded to Prime for this Project	Total Amount Paid for this Period	Purchase Order number for subcontractor work (please attach PO)	Scheduled Project Start Date	Scheduled Project End Date
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

By the signature below of an authorized company representative, you certify that the information is correct, and that each of the representations set forth below is true. Any misrepresentations may result in the termination of the contract and/or prosecution under applicable Federal and State laws concerning false statements and false claims.

Path Master, Inc.
 Company
06/08/22
 Date

Stacia Shanley
 Company Representative
 Vice President
 Title

LFUCG STATEMENT OF GOOD FAITH EFFORTS

Bid/RFP/Quote # 58-2022

By the signature below of an authorized company representative, we certify that we have utilized the following Good Faith Efforts to obtain the maximum participation by MWDBE and Veteran-Owned business enterprises on the project and can supply the appropriate documentation.

N/A Advertised opportunities to participate in the contract in at least two (2) publications of general circulation media; trade and professional association publications; small and minority business or trade publications; and publications or trades targeting minority, women and disadvantaged businesses not less than fifteen (15) days prior to the deadline for submission of bids to allow MWDBE firms and Veteran-Owned businesses to participate.

N/A Included documentation of advertising in the above publications with the bidders good faith efforts package

N/A Attended LFUCG Central Purchasing Economic Inclusion Outreach event

N/A Attended pre-bid meetings that were scheduled by LFUCG to inform MWDBEs and/or Veteran-Owned Businesses of subcontracting opportunities

N/A Sponsored Economic Inclusion event to provide networking opportunities for prime contractors and MWDBE firms and Veteran-Owned businesses

N/A Requested a list of MWDBE and/or Veteran subcontractors or suppliers from LFUCG and showed evidence of contacting the companies on the list(s).

N/A Contacted organizations that work with MWDBE companies for assistance in finding certified MWDBE firms and Veteran-Owned businesses to work on this project. Those contacted and their responses should be a part of the bidder's good faith efforts documentation.

N/A Sent written notices, by certified mail, email or facsimile, to qualified, certified MWDBEs soliciting their participation in the contract not less than seven (7) days prior to the deadline for submission of bids to allow them to participate effectively.

N/A Followed up initial solicitations by contacting MWDBEs and Veteran-Owned businesses to determine their level of interest.

N/A Provided the interested MWDBE firm and/or Veteran-Owned business with adequate and timely information about the plans, specifications, and requirements of the contract.

N/A Selected portions of the work to be performed by MWDBE firms and/or Veteran-Owned businesses in order to increase the likelihood of meeting the contract goals. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate MWDBE and Veteran participation, even when the prime contractor may otherwise perform these work items with its own workforce

N/A Negotiated in good faith with interested MWDBE firms and Veteran-Owned businesses not rejecting them as unqualified without sound reasons based on a thorough investigation of their capabilities. Any rejection should be so noted in writing with a description as to why an agreement could not be reached.

N/A Included documentation of quotations received from interested MWDBE firms and Veteran-Owned businesses which were not used due to uncompetitive pricing or were rejected as unacceptable and/or copies of responses from firms indicating that they would not be submitting a bid.

N/A Bidder has to submit sound reasons why the quotations were considered unacceptable. The fact that the bidder has the ability and/or desire to perform the contract work with its own forces will not be considered a sound reason for rejecting a MWDBE and/or Veteran-Owned business's quote. Nothing in this provision shall be construed to require the bidder to accept unreasonable quotes in order to satisfy MWDBE and Veteran goals.

N/A Made an effort to offer assistance to or refer interested MWDBE firms and Veteran-Owned businesses to obtain the necessary equipment, supplies, materials, insurance and/or bonding to satisfy the work requirements of the bid proposal

N/A Made efforts to expand the search for MWBE firms and Veteran-Owned businesses beyond the usual geographic boundaries.

N/A Other--any other evidence that the bidder submits which may show that the bidder has made reasonable good faith efforts to include MWDBE and Veteran participation.

NOTE: Failure to submit any of the documentation requested in this section may be cause for rejection of bid. Bidders may include any other documentation deemed relevant to this requirement which is subject to approval by the MBE Liaison. Documentation of Good Faith Efforts must be submitted with the Bid, if the participation Goal is not met.

The undersigned acknowledges that all information is accurate. Any misrepresentations may result in termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and claims.

Path Master, Inc.
Company
06/08/22
Date

Stacia Shalby
Company Representative
Vice President
Title

AMENDMENT 1 —
CERTIFICATION OF COMPLIANCE FOR AMERICAN RESCUE PLAN ACT EXPENDITURES

The Lexington-Fayette Urban County Government (“LFUCG”) may classify the subject matter of this bid as an expenditure under the American Rescue Plan Act of 2021. Expenditures under the American Rescue Plan Act of 2021 require evidence of the contractor’s compliance with Federal law. Therefore, by the signature below of an authorized company representative, you certify that the information below is understood, agreed, and correct. Any misrepresentations may result in the termination of the contract and/or prosecution under applicable Federal and State laws concerning false statements and false claims.

The bidder agrees and understands that in addition to all conditions stated within the attached bid documents, the following conditions will also apply to any Agreement entered between bidder and LFUCG, if LFUCG classifies the subject matter of this bid as an expenditure under the American Rescue Plan Act. The bidder further certifies that it can and will comply with these conditions, if this bid is accepted and an Agreement is executed:

1. Any Agreement executed as a result of acceptance of this bid may be governed in accordance with 2 CFR Part 200 and all other applicable Federal law and regulations and guidance issued by the U.S. Department of the Treasury.
2. Pursuant to 24 CFR 85.43, any Agreement executed as a result of acceptance of this bid can be terminated if the contractor fails to comply with any term of the award. This Agreement may be terminated for convenience in accordance with 24 CFR 85.44 upon written notice by LFUCG. Either party may terminate this Agreement with thirty (30) days written notice to the other party, in which case the Agreement shall terminate on the thirtieth day. In the event of termination, the contractor shall be entitled to that portion of total compensation due under this Agreement as the services rendered bears to the services required. Either party may terminate this Agreement for good cause shown with forty-five (45) days written notice, which shall explain the party’s cause for the termination. If the parties do not reach a settlement before the end of the 45 days, then the Agreement shall terminate on the forty-fifth day.
3. The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The contractor will take affirmative action to ensure that applicants are employed and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following:
 - (1) Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.
 - (2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.
 - (3) The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.

- (4) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- (5) The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
- (6) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
- (7) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part, and the contractor may be declared ineligible for further government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.
- (8) The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance.

Provided, however, that in the event a contractor becomes involved in or is threatened with litigation with a subcontractor or vendor as a result of such direction by the administering agency, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

4. If fulfillment of the contract requires the contractor to employ mechanic's or laborers, the contractor further agrees that it can and will comply with the following:

- (1) Overtime requirements: No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such a workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such a workweek.
- (2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1) of this section, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory) for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1) of this section.
- (3) Withholding for unpaid wages and liquidated damages. LFUCG shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other federal contract with the same prime contractor, or any other federally-assisted contract

subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2) of this section.

- (4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower-tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower-tier subcontractor with the clauses set forth in paragraphs (1) through (4) of this section.

5. The contractor shall comply with all applicable standards, orders, or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. § 7401 et seq.

6. The contractor shall report each violation to LFUCG and understands and agrees that LFUCG will, in turn, report each violation as required to assure notification to the Treasury Department and the appropriate Environmental Protection Agency Regional Office.

7. The contractor shall include these requirements in numerical paragraphs 5 and 6 in each subcontract exceeding \$100,000 financed in whole or in part with American Rescue Plan Act funding.

8. The contractor shall comply with all applicable standards, orders, or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq.

9. The contractor shall report each violation to LFUCG and understands and agrees that LFUCG will, in turn, report each violation as required to assure notification to the Treasury Department and the appropriate Environmental Protection Agency Regional Office.

10. The contractor shall include these requirements in numerical paragraphs 8 and 9 in each subcontract exceeding \$100,000 financed in whole or in part with American Rescue Plan Act funds.

11. The contractor shall comply with all applicable standards, orders, or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq.

12. The contractor shall report each violation to LFUCG and understands and agrees that LFUCG will, in turn, report each violation as required to assure notification to the Treasury Department and the appropriate Environmental Protection Agency regional office.

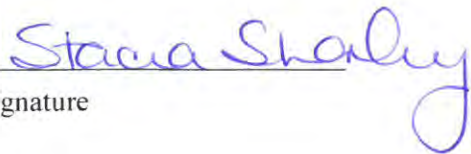
13. The contractor shall include these requirements in numerical paragraphs 11 and 12 in each subcontract exceeding \$100,000 financed in whole or in part with American Rescue Plan Act funds.

14. The contractor shall include this language in any subcontract it executes to fulfill the terms of this bid: "the subgrantee, contractor, subcontractor, successor, transferee, and assignee shall comply with Title VI of the Civil Rights Act of 1964, which prohibits recipients of federal financial assistance from excluding from a program or activity, denying benefits of, or otherwise discriminating against a person on the basis of race, color, or national origin (42 U.S.C. § 2000d et seq.), as implemented by the Department of the Treasury's Title VI regulations, 31 CFR Part 22, which are herein incorporated by reference and made a part of this contract (or agreement). Title VI also includes protection to persons with 'Limited English Proficiency' in any program or activity receiving federal financial

assistance, 42 U.S.C. § 2000d et seq., as implemented by the Department of the Treasury's Title VI regulations, 31 CFR Part 22, and herein incorporated by reference and made a part of this contract or agreement."

15. Contractors who apply or bid for an award of \$100,000 or more shall file the required certification that it will not and has not used federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency. Each tier certifies to the tier above that it will not and has not used federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any federal contract, grant, or any other award covered by 31 U.S.C. § 1352. Each tier shall also disclose any lobbying with non-federal funds that takes place in connection with obtaining any federal award. Such disclosures are forwarded from tier to tier, up to the recipient. The required certification is included here:

- a. The undersigned certifies, to the best of his or her knowledge and belief, that:
 - (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
 - (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
 - (3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.
- b. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.


Signature

06/08/22

Date



LEXINGTON

Lexington-Fayette Urban County Government Division of Traffic Engineering Bid #58-2022 Advanced Transportation Controller Cabinet (ATCC)

The Lexington-Fayette Urban County Government is accepting bids for the purpose of establishing a price contract for an Advanced Transportation Controller Cabinet (ATCC) and related parts for the Division of Traffic Engineering. The cabinets and equipment must meet the ATC 5301 v02 standards and also KYTC 332i Cabinet specifications dated 1/28/22. Please enter your pricing information on lonwave under the line item tab.

(1.) Complete Assembly 32 Output/48 Input (with loop detectors/PED Detector) - No Controller
Econolite ATCC 352 Cabinet Assembly with Dual Output Files and Termination Panels (32 Output/48 Input), per KYTC 332i Cabinet Specification Document Dated 1/28/22 and ATC 5301 v02 Advanced Transportation Controller Cabinet Standard
(including)

- 1 - ADU-2220 Auxiliary Display Unit
- 16 - Flash Transfer Relays
- 24 - MRA-6LC-6 Input Surge Protector
- 16 - MPA-303-9 Output Surge Protector
- 1 - 1250its/1705 AC Surge Protector
- 2 - LED Cabinet Light Assembly
- 2 - ITS Cabinet Lock
- 1 - Document Drawer, Vented
- 1 - UL Listed AC Surge Protector
- 17 - ATCC High Density Switch Pack/Flasher EDI Model 2202-HV
- 1 - ATCC Cabinet Monitor Unit (CMU), 32Channel with ENET EDI Model CMUIP-2212-HV
- 4 - ATCC SIU ITS Serial Interface Unit EDI Model SIU-2218
- 4 - ATCC DC Isolator, 4-Channel EDI Model 244L
- 10 - Loop Detector Unit, 4-Channel EDI Model LMD624H

(2.) Complete Assembly 32 Output/48 Input (No Detectors)

Econolite ATCC 352 Cabinet Assembly with Dual Output Files and Termination Panels (32 Output/48 Input), per KYTC 332i Cabinet Specification Document Dated 1/28/22 and ATC 5301 v02 Advanced Transportation Controller Cabinet Standard
(including)

- 1 - ADU-2220 Auxiliary Display Unit
- 16 - Flash Transfer Relays
- 24 - MRA-6LC-6 Input Surge Protector
- 16 - MPA-303-9 Output Surge Protector

- 1 - 1250its/1705 AC Surge Protector
 - 2 - LED Cabinet Light Assembly
 - 2 - ITS Cabinet Lock
 - 1 - Document Drawer, Vented
 - 1 - UL Listed AC Surge Protector
 - 17 - ATCC High Density Switch Pack/Flasher EDI Model 2202-HV
 - 1 - ATCC Cabinet Monitor Unit (CMU), 32Channel with ENET EDI Model CMUIP-2212-HV
 - 4 - ATCC SIU ITS Serial Interface Unit EDI Model SIU-2218
 - 2 - ATCC DC Isolator, 4-Channel EDI Model 244L
-

Individual Components:

(3.) Econolite ATCC 352 Cabinet Assembly with Dual Output Files and Termination Panels (32 Output/48 Input), per KYTC 332i Cabinet Specification Document Dated 1/28/22 and ATC 5301 v02 Advanced Transportation Controller Cabinet Standard (including)

- 1 - ADU-2220 Auxiliary Display Unit
- 16 - Flash Transfer Relays
- 24 - MRA-6LC-6 Input Surge Protector
- 16 - MPA-303-9 Output Surge Protector
- 1 - 1250its/1705 AC Surge Protector
- 2 - LED Cabinet Light Assembly
- 2 - ITS Cabinet Lock
- 1 - Document Drawer, Vented
- 1 - UL Listed AC Surge Protector

(4.) ATCC High Density Switch Pack/Flasher EDI Model 2202-HV

(5.) ATCC Cabinet Monitor Unit (CMU), 32Channel with ENET EDI Model CMUIP-2212-HV

(6.) ATCC SIU ITS Serial Interface Unit EDI Model SIU-2218

(7.) ATCC DC Isolator, 4-Channel EDI Model 244L

(8.) Loop Detector Unit, 4-Channel EDI Model LMD624H

LFUCG; Bid 58-2022
 Advanced Transportation Controller Cabinet
 B/R# 1
 Qty. 1
 Qty. 4 DC Isolators

Model 244L

DC ISOLATOR SERIES

▪ QUAD CHANNEL – RACK MOUNT



For over 30 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 244L is powered from the 24VDC cabinet power supply and does not require AC Line. It is interchangeable with the Model 242 and 242L.

The Model 244L DC Isolator has been specifically designed to deal with all traffic applications and meets or exceeds all requirements of:

- Model 242L (dual channel) is Caltrans QPL Listed, TEES March 2009 plus Errata #2 (12/2014)
- Note that the half-width form factor is intended for Input Assemblies that are designed for double density (4-channel half-width) devices. It can be used to replace a dual channel Model 242 or 242L, but can only be installed in even numbered slots.

STANDARD FEATURES

Rugged Handle Assembly:



The Model 244L 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 Isolated Power Supply:

The Model 244L series uses a reliable and efficient isolated switching power supply to provide the DC voltages of the unit from the cabinet 24VDC power supply. The input bias voltages going to the inputs are isolated from both 24VDC Logic Ground and AC Neutral.

Enhanced I/O Transient Protection:

Both the DC inputs and outputs are protected from damage due to transient voltages.

100 ms Minimum Output Pulse Option:

The Model 244L series can be programmed to provide output pulse widths of 100ms minimum.

Polarity Option:

The input polarity for each channel can be inverted.

Half-width Form Factor:

The half-width form factor is intended for Input Assemblies that are designed for double density (4-channel half-width) devices. The Model 244L can be used to replace a dual channel Model 242 or 242L, but can only be installed in even numbered slots.

U.S. Pat. No. 7,855,893
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EBERLE DESIGN INC.

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 Fax (602) 437-1996



Auxiliary Display Unit

ATC / ITS Cabinet CMU Auxiliary Display Unit (ADU)

The EDI **Auxiliary Display Unit (ADU)** is a rack mounted display module that provides an LED four color by thirty-two channel **Full Intersection Display** along with an LCD **SmartMonitor**[®] technology menu driven interface to the CMU-212 and CMU-2212 Cabinet Monitor Unit (CMU).

The unit installs in a 1U height 19" rack space and provides a menu driven user interface to the enhanced features of the CMU monitor including the built-in Diagnostic Wizard. Data is passed between the CMU and the Auxiliary Display Unit via the cabinet Serial Bus #3. No modifications to the cabinet wiring are necessary.

- Use a built-in DIAGNOSTIC WIZARD to **automatically diagnose** cabinet malfunctions and **pinpoint** faulty signals.
- Automatically** isolate and identify problems generated by the Controller from actual load bay and field issues.
- Use a MENU DRIVEN LCD interface to **view** vital cabinet operational details such as field signal voltages, historical event logs, and monitor configuration data.
- Upgrade the CMU Cabinet Monitor to include **SmartMonitor**[®] capabilities with the addition of the CMU Auxiliary Display Unit. No cabinet wiring changes are necessary.

- • **Model ADU-2220** ATC Cabinet, powered by 48 Vdc
- **Model ADU-2220C** ATC Cabinet, powered by 48 Vdc, Compact 14" size
- **Model ADU** ITS Cabinet, powered by 120 Vac



ADU OPERATIONAL FEATURES

- Basic Functions:**
- 32 channels of Red, Yellow, Green LED indicators display Full Intersection status
 - 32 Blue Fault Status LED indicators identify faulty channels
 - Menu Driven LCD provides operation over full -34°C to +74°C NEMA temperature range
 - Context sensitive Help screens
 - Provides proper electrical termination to Serial Bus #3
- LED Display Indicators:** 32 channels of Red, Yellow, Green LED indicators display Full Intersection status. 32 blue Fault Status LED indicators identify faulty channels. The ADU-2220C provides 16 channels plus 4 virtual channels.
- Liquid Crystal Display:** 4 Line by 20 Character menu driven Liquid Crystal Display with backlight and heater.
- CMU & Cabinet Status:** Display CMU and cabinet status including field voltages, currents, and fault status. Review event logs, get Help, and launch the Diagnostic Wizard.
- Diagnostic Wizard:** The CMU Diagnostic Wizard *automatically pinpoints* faulty signals and offers trouble-shooting guidance. Automatically isolate and identify problems generated by the CU from actual load bay and field issues.
- Event Logging:** View the CMU time-stamped nonvolatile event log records with the complete intersection status as well as AC Line events, configuration changes, monitor resets, temperature and true RMS voltages.
- Help System:** The integrated Help System provides context sensitive operational assistance.
- Dimensions:** ADU & ADU-2220: 1.75 inches High (1U) x 19.0 inches Wide x 4.0 inches Deep
ADU-2220C: 1.75 inches High (1U) x 14.0 inches Wide x 4.0 inches Deep

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LFUCG; Bid 58-2022
 Advanced Transportation Controller Cabinet
 B/R# 1
 Qty. 1



CMUip-2212

ATC CABINET MONITOR UNIT

The EDI CMUip-2212 Cabinet Monitor Unit is a compact and modular cabinet malfunction management system for the Advanced Transportation Controller (ATC) Cabinet. The CMUip-2212 functions as the main cabinet fault monitoring component. It offers the broadest fault coverage of any monitoring system and incorporates full event logging and status reporting, providing the signal technician with powerful monitoring and trouble-shooting tools to ensure that cabinet malfunctions are detected, diagnosed, and repaired with confidence.

The CMUip-2212 is designed to operate directly with the Model 2202 *iPack*[®] high density switch packs. Load current monitoring is built-in for each RYG output resulting in a new level of intersection safety and diagnostic performance.

Model Options:

- CMUip-2212-HV 32 channel capability with Ethernet for 120 Vac cabinets
- CMUip-2212-LV 32 channel capability with Ethernet for 48 Vdc cabinets
- CMUip-2212-VHV 32 channel capability with Ethernet for 220 Vac cabinets
- ADU-2220 Auxiliary Display Unit (LED / LCD *SmartMonitor*[®] display interface)

CMUip-2212 ENHANCED FEATURES

- Configuration:** Capable of monitoring up to 32 physical load switch channels (RYG). An optional four virtual channels can be used to optimize compact applications.
- CMU Programming:** Complete CMUip-2212 programming is provided by an interchangeable Datakey[™] nonvolatile memory device. This rugged key stores all CMUip-2212 configuration parameters and eliminates programming using jumpers, diodes, or DIP switches. Monitor programming parameters can be easily developed using the software wizards provided by the EDI MonitorKey[®] Programming Tool.
- Load Current Monitoring:** Using the load current information from the *iPack*[®] 2202 switches, dark intersection approaches resulting from a no-load condition can be detected at the time of the fault rather than waiting for the signal to cycle. The Diagnostic Wizard uses load current information to unambiguously diagnose open load and leakage faults.
- Field Check Monitor:** The CMUip-2212 analyzes the ATC output commands and field input status to isolate whether the cabinet fault was caused by an ATC malfunction or a failure in the load bay or field wiring, and identifies the faulty channel and input directly.
- Event Logging:** The CMUip-2212 maintains a nonvolatile event log recording the complete intersection status as well as time stamped previous fault events, AC Line events, configuration changes, monitor resets, cabinet temperature and true RMS voltages and currents for all field inputs.
- Signal Sequence History Log:** The Signal Sequence History Log stored in nonvolatile memory graphically displays up to 30 seconds of signal status prior to the fault trigger event with 50ms resolution to ease diagnosing of intermittent and transient faults.
- EDI ECom PC Software:** Access to the CMUip-2212 data is provided by the industry standard EDI *ECom* Windows based software for status, event log retrieval, configuration, and data archival.
- MonitorKey[®] Programming Tool:** The EDI *MonitorKey*[®] Programming Tool provides a simple but complete solution to programming the CMUip-2212 parameters into the Datakey[™]. The software includes a Parameter Setup Wizard that simplifies the initial set-up of the parameter database.
- Low Voltage 48 VDC Operation:** Provide an additional level of safety to technicians and motorists with touch-safe low voltage operation in an ATC LV cabinet.

EBERLE DESIGN INC.

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 Phoenix, AZ 85040 USA Fax (602) 437-1996
 www.EDITraffic.com



LFUCG; Bid 58-2022

Advanced Transportation Controller Cabinet

B/R# 1

Qty. 1

Qty. 4 SIU's



SIU-2218

ATCC SERIAL INTERFACE UNIT

The SIU-2218 Serial Interface Unit (SIU) performs the interface between Serial Bus #1 of the Advanced Traffic Controller (ATC) and the Input Assembly, Output Assembly, and other devices in an ATC modular cabinet assembly. Its functions include controlling load switch outputs, detector resets, communicating with inductive loop detectors and other devices, and the conditioning and conversion of loop detector inputs for the ATC.

The SIU-2218 meets all requirements of the *ASHTO/ITE/NEMA Advanced Transportation Controller (ATC) Cabinet Standard, ATC 5301 V02.02.*

SIU-2218 ENHANCED FEATURES

- SIU Programming:** Input or Output Assembly mounted address jumpers program the SIU-2218 configuration. No other user setup is required.
- Input / Output Pins:**
- 54 Programmable Input/Output pins
 - 4 Optically Isolated Input pins
 - 1 Line Sync Reference Input pin
 - 4 Address Select Input pins
- Standardized Communications:** The SIU-2218 uses real-time standardized 614.4 Kbs SDLC communications with the ATC to transfer command and response data on Serial Bus #1.
- SIU Port 4 INBUS:** The Serial Bus #2 from the ATC is directed to peripheral devices in the Input Assembly using the SIU-2218 on-board INBUS buffers.
- Output Drivers:** All outputs are rated at 150mA continuous sink current. Each output provides a 500mA typical current limit. Outputs are rated to 50 volts and utilize a voltage clamp for inductive transient protection.
- Isolated Inputs:** Four optically isolated inputs provide isolation for Pedestrian Detector and Remote Interconnect inputs. These inputs are intended for direct connection to 12 Vac for Pedestrian Detector applications. They may also be connected for 'Low True' DC applications when the Opto Input Ground pin is connected to a 24Vdc supply.
- Internal Diagnostics:** A complete set of internal diagnostic self-tests are run continuously to help ensure critical components of the SIU-2218 are operating correctly.
- Address Reporting:** A front panel LED indicator can be used to report the current Input/Output assembly address assignment of the SIU-2218 for cabinet configuration verification.
- Front Panel Port:** A Diagnostic EIA-232 port is available on the front panel to interface to SIU-2218 functions using the EDI *FrontPanel* software, and for custom applications. The connector is 9 pin "DE9S" subminiature type connector.

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LFUCG; Bid 58-2022
 Advanced Transportation Controller Cabinet
 B/R# 1
 Qty. 1
 Qty. 17 Switch Packs

iPack 2202

HIGH DENSITY SWITCH PACK / FLASHER



The EDI *iPack*® series Model 2202 High Density Switch Pack / Flasher Unit (HDSP/FU) is designed to operate in the Advanced Transportation Controller (ATC) Cabinet Output Assembly to form a compact and modular load switch and measurement system. The *iPack*® 2202 series provides two RYG channels of operation (6 outputs) compatible with ultra low power LED signal heads. Both voltage and load current data acquisition functions are provided to the cabinet monitoring system using Serial Bus #3.

The Model 2202 functions as either a load switch or four output flasher, eliminating the need for an inventory of flasher units. The ATC Cabinet and related components are designed to provide both conventional 120 Vac operation and offer low voltage 48 VDC operation for enhanced technician and motorist safety.

Model Options:

- 2202-HV 2 channel load switch (6 outputs) / 2 channel flasher (4 outputs), 120 VAC
- 2202-LV 2 channel load switch (6 outputs) / 2 channel flasher (4 outputs), 48 VDC

iPack® 2202 ENHANCED FEATURES

- Dual Channel HDSP Configuration:** The unit provides two channels (6 outputs) of drive capability. Each output is rated for up to 1 Amp of load current.
- Universal Load Switch & Flasher Function:** The *iPack*® 2202 functions as either a dual channel load switch or a four output Flasher unit based on the slot address. A separate inventory of Flashers is not needed.
- Standardized Communications:** The *iPack*® 2202 uses real-time standardized high speed SB#3 communications with the CMU-2212 Cabinet Monitor Unit to send a complete set of RMS voltage and load current measurements.
- Load Current Monitoring:** Quantitative load current measurements are taken for each load switch output. This enables the CMU to detect an unsafe no-load condition immediately. Load current monitoring also increases the diagnostic capability of the CMU to identify off-state voltage leakage conditions without ambiguity.
- High Density Form Factor:** The *iPack*® 2202 is built on a 4.5 x 6.5 inch format (1.2 inch card pitch) with a rugged DIN connector. Sixteen channels fit in the same space as six conventional ITS v1 load switches.
- Driver Shutdown:** The *iPack*® 2202 will disable the channel Outputs under fault conditions defined by the CMU-2212 offering an additional fail-safe mode during cabinet malfunction conditions.
- Low Voltage 48 VDC Operation:** Provide an additional level of safety to technicians and motorists with touch-safe low voltage operation.

EBERLE DESIGN INC.

3510 East Atlanta Avenue
 Phoenix, AZ 85040 USA
 www.EDIttraffic.com

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



K

**TYPE
SPD**

Features

- Whole house surge protection
- Compact NEMA polycarbonate enclosure
- Blue indicator LED
- 50 kA surge current strength
- Optional electrical noise filter
- UL 1449 Listed with advanced safety features
- Integrated threaded female hub
- Five year warranty
- Optional flush mount plate available for mounting versatility

Benefits

- Protect residence from electrical surges
- Easily installed outdoors or indoors, non-submersible
- Easy monitoring of surge protection status
- Withstands severe lightning strikes
- Protects valuable electronics & appliances
- Product longevity in the most demanding environments
- Quick installation

1/2 IN. CONDUIT FITTING



Fig. 1

3/4 IN. CONDUIT FITTING



Fig. 2



Catalog Number	Figure Number	Lead Wire Size	Electrical Characteristics				Nominal Discharge Current	Short Circuit Current Rating (SCCR)	UL/CSA Type*	UL Voltage Protection Rating				Conduit Size (in.)	
			Phase	System	AC Frequency	Nominal Voltage				Noise Filter†	L-L	L-N	L-G		N-G
RE-050-1R1X-A ^Δ	1	12 AWG	1	SPLIT	50/60 Hz	120/240 V	-	20 kA	200 kA	1	1000	-	700	-	1/2
RE-050-1R1X-C ^Δ	1	12 AWG	1	SPLIT	50/60 Hz	120/240 V	Yes	20 kA	200 kA	2	1200	-	600	-	1/2
RE-050-1P1X-A ^Δ	1	12 AWG	1	SINGLE	50/60 Hz	120 V	-	20 kA	200 kA	1	-	700	700	1200	1/2
RE-050-1P1X-C ^Δ	1	12 AWG	1	SINGLE	50/60 Hz	120 V	Yes	20 kA	200 kA	2	-	600	1200	600	1/2
RE-050-Y3WX-A	2	10 AWG	3	WYE	50/60 Hz	208Y/120 V	-	20 kA	200 kA	1	1000	-	600	-	3/4
RE-050-Y3WX-C	2	10 AWG	3	WYE	50/60 Hz	208Y/120 V	Yes	20 kA	200 kA	2	1200	-	700	-	3/4

Tested and Certified:

Type 1 SPDs (no filter) = UL 1449 (4th Edition), CSA C22.2 No. 269.1-14

Type 2 SPDs (filter) = UL 1449, UL 1283, CSA C22.2 No. 269.2-13, CSA C22.2 No. 8-13

Operating temperature range -40 - +150° F

Enclosure is rated to NEMA/UL Type 1, 2, 3, 3R, 3X, 4 and 4X

† Advanced UL 1283 rated electrical noise filter

Δ Mounting flange kit included

* Type 1 = Permanently connected SPDs permitted to be installed between the secondary of the service transformer and the line side of the service equipment overcurrent device, as well as the load side, permitted to be installed without an external overcurrent protective device on the line side of the service entrance

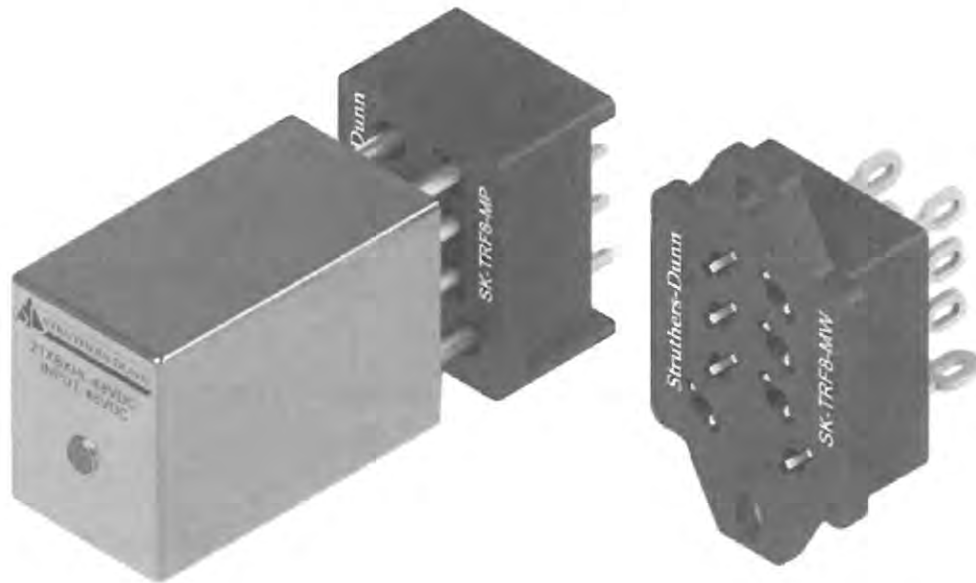
Type 2 = Permanently connected SPDs intended for installation on the load side of the service equipment overcurrent device; including SPDs located at the branch panel

Option Code	UL/CSA Type	Indicator LED	Advanced Filtering
A	1	•	
C	2	•	•



LFUCG; Bid 58-2022
Advanced Transportation Controller Cabinet
B/R# 1
Qty. 1
Qty. 16 Flash Transfer Relays
Model 21XBXHL-48VDC

ATC Flash Transfer Relay 21H Series



WHY use a Hermetically Sealed FTR?

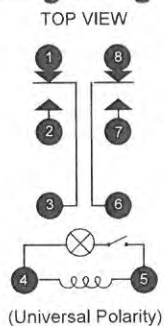
1. **Hermetically Sealed Metal Cover Relay:**
 - **Dry Nitrogen Atmosphere** to protect components from Moisture to prevent corrosion.
 - **Extends the life** of the relay, (less field maintenance by municipalities)
 - **Suppresses arcing** between contacts.
 - **Lower Contact Resistance** over the life of the relay – important at low level switching!
 - **Seals out** possible debris, dust, oxidation from external sources coming through holes and slots normally found in plastic covers.
 - **Rugged Construction** protects from accidental or mishandling of the relays.
2. **Cupronickel metal cover** material is salt water corrosion resistant.
3. **LED indicator** - *shows when Normally Open contacts are closed* instead of just power applied to the coil as with standard industry construction.
4. **Rugged 2.3mm Pins** that are not easily bent during installation or replacement in the field.
5. **Sockets designed to securely hold the relay** in place without the use of retainer clips needed for plastic covered relays.

General Specifications

21XBXHL-12, 24, 48VDC / 120VAC, 240VAC

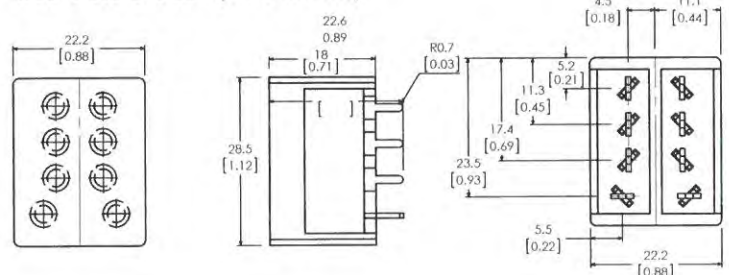
Input	
Coil Voltage	12, 24, 48 VDC / 120 VAC, 240 VAC - Other Voltages Available Upon Request
Pull-in-voltage	80% of pulsed nominal voltage or less for DC. Ambient (Coil warm and stabilized)
Drop-out-voltage	10% of Coil Voltage
Maximum Voltage	110% of Coil Voltage
Coil Insulation	Class "B" coil insulation system (130°C per UL standard 1446)
Continuous (Nominal Coil) Dissipation	0.9 Watts @ 25°C.
Duty	Continuous
Contacts	
Contact Configuration	2PDT
Contact Material	Silver Alloy
Contact Load Minimum	10 mA up to 120 VAC or up to 48 VDC, Resistive
Contact Rating Maximum	10 A up to 120 VAC or up to 48 VDC, Resistive
Performance	
Operate Time	13 ms @ Nominal Voltage (typical)-excluding bounce
Release Time	6 ms @ Nominal Voltage (typical)-excluding bounce
Environment	
Operating	-37°C to 74°C @ rated operation
Storage	-60°C to 130°C
Miscellaneous	
Enclosure	Hermetically sealed can-Dry Nitrogen back-filled atmosphere
Finish	Natural Shiny Metallic Finish
Weight	45 g (1.6 oz)

Wiring Diagram

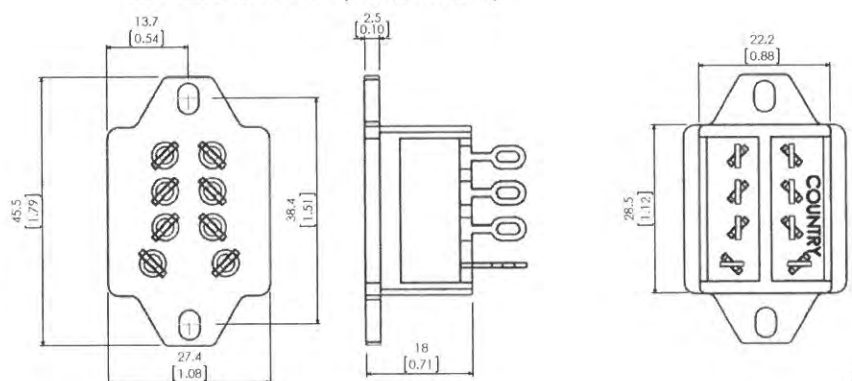


Mating Sockets

SK-TRF8-MP (PCB Mount)

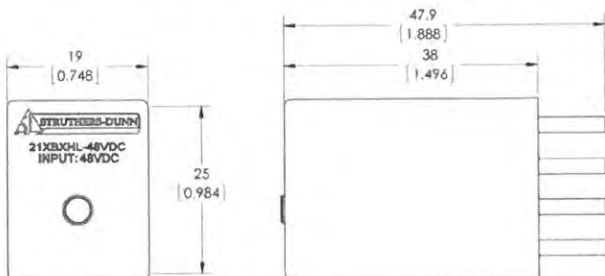


SK-TRF8-MW (Panel Mount)



Outline Dimensions

Dimensions shown in millimeters and (inches)



21H SERIES
QR CODE

Struthers-Dunn

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LFUCG; Bid 58-2022
Advanced Transportation Controller Cabinet
B/R# 1
Qty. 1
Qty. 10 Detectors



DEFLECTOMETER[®]

LMD624H

DEFLECTOMETER[®] SERIES

FOUR CHANNEL NEMA TS-2 TYPE B LOOP MONITOR

Built-in DEFLECTOMETER[®] Technology Provides Users With:

- Call Strength Indicator for Optimum Sensitivity Programming
- One step / One vehicle dynamic Sensitivity programming
- Frequency Meter for immediate analysis of loop frequency, avoiding loop cross-talk problems
- Push Button Programming

Why guess when you can know your detector is optimally programmed and performing for all vehicle classes!

ENHANCED FEATURES

- Half Width Front Panel:** Provides four channels of detection with a half-width front panel (1.14" inches / 28.9 mm).
- DEFLECTOMETER Call Strength Indicator:** The *Call Strength Indicator* provides the technician with a simple one-step method for accurately setting the optimum level of sensitivity that ensures accurate vehicle detection of all vehicles, including motorcycles and high-bed trucks. **NO MORE GUESSING!**
When a medium size vehicle is over the roadway loop, a DEFLECTOMETER Call Strength value of "5" assures that the optimum sensitivity has been achieved. You can adjust the DEFLECTOMETER reading *DYNAMICALLY* without moving the vehicle by using the front panel UP or DOWN sensitivity buttons. **IT DOES NOT GET ANY EASIER THAN THIS!**
- Frequency Meter:** The built-in *Frequency Meter* reports the operating frequency of the loop network. Ensuring that adjacent loops are separated by at least 5 KHz will avoid crosstalk problems and future service calls.
- Output CALL Test Mode:** The Output Call Test Mode provides a straight forward way to test that the Controller Unit is receiving an active output from the detector. This eliminates the need for cabinet test switches and associated wiring. A huge time saving feature during system set-up and trouble-shooting.
- Advanced Loop Diagnostics:** The Fault (FLT) indicator displays the type of fault: Short, Open or 25% change of inductance. The Fault Monitor will report and store three types of loop faults; Open Loops, Shorted Loops, and 25% sudden changes in inductance. Each type of fault is indicated by a unique sequence of flashes allowing the user to diagnose loop failures at a glance.

STANDARD FEATURES

- Automatic Tuning
- Lightning & Surge Protection
- Four Frequency Levels
- Fail Safe Output Configuration
- Separate Color Coded LED indicators
- Wide Loop Inductance Range: 20 to 2500 micro Henries.

U.S. Pat. No. 7,855,893

EBERLE DESIGN INC.

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LMD624H DEFLECTOMETER® SERIES FOUR CHANNEL INDUCTIVE LOOP VEHICLE DETECTOR SPECIFICATIONS

General Characteristics

Controls: Front panel push buttons allow the user to set the Sensitivity Level, Operational mode, and nominal Frequency independently on each channel.

Setting Sensitivity - Front Panel Push Buttons

The DEFLECTOMETER (front panel 7-segment LED) aids in setting the DETECTOR quickly and easily to the most optimum sensitivity level to ensure the trouble-free detection of all vehicles, including motorcycles and high bed vehicles. For typical vehicles (mid-size vehicle / small pick up) utilizing properly installed roadway loops, a Call Strength of 5 displayed on the DEFLECTOMETER during the DETECT output period indicates an optimum sensitivity setting. For high profile vehicles (commercial trucks, 4x4's, etc...), a Call Strength value of 4 will be optimum. For low profile vehicles (sports cars, etc...), a Call Strength value of 6 will be optimum.

Adjusting sensitivity using the DEFLECTOMETER (recommended):

The DEFLECTOMETER should read zero (0) with no vehicle over the roadway loop. When a typical mid-sized vehicle is completely in the detection zone (DET indicator On), the Call Strength value should be adjusted up or down until the DEFLECTOMETER displays the desired optimum value of 5 (or 4 or 6 as described above).

If a typical vehicle located over the roadway loop causes the Call Strength "7" to be displayed on the DEFLECTOMETER, the sensitivity should be decreased two levels. This can be done by pressing the front panel SENS \downarrow button two times to achieve the Call Strength value of 5.

If a typical vehicle located over the roadway loop causes the number "2" to be displayed on the DEFLECTOMETER, the sensitivity should be increased three levels. This can be done by pressing the front panel SENS \uparrow button three times to achieve the Call Strength value of 5.

NOTE: THE DEFLECTOMETER CALL STRENGTH DYNAMICALLY UPDATES AFTER EACH SENSITIVITY LEVEL CHANGE, ALLOWING YOU TO CHANGE SENSITIVITY SETTINGS WHILE A VEHICLE REMAINS IN THE LOOP DETECTION ZONE.

Adjusting sensitivity without using the DEFLECTOMETER (manually setting sensitivity):

The DETECTOR offers 9 levels of sensitivity (1 to 9). Level 9 is the highest sensitivity. Sensitivity Level can be manually set to any desired value by pressing the front panel SENS buttons (\uparrow or \downarrow) when a vehicle is NOT over the roadway loop (DET indicator Off). The first time a SENS button (\uparrow or \downarrow) is pressed, the current Sensitivity Level is displayed on the DEFLECTOMETER for 3 seconds. If either SENS button (\uparrow or \downarrow) is pressed again before the 3 second period ends, the Sensitivity Level will increase (SENS \uparrow) or decrease (SENS \downarrow). The new Sensitivity Level value will be displayed on the DEFLECTOMETER display for 3 seconds. The factory default Sensitivity setting is level 6.

Sensitivity	$\Delta L / L$	Sensitivity	$\Delta L / L$
9	0.01%	4	0.32%
8	0.02%	3	0.64%
7	0.04%	2	1.28%
6	0.08%	1	2.56%
5	0.16%	-	-

Loop Frequency / Loop Frequency Display: One of four frequency settings may be selected via the front panel FREQ push button to alleviate interference which may occur when loops connected to different detectors are located adjacent to one another. To help prevent or diagnose crosstalk problems, the loop frequency is displayed on the front panel DEFLECTOMETER. The current loop frequency is displayed after pressing the FREQ button to display the current Frequency Level. The frequency is shown in KHz with a "-" symbol displayed both before and after the numeric digits shown on the DEFLECTOMETER.

For example, after pressing the FREQ button once the display sequence might show:

"3" \Rightarrow "-" \Rightarrow "27" \Rightarrow "K"

This sequence would indicate Frequency Level "3" and a loop reference frequency of 27 KHz. Detectors on adjacent loops should all be separated by at least 5 KHz.

Loop Fault Monitoring: The Detector 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 inductance. If a fault is detected, the OUT and FLT indicators continuously emit a sequence of flashes. Additionally, the DEFLECTOMETER displays the letter "F" indicating a current loop fault. Each type of fault is identified by a unique flash sequence:

Flash Sequence	Fault
1 flash	Open Circuit Loop.
2 flashes	Shorted Circuit Loop.
3 flashes	25% excessive change in inductance.

If the Open or Shorted fault condition self heals, the DET indicator and DEFLECTOMETER will return to normal operation. The FLT indicator will continue to flash with the sequence signifying the type of fault that was last detected. In the case of the excessive inductance change fault, the unit will return to the new inductance after a period of two seconds and continue operation. The fault condition will be indicated by the flash sequence of the FLT indicator.

Operational Modes

Presence: For each channel, a Presence output mode may be selected from the front panel MODE push button. If presence mode is selected then a choice of short (S) or long (L) can be selected. Short Presence is defined as 30 minutes and Long Presence is defined as 120 minutes.

Pulse: For each channel, a Pulse output mode (P) may be selected from the front panel MODE push button. In Pulse mode, a 125 ms \pm 25ms width pulse will be output for each vehicle entering the loop.

Call: For each channel, a continuous CALL output (C) may be selected from the front panel MODE push button which will simulate the presence of a vehicle. This mode is used for testing the CALL output of a channel.

Channel Off: For each channel, the Channel Off (-) may be selected from the front panel Mode push button. This option turns OFF the channel and disables the oscillator. An additional option allows the Status Output to be turned ON while the channel is OFF.

Status Outputs:

Each channel includes a separate output which is used to transmit operational status information to a bus interface unit (BIU). Fault information is transmitted by means of pulse-width modulation. Pulse widths shown are +10ms.

Status	Status Output Condition
Normal operation / No fault	Continuous ON (low)
Watchdog fail / Power Supply fail	Continuous OFF (high)
Open circuit loop	50ms OFF, 50ms ON
Short circuit loop	100ms OFF, 50ms ON
25% change in inductance	150ms OFF, 50ms ON

Specifications:

DC Supply Voltage: Minimum.....10.8 Vdc
Maximum.....28.8 Vdc

DC Supply Current: Maximum.....100 mA

DC Timer Control Inputs: True (low).....Less than 8 Vdc
False (high).....Greater than 16 Vdc

Optical Isolated Outputs: True (low, 50 mA).....Less than 1.5 Vdc
Maximum Current.....100 mA

Outputs are fail-safe such that a Detector with no power will provide the True (low) Call state.

Environmental: Operating Temperature Range: -30°F to 165°F (-34°C to 74°C)

Mechanical: International Card with 44 pin double sided edge connector

Height.....4.5" (114.3mm)

Width.....1.14" (28.9mm)

Depth (excluding handle).....6.875" (174.6mm)

Pin Assignment:

PIN	FUNCTIONS	PIN	FUNCTIONS
A	Logic Ground	1	Reserved
B	DC Supply	2	Reserved
C	Ext. Reset	3	Reserved
D	Ch 1 Loop Input	4	Ch 1 Redundant Loop Input
E	Ch 1 Loop Input	5	Ch 1 Redundant Loop Input
F	Ch 1 Output (+)	6	Reserved
H	Ch 1 Output (-)	7	Ch 1 Status Output
J	Ch 2 Loop Input	8	Ch 2 Redundant Loop Input
K	Ch 2 Loop Input	9	Ch 2 Redundant Loop Input
L	Chassis Ground	10	Reserved
M	Reserved	11	Reserved
N	Reserved	12	Reserved
P	Ch 3 Loop Input	13	Ch 3 Redundant Loop Input
R	Ch 3 Loop Input	14	Ch 3 Redundant Loop Input
S	Ch 3 Output (+)	15	Reserved
T	Ch 3 Output (-)	16	Ch 3 Status Output
U	Ch 4 Loop Input	17	Ch 4 Redundant Loop Input
V	Ch 4 Loop Input	18	Ch 4 Redundant Loop Input
W	Ch 2 Output (+)	19	Reserved
X	Ch 2 Output (-)	20	Ch 2 Status Output
Y	Ch 4 Output (+)	21	Reserved
Z	Ch 4 Output (-)	22	Ch 4 Status Output

LFUCG; Bid 58-2022

Advanced Transportation Controller Cabinet

B/R# 1

Qty. 1

Cabinets for Traffic Management

ECONOLITE

cobalt
by Econolite

ATCC Standard 352

The Safetran ATCC Standard 352 is built to meet the ATC 5301 Advanced Transportation Controller Cabinet Standard. Each ATC Cabinet is designed to provide Safer, Smarter, and Greener intersections. The 352 features a 19-inch EIA rack that provides ultimate ease and flexibility of traffic control component configuration.

The ATCC Standard 352 gives agencies a touch-safe environment that provides ample space in their cabinet while providing 16 channels of output and 48 channels of detection, expandable up to 32 channels of output, and 120 channels of detection.

The added safety features of the ATCC Standard help ensure drivers will not have a dark intersection, improving safety for all roadway users. Additional safety features, such as low voltage, are also available. Improved traffic flow with enhanced detection, Transit Signal Priority, and Emergency Vehicle Preemption also benefit the public.

Safetran
BY ECONOLITE

Key Features

- Safer, Smarter, Greener
- Touch Safe
- Designed to Meet UL508 and IPC Requirements
- Support up to 120 Channels of Detection
- Support up to 32 Channels of Output
- Easy Rework , Hot Swappable Components
- Prevents Dark Intersections by Monitoring Voltage and Current
- Flash Program Blocks for Easy Flash Programming
- Compact Equipment to Allow Room for Future Growth

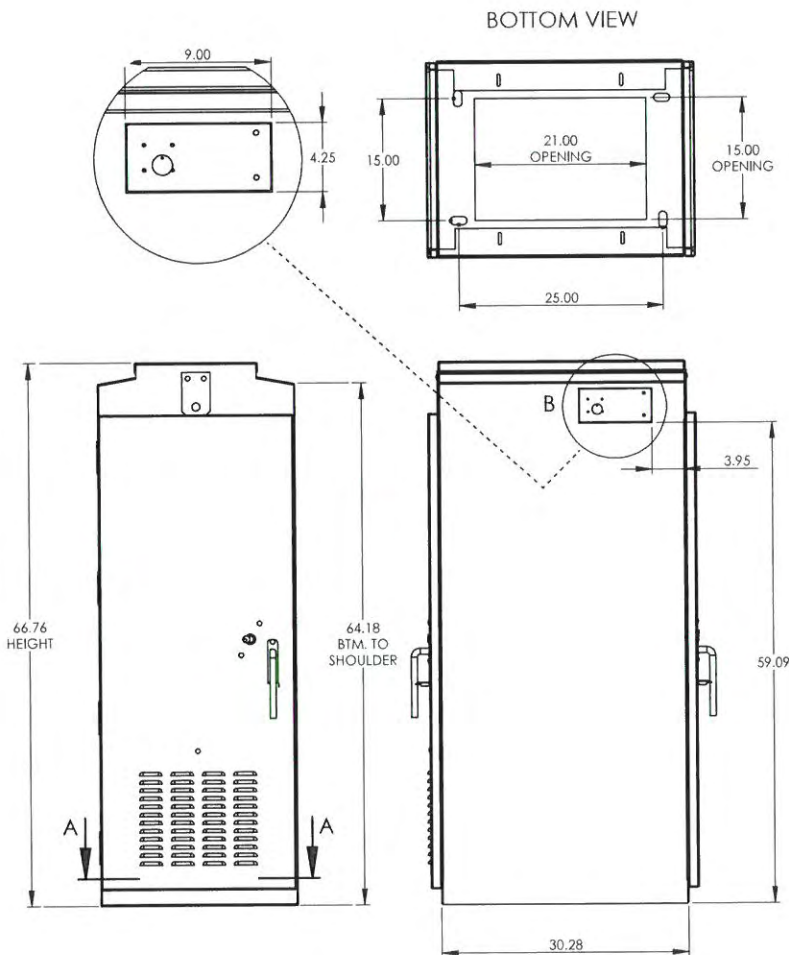


Assemblies

24 or 48 Channel Input Assembly Using 2 or 4 Channel Detector Cards
16 or 32 Channel Output Assembly with 8 HDSPs, CMU and Circuit Breakers
Input Termination Panel - Connects up to 24 Loops with Surge Protection
Output Termination Panel - Connects up to 16 Phases with Surge Protection
Service Assembly - Connect Utility and BBS with Removable Flasher
PS-2216 175 Watt Power Supply
Auxiliary Display Unit
Traffic Controller Running EOS

Basic Specifications

- **Dimensions**
 - 66 in. H x 24 in. W x 30 in. D
- **Material**
 - Aluminum
 - 0.125 in. (door and top)
 - 0.188 in. (sides and bottom)
- **Ship Weight**
 - 300 lbs
- **Finish**
 - Anodized, bare, painted, or anti-graffiti
- **UL Label**
 - Cabinet Housing UL 3R listed, UL File #E256326 (label optional)



Options

- Fans
- LED Lighting
- Battery Backup Systems
- GPS Timing
- Battery Drawer
- Document Drawer
- Mechanical and Electronic
- Lock
- Door Mount Shelf and
- Document Storage
- Lifting Tabs
- Cabinet Beautification Wrap
- Stainless Steel Hardware
- Generator and Police Doors
- And More Options from
- Econolite's One-Stop-Shop.



LFUCG; Bid 58-2022
 Advanced Transportation Controller Cabinet
 B/R# 2
 Qty. 1
 Qty. 2 DC Isolators

Model 244L

DC ISOLATOR SERIES

▪ QUAD CHANNEL – RACK MOUNT



For over 30 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 244L is powered from the 24VDC cabinet power supply and does not require AC Line. It is interchangeable with the Model 242 and 242L.

The Model 244L DC Isolator has been specifically designed to deal with all traffic applications and meets or exceeds all requirements of:

- Model 242L (dual channel) is Caltrans QPL Listed, TEES March 2009 plus Errata #2 (12/2014)
- Note that the half-width form factor is intended for Input Assemblies that are designed for double density (4-channel half-width) devices. It can be used to replace a dual channel Model 242 or 242L, but can only be installed in even numbered slots.

STANDARD FEATURES

Rugged Handle Assembly:



The Model 244L 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 Isolated Power Supply:

The Model 244L series uses a reliable and efficient isolated switching power supply to provide the DC voltages of the unit from the cabinet 24VDC power supply. The input bias voltages going to the inputs are isolated from both 24VDC Logic Ground and AC Neutral.

Enhanced I/O Transient Protection:

Both the DC inputs and outputs are protected from damage due to transient voltages.

100 ms Minimum Output Pulse Option:

The Model 244L series can be programmed to provide output pulse widths of 100ms minimum.

Polarity Option:

The input polarity for each channel can be inverted.

Half-width Form Factor:

The half-width form factor is intended for Input Assemblies that are designed for double density (4-channel half-width) devices. The Model 244L can be used to replace a dual channel Model 242 or 242L, but can only be installed in even numbered slots.

U.S. Pat. No. 7,855,893
 LEXAN Resin is a trademark of General Electric

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Auxiliary Display Unit

ATC / ITS Cabinet CMU Auxiliary Display Unit (ADU)

The EDI **Auxiliary Display Unit (ADU)** is a rack mounted display module that provides an LED four color by thirty-two channel **Full Intersection Display** along with an LCD **SmartMonitor**® technology menu driven interface to the CMU-212 and CMU-2212 Cabinet Monitor Unit (CMU).

The unit installs in a 1U height 19" rack space and provides a menu driven user interface to the enhanced features of the CMU monitor including the built-in Diagnostic Wizard. Data is passed between the CMU and the Auxiliary Display Unit via the cabinet Serial Bus #3. No modifications to the cabinet wiring are necessary.

- Use a built-in DIAGNOSTIC WIZARD to **automatically diagnose** cabinet malfunctions and **pinpoint** faulty signals.
- Automatically** isolate and identify problems generated by the Controller from actual load bay and field issues.
- Use a MENU DRIVEN LCD interface to **view** vital cabinet operational details such as field signal voltages, historical event logs, and monitor configuration data.
- Upgrade the CMU Cabinet Monitor to include **SmartMonitor**® capabilities with the addition of the CMU Auxiliary Display Unit. No cabinet wiring changes are necessary.

-
- **Model ADU-2220** ATC Cabinet, powered by 48 Vdc
 - **Model ADU-2220C** ATC Cabinet, powered by 48 Vdc, Compact 14" size
 - **Model ADU** ITS Cabinet, powered by 120 Vac



ADU OPERATIONAL FEATURES

- Basic Functions:**
- 32 channels of Red, Yellow, Green LED indicators display Full Intersection status
 - 32 Blue Fault Status LED indicators identify faulty channels
 - Menu Driven LCD provides operation over full -34°C to +74°C NEMA temperature range
 - Context sensitive Help screens
 - Provides proper electrical termination to Serial Bus #3
- LED Display Indicators:** 32 channels of Red, Yellow, Green LED indicators display Full Intersection status. 32 blue Fault Status LED indicators identify faulty channels. The ADU-2220C provides 16 channels plus 4 virtual channels.
- Liquid Crystal Display:** 4 Line by 20 Character menu driven Liquid Crystal Display with backlight and heater.
- CMU & Cabinet Status:** Display CMU and cabinet status including field voltages, currents, and fault status. Review event logs, get Help, and launch the Diagnostic Wizard.
- Diagnostic Wizard:** The CMU Diagnostic Wizard *automatically pinpoints* faulty signals and offers trouble-shooting guidance. Automatically isolate and identify problems generated by the CU from actual load bay and field issues.
- Event Logging:** View the CMU time-stamped nonvolatile event log records with the complete intersection status as well as AC Line events, configuration changes, monitor resets, temperature and true RMS voltages.
- Help System:** The integrated Help System provides context sensitive operational assistance.
- Dimensions:** ADU & ADU-2220: 1.75 inches High (1U) x 19.0 inches Wide x 4.0 inches Deep
 ADU-2220C: 1.75 inches High (1U) x 14.0 inches Wide x 4.0 inches Deep

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 Phoenix, AZ 85040 USA Fax (602) 437-1996
 www.EDITraffic.com



LFUCG; Bid 58-2022
 Advanced Transportation Controller Cabinet
 B/R# 2
 Qty. 1



CMUip-2212

ATC CABINET MONITOR UNIT

The EDI CMUip-2212 Cabinet Monitor Unit is a compact and modular cabinet malfunction management system for the Advanced Transportation Controller (ATC) Cabinet. The CMUip-2212 functions as the main cabinet fault monitoring component. It offers the broadest fault coverage of any monitoring system and incorporates full event logging and status reporting, providing the signal technician with powerful monitoring and trouble-shooting tools to ensure that cabinet malfunctions are detected, diagnosed, and repaired with confidence.

The CMUip-2212 is designed to operate directly with the Model 2202 *iPack*[®] high density switch packs. Load current monitoring is built-in for each RYG output resulting in a new level of intersection safety and diagnostic performance.

Model Options:

- CMUip-2212-HV 32 channel capability with Ethernet for 120 Vac cabinets
- CMUip-2212-LV 32 channel capability with Ethernet for 48 Vdc cabinets
- CMUip-2212-VHV 32 channel capability with Ethernet for 220 Vac cabinets
- ADU-2220 Auxiliary Display Unit (LED / LCD *SmartMonitor*[®] display interface)

CMUip-2212 ENHANCED FEATURES

- Configuration:** Capable of monitoring up to 32 physical load switch channels (RYG). An optional four virtual channels can be used to optimize compact applications.
- CMU Programming:** Complete CMUip-2212 programming is provided by an interchangeable Datakey[™] nonvolatile memory device. This rugged key stores all CMUip-2212 configuration parameters and eliminates programming using jumpers, diodes, or DIP switches. Monitor programming parameters can be easily developed using the software wizards provided by the EDI MonitorKey[®] Programming Tool.
- Load Current Monitoring:** Using the load current information from the *iPack*[®] 2202 switches, dark intersection approaches resulting from a no-load condition can be detected at the time of the fault rather than waiting for the signal to cycle. The Diagnostic Wizard uses load current information to unambiguously diagnose open load and leakage faults.
- Field Check Monitor:** The CMUip-2212 analyzes the ATC output commands and field input status to isolate whether the cabinet fault was caused by an ATC malfunction or a failure in the load bay or field wiring, and identifies the faulty channel and input directly.
- Event Logging:** The CMUip-2212 maintains a nonvolatile event log recording the complete intersection status as well as time stamped previous fault events, AC Line events, configuration changes, monitor resets, cabinet temperature and true RMS voltages and currents for all field inputs.
- Signal Sequence History Log:** The Signal Sequence History Log stored in nonvolatile memory graphically displays up to 30 seconds of signal status prior to the fault trigger event with 50ms resolution to ease diagnosing of intermittent and transient faults.
- EDI ECom PC Software:** Access to the CMUip-2212 data is provided by the industry standard EDI *ECom* Windows based software for status, event log retrieval, configuration, and data archival.
- MonitorKey[®] Programming Tool:** The EDI *MonitorKey*[®] Programming Tool provides a simple but complete solution to programming the CMUip-2212 parameters into the Datakey[™]. The software includes a Parameter Setup Wizard that simplifies the initial set-up of the parameter database.
- Low Voltage 48 VDC Operation:** Provide an additional level of safety to technicians and motorists with touch-safe low voltage operation in an ATC LV cabinet.

EBERLE DESIGN INC.

3510 East Atlanta Avenue
 Phoenix, AZ 85040 USA
 www.EDITraffic.com

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



LFUCG; Bid 58-2022
Advanced Transportation Controller Cabinet
B/R# 2
Qty. 1
Qty. 4 SIU's



SIU-2218

ATCC SERIAL INTERFACE UNIT

The SIU-2218 Serial Interface Unit (SIU) performs the interface between Serial Bus #1 of the Advanced Traffic Controller (ATC) and the Input Assembly, Output Assembly, and other devices in an ATC modular cabinet assembly. Its functions include controlling load switch outputs, detector resets, communicating with inductive loop detectors and other devices, and the conditioning and conversion of loop detector inputs for the ATC.

The SIU-2218 meets all requirements of the *ASHTO/ITE/NEMA Advanced Transportation Controller (ATC) Cabinet Standard, ATC 5301 V02.02.*

SIU-2218 ENHANCED FEATURES

- SIU Programming:** Input or Output Assembly mounted address jumpers program the SIU-2218 configuration. No other user setup is required.
- Input / Output Pins:**
- 54 Programmable Input/Output pins
 - 4 Optically Isolated Input pins
 - 1 Line Sync Reference Input pin
 - 4 Address Select Input pins
- Standardized Communications:** The SIU-2218 uses real-time standardized 614.4 Kbs SDLC communications with the ATC to transfer command and response data on Serial Bus #1.
- SIU Port 4 INBUS:** The Serial Bus #2 from the ATC is directed to peripheral devices in the Input Assembly using the SIU-2218 on-board INBUS buffers.
- Output Drivers:** All outputs are rated at 150mA continuous sink current. Each output provides a 500mA typical current limit. Outputs are rated to 50 volts and utilize a voltage clamp for inductive transient protection.
- Isolated Inputs:** Four optically isolated inputs provide isolation for Pedestrian Detector and Remote Interconnect inputs. These inputs are intended for direct connection to 12 Vac for Pedestrian Detector applications. They may also be connected for 'Low True' DC applications when the Opto Input Ground pin is connected to a 24Vdc supply.
- Internal Diagnostics:** A complete set of internal diagnostic self-tests are run continuously to help ensure critical components of the SIU-2218 are operating correctly.
- Address Reporting:** A front panel LED indicator can be used to report the current Input/Output assembly address assignment of the SIU-2218 for cabinet configuration verification.
- Front Panel Port:** A Diagnostic EIA-232 port is available on the front panel to interface to SIU-2218 functions using the EDI *FrontPanel* software, and for custom applications. The connector is 9 pin "DE9S" subminiature type connector.

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LFUCG; Bid 58-2022
 Advanced Transportation Controller Cabinet
 B/R# 2
 Qty. 1
 Qty. 17 Switch Packs

iPack 2202

HIGH DENSITY SWITCH PACK / FLASHER



The EDI *iPack*® series Model 2202 High Density Switch Pack / Flasher Unit (HDSP/FU) is designed to operate in the Advanced Transportation Controller (ATC) Cabinet Output Assembly to form a compact and modular load switch and measurement system. The *iPack*®2202 series provides two RYG channels of operation (6 outputs) compatible with ultra low power LED signal heads. Both voltage and load current data acquisition functions are provided to the cabinet monitoring system using Serial Bus #3.

The Model 2202 functions as either a load switch or four output flasher, eliminating the need for an inventory of flasher units. The ATC Cabinet and related components are designed to provide both conventional 120 Vac operation and offer low voltage 48 VDC operation for enhanced technician and motorist safety.

Model Options:

- 2202-HV 2 channel load switch (6 outputs) / 2 channel flasher (4 outputs), 120 VAC
- 2202-LV 2 channel load switch (6 outputs) / 2 channel flasher (4 outputs), 48 VDC

iPack® 2202 ENHANCED FEATURES

- Dual Channel HDSP Configuration:** The unit provides two channels (6 outputs) of drive capability. Each output is rated for up to 1 Amp of load current.
- Universal Load Switch & Flasher Function:** The *iPack*® 2202 functions as either a dual channel load switch or a four output Flasher unit based on the slot address. A separate inventory of Flashers is not needed.
- Standardized Communications:** The *iPack*® 2202 uses real-time standardized high speed SB#3 communications with the CMU-2212 Cabinet Monitor Unit to send a complete set of RMS voltage and load current measurements.
- Load Current Monitoring:** Quantitative load current measurements are taken for each load switch output. This enables the CMU to detect an unsafe no-load condition immediately. Load current monitoring also increases the diagnostic capability of the CMU to identify off-state voltage leakage conditions without ambiguity.
- High Density Form Factor:** The *iPack*® 2202 is built on a 4.5 x 6.5 inch format (1.2 inch card pitch) with a rugged DIN connector. Sixteen channels fit in the same space as six conventional ITS v1 load switches.
- Driver Shutdown:** The *iPack*® 2202 will disable the channel Outputs under fault conditions defined by the CMU-2212 offering an additional fail-safe mode during cabinet malfunction conditions.
- Low Voltage 48 VDC Operation:** Provide an additional level of safety to technicians and motorists with touch-safe low voltage operation.

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SURGENCY

Surge Protective Device

Series RE - Residential

LFUCG; Bid 58-2022
Advanced Transportation Controller Cabinet
B/R# 2
Qty. 1

K

**TYPE
SPD**

Features

- Whole house surge protection
- Compact NEMA polycarbonate enclosure
- Blue indicator LED
- 50 kA surge current strength
- Optional electrical noise filter
- UL 1449 Listed with advanced safety features
- Integrated threaded female hub
- Five year warranty
- Optional flush mount plate available for mounting versatility

Benefits

- Protect residence from electrical surges
- Easily installed outdoors or indoors, non-submersible
- Easy monitoring of surge protection status
- Withstands severe lightning strikes
- Protects valuable electronics & appliances
- Product longevity in the most demanding environments
- Quick installation

1/2 IN. CONDUIT FITTING



Fig. 1

3/4 IN. CONDUIT FITTING



Fig. 2



Catalog Number	Figure Number	Lead Wire Size	Electrical Characteristics				Nominal Discharge Current	Short Circuit Current Rating (SCCR)	UL/CSA Type*	UL Voltage Protection Rating				Conduit Size (in.)	
			Phase	System	AC Frequency	Nominal Voltage				Noise Filter†	L-L	L-N	L-G		N-G
RE-050-1R1X-A ^Δ	1	12 AWG	1	SPLIT	50/60 Hz	120/240 V	-	20 kA	200 kA	1	1000	-	700	-	1/2
RE-050-1R1X-C ^Δ	1	12 AWG	1	SPLIT	50/60 Hz	120/240 V	Yes	20 kA	200 kA	2	1200	-	600	-	1/2
RE-050-1P1X-A ^Δ	1	12 AWG	1	SINGLE	50/60 Hz	120 V	-	20 kA	200 kA	1	-	700	700	1200	1/2
RE-050-1P1X-C ^Δ	1	12 AWG	1	SINGLE	50/60 Hz	120 V	Yes	20 kA	200 kA	2	-	600	1200	600	1/2
RE-050-Y3WX-A	2	10 AWG	3	WYE	50/60 Hz	208Y/120 V	-	20 kA	200 kA	1	1000	-	600	-	3/4
RE-050-Y3WX-C	2	10 AWG	3	WYE	50/60 Hz	208Y/120 V	Yes	20 kA	200 kA	2	1200	-	700	-	3/4

Tested and Certified:

Type 1 SPDs (no filter) = UL 1449 (4th Edition), CSA C22.2 No. 269.1-14

Type 2 SPDs (filter) = UL 1449, UL 1283, CSA C22.2 No. 269.2-13, CSA C22.2 No. 8-13

Operating temperature range -40 - +150° F

Enclosure is rated to NEMA/UL Type 1, 2, 3, 3R, 3X, 4 and 4X

† Advanced UL 1283 rated electrical noise filter

Δ Mounting flange kit included

* Type 1 = Permanently connected SPDs permitted to be installed between the secondary of the service transformer and the line side of the service equipment overcurrent device, as well as the load side, permitted to be installed without an external overcurrent protective device on the line side of the service entrance

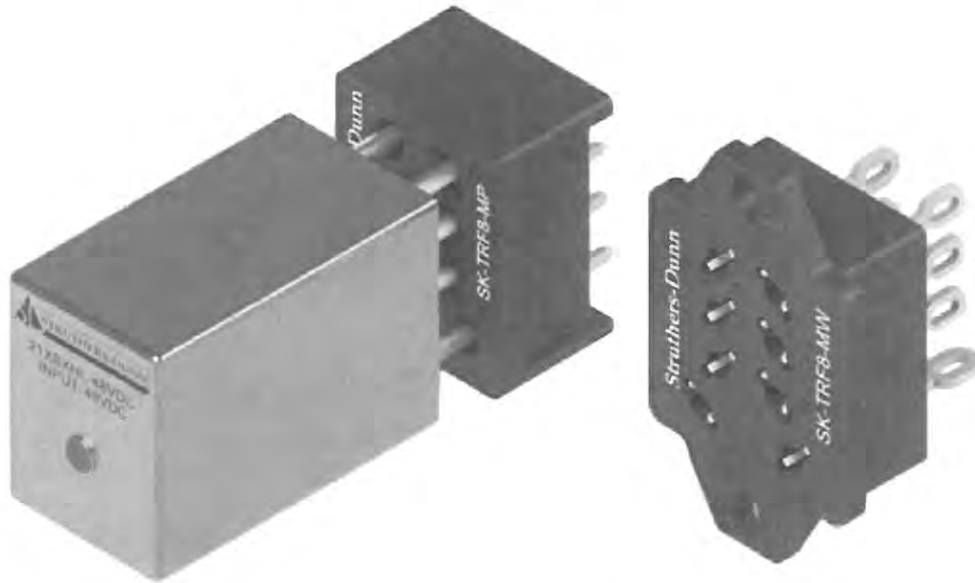
Type 2 = Permanently connected SPDs intended for installation on the load side of the service equipment overcurrent device; including SPDs located at the branch panel

Option Code	UL/CSA Type	Indicator LED	Advanced Filtering
A	1	•	
C	2	•	•



LFUCG; Bid 58-2022
Advanced Transportation Controller Cabinet
B/R# 2
Qty. 1
Qty. 16 Flash Transfer Relays
Model 21XBXHL-48VDC

ATC Flash Transfer Relay 21H Series



WHY use a Hermetically Sealed FTR?

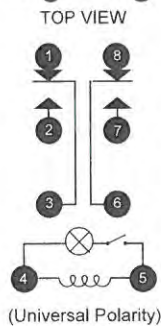
1. **Hermetically Sealed Metal Cover Relay:**
 - **Dry Nitrogen Atmosphere** to protect components from Moisture to prevent corrosion.
 - **Extends the life** of the relay, (less field maintenance by municipalities)
 - **Suppresses arcing** between contacts.
 - **Lower Contact Resistance** over the life of the relay – important at low level switching!
 - **Seals out** possible debris, dust, oxidation from external sources coming through holes and slots normally found in plastic covers.
 - **Rugged Construction** protects from accidental or mishandling of the relays.
2. **Cupronickel metal cover** material is salt water corrosion resistant.
3. **LED indicator** - *shows when Normally Open contacts are closed* instead of just power applied to the coil as with standard industry construction.
4. **Rugged 2.3mm Pins** that are not easily bent during installation or replacement in the field.
5. **Sockets designed to securely hold the relay** in place without the use of retainer clips needed for plastic covered relays.

General Specifications

21XBXHL-12, 24, 48VDC / 120VAC, 240VAC

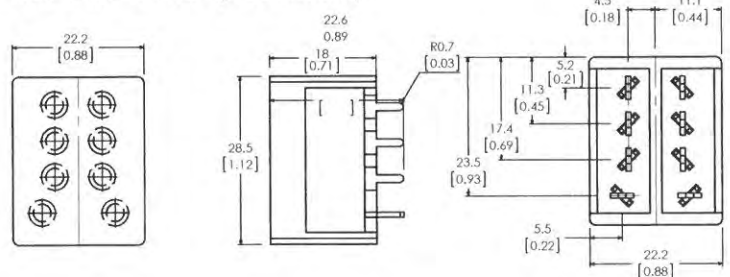
Input	
Coil Voltage	12, 24, 48 VDC / 120 VAC, 240 VAC - Other Voltages Available Upon Request
Pull-in-voltage	80% of pulsed nominal voltage or less for DC. Ambient (Coil warm and stabilized)
Drop-out-voltage	10% of Coil Voltage
Maximum Voltage	110% of Coil Voltage
Coil Insulation	Class "B" coil insulation system (130°C per UL standard 1446)
Continuous (Nominal Coil) Dissipation	0.9 Watts @ 25°C.
Duty	Continuous
Contacts	
Contact Configuration	2PDT
Contact Material	Silver Alloy
Contact Load Minimum	10 mA up to 120 VAC or up to 48 VDC, Resistive
Contact Rating Maximum	10 A up to 120 VAC or up to 48 VDC, Resistive
Performance	
Operate Time	13 ms @ Nominal Voltage (typical)-excluding bounce
Release Time	6 ms @ Nominal Voltage (typical)-excluding bounce
Environment	
Operating	-37°C to 74°C @ rated operation
Storage	-60°C to 130°C
Miscellaneous	
Enclosure	Hermetically sealed can-Dry Nitrogen back-filled atmosphere
Finish	Natural Shiny Metallic Finish
Weight	45 g (1.6 oz)

Wiring Diagram

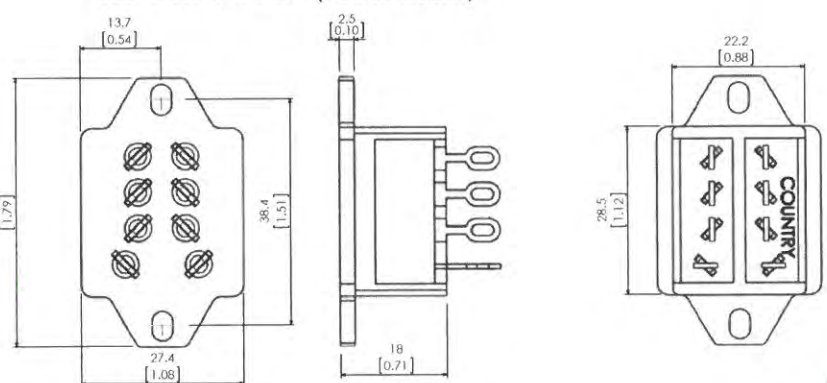


Mating Sockets

SK-TRF8-MP (PCB Mount)

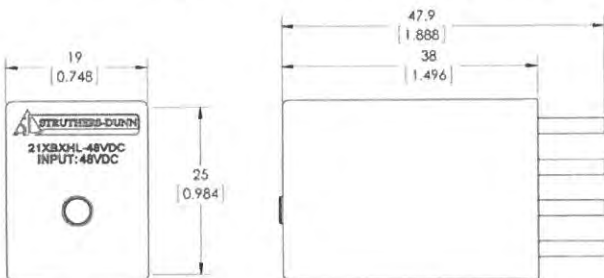


SK-TRF8-MW (Panel Mount)



Outline Dimensions

Dimensions shown in millimeters and (inches)



21H SERIES
QR CODE

Struthers-Dunn

407 E Smith Street - Suite B
Timmonsville, SC 29161

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Sales & Technical Email: info@struthers-dunn.com

Visit us at www.struthers-dunn.com

LFUCG; Bid 58-2022

Advanced Transportation Controller Cabinet

B/R# 2

Qty. 1

Cabinets for Traffic Management

ATCC Standard 352

The Safetran ATCC Standard 352 is built to meet the ATC 5301 Advanced Transportation Controller Cabinet Standard. Each ATC Cabinet is designed to provide Safer, Smarter, and Greener intersections. The 352 features a 19-inch EIA rack that provides ultimate ease and flexibility of traffic control component configuration.

The ATCC Standard 352 gives agencies a touch-safe environment that provides ample space in their cabinet while providing 16 channels of output and 48 channels of detection, expandable up to 32 channels of output, and 120 channels of detection.

The added safety features of the ATCC Standard help ensure drivers will not have a dark intersection, improving safety for all roadway users. Additional safety features, such as low voltage, are also available. Improved traffic flow with enhanced detection, Transit Signal Priority, and Emergency Vehicle Preemption also benefit the public.

ECONOLITE

Safetran
BY ECONOLITE

Key Features

- Safer, Smarter, Greener
- Touch Safe
- Designed to Meet UL508 and IPC Requirements
- Support up to 120 Channels of Detection
- Support up to 32 Channels of Output
- Easy Rework , Hot Swappable Components
- Prevents Dark Intersections by Monitoring Voltage and Current
- Flash Program Blocks for Easy Flash Programming
- Compact Equipment to Allow Room for Future Growth

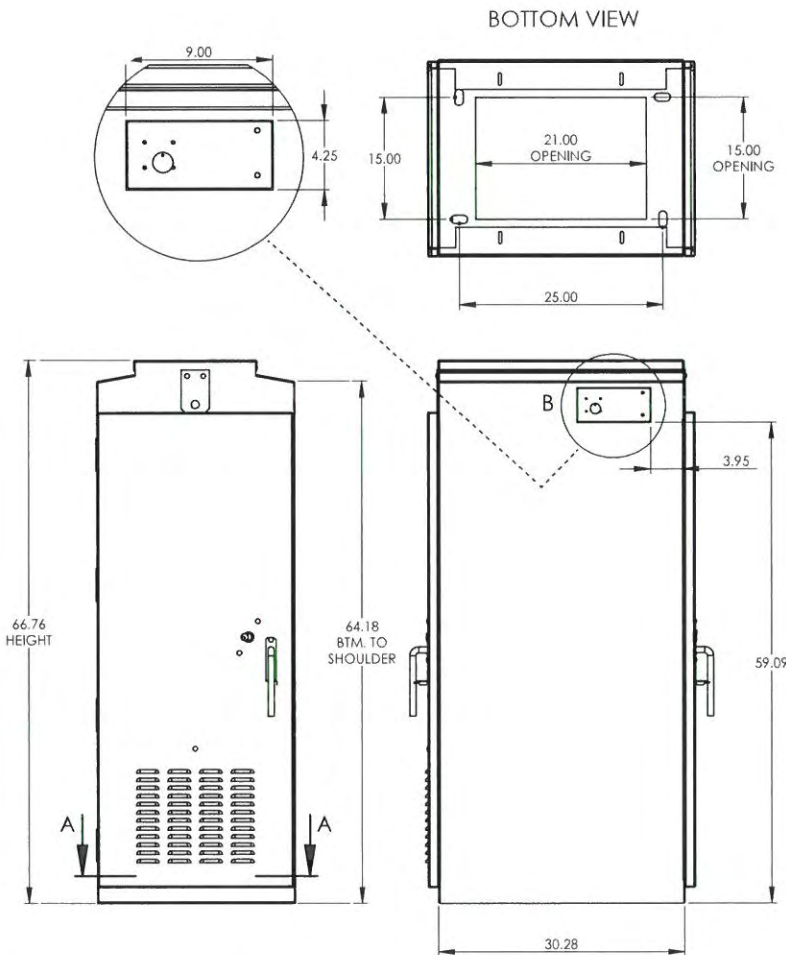


Assemblies

24 or 48 Channel Input Assembly Using 2 or 4 Channel Detector Cards
16 or 32 Channel Output Assembly with 8 HDSPs, CMU and Circuit Breakers
Input Termination Panel - Connects up to 24 Loops with Surge Protection
Output Termination Panel - Connects up to 16 Phases with Surge Protection
Service Assembly - Connect Utility and BBS with Removable Flasher
PS-2216 175 Watt Power Supply
Auxiliary Display Unit
Traffic Controller Running EOS

Basic Specifications

- **Dimensions**
 - 66 in. H x 24 in. W x 30 in. D
- **Material**
 - Aluminum
 - 0.125 in. (door and top)
 - 0.188 in. (sides and bottom)
- **Ship Weight**
 - 300 lbs
- **Finish**
 - Anodized, bare, painted, or anti-graffiti
- **UL Label**
 - Cabinet Housing UL 3R listed, UL File #E256326 (label optional)



Options

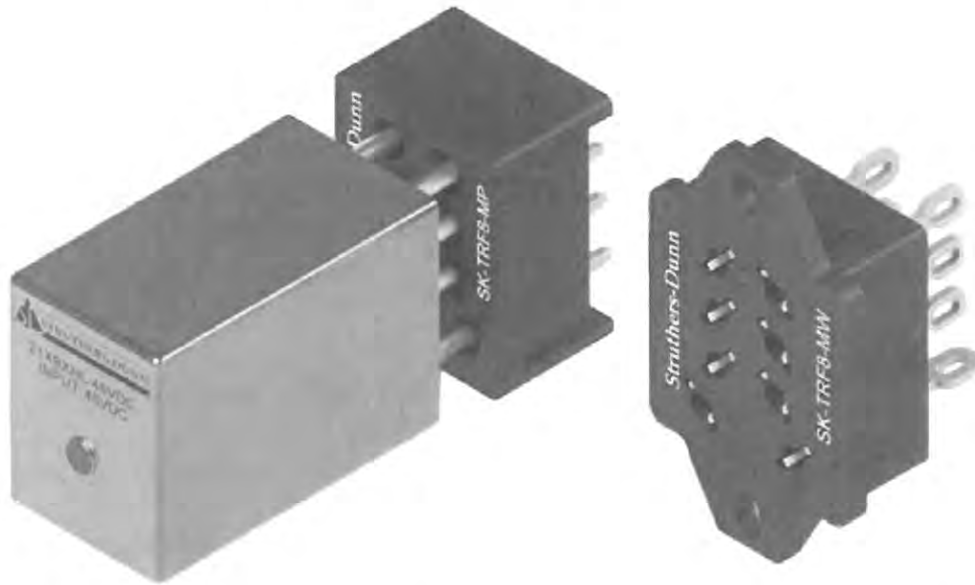
- Fans
- LED Lighting
- Battery Backup Systems
- GPS Timing
- Battery Drawer
- Document Drawer
- Mechanical and Electronic
- Lock
- Door Mount Shelf and
- Document Storage
- Lifting Tabs
- Cabinet Beautification Wrap
- Stainless Steel Hardware
- Generator and Police Doors
- And More Options from
- Econolite's One-Stop-Shop.





LFUCG; Bid 58-2022
Advanced Transportation Controller Cabinet
B/R# 3
Qty. 1
Qty. 16 Flash Transfer Relays
Model 21XBXHL-48VDC

ATC Flash Transfer Relay 21H Series



WHY use a Hermetically Sealed FTR?

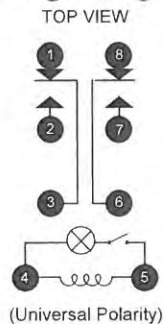
1. **Hermetically Sealed Metal Cover Relay:**
 - **Dry Nitrogen Atmosphere** to protect components from Moisture to prevent corrosion.
 - **Extends the life** of the relay, (less field maintenance by municipalities)
 - **Suppresses arcing** between contacts.
 - **Lower Contact Resistance** over the life of the relay – important at low level switching!
 - **Seals out** possible debris, dust, oxidation from external sources coming through holes and slots normally found in plastic covers.
 - **Rugged Construction** protects from accidental or mishandling of the relays.
2. **Cupronickel metal cover** material is salt water corrosion resistant.
3. **LED indicator** - *shows when Normally Open contacts are closed* instead of just power applied to the coil as with standard industry construction.
4. **Rugged 2.3mm Pins** that are not easily bent during installation or replacement in the field.
5. **Sockets designed to securely hold the relay** in place without the use of retainer clips needed for plastic covered relays.

General Specifications

21XBXHL-12, 24, 48VDC / 120VAC, 240VAC

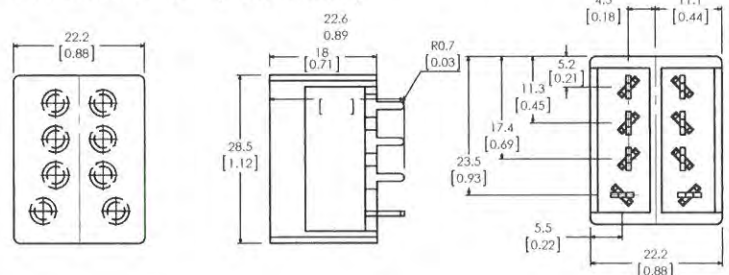
Input	
Coil Voltage	12, 24, 48 VDC / 120 VAC, 240 VAC - Other Voltages Available Upon Request
Pull-in-voltage	80% of pulsed nominal voltage or less for DC. Ambient (Coil warm and stabilized)
Drop-out-voltage	10% of Coil Voltage
Maximum Voltage	110% of Coil Voltage
Coil Insulation	Class "B" coil insulation system (130°C per UL standard 1446)
Continuous (Nominal Coil) Dissipation	0.9 Watts @ 25°C.
Duty	Continuous
Contacts	
Contact Configuration	2PDT
Contact Material	Silver Alloy
Contact Load Minimum	10 mA up to 120 VAC or up to 48 VDC, Resistive
Contact Rating Maximum	10 A up to 120 VAC or up to 48 VDC, Resistive
Performance	
Operate Time	13 ms @ Nominal Voltage (typical)-excluding bounce
Release Time	6 ms @ Nominal Voltage (typical)-excluding bounce
Environment	
Operating	-37°C to 74°C @ rated operation
Storage	-60°C to 130°C
Miscellaneous	
Enclosure	Hermetically sealed can-Dry Nitrogen back-filled atmosphere
Finish	Natural Shiny Metallic Finish
Weight	45 g (1.6 oz)

Wiring Diagram

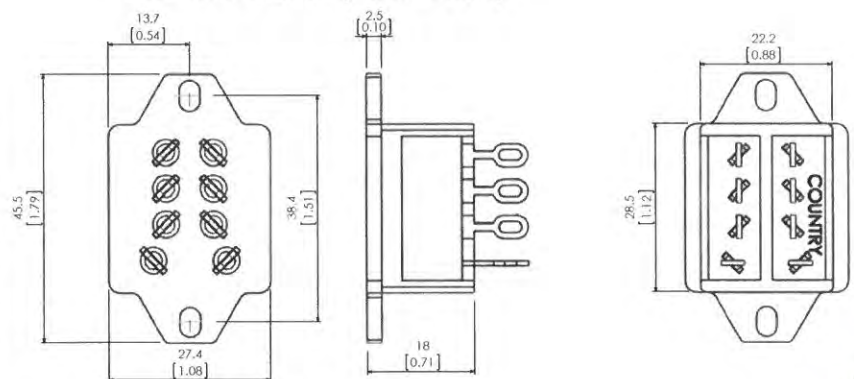


Mating Sockets

SK-TRF8-MP (PCB Mount)

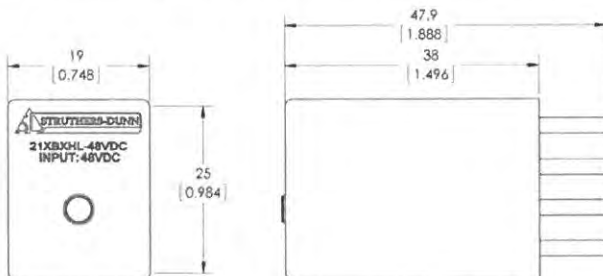


SK-TRF8-MW (Panel Mount)



Outline Dimensions

Dimensions shown in millimeters and (inches)



21H SERIES
QR CODE

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LFUCG; Bid 58-2022

Advanced Transportation Controller Cabinet

B/R# 3

Qty. 1

Cabinets for Traffic Management

ECONOLITE

cobalt

ATCC Standard 352

Safetran
BY ECONOLITE

The Safetran ATCC Standard 352 is built to meet the ATC 5301 Advanced Transportation Controller Cabinet Standard. Each ATC Cabinet is designed to provide Safer, Smarter, and Greener intersections. The 352 features a 19-inch EIA rack that provides ultimate ease and flexibility of traffic control component configuration.

The ATCC Standard 352 gives agencies a touch-safe environment that provides ample space in their cabinet while providing 16 channels of output and 48 channels of detection, expandable up to 32 channels of output, and 120 channels of detection.

The added safety features of the ATCC Standard help ensure drivers will not have a dark intersection, improving safety for all roadway users. Additional safety features, such as low voltage, are also available. Improved traffic flow with enhanced detection, Transit Signal Priority, and Emergency Vehicle Preemption also benefit the public.

Key Features

- Safer, Smarter, Greener
- Touch Safe
- Designed to Meet UL508 and IPC Requirements
- Support up to 120 Channels of Detection
- Support up to 32 Channels of Output
- Easy Rework , Hot Swappable Components
- Prevents Dark Intersections by Monitoring Voltage and Current
- Flash Program Blocks for Easy Flash Programming
- Compact Equipment to Allow Room for Future Growth



Assemblies

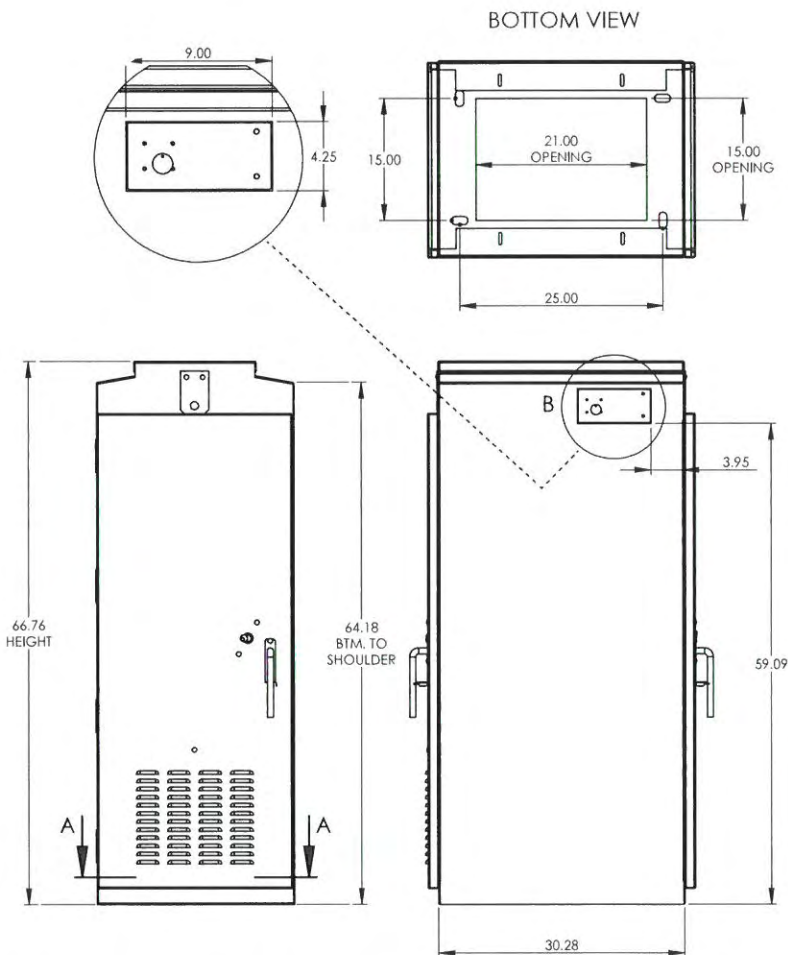
24 or 48 Channel Input Assembly Using 2 or 4 Channel Detector Cards
16 or 32 Channel Output Assembly with 8 HDSPs, CMU and Circuit Breakers
Input Termination Panel - Connects up to 24 Loops with Surge Protection
Output Termination Panel - Connects up to 16 Phases with Surge Protection
Service Assembly - Connect Utility and BBS with Removable Flasher
PS-2216 175 Watt Power Supply
Auxiliary Display Unit
Traffic Controller Running EOS

Basic Specifications

- **Dimensions**
 - 66 in. H x 24 in. W x 30 in. D
- **Material**
 - Aluminum
 - 0125 in. (door and top)
 - 0188 in. (sides and bottom)
- **Ship Weight**
 - 300 lbs
- **Finish**
 - Anodized, bare, painted, or anti-graffiti
- **UL Label**
 - Cabinet Housing UL 3R listed, UL File #E256326 (label optional)

Options

- Fans
- LED Lighting
- Battery Backup Systems
- GPS Timing
- Battery Drawer
- Document Drawer
- Mechanical and Electronic
- Lock
- Door Mount Shelf and
- Document Storage
- Lifting Tabs
- Cabinet Beautification Wrap
- Stainless Steel Hardware
- Generator and Police Doors
- And More Options from
- Econolite's One-Stop-Shop.



LFUCG; Bid 58-2022
 Advanced Transportation Controller Cabinet
 B/R# 4
 Qty. 1

iPack 2202

HIGH DENSITY SWITCH PACK / FLASHER



The EDI *iPack*® series Model 2202 High Density Switch Pack / Flasher Unit (HDSP/FU) is designed to operate in the Advanced Transportation Controller (ATC) Cabinet Output Assembly to form a compact and modular load switch and measurement system. The *iPack*® 2202 series provides two RYG channels of operation (6 outputs) compatible with ultra low power LED signal heads. Both voltage and load current data acquisition functions are provided to the cabinet monitoring system using Serial Bus #3.

The Model 2202 functions as either a load switch or four output flasher, eliminating the need for an inventory of flasher units. The ATC Cabinet and related components are designed to provide both conventional 120 Vac operation and offer low voltage 48 VDC operation for enhanced technician and motorist safety.

Model Options:

- 2202-HV 2 channel load switch (6 outputs) / 2 channel flasher (4 outputs), 120 VAC
- 2202-LV 2 channel load switch (6 outputs) / 2 channel flasher (4 outputs), 48 VDC

iPack® 2202 ENHANCED FEATURES

- Dual Channel HDSP Configuration:** The unit provides two channels (6 outputs) of drive capability. Each output is rated for up to 1 Amp of load current.
- Universal Load Switch & Flasher Function:** The *iPack*® 2202 functions as either a dual channel load switch or a four output Flasher unit based on the slot address. A separate inventory of Flashers is not needed.
- Standardized Communications:** The *iPack*® 2202 uses real-time standardized high speed SB#3 communications with the CMU-2212 Cabinet Monitor Unit to send a complete set of RMS voltage and load current measurements.
- Load Current Monitoring:** Quantitative load current measurements are taken for each load switch output. This enables the CMU to detect an unsafe no-load condition immediately. Load current monitoring also increases the diagnostic capability of the CMU to identify off-state voltage leakage conditions without ambiguity.
- High Density Form Factor:** The *iPack*® 2202 is built on a 4.5 x 6.5 inch format (1.2 inch card pitch) with a rugged DIN connector. Sixteen channels fit in the same space as six conventional ITS v1 load switches.
- Driver Shutdown:** The *iPack*® 2202 will disable the channel Outputs under fault conditions defined by the CMU-2212 offering an additional fail-safe mode during cabinet malfunction conditions.
- Low Voltage 48 VDC Operation:** Provide an additional level of safety to technicians and motorists with touch-safe low voltage operation.

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LFUCG; Bid 58-2022
 Advanced Transportation Controller Cabinet
 B/R# 5
 Qty. 1

CMUip-2212

ATC CABINET MONITOR UNIT



The EDI CMUip-2212 Cabinet Monitor Unit is a compact and modular cabinet malfunction management system for the Advanced Transportation Controller (ATC) Cabinet. The CMUip-2212 functions as the main cabinet fault monitoring component. It offers the broadest fault coverage of any monitoring system and incorporates full event logging and status reporting, providing the signal technician with powerful monitoring and trouble-shooting tools to ensure that cabinet malfunctions are detected, diagnosed, and repaired with confidence.

The CMUip-2212 is designed to operate directly with the Model 2202 *iPack*[®] high density switch packs. Load current monitoring is built-in for each RYG output resulting in a new level of intersection safety and diagnostic performance.

Model Options:

- CMUip-2212-HV 32 channel capability with Ethernet for 120 Vac cabinets
- CMUip-2212-LV 32 channel capability with Ethernet for 48 Vdc cabinets
- CMUip-2212-VHV 32 channel capability with Ethernet for 220 Vac cabinets
- ADU-2220 Auxiliary Display Unit (LED / LCD *SmartMonitor*[®] display interface)

CMUip-2212 ENHANCED FEATURES

- Configuration:** Capable of monitoring up to 32 physical load switch channels (RYG). An optional four virtual channels can be used to optimize compact applications.
- CMU Programming:** Complete CMUip-2212 programming is provided by an interchangeable Datakey[™] nonvolatile memory device. This rugged key stores all CMUip-2212 configuration parameters and eliminates programming using jumpers, diodes, or DIP switches. Monitor programming parameters can be easily developed using the software wizards provided by the EDI MonitorKey[®] Programming Tool.
- Load Current Monitoring:** Using the load current information from the *iPack*[®] 2202 switches, dark intersection approaches resulting from a no-load condition can be detected at the time of the fault rather than waiting for the signal to cycle. The Diagnostic Wizard uses load current information to unambiguously diagnose open load and leakage faults.
- Field Check Monitor:** The CMUip-2212 analyzes the ATC output commands and field input status to isolate whether the cabinet fault was caused by an ATC malfunction or a failure in the load bay or field wiring, and identifies the faulty channel and input directly.
- Event Logging:** The CMUip-2212 maintains a nonvolatile event log recording the complete intersection status as well as time stamped previous fault events, AC Line events, configuration changes, monitor resets, cabinet temperature and true RMS voltages and currents for all field inputs.
- Signal Sequence History Log:** The Signal Sequence History Log stored in nonvolatile memory graphically displays up to 30 seconds of signal status prior to the fault trigger event with 50ms resolution to ease diagnosing of intermittent and transient faults.
- EDI ECom PC Software:** Access to the CMUip-2212 data is provided by the industry standard EDI *ECom* Windows based software for status, event log retrieval, configuration, and data archival.
- MonitorKey[®] Programming Tool:** The EDI *MonitorKey*[®] Programming Tool provides a simple but complete solution to programming the CMUip-2212 parameters into the Datakey[™]. The software includes a Parameter Setup Wizard that simplifies the initial set-up of the parameter database.
- Low Voltage 48 VDC Operation:** Provide an additional level of safety to technicians and motorists with touch-safe low voltage operation in an ATC LV cabinet.

EBERLE DESIGN INC.

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 Phoenix, AZ 85040 USA Fax (602) 437-1996
 www.EDITraffic.com



LFUCG; Bid 58-2022
Advanced Transportation Controller Cabinet
B/R# 6
Qty. 1



SIU-2218

ATCC SERIAL INTERFACE UNIT

The SIU-2218 Serial Interface Unit (SIU) performs the interface between Serial Bus #1 of the Advanced Traffic Controller (ATC) and the Input Assembly, Output Assembly, and other devices in an ATC modular cabinet assembly. Its functions include controlling load switch outputs, detector resets, communicating with inductive loop detectors and other devices, and the conditioning and conversion of loop detector inputs for the ATC.

The SIU-2218 meets all requirements of the *ASHTO/ITE/NEMA Advanced Transportation Controller (ATC) Cabinet Standard, ATC 5301 V02.02.*

SIU-2218 ENHANCED FEATURES

- SIU Programming:** Input or Output Assembly mounted address jumpers program the SIU-2218 configuration. No other user setup is required.
- Input / Output Pins:**
- 54 Programmable Input/Output pins
 - 4 Optically Isolated Input pins
 - 1 Line Sync Reference Input pin
 - 4 Address Select Input pins
- Standardized Communications:** The SIU-2218 uses real-time standardized 614.4 Kbs SDLC communications with the ATC to transfer command and response data on Serial Bus #1.
- SIU Port 4 INBUS:** The Serial Bus #2 from the ATC is directed to peripheral devices in the Input Assembly using the SIU-2218 on-board INBUS buffers.
- Output Drivers:** All outputs are rated at 150mA continuous sink current. Each output provides a 500mA typical current limit. Outputs are rated to 50 volts and utilize a voltage clamp for inductive transient protection.
- Isolated Inputs:** Four optically isolated inputs provide isolation for Pedestrian Detector and Remote Interconnect inputs. These inputs are intended for direct connection to 12 Vac for Pedestrian Detector applications. They may also be connected for 'Low True' DC applications when the Opto Input Ground pin is connected to a 24Vdc supply.
- Internal Diagnostics:** A complete set of internal diagnostic self-tests are run continuously to help ensure critical components of the SIU-2218 are operating correctly.
- Address Reporting:** A front panel LED indicator can be used to report the current Input/Output assembly address assignment of the SIU-2218 for cabinet configuration verification.
- Front Panel Port:** A Diagnostic EIA-232 port is available on the front panel to interface to SIU-2218 functions using the EDI *FrontPanel* software, and for custom applications. The connector is 9 pin "DE9S" subminiature type connector.

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LFUCG; Bid 58-2022
 Advanced Transportation Controller Cabinet
 B/R# 7
 Qty. 1



Model 244L

DC ISOLATOR SERIES

▪ QUAD CHANNEL – RACK MOUNT

For over 30 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 244L is powered from the 24VDC cabinet power supply and does not require AC Line. It is interchangeable with the Model 242 and 242L.

The Model 244L DC Isolator has been specifically designed to deal with all traffic applications and meets or exceeds all requirements of:

- Model 242L (dual channel) is Caltrans QPL Listed, TEES March 2009 plus Errata #2 (12/2014)
- Note that the half-width form factor is intended for Input Assemblies that are designed for double density (4-channel half-width) devices. It can be used to replace a dual channel Model 242 or 242L, but can only be installed in even numbered slots.

STANDARD FEATURES

Rugged Handle Assembly:



The Model 244L 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 Isolated Power Supply:

The Model 244L series uses a reliable and efficient isolated switching power supply to provide the DC voltages of the unit from the cabinet 24VDC power supply. The input bias voltages going to the inputs are isolated from both 24VDC Logic Ground and AC Neutral.

Enhanced I/O Transient Protection:

Both the DC inputs and outputs are protected from damage due to transient voltages.

100 ms Minimum Output Pulse Option:

The Model 244L series can be programmed to provide output pulse widths of 100ms minimum.

Polarity Option:

The input polarity for each channel can be inverted.

Half-width Form Factor:

The half-width form factor is intended for Input Assemblies that are designed for double density (4-channel half-width) devices. The Model 244L can be used to replace a dual channel Model 242 or 242L, but can only be installed in even numbered slots.

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LFUCG; Bid 58-2022
Advanced Transportation Controller Cabinet
B/R# 8
Qty. 1



DEFLECTOMETER™

LMD624H

DEFLECTOMETER® SERIES

FOUR CHANNEL NEMA TS-2 TYPE B LOOP MONITOR

Built-in DEFLECTOMETER® Technology Provides Users With:

- Call Strength Indicator for Optimum Sensitivity Programming
- One step / One vehicle dynamic Sensitivity programming
- Frequency Meter for immediate analysis of loop frequency, avoiding loop cross-talk problems
- Push Button Programming

Why guess when you can know your detector is optimally programmed and performing for all vehicle classes!

ENHANCED FEATURES

- Half Width Front Panel:** Provides four channels of detection with a half-width front panel (1.14" inches / 28.9 mm).
- DEFLECTOMETER Call Strength Indicator:** The *Call Strength Indicator* provides the technician with a simple one-step method for accurately setting the optimum level of sensitivity that ensures accurate vehicle detection of all vehicles, including motorcycles and high-bed trucks. **NO MORE GUESSING!**
When a medium size vehicle is over the roadway loop, a DEFLECTOMETER Call Strength value of "5" assures that the optimum sensitivity has been achieved. You can adjust the DEFLECTOMETER reading *DYNAMICALLY* without moving the vehicle by using the front panel UP or DOWN sensitivity buttons. **IT DOES NOT GET ANY EASIER THAN THIS!**
- Frequency Meter:** The built-in *Frequency Meter* reports the operating frequency of the loop network. Ensuring that adjacent loops are separated by at least 5 KHz will avoid crosstalk problems and future service calls.
- Output CALL Test Mode:** The Output Call Test Mode provides a straight forward way to test that the Controller Unit is receiving an active output from the detector. This eliminates the need for cabinet test switches and associated wiring. A huge time saving feature during system set-up and trouble-shooting.
- Advanced Loop Diagnostics:** The Fault (FLT) indicator displays the type of fault: Short, Open or 25% change of inductance. The Fault Monitor will report and store three types of loop faults; Open Loops, Shorted Loops, and 25% sudden changes in inductance. Each type of fault is indicated by a unique sequence of flashes allowing the user to diagnose loop failures at a glance.

STANDARD FEATURES

- Automatic Tuning
- Lightning & Surge Protection
- Four Frequency Levels
- Fail Safe Output Configuration
- Separate Color Coded LED indicators
- Wide Loop Inductance Range: 20 to 2500 micro Henries.

U.S. Pat. No. 7,855,893

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LMD624H DEFLECTOMETER® SERIES FOUR CHANNEL INDUCTIVE LOOP VEHICLE DETECTOR SPECIFICATIONS

General Characteristics

Controls: Front panel push buttons allow the user to set the Sensitivity Level, Operational mode, and nominal Frequency independently on each channel.

Setting Sensitivity - Front Panel Push Buttons

The DEFLECTOMETER (front panel 7-segment LED) aids in setting the DETECTOR quickly and easily to the most optimum sensitivity level to ensure the trouble-free detection of all vehicles, including motorcycles and high bed vehicles. For typical vehicles (mid-size vehicle / small pick up) utilizing properly installed roadway loops, a Call Strength of 5 displayed on the DEFLECTOMETER during the DETECT output period indicates an optimum sensitivity setting. For high profile vehicles (commercial trucks, 4x4's, etc...), a Call Strength value of 4 will be optimum. For low profile vehicles (sports cars, etc...), a Call Strength value of 6 will be optimum.

Adjusting sensitivity using the DEFLECTOMETER (recommended):

The DEFLECTOMETER should read zero (0) with no vehicle over the roadway loop. When a typical mid-sized vehicle is completely in the detection zone (DET indicator On), the Call Strength value should be adjusted up or down until the DEFLECTOMETER displays the desired optimum value of 5 (or 4 or 6 as described above).

If a typical vehicle located over the roadway loop causes the Call Strength "7" to be displayed on the DEFLECTOMETER, the sensitivity should be decreased two levels. This can be done by pressing the front panel SENS \downarrow button two times to achieve the Call Strength value of 5.

If a typical vehicle located over the roadway loop causes the number "2" to be displayed on the DEFLECTOMETER, the sensitivity should be increased three levels. This can be done by pressing the front panel SENS \uparrow button three times to achieve the Call Strength value of 5.

NOTE: THE DEFLECTOMETER CALL STRENGTH DYNAMICALLY UPDATES AFTER EACH SENSITIVITY LEVEL CHANGE, ALLOWING YOU TO CHANGE SENSITIVITY SETTINGS WHILE A VEHICLE REMAINS IN THE LOOP DETECTION ZONE.

Adjusting sensitivity without using the DEFLECTOMETER (manually setting sensitivity):

The DETECTOR offers 9 levels of sensitivity (1 to 9). Level 9 is the highest sensitivity. Sensitivity Level can be manually set to any desired value by pressing the front panel SENS buttons (\uparrow or \downarrow) when a vehicle is NOT over the roadway loop (DET indicator Off). The first time a SENS button (\uparrow or \downarrow) is pressed, the current Sensitivity Level is displayed on the DEFLECTOMETER for 3 seconds. If either SENS button (\uparrow or \downarrow) is pressed again before the 3 second period ends, the Sensitivity Level will increase (SENS \uparrow) or decrease (SENS \downarrow). The new Sensitivity Level value will be displayed on the DEFLECTOMETER display for 3 seconds. The factory default Sensitivity setting is level 6.

Sensitivity	$\Delta L / L$	Sensitivity	$\Delta L / L$
9	0.01%	4	0.32%
8	0.02%	3	0.64%
7	0.04%	2	1.28%
6	0.08%	1	2.56%
5	0.16%	-	-

Loop Frequency / Loop Frequency Display: One of four frequency settings may be selected via the front panel FREQ push button to alleviate interference which may occur when loops connected to different detectors are located adjacent to one another. To help prevent or diagnose crosstalk problems, the loop frequency is displayed on the front panel DEFLECTOMETER. The current loop frequency is displayed after pressing the FREQ button to display the current Frequency Level. The frequency is shown in KHz with a "-" symbol displayed both before and after the numeric digits shown on the DEFLECTOMETER.

For example, after pressing the FREQ button once the display sequence might show:

"3" \leftrightarrow "-" \leftrightarrow "27" \leftrightarrow "K"

This sequence would indicate Frequency Level "3" and a loop reference frequency of 27 KHz. Detectors on adjacent loops should all be separated by at least 5 KHz.

Loop Fault Monitoring: The Detector 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 inductance. If a fault is detected, the OUT and FLT indicators continuously emit a sequence of flashes. Additionally, the DEFLECTOMETER displays the letter "F" indicating a current loop fault. Each type of fault is identified by a unique flash sequence:

Flash Sequence	Fault
1 flash	Open Circuit Loop.
2 flashes	Shorted Circuit Loop.
3 flashes	25% excessive change in inductance.

If the Open or Shorted fault condition self heals, the DET indicator and DEFLECTOMETER will return to normal operation. The FLT indicator will continue to flash with the sequence signifying the type of fault that was last detected. In the case of the excessive inductance change fault, the unit will return to the new inductance after a period of two seconds and continue operation. The fault condition will be indicated by the flash sequence of the FLT indicator.

Operational Modes

Presence: For each channel, a Presence output mode may be selected from the front panel MODE push button. If presence mode is selected then a choice of short (S) or long (L) can be selected. Short Presence is defined as 30 minutes and Long Presence is defined as 120 minutes.

Pulse: For each channel, a Pulse output mode (P) may be selected from the front panel MODE push button. In Pulse mode, a 125 ms \pm 25ms width pulse will be output for each vehicle entering the loop.

Call: For each channel, a continuous CALL output (C) may be selected from the front panel MODE push button which will simulate the presence of a vehicle. This mode is used for testing the CALL output of a channel.

Channel Off: For each channel, the Channel Off (-) may be selected from the front panel Mode push button. This option turns OFF the channel and disables the oscillator. An additional option allows the Status Output to be turned ON while the channel is OFF.

Status Outputs:

Each channel includes a separate output which is used to transmit operational status information to a bus interface unit (BIU). Fault information is transmitted by means of pulse-width modulation. Pulse widths shown are ± 10 ms.

Status	Status Output Condition
Normal operation / No fault	Continuous ON (low)
Watchdog fail / Power Supply fail	Continuous OFF (high)
Open circuit loop	50ms OFF, 50ms ON
Short circuit loop	100ms OFF, 50ms ON
25% change in inductance	150ms OFF, 50ms ON

Specifications:

DC Supply Voltage: Minimum.....10.8 Vdc
Maximum.....28.8 Vdc

DC Supply Current: Maximum.....100 mA

DC Timer Control Inputs: True (low).....Less than 8 Vdc
False (high).....Greater than 16 Vdc

Optical Isolated Outputs: True (low, 50 mA).....Less than 1.5 Vdc
Maximum Current.....100 mA

Outputs are fail-safe such that a Detector with no power will provide the True (low) Call state.

Environmental: Operating Temperature Range: -30°F to 165°F (-34°C to 74°C)

Mechanical: International Card with 44 pin double sided edge connector

Height.....4.5" (114.3mm)

Width.....1.14" (28.9mm)

Depth (excluding handle).....6.875" (174.6mm)

Pin Assignment:

PIN	FUNCTIONS	PIN	FUNCTIONS
A	Logic Ground	1	Reserved
B	DC Supply	2	Reserved
C	Ext. Reset	3	Reserved
D	Ch 1 Loop Input	4	Ch 1 Redundant Loop Input
E	Ch 1 Loop Input	5	Ch 1 Redundant Loop Input
F	Ch 1 Output (+)	6	Reserved
H	Ch 1 Output (-)	7	Ch 1 Status Output
J	Ch 2 Loop Input	8	Ch 2 Redundant Loop Input
K	Ch 2 Loop Input	9	Ch 2 Redundant Loop Input
L	Chassis Ground	10	Reserved
M	Reserved	11	Reserved
N	Reserved	12	Reserved
P	Ch 3 Loop Input	13	Ch 3 Redundant Loop Input
R	Ch 3 Loop Input	14	Ch 3 Redundant Loop Input
S	Ch 3 Output (+)	15	Reserved
T	Ch 3 Output (-)	16	Ch 3 Status Output
U	Ch 4 Loop Input	17	Ch 4 Redundant Loop Input
V	Ch 4 Loop Input	18	Ch 4 Redundant Loop Input
W	Ch 2 Output (+)	19	Reserved
X	Ch 2 Output (-)	20	Ch 2 Status Output
Y	Ch 4 Output (+)	21	Reserved
Z	Ch 4 Output (-)	22	Ch 4 Status Output