Murphy Boulevard High Water Automated Gates System (TS0804)

Bid Opening: May 5, 2022 at 10:00 a.m.

CITY OF JOPLIN

Department of Public Works
Engineering Division
602 S. Main Street
Joplin, MO 64801

Phone: 417 624-0820 Ext. 1531
FAX: 417 625-4738

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NOTICE TO CONTRACTORS

Notice is hereby given that the Director of Public Works of the City of Joplin, Missouri, will accept sealed bids for the following improvements in the City of Joplin, Missouri:

Murphy Boulevard High Water Automated Gates System (TS0804)

This work generally consists of, but is not limited to, the purchase and installation of an automated gate system at Murphy Boulevard to stop traffic during high water events at the low water bridge. The system will include gates east and west of Joplin creek as well as a high-water indicator at the low water bridge crossing, flashing warning lights, video camera system, and electronic notification system.

Copies of the plans and specifications are on file and may be examined on the City's website. **Sealed bids must be in the hands of said Director of Public Works before 10:00 a.m. on the 5th day of May 2022**. Bids will be opened by the Director of Public Works in the 4th floor Engineering Conference Room at 10:00 a.m. on the 5th day of May 2022. **A mandatory pre-bid meeting will take place on April 21 2022, starting at 10:00 a.m in the 4th floor engineering conference room at City Hall.**

Specifications will follow current City Standards. These standards can be downloaded online on the City's website at the following link:

Standard Specifications:
https://www.joplinmo.org/DocumentCenter/View/10379/2022-Standard-Specifications-

or a copy may be viewed in person at 602 S. Main Street, 4th floor.

Wage rates for this project shall be in accordance with the most current wage rate determination made by the Industrial Commission of Missouri on file in the Department of Public Works. Contractor will use the Division of Labor Standards Form LS-57 to report all wages.

Missouri Law, 292.675 RSMO, requires the awarded contractor and its subcontractor(s) to provide a ten-hour occupational safety and health administration (OSHA) construction safety program (or a similar program approved by the Missouri Department of Labor and industrial relations as a qualified substitute) for their on-site employees (Laborers, workmen, drivers, equipment operators, and craftsmen) who have not previously completed such a program and are directly engaged in actual construction of the improvement (or working at a nearby or adjacent facility used for construction of the improvement), The awarded contractors and its subcontractor(s) shall require all such employees to complete this ten-hour program, pursuant to 292.675 RSMO, unless they hold documentation on their prior completion of said program. Penalties for non-compliance include contractor forfeiture to the City of Joplin in the amount of $2,500, plus $100 per contractor and subcontractor employee for each calendar day such employee is employed beyond the elapsed time period for required program completion under 292.675 RSMO

The successful bidder will have to sign an agreement that they are enrolled and participating in a Federal Work Authorization Program ("FWAP") that ensures that all of its employees or agents or subcontractors have the legal right to work in the United States, as defined in 8 U.S.C. 1324a(h)(3) and RSMo § 285.525-285.555, and that it will maintain this compliance for the entire duration of its contract with the City of Joplin, and will provide an Affidavit of Compliance to the City stating the same.

Payment for this project will be made to the contractor in cash.

A bid bond for five percent (5%) of the total bid amount must accompany each bid. The successful bidder will be required to furnish a performance bond in the amount of his bid and shall before entering on the work of said contract be licensed as a contractor of the City of Joplin, Missouri. The Director of Public Works reserves the right to reject any or all bids.

The City of Joplin hereby notifies all bidders that it will affirmatively insure that in any contract entered into pursuant to this advertisement Disadvantaged Business Enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, sex, or national origin in consideration for an award. Also, the contractor will be required to have an approved Affirmative Action Program. Attention of bidders is particularly called to the requirement that an Affirmative Action Program must be adopted by the contractor and approved by the Affirmative Action Committee of the City of Joplin before the contract may be executed.

Dan Johnson, P.E
INTERIM DIRECTOR OF PUBLIC WORKS

BIDDER CHECKLIST / INSTRUCTIONS
FINAL CHECKLIST BEFORE SUBMITTING BID

☐ 1. If submitting the bid by mail, it is to be completed, executed, and submitted in a sealed envelope addressed to City of Joplin, 602 S. Main Street, Joplin Missouri. **Provide the project name, contractor name and address on the outside of the envelope**.

☐ 2. Please read all items in the bidding document carefully. For paper bids, complete all items in ink or by typing in the information. The Technical Specifications/Job Special Provisions are for the bidder's information only and is not to be returned with the bid

☐ 3. Sign this bidding document properly. If submitted in the name of a firm or corporation, the legal name of the firm or corporation should appear in the space designated, and be signed for by one or more persons legally qualified to execute papers in the name of said firm or corporation.

☐ 4. For paper bids, submit a bid bond executed by bidder and surety.

☐ 5. For paper bids, staple the executed addenda to the bid, thus acknowledging receipt of said addenda. The letter accompanying the addenda should be stapled to the inside of the back cover of the bid and returned. The bidder should retain a duplicate copy. (if applicable)

☐ 6. Include a copy of the Proposal, fully filled out with all unit prices and extended total prices.

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made to any bidder orally. Every request for such interpretation should be emailed to Steven Martinez at **smartine@joplinmo.org** and to be given consideration must be received at least five (5) days prior to the date fixed for the opening of bids

Special Needs: If you have special needs addressed by the Americans with Disabilities Act, please notify the City of Joplin, at 417-624-0820 at least five (5) working days prior to the bid opening. You may also make arrangements by notifying staff via E-mail at **smartine@joplinmo.org.**

INFORMATION FOR BIDDERS

1. Receipt and Opening of Bids:

   The City of Joplin (herein called the "Owner"), invites bids on the form attached hereto, all blanks of which must be appropriately filled in. Bids will be received by the Owner at the City Hall, 4th Floor, 602 S. Main Street, Joplin, Missouri, 64804 until 10:00 a.m., May 5, 2022 and then at said office publicly opened and read aloud. The envelopes containing the bids must be sealed, addressed to the City of Joplin, 602 S. Main Street, Joplin, Missouri and designated as bid for Murphy Boulevard High Water Automated Gates System (TS0804).

   The Owner may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject any and all bids. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified shall not be considered. No bidder may withdraw a bid within ninety (90) days after the actual date of the opening thereof.

2. Preparation of Bid: Each bid must be submitted on the required BID form, included as part of these specifications, and accompanied by:

   a. Acknowledgement of receipt of all addenda issued (if any).

   b. a bid bond payable to the Owner for five percent (5%) of the total amount of the bid

   All blank spaces for bid prices must be filled in, in ink or typewritten, in figures, and the foregoing Certifications must be fully completed and executed when submitted.

3. Pre-Bid Meeting: **A mandatory pre-bid meeting will take place on April 21, 2022, starting at 10:00 a.m in the 4th floor engineering conference room at City Hall.**

4. Subcontracts: The bidder is specifically advised that any person, or other party, to whom it is proposed to award a subcontract under this contract must be acceptable to the procurer.

5. Telegraphic Modification: Any bidder may modify his bid by telegraphic communication at any time prior to the scheduled closing time for receipt of bids, provided such telegraphic communication is received by the Owner prior to the closing time, and, provided further, the Owner is satisfied that a written confirmation of the telegraphic modification over the signature of the bidder was mailed prior to the closing time. The telegraphic communication should not reveal the bid price, but should provide the addition or subtraction or other modification so that the final prices or terms will not be known by the Owner until the sealed bid is opened. If written confirmation is not received within two days from the closing time, no consideration will be given to the telegraphic modification.

6. Method of Bidding: The Owner invites the following bid(s): Unit Price submission for Murphy Boulevard High Water Automated Gates System (TS0804) in compliance with project drawings, specifications and contract documents. Award of the contract shall be based upon the lowest responsive, responsible bid submitted for the Total Base Bid Amount. The OWNER reserves the right to add or subtract quantities from the Project Contract at the Unit Prices submitted, as necessary.

7. Qualifications of Bidder: The Owner may make such investigations as he deems necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the owner that such bidder is properly qualified to carry out the obligations of the contract and to complete the work contemplated therein. Conditional bids will not be accepted.

8. Bid Security: Each bid must be accompanied by a bid bond payable to the Owner for five percent (5%) of the total amount of the bid. As soon as the bid prices have been compared, the Owner will return all of the bonds except the three lowest responsible bidders. When the agreement is executed the bonds of the two remaining unsuccessful bidders will be returned. The bid bond of the successful bidder will be retained until the payment bond and performance bond have been executed and approved, after which it will be returned.

9. Liquidated Damages for Failure to Enter into Contract: The successful bidder, upon his failure or refusal to execute and deliver the contract and bonds required within 30 days after he received notice of the acceptance of his bid, shall forfeit to the Owner, as liquidated damages for such failure or refusal, the security deposited with his bid.

10. Time of Completion and Liquidated Damages: Bidder must agree to commence work on or before a date to be specified in a written "Notice to Proceed" of the Owner and to fully complete the project within SIXTY (60) consecutive calendar days thereafter. Bidder must agree also to pay as liquidated damages, the sum of $500.00 for each consecutive calendar

day thereafter as hereinafter provided in the General Conditions.

11. Conditions of Work: Each bidder must inform himself fully of the conditions relating to the construction of the project and the employment of labor thereon. Failure to do so will not relieve a successful bidder of his obligation to furnish all material and labor necessary to carry out the provisions of his contract. Insofar as possible the contractor, in carrying out the work, must employ such methods or means as will not cause any interruption of or interference with the work of any other contractor.

12. Addenda and Interpretations: **No interpretation of the meaning to the plans, specifications, or other pre-bid documents will be made to any bidder orally.** Every request for such interpretation should be emailed to Steven Martinez at **smartine@joplinmo.org** and to be given consideration must be received at least five (5) days prior to the date fixed for the opening of bids. Interpretations, supplemental instructions or clarifications considered necessary by the Engineer in response to such questions will be issued in the form of written addenda to the contract documents and specifications which, if issued, will be posted to the City of Joplin Website on the www.Joplinmo.org webpage, not later than three days prior to the data fixed for the opening of bids. Questions received less than (5) days prior to the date for opening of bids may not be answered. Only answers issued by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect. Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under his bid as submitted. All addenda so issued shall become part of the contract documents.

13. Security for Faithful Performance: Simultaneously with the delivery of the executed contract, the Contractor shall furnish a surety bond or bonds as security for faithful performance of this contract and for the payment of all persons performing labor on the project under this contract and furnishing materials in connection with this contract, as specified in the General Conditions included herein. The surety on such bond or bonds shall be a duly authorized surety company satisfactory to the Owner.

14. Power of Attorney: Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

15. Notice of Special Conditions: Attention is particularly called to those parts of the contract documents and specifications which deal with the following:

    a. Inspection and testing of materials.

    b. Insurance requirements.

    c. Wage rates.

    d. Stated allowances.

16. Laws and Regulations: The bidder's attention is directed to the fact that all

applicable State laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they will be deemed to be included in the contract the same as though herein written out in full.

17. Method of Award - Lowest Qualified Bidder: If at the time this contract is to be awarded, the lowest base bid amount for the Murphy Boulevard High Water Automated Gates System (TS0804) project, submitted by a responsive, responsible bidder, does not exceed the amount of funds then estimated by the Owner as available to finance the contract; the contract will be awarded on the base bid amount. If such bid exceeds such amount, the Owner may reject all bids or may award the contract on the base bid combined with such deductible alternates applied in numerical order in which they are listed in the Form of Bid, as produces a net amount which is within the available funds.

18. Obligation of Bidder: At the time of the opening of bids, each bidder will be presumed to have inspected the site and to have read and to be thoroughly familiar with the plans and contract documents (including all addenda). The failure or omission of any bidder to examine any form, instrument, or document shall in no way relieve any bidder from any obligation in respect or his bid.

    a. Bidders are informed that pursuant to Section 285.530, RSMo, as a condition of the award of any contract in excess of five thousand dollars ($5,000), the successful bidder shall, by sworn affidavit and provision of documentation, affirm its enrollment and participation if a federal work authorization program with respect to the employees working in connection to the contracted services. Successful bidders shall also sign an affidavit affirming that it does not knowingly employ any person who is an unauthorized alien in connection to the contracted services.

19. Safety Standards and Accident Prevention: With respect to all work performed under this contract, the contractor shall:

    a. Comply with the safety standards provisions of applicable laws, building and construction codes, and the "Manual of Accident Prevention in Construction" published by the Associated General Contractors of America, the requirements of the Occupational Safety and Health Act of 1970 (Public Law 91-596), and the requirements of Title 29 of the Code of Federal Regulations, Section 1518 as published in the "Federal Register", Volume 36, No. 75, Saturday, April 17, 1971.

    b. Exercise every precaution at all times for the prevention of accidents and the protection of persons (including employees) and property.

    c. Maintain at his office or other well-known place at the job site, all articles necessary for giving first aid to the injured and shall make arrangements for the immediate removal to a hospital or a doctor's care

of persons (including employees), who may be injured on the job site. In no case shall employees be permitted to work at a job site before the employer has made a standing arrangement for removal of injured persons to a hospital or a doctor's care.

20. Bidders are informed that the Project is subject to the requirements of Section 292.675, RSMo, which requires all contractors or subcontractors doing work on the Project to provide, and require its on-site employees to complete, a ten (10) hour course in construction safety and health approved by the Occupational Safety and Health Administration ("OSHA") or a similar program approved by the Missouri Department of Labor and Industrial Relations which is at least as stringent as an approved OSHA program. The training must be completed within sixty (60) days of the date of work on the Project commences. On-site employees found on the worksite without documentation of the required training shall have twenty (20) days to procure documentation or be subject to removal from the project.

21. Local Preference: Bidders whose principal place of business is located within a radius of 25 miles from Joplin City Hall may be given a *local preference* in the awarding of a bid, provided the bid from the local bidder does not exceed the lowest bid of a non-local bidder by more than 3% for bids less than $1,000,000, 2% for bids from $1,000,000 to $3,000,000, and 1% for bids from $3,000,000 to $5,000,000.

22. Contractor's Responsibility for Subcontractors:

    a. The Contractor shall be as fully responsible to the City for the acts and omissions of its subcontractors, and of persons either directly or indirectly employed by them, as Contractor is for the acts and omissions of persons it directly employs.

    b. Contractor shall cause appropriate provisions to be inserted in all subcontracts relating to this work, to bind all subcontractors to Contractor by all the terms herein set forth, and insofar as applicable to the work of subcontractors and to give Contractor the same power regarding termination of any subcontract as the City may exercise over Contractor under any provisions of this contract.

    c. Nothing contained in this contract shall create any contractual relation between the subcontractor and the City or between any subcontractors.

23. Antidiscrimination: The Contracting Authority hereby notifies all bidders that it will affirmatively ensure that in any contract entered in pursuant to this advertisement, business owned and controlled by socially and economically disadvantaged individuals will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, religion, creed sex, age, ancestry, or national origin in consideration for an award.

SPECIAL PROVISIONS
Murphy Boulevard High Water Automated Gates System (TSO804)
City of Joplin, MO

The contractor shall fully comply with the City of Joplin Standard Specifications, latest edition, except as noted herein. Standard specifications and Standard details may be found at the following web addresses:

Standard Specifications:

https://www.joplinmo.org/DocumentCenter/View/10379/2022-Standard-Specifications-

Standard Details:

https://www.joplinmo.org/DocumentCenter/View/10380/2022-Standard-Details

The following specifications shall supplement and supersede the City of Joplin Standard Specifications.

1. Contractor is required to provide the TAPCO system as specified in the appendix of these bid documents. Contractor may choose to submit a different system for approval prior to bid opening.

2. Process for determining approved alternates is as follows:
    a. System must be submitted 2 weeks prior to bid opening
    b. Submittal must include:
        i. Manufacturer's contact information
        ii. Manufacturer's specifications and warranty information
        iii. Complete list of equipment
        iv. Narrative of how alternate system provides the same or exceeding level of service of TAPCO system.

3. Contractor shall be responsible for all construction staking required to complete the project. The contractor shall protect and preserve the established benchmarks, monuments, and survey markers. The contractor shall carry sole responsibility for replacement of altered or destroyed survey references within the limits of construction. Existing property pins and offsets have been labeled on the drawings for reestablishment purposes.

4. Contractor shall be licensed to work in the City of Joplin.

5. Materials Testing: The City shall arrange and pay for all materials testing for the project.

6. The following are requirements for insurance to be on file in City Finance Dept.:
    a. Employer's Liability – Unlimited (as per RSMO 287.010 et seq.)
    b. Workmen's Compensation – Statutory
    c. Public Liability Insurance to include premises operation, products and completed operations, Contractual Liability, Broad Form Property Damage, Independent Contractors, Explosion Collapse and Underground Property Damage – Limit of $2,905,664.00 for all claims arising out of a single accident or occurrence and $435,849.00 for any one person in a single accident or occurrence.

7. Contractor to provide owner with advance notification of at least 2 business days for any street closure. Murphy Boulevard may be closed up to a **total** of fifteen (15) working days for the project.

8. Supplier (Tapco or approved alternative) shall provide installation oversight services for the system. Contractor will be required to coordinate with the supplier for this installation oversight.

Details: The contractor shall fully comply with the City of Joplin Standard Details, latest edition, except as noted herein. Standard details may be found at the following web address:

https://www.joplinmo.org/DocumentCenter/View/10380/2022-Standard-Details

PROPOSAL

THE UNDERSIGNED hereby proposes to furnish the labor and material for:

Project: Murphy Boulevard High Water Automated Gates System (TS0804)

in the City of Joplin, Missouri, according to Drawings, Contract Documents and General Specifications for such work on file in the office of the City Engineer and Director of Public Works, together with the terms and conditions to be stipulated in the general contract forms, now adopted by the City of Joplin, as advertised to be let on May 5, 2022 at the following prices to-wit:

Murphy Boulevard High Water Automated Gates System (TS0804)					
Item No.	**No. of Units**	**Unit**	**Description**	**Unit Price**	**Extended Price**
1	1	LS	Mobilization and Bonds		
2	1	LS	Cost of Automated High Water Gate Detection System (complete per included specs)		
3	1	LS	Cost of Installation		
4	1	LS	Traffic Control		
				Total Base Bid	

BIDDER understands that they may be asked to provide a complete and detailed breakdown of bid item prices following opening of the bids but prior to award of contract. BIDDER also hereby certifies that the bid prices for each component of the project will be substantiated by submittal of a detailed cost breakdown of all components of the PROJECT to the ENGINEER prior to release of any payments to the BIDDER for work performed.

BIDDER understands and acknowledges that the bid items shown in this proposal represent a summary of major components of construction required. The bid price for each item shall include the cost of all adjacent or related items that are shown on the plans, are called for in the specifications, or are otherwise necessary to provide completely the improvements.
BIDDER agrees that this bid shall be good and may not be withdrawn for a period of ninety (90) consecutive calendar days after the scheduled closing time for receiving bids.
BIDDER understands that the City has the right to waive any informalities and maintains the right to reject any or all bids.

The undersigned agrees to enter into a contract within seven (7) days from notice of award should this proposal be accepted, and enter into bonds with good and sufficient securities, to complete the work on or before a date to be specified in the Notice to Proceed, and to fully complete the project within 90 consecutive calendar days thereafter. A penalty of $500.00 per calendar day thereafter shall be instituted, the amount to be deducted from the contract price. In order to pay all labor employed and material used in connection with this work and to adjust all claims or liens that may arise in consequence of said work, to the satisfaction of the Director of Public Works, above said bonds shall also indemnify and save harmless the said City from all damages or injuries to any person or persons, either in the employ of the contractor, his agents, servants or employees. In the event of the failure of the undersigned to enter into such contract within seven (7) days of the award, then the deposit of five percent (5%) of the total bid amount as surety is therefore forfeited to the City of Joplin.

All applicable laws, ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the PROJECT shall apply to the Contract throughout.

Each BIDDER is responsible for inspecting the site and for reading and being thoroughly familiar with the CONTRACT DOCUMENTS. The failure or omission of any BIDDER to do any of the foregoing shall in no way relieve any BIDDER from the any obligation in respect to his BID.

The low BIDDER shall supply the names and addresses of the major material SUPPLIERS AND SUBCONTRACTORS when requested to do so by the OWNER.

Dated_____day of_____, 20___.

Company _____

Address _____

Signature _____

(Print Name) _____

AGREEMENT
BETWEEN
CITY OF JOPLIN AND

CITY		CONTRACTOR	
CITY OF JOPLIN **602 S. MAIN STREET** **JOPLIN, MO 64801**		Name: Address:	
Attention:		Attention:	
Department:		Phone:	Fax:
Phone:	Fax:	Murphy Boulevard High Water Automated Gates System (TS0804)	

THIS AGREEMENT, made and entered into this ____ day of _____, 20____, by the parties identified above.

WITNESSETH: That whereas, the Contractor has become the lowest responsible bidder for furnishing the supervision, labor, tools, equipment, materials and supplies and for constructing the following City improvements:

Murphy Boulevard High Water Automated Gates System (TS0804)

The City and Contractor agree to the following:

1. Manner and Time for Completion. The Contractor will furnish all supervision, labor, tools, equipment, materials and supplies necessary to perform, and to perform said work at Contractor's own expense in accordance with the contract documents and any applicable City ordinances and state and federal laws within Sixty (60) calendar days from the date Contractor is ordered to proceed, which order shall be issued by the Director of Public Works within 30 days after the date of this contract.

2. Prevailing Wages. All labor utilized in the construction of the aforementioned improvements shall be paid a wage of no less than the "prevailing hourly rate of wages" for work of a similar character in this locality, as established and amended at any time by the Department of Labor and Industrial Relations of the State of Missouri. At any time the contractor is found to not have paid prevailing wages, the contractor shall forfeit as a penalty to the city one hundred dollars for each underpaid worker employed, for each calendar day, or portion thereof such worker is paid less than the said stipulated rates for any work done under this contract.

3. Insurance Requirements. Without limiting any of the other obligations or liabilities of the Contractor, the Contractor shall secure and maintain at its own cost and expense, throughout the duration of this Contract and until the work is completed and

accepted by the City of Joplin, insurance of such types and in such amounts as may be necessary to protect it and the interests of the City of Joplin against all hazards or risks of loss as hereunder specified or which may arise out of the performance of the Contract Documents. The form and limits of such insurance, together with the underwriter thereof in each case, are subject to approval by the City of Joplin. Regardless of such approval, it shall be the responsibility of the contractor to maintain adequate insurance coverage at all times during the term of the Contract. Failure of the Contractor to maintain coverage shall not relieve it of any contractual responsibility or obligation or liability in general or under the Contract Documents.

The certificates of insurance, including evidence of the required endorsements hereunder or the policies, shall be filed with the City within ten (10) days after the date of the receipt of Notice of Award of the Contract to the Contractor and prior to the start of work. All insurance policies shall require that the insurance company in question provide thirty (30) days written notice prior to modification or cancellation of such insurance. Such notices shall be mailed, certified mail, return receipt requested, to:

City of Joplin - Public Works, 602 S. Main Street, Joplin, MO 64801

Such policies shall name the City as an additional insured, with limits of liability not less than the sovereign immunity limits for Missouri public entities calculated by the Missouri Department of Insurance as of January 1 each calendar year and published annually in the Missouri Register pursuant to Section 537.610, RSMo. (See, http://insurance.mo.gov/industry/sovimmunity.php)

As of January 1, 2022, the minimum coverage for the insurance referred to herein shall be as set out below:

a. Workers' Compensation…. Statutory coverage per RSMo 287.010 et seq

Employer's Liability……. $1,000,000.00

b. Commercial General Liability Insurance, including coverage for Premises, Operations, Products and Completed Operations, Contractual Liability, Broad Form Property Damage, Independent Contractors, Explosion, Collapse, and Underground Property Damage and endorsed for blasting if blasting required. Such coverage shall apply to bodily injury and property damage on an "Occurrence Form Basis" with limits of at least Three Million Sixty-Five Thousand Nine Hundred Fifty-Two and no/100 Dollars ($3,065,952.00) for all claims arising out of a single accident or occurrence and at least Four Hundred Fifty-Nine Thousand Eight Hundred Ninety-Three and no/100 Dollars ($459,893.00) with respect to injuries and/or death of any one person in a single occurrence and an amount not less than at least $1,000,000 for all claims to property arising out of a single occurrence and at least $100,000 to any one owner with respect to damages to property. Contractor agrees that the proceeds of such insurance policy shall first be used to pay any award, damages, costs, and/or attorneys' fees incurred by or assessed against City, its employees, officers and agents, before payment of any award, damages, costs or attorneys' fees of Contractor, its employees, officers or agents. Contractor agrees to cause its insurer to name City as an additional insured on such insurance policy, including the City as an additional insured for coverage under its products-completed operations hazard, and said policy shall be primary and noncontributory.

c. Automobile Liability Insurance covering bodily injury and property damage for owned, non-owned and hired vehicles, with limits of at least Three Million Sixty-Five Thousand Nine Hundred Fifty-Two and no/100 Dollars ($3,065,952.00) for all claims arising out of a single accident or occurrence and at least Four Hundred Fifty-Nine Thousand Eight Hundred Ninety-Three and no/100 Dollars ($459,893.00) with respect to injuries and/or death of any one person in a single accident or occurrence.

d. Owner's and Contractor's Protective Liability Insurance to protect the City, its agents, servants and employees from claims which may arise from the performance of this Contract, with limits of at least Three Million Sixty-Five Thousand Nine Hundred Fifty-Two and no/100 Dollars ($3,065,952.00) for all claims arising out of a single accident or occurrence and at Four Hundred Fifty-Nine Thousand Eight Hundred Ninety-Three and no/100 Dollars ($459,893.00) with respect to injuries and/or death of any one person in a single accident or occurrence.

The Owner's and Contractor's Protective Liability Insurance must:

(1) Be a separate policy with the named insured being: The City of Joplin, and

(2) Contain an endorsement that disclaims coverage for any claim barred by the doctrines of sovereign immunity or official immunity, except attorney's fees and other litigation costs incurred in defending a claim. Nothing contained in this policy (or this endorsement thereto) shall constitute any waiver of whatever kind of these defenses or sovereign immunity or official immunity for any monetary amount whatsoever.

e. Builders Risk Insurance for contracts involving unoccupied structures. The Contractor shall secure All Risk Builder's Risk Insurance. Unless specifically authorized by the City, the amount of such insurance shall not be less than the total contract price.

f. Subcontracts. In case any or all of this work is sublet, the Contractor shall require the subcontractor to procure and maintain all insurance required in subparagraphs (a), (b) and (c) hereof and in like amounts. Contractor shall require any and all subcontractors with whom it enters into a contract to perform work on this project to protect the City of Joplin through insurance against applicable hazards or risks and shall, upon request of the City, provide evidence of such insurance.

g. Notice. The Contractor and/or subcontractor shall furnish the City prior to beginning the work, the policy as specified in subparagraph (d), and satisfactory proof of carriage of all the insurance required by this contract, with the provision that policies shall not be canceled, modified or non-renewed without thirty (30) days written notice to the City of Joplin.

h. Legislative or Judicial Changes. In the event the scope or extent of the City's tort liability as a governmental entity as described in Section 537.600 through 537.650 RSMo is broadened or increased during the term of this agreement by legislative or judicial action, the City may require Contractor, upon 10 days written notice, to execute a contract addendum whereby the Contractor agrees to provide, at a price not exceeding Contractor's actual increased premium cost, additional liability insurance coverage as the City may require to protect the City from increased tort liability exposure as the result of such legislative or judicial action. Any such additional insurance coverage shall be evidenced by an appropriate certificate of insurance and shall take effect within the time set forth in the addendum.

4. Performance, Labor, and Materials Payment Bond: The Contractor shall furnish a Performance Bond and a Labor and Materials Payment Bond with surety approved by the City and on the forms approved by the City, each bond shall be in the amount of $_____ (full amount of contract) conditioned upon the full and faithful performance of all major terms and conditions of this contract and payment of all labor and material suppliers. It is further mutually agreed between the parties hereto that if at any time after the execution of this agreement and the surety bond(s) hereto attached for its faithful performance and payment of labor and material suppliers, the City shall deem the surety or sureties upon such bond(s) to be unsatisfactory, or if, for any reason, such bond(s) ceases to be adequate to cover the performance of the work, the Contractor shall, at its expense, within five (5) days after the receipt of notice from the City to do so, furnish an additional bond or bonds, in such form and amount, and with such surety or sureties as shall be satisfactory to the City. In such event no further payment to the Contractor shall be deemed to be due under this contract until such new or additional security for the faithful performance of the work and the payment of labor and material suppliers shall be furnished in a manner and form satisfactory to the City. The corporate surety on any performance or payment bond must be licensed by the State of Missouri and if the required bond exceeds $25,000.00 must be listed in United States Treasury Circular 570.

5. Certification Regarding Disbarment, Eligibility, Indictments, Convictions or Civil Judgements for all Federal Aid Projects: By signing and submitting the bid, the president or authorized official of the bidder, under penalty of perjury under the laws of the USA, shall certify that, except as noted in the exceptions, the company or any person associated therewith in the capacity of owner, partner, director, officer, principal investor, project director, manager, auditor or any position involving the administration of federal funds:
(Reference can be made to "The System for Award Management" website as a helpful resource).

a. Is not currently under suspension, debarment, voluntary exclusion or determination of ineligibility by any federal agency.

b. Has not been suspended, debarred, voluntarily excluded or determined ineligible by any federal agency within the past three years.

c. Does not have a proposed debarment or suspension pending.

d. Has not been indicted, convicted or had a civil judgment rendered against any of the listed parties by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past three years.

5.1 If there are any exceptions, the bidder shall submit the exceptions on company letterhead, signed by the bidder and inserted inside the bid submitted. Exceptions will not necessarily result in denial of award, but will be considered in determining bidder responsibility. For any exception noted, the bidder shall indicate to whom it applies, the

initiating agency, and dates of action. Providing false information may result in criminal prosecution or administrative sanctions.

5.2 By signing the contract, the contractor shall further certify that all related subcontracts of $25,000 shall comply with this requirement. This includes all subcontractors, material suppliers and vendors.

6. Contractor's responsibility for subcontractors. The Contractor shall be as fully responsible to the City for the acts and omissions of its subcontractors, and of persons either directly or indirectly employed by them, as Contractor is for the acts and omissions of persons it directly employs. Contractor shall cause appropriate provisions to be inserted in all subcontracts relating to this work, to bind all subcontractors to Contractor by all the terms herein set forth, and insofar as applicable to the work of subcontractors and to give Contractor the same power regarding termination of any subcontract as the City may exercise over Contractor under any provisions of this contract. Nothing contained in this contract shall create any contractual relation between the subcontractor and the City or between any subcontractors.

7. General Independent Contractor Clause. This agreement does not create an employee/employer relationship between the parties. It is the parties' intention that the Contractor will be an independent contractor and not the City's employee for all purposes, including, but not limited to, the application of the Fair Labor Standards Act minimum wage and overtime payments, Federal Insurance Contribution Act, the Social Security Act, the Federal Unemployment Tax Act, the provisions of the Internal Revenue Code, Missouri Revenue and Taxation laws, Missouri Workers' Compensation and Unemployment Insurance laws. The Contractor will retain sole and absolute discretion in the judgment of the manner and means of carrying out the Contractor's activities and responsibilities hereunder. The Contractor agrees that it is a separate and independent enterprise from the public employer, that it has a full opportunity to find other business, that it has made its own investment in its business, and that it will utilize a high level of skill necessary to perform the work. This agreement shall not be construed as creating any joint employment relationship between the Contractor and the City, and the City will not be liable for any obligation incurred by the Contractor, including but not limited to unpaid minimum wages and/or overtime premiums.

8. Liquidated Damages. Time of completion of work by the Contractor is of the essence. Should Contractor, or in the case of default, the surety, fail to complete the work within the time specified in the contract, or within such extra time as may be allowed in accordance with City of Joplin Standard Specifications, Division 0000, General Requirements and Provisions, Section 0400.19, (http://mo-joplin.civicplus.com/DocumentCenter/View/3460) Contractor (or surety) shall be liable to the City in the amount of $500 per day for each and every calendar day that the contract remains uncompleted after the time allowed for completion, as liquidated damages, and not as a penalty, it being stipulated that actual damages to the City and the public arising from Contractor's failure to timely complete the work would be difficult, if not impossible, to ascertain. The amount assessed as liquidated damages may be withheld from any moneys otherwise due to Contractor from the City.

9. Termination. The City reserves the right to terminate this contract by giving at least five (5) days prior written notice to the Contractor, without prejudice to any other rights or remedies of the City should the Contractor be adjudged a bankrupt, or if Contractor should make a general assignment for the benefit of its creditors, or if a receiver should be appointed for Contractor or for any of its property, or if Contractor should persistently or repeatedly refuse or fail to supply enough properly skilled workmen or proper material, or if Contractor should refuse or fail to make prompt payment to any person supplying labor or materials for the work under the contract, or persistently disregard instructions of the City or fail to observe or perform any provisions of the contract.

10. City's Right to Proceed. In the event this contract is terminated pursuant to Paragraph 8, then the City may take over the work and prosecute the same to completion, by contract or otherwise, and Contractor and its sureties shall be liable to the City for any costs over the amount of this contract thereby occasioned by the City. In any such case, the City may take possession of, and utilize in completing the work, such materials, appliances and structures as may be on the work site and are necessary for completion of the work. The foregoing provisions are in addition to, and not in limitation of, the rights of the City under any other provisions of the contract, city ordinances, and state and federal laws.

11. Termination for Convenience of City. The City shall have the right at any time by written notice to Contractor to terminate and cancel this contract, without cause, for the convenience of the City, and Contractor shall immediately stop work. In such event City shall not be liable to Contractor except for payment for actual work performed prior to such notice in an amount proportionate to the completed contract price and for the actual costs of preparations made by Contractor for the performance of the cancelled portions of the contract, including a reasonable allowance of profit applicable to the actual work performed and such preparations. Anticipatory profits and consequential damages shall not be recoverable by Contractor.

12. Guards and Lights. The Contractor agrees that during the performance of said work, adequate barricades, guards and warning signs, lights or devices consistent with the requirements contained in the Manual on Uniform Traffic Control Devices shall be provided by Contractor during construction.

13. Liability and Indemnity.

a. In no event shall the City be liable to the Contractor for special, indirect, or consequential damages, except those caused by the City's gross negligence or willful or wanton misconduct arising out of or in any way connected with a breach of this contract. The maximum liability of the City shall be limited to the amount of money to be paid or received by the City under this contract.

b. The Contractor shall defend, indemnify and save harmless the City, its elected or appointed officials, agents and employees from and against any and all liability, suits, damages, costs (including attorney fees), losses, outlays and expenses from claims in any manner caused by, or allegedly caused by, or arising out of, or connected with, this contract, or the work or any subcontract thereunder (the Contractor hereby assuming full responsibility for relations with subcontractors), including, but not limited to, claims for personal injuries, death, property damage, or for damages from the award of this contract to Contractor, notwithstanding any possible negligence, whether sole or concurrent, on the part of the City, its officials, agents and employees.

c. The Contractor shall indemnify and hold the City harmless from all wages or overtime compensation due any employees in rendering services pursuant to this agreement or any subcontract, including payment of reasonable attorneys' fees and costs in the defense of any claim made under the Fair Labor Standards Act, the Missouri Prevailing Wage Law or any other federal or state law.

d. The indemnification obligations of Contractor hereunder shall not be limited by any limitations as to the amount or type of damages, compensation or benefits payable by or for the Contractor, under any federal or state law, to any person asserting the claim against City, its elected or appointed officials, agents and employees, for which indemnification is sought.

e. The indemnification obligations herein shall not negate, abridge or reduce in any way any additional indemnification rights of the City, its elected or appointed officials, agents and employees, which are otherwise available under statute, or in law or equity.

f. Contractor affirms that it has had the opportunity to recover the costs of the liability insurance required in this agreement in its contract price. Contractor's obligation under this agreement to defend, indemnify, and hold harmless any person from that person's own negligence or wrongdoing is limited to the coverage and limits of the applicable insurance required of the Contractor under this agreement.

g. The Contractor shall indemnify and hold the City harmless for any penalties, fines, fees or costs, including costs of defense, which are charged or assessed by any Federal, state or local agency including, but not limited to, Environmental Protection Agency or Department of Natural Resources.

14. Payment for Labor and Materials. The Contractor agrees and binds itself to pay for all labor done, and for all the materials used in the construction of the work to be completed pursuant to this contract.

15. Payment. The City will pay the Contractor in accordance with the rate set forth in the contract documents on file in the Public Works Department and by this reference made a part hereof, which shall constitute full and complete compensation for the Contractor's work provided hereunder. Such compensation will be paid in progress payments (less five (5) percent retainage), as established by the City, subject to receipt of a requisition for payment and a statement of work provided by the Contractor and agreement by both the City and the Contractor that the Contractor has fully performed the work to be paid for in such progress payments in conformance with the contract. If the City or the architect or engineer determines that a higher rate of retainage is required to ensure performance of the contract, the City may withhold up to ten (10) percent retainage until the work is fully completed and accepted by the City.

16. Contract Documents. The contract documents shall consist of the following:

a. This Contract
b. All Change Orders
c. Bid Plans and Specifications
d. City of Joplin Standard Specifications (Latest Revised Edition)
e. Special Conditions & Provisions

f. Proposal
g. Statement of Bidder's Qualifications
h. Acknowledgment
i. Performance Bond
h. Payment and Material Bond
k. Instructions to Bidders
l. Non-collusion Affidavit
m. Notice to Proceed

Notice to Contractors: This contract, together with the other documents enumerated in this paragraph, forms the contract between the parties. These documents are as fully a part of the contract as if attached hereto or repeated herein. The Contractor agrees to perform all of the work described in the contract documents and to comply with the terms and conditions defined therein for a total sum of ORIGINAL CONTRACT AMOUNT WRITTEN OUT ($) dollars, said amount being subject to any approved addenda or change order.

17. Subsurface Conditions. Contractor agrees that information contained in the published reports and public actions of the Missouri Division of Geology and Land Survey shall be conclusive and binding upon the Contractor as to what subsurface conditions at the job site are reasonably anticipated or reasonably foreseeable. Contractor acknowledges and agrees that it shall not be entitled to any adjustment in the Contract Sum or Contract Times for any concealed condition of any nature, including but not limited to unknown physical conditions of an unusual nature which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, in addition to the information contained in the published reports and public actions of the Missouri Division of Geology and Land Survey. Contractor recognizes that it has assumed the risks of concealed conditions and is being compensated for assuming these risks.

18. Conflict of Interest. In accepting this contract, Contractor certifies that no member or officer of its firm or corporation is an officer or employee of the City of Joplin, Missouri, or any of its boards or agencies, and further that no officer or employee of the City has any financial interest, direct or indirect, in this contract. All applicable federal regulations and provisions of R.S.Mo. Section 105.450 et seq. shall not be violated.

19. Assignment. The Contractor shall not assign any interest in this contract, and shall not transfer any interest in the same (whether by assignment or novation), without prior written consent of the City thereto, provided, however, that claims for money due or to become due to the Contractor from the City under this Contract may be assigned to a bank, trust company, or other financial institution without such approval. Notice of such assignment or transfer shall be furnished in writing promptly to the City and the bond surety. Any such assignment is expressly subject to all rights and remedies of the City under this agreement, including the right to change or delete activities from the Contract or to terminate the same as provided herein, and no such assignment shall require the City to give any notice to any such assignee of any actions which the City may take under this agreement.

20. Nondiscrimination. The Contractor agrees in the performance of this contract not to discriminate on the ground or because of race, creed, color, national origin or ancestry, sex, religion, handicap, age, status as a protected veteran or status as a qualified individual with a disability, or political opinion or affiliation, against any employee of Contractor or applicant for employment and shall include a similar provision in all subcontracts let or awarded hereunder. The parties hereby incorporate the requirements of 41 C.F.R. §§ 60-1.4(a)(7), 29 C.F.R. Part 471, Appendix A to Subpart A, 41 C.F.R. § 60-300.5(a)ii and 41 C.F.R. § 60-741.5(a), if applicable.

a. This contractor and subcontractor shall abide by the requirements of 41 C.F.R. § 60-300.5(a). This regulation prohibits discriminations against qualified protected veterans, and requires affirmative action by covered prime contractors and subcontractors to employ and advance in employment qualified protected veterans.

b. This contractor and subcontractor shall abide by the requirements of 41 C.F.R. § 60-741.5(a). This regulation prohibits discrimination against qualified individuals on the basis of disability, and requires affirmative action by covered prime contractors and subcontractors to employ and advance in employment qualified individuals with disabilities.

21. Nonresident/Foreign Contractors. The Contractor shall procure and maintain during the life of this contract:

a. If the Contractor is a foreign corporation, a certificate of authority to transact business in the State of Missouri from the Secretary of State, unless exempt pursuant to the provisions of Section 351.570 R.S.Mo.

b. A certificate from the Missouri Director of Revenue evidencing compliance with the transient employer financial

assurance law, unless exempt pursuant to the provisions of Section 285.230 RSMo.

22. Notices. All notices required or permitted hereinunder and required to be in writing may be given by FAX or by first class mail addressed to City and Contractor at the addresses shown above. The date of delivery of any notice given by mail shall be the date falling on the second full day after the day of its mailing. The date of delivery of notice by FAX transmission shall be deemed to be the date transmission occurs, except where the transmission is not completed by 5:00 p.m. on a regular business day at the terminal of the receiving party, in which case the date of delivery shall be deemed to fall on the next regular business day for the receiving party.

23. Records and Audits. The Contractor shall maintain accounts and records, including personnel, property, and financial records, adequate to identify and account for all costs pertaining to the Contract and such other records as may be deemed necessary by the City to assure proper accounting for all project funds. These records will be made available for audit purposes to the City or any authorized representative, and will be retained for three years after the expiration of this Contract.

24. Authorized Employees. Contractor acknowledges that Section285.530, RSMo, prohibits any business entity or employer from knowingly employing, hiring for employment, or continuing to employ an unauthorized alien to perform work within the State of Missouri. Contractor therefore covenants that is not knowingly in violation of subsection 1 or Section 285.530, RSMo, and that it will not knowingly employ, hire for employment, or continue to employ any unauthorized aliens to perform work on the Project, and that its employees are lawfully to work in the United States.

25. Interest of Contractor and Employees. The Contractor covenants that he/she presently has no interest and shall not acquire interest, direct or indirect, in the study area or any parcels therein or any other interest which would conflict in any manner or degree with the performance of his services hereunder. The Contractor further covenants that in the performance of this Contract, no person having any such interest shall be employed.

26. Interest of Members of a City. No member of the governing body of the City and no other officer, employee, or agent of the City who exercises any functions or responsibilities in connection with the planning and carrying out of the program, shall have any personal financial interest, direct or indirect, in this Contract, and the Contractor shall take appropriate steps to assure compliance.

27. Interest of Other Local Public Officials. No member of the governing body of the locality and no other public official of such locality, who exercises any functions or responsibilities in connection with the planning and carrying out of the program, shall have any personal financial interest, direct or indirect, in this Contract, and the Contractor shall take appropriate steps to assure compliance.

28. Affidavit for Contracts Over $5,000.00. That pursuant to Missouri Revised Statute Sections 285.525 through 285.550, if this contract exceeds the amount of $5,000.00 and Contractor is associated with a business entity, Contractor shall provide an acceptable notarized affidavit stating that the associated business entity is enrolled in and participates in a federal work authorization program with respect to the employees working in connection with the contracted services, and that said business entity does not knowingly employ any person who is an unauthorized alien in connection with the contracted services. Additionally, Contractor must provide documentation for said business entity evidencing current enrollment in a federal work authorization program.

29. City Benefits. The Contractor shall not be entitled to any of the benefits established for the employees of the City nor be covered by the Worker's Compensation Program of the City.

30. Occupational License: The Contractor shall obtain and maintain an occupational license with the City of Joplin, Missouri, if required by city code and any required state or federal license. The cost for this occupational license shall be borne by the Contractor. No contract will be executed by the City until this occupational license has been obtained and that the Contractor is current on any City taxes is verified.

31. Safety Training. Pursuant to Missouri Revised Statute Section 292.675, Contractors and subcontractors who sign a contract to work on public works projects must provide a 10-hour OSHA construction safety program, or similar program approved by the Department of Labor and Industrial Relations, to be completed by their on-site employees within sixty (60) days of beginning work on the construction project. Contractors and subcontractors in violation of this provision will forfeit to the public body $2,500 plus $100 a day for each employee who is employed without training. Public bodies and contractors may withhold/assess these penalties from the payment due to those contractors and subcontractors if found to be in non-compliance.

32. Compliance with Laws. Contractor agrees to comply with all applicable federal, state and local laws or rules and regulations applicable to the provision of services and products hereunder. Contractor affirmatively states that payment of all local, state, and federal taxes and assessments owed by Contractor is current.

33. Entire Agreement. This agreement contains the entire agreement of the parties. No modification, amendment, or waiver of any of the provisions of this agreement shall be effective unless in writing specifically referring hereto, and signed by both parties.

34. Remedies. Except as may be otherwise found in the contract documents, all claims, disputes, counter-claims, and other matters in question between the Owner and Contractor arising out of or related to this agreement or the breech thereof, will be decided by arbitration if the parties hereto mutually agree, or in a court of competent jurisdiction within the state in which the Owner is located.

35. Jurisdiction. This agreement and every question arising hereunder shall be construed or determined according to the laws of the State of Missouri. Should any part of this agreement be adjudicated, venue shall be proper only in the Circuit Court of Jasper County, Missouri.

IN WITNESS WHEREOF, the parties hereto have set their hands and seals on the day and year herein stated.

CERTIFICATE OF DIRECTOR OF FINANCE

I certify that the expenditure contemplated by this document is within the purpose of the appropriation to which it is to be charged and that there is an unencumbered balance of appropriated and available funds to pay therefor.

_____

Leslie Haase, Director of Finance

APPROVED AS TO FORM

_____

Peter Edwards, City Attorney

CONTRACTOR:

By: _____

Printed Name: _____

Title: _____

CITY OF JOPLIN, MISSOURI

By: _____

Daniel Johnson, Interim Public Works Director

CONTRACTOR'S BOND NO.
FOR CITY CONTRACTS

PERFORMANCE BOND

KNOW ALL PERSONS BY THESE PRESENTS: That

Contractor

a Corporation, hereinafter called Principal, and

_____

(Name of Surety)

_____

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

THE CITY OF JOPLIN, MISSOURI
602 S. MAIN STREET, JOPLIN, MO 64801

hereinafter called OWNER, in the total aggregate penal sum of XXXXXXXXXXXXX AND xx/100 Dollars ($XXX,000.00) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the _____ day of _____, 20____, a copy of which is hereto attached and made a part hereof for the construction of:

Murphy Boulevard High Water Automated Gates System (TS0804)

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term thereof, or any extensions thereof, which may be granted by the OWNER, with or with-out notice to the SURETY and during the one year guaranty period and if the PRINCIPAL shall satisfy all claims and demands incurred under such

contract, and shall fully indemnify and save harmless the OWNER from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the OWNER all outlay and expense which the OWNER may incur in making good any default, then this obligation shall be void, otherwise to remain in full force and effect.
PROVIDED, FURTHER, that the said SURETY, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to WORK to be performed thereunder or the SPECIFICATIONS accompanying same shall in any way affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that it is expressly agreed that the BOND shall be deemed amended automatically and immediately, without formal and separate amendments hereto, upon amendment of the Contract not increasing the contract price more than 20 percent, so as to bind the PRINCIPAL and the SURETY to the full and faithful performance of the CONTRACT as so amended. The term “Amendment”, wherever used in this BOND, and whether referring to this BOND, the Contract or the Loan Documents shall include any alteration, addition, extension, or modification of any character whatsoever.

IN WITNESS, whereof, this the _____ day of _____, 20____.

ATTEST: (SEAL)

_____ _____
Secretary Principal

Approved as to form this _____ day

of _____, 20____. By _____

_____ By _____
City Attorney

ATTEST: (SEAL)

_____ _____
Secretary Surety

Approved this _____ day of

_____, 20_____. By _____

_____ By _____
Director of Finance (Title)

NOTE: Date of BOND must not be prior to date of Contract.

If CONTRACTOR is partnership, all partners should execute BOND.
IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the Project is located.

CONTRACTOR'S BOND NO.
FOR CITY CONTRACTS

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: That

Contractor

a Corporation, hereinafter called Principal, and

_____
(Name of Surety)

hereinafter called Surety, are held and firmly bound unto

THE CITY OF JOPLIN, MISSOURI
602 S. MAIN STREET, JOPLIN, MO 64801

hereinafter called OWNER, and unto all persons, firms, and corporations who or which may furnish labor, or who furnish materials to perform as described under the contract and to their successors and assigns in the total aggregate penal sum of XXXXXXXXXXXXXXXXX and xx/100 Dollars ($XXX,000.00)in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the principal entered into a certain contract with the OWNER, dated the _____ day of _____, 20___, a copy of which is hereto attached and made a part hereof for the construction of:

Murphy Boulevard High Water Automated Gates System (TS0804)

NOW, THEREFORE, if the PRINCIPAL shall promptly make payment to all persons, firms, subcontractors, and corporations furnishing materials for or performing labor in the prosecution of the WORK provided for in such contract, and any authorized extensions or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal or coke, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such WORK, all insurance premiums on said work, and for all labor cost incurred in such WORK including the stipulation in said contract requiring the payment of not less than the prevailing hourly rate of wages as found by the Department of Labor and Industrial Relations of the State of Missouri or by final judicial determination of the Courts of the State of Missouri, including that by a

SUBCONTRACTOR, and to any mechanic or material man lien holder whether it acquires its lien by operation of State or Federal law; then this obligation shall be void, otherwise to remain in full force and effect.

PROVIDED, that beneficiaries or claimants hereunder shall be limited to the SUBCONTRACTORS, any persons, firms, and corporations having a direct contract with the PRINCIPAL or its SUBCONTRACTORS.

PROVIDED, FURTHER, that the said SURETY for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in any way affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of this contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no suit or action shall be commended hereunder by any claimant: (a) Unless claimant, other than one having a direct contract with the PRINCIPAL, shall have given written notice to any two of the following: The PRINCIPAL, the OWNER, or the SURETY above named within ninety (90) days after such claimant did or performed the last of the work or labor, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work or labor was done or performed. Such notice shall be served by mailing the same by registered mail or certified mail, postage prepaid, in an envelope addressed to the PRINCIPAL, OWNER, or SURETY, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the state in which the aforesaid project is located, save that such service need to be made by a public officer. (b) After the expiration of one (1) year following the date of which PRINCIPAL ceased work on said CONTRACT, it being understood, however, that if any limitation embodied in the BOND is prohibited by any law controlling the construction thereof, such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.

PROVIDED, FURTHER, that it is expressly agreed that this BOND shall be deemed amended automatically and immediately, without formal and separate amendments hereto, upon amendment to the Contract not increasing the contract price more than 20 percent, so as to bind the PRINCIPAL and the SURETY to the full and faithful performance of the Contract as so amended. The term "Amendment", wherever used in this BOND and whether referring to this BOND, the contract or the loan documents shall include any alteration, addition, extension or modification of any character whatsoever.
PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS, whereof, this the _____ day of _____, 20____.

ATTEST: (SEAL)

_____ _____
Secretary Principal

Approved as to form this _____ day
of _____, 20____. By _____

_____ By _____
City Attorney

ATTEST: (SEAL)

_____ _____
Secretary Surety

Approved this _____ day of

_____, 20____. By _____

_____ By _____
Director of Finance (Title)

NOTE: Date of BOND must not be prior to date of Contract.

If CONTRACTOR is partnership, all partners should execute BOND.
IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the Project is located.

ANTI-COLLUSION STATEMENT

STATE OF MISSOURI

CITY OF JOPLIN

_____

_____ being first duly sworn, deposes and says that he is

_____
Title of Person Signing

of _____

_____
Name of Bidder

that all statements made and facts set out in the proposal for the above project are true and correct; and the bidder (The person, firm, association, or corporation making said bid) has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with said bid or any contract which may result from its acceptance.

Affiant further certifies that bidder is not financially interested in, or financially affiliated with, any other bidder for the above project.

BY_____

BY_____

BY_____

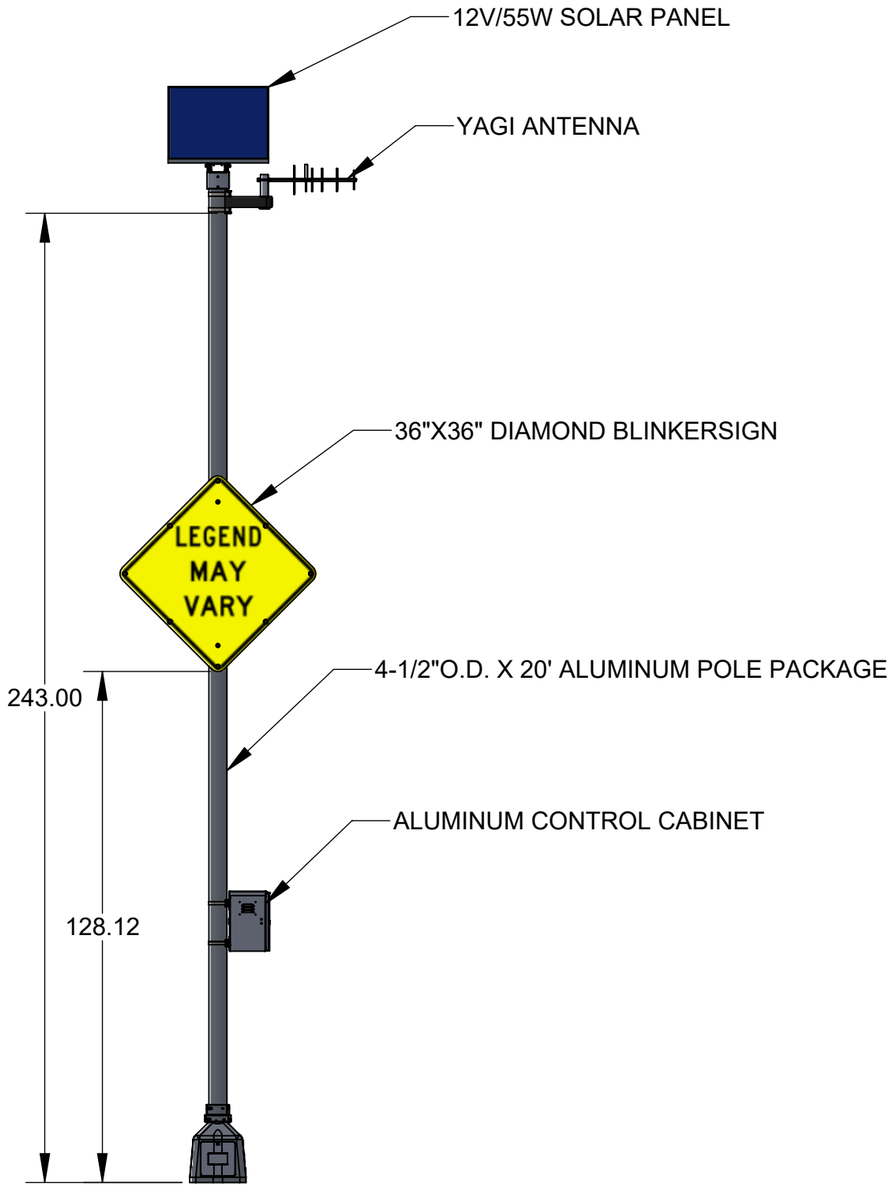
SWORN to before me this _____ day of _____ 20 ___.

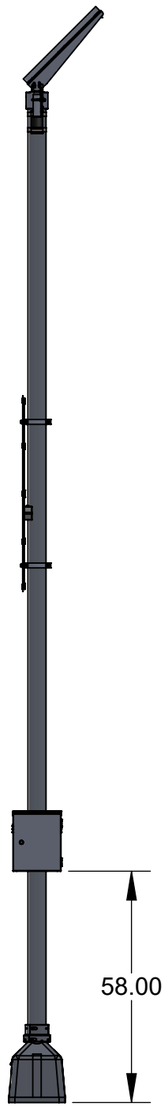
_____
Notary Public

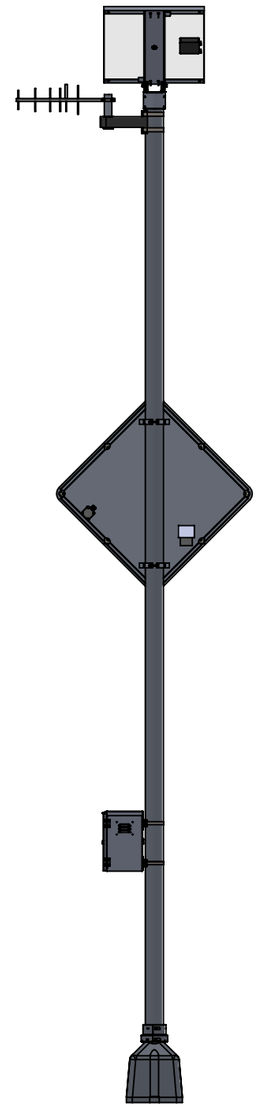
My Commission Expires_____

APPENDIX


Proposed Location for Warning Blinker Sign
Proposed location for additional warning blinker sign
Approximate location of driveway entrance for new Dover Hill Elementary School
W MURPHY BLVD
N BRAMAR DR
N CREST DR
N SERGEANT AVE
W JACCARD PL
W RICHMOND RD
N JACKSON AVE
W ISLINGTON PL
N MOFFETT AVE
N BYERS AVE
W HAMPTON PL
N PEARL AVE
N MAIN ST
W OZARK LOOP
E OZARK LOOP
CHAPEL DR
MISSIONS DR
S OZARK LOOP
S OZARK DR
N MURPHY BLVD
N LANDRETH AVE









NOTES:

1. ORIENT SOLAR PANEL TOWARDS SOUTHERN SKY FOR MAXIMUM SOLAR EXPOSURE
2. CONTROL CABINET HEIGHT MAY VARY.
3. WORM CLAMPS ARE PROVIDED, STANDARD 3/4" S/S BANDING IS RECOMMENDED
4. J-BOLTS NOT SHOWN
5. ALL DIMENSIONS ARE FOR REFERENCE ONLY.

REV.	DESCRIPTION	ECO	BY	DATE
A	INITIAL RELEASE	-	JP	01/25/2022

DIMENSIONS ARE INCH AND TOLERANCES ARE AS FOLLOWS UNLESS OTHERWISE SPECIFIED

.X	±0.1
.XX	±0.02
.XXX	±0.008
ANGLES	±1°

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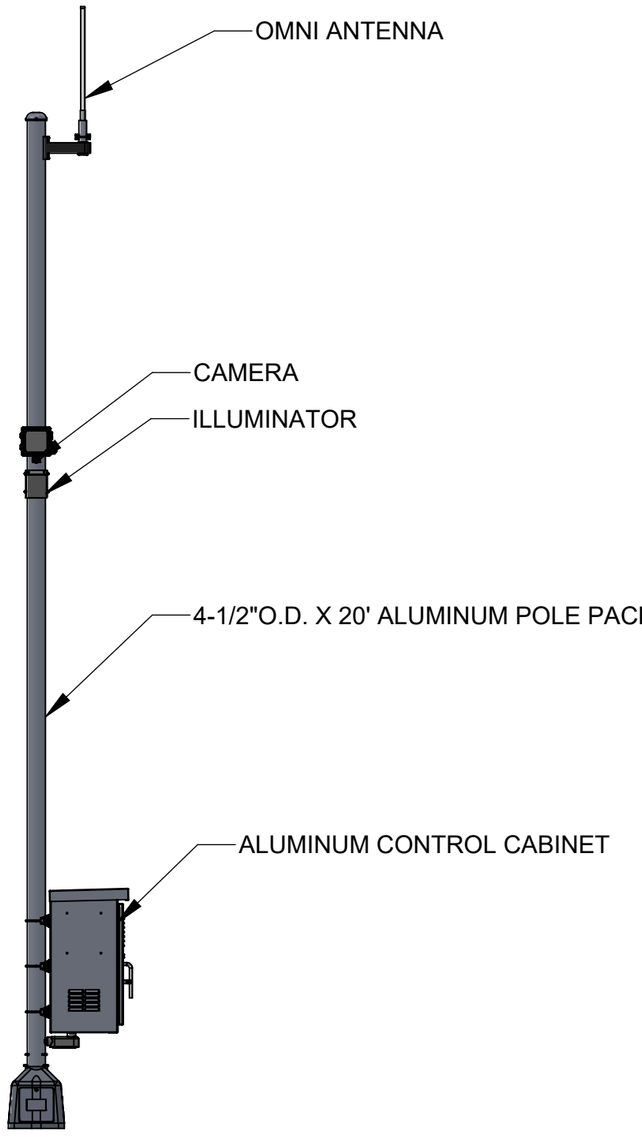
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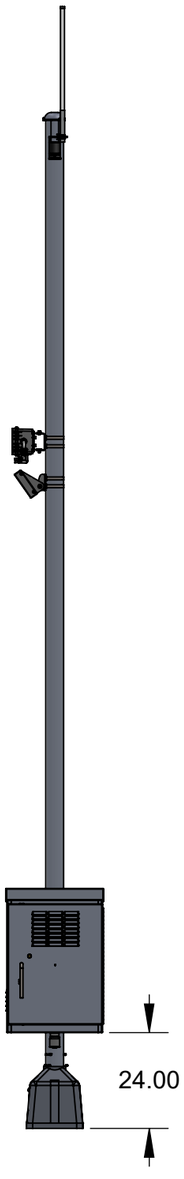
SOLAR BLINKERSIGN WARNING POLE 6 ARRANGEMENT

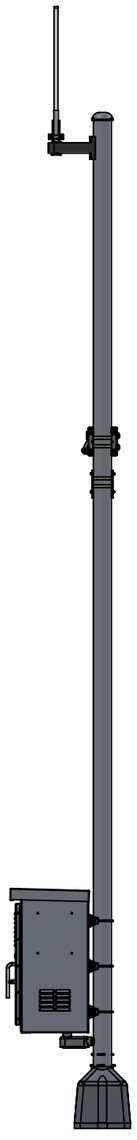
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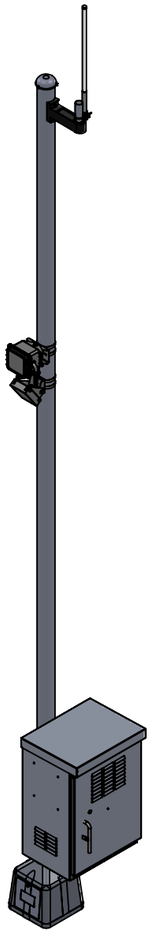
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ANGLES	±1°

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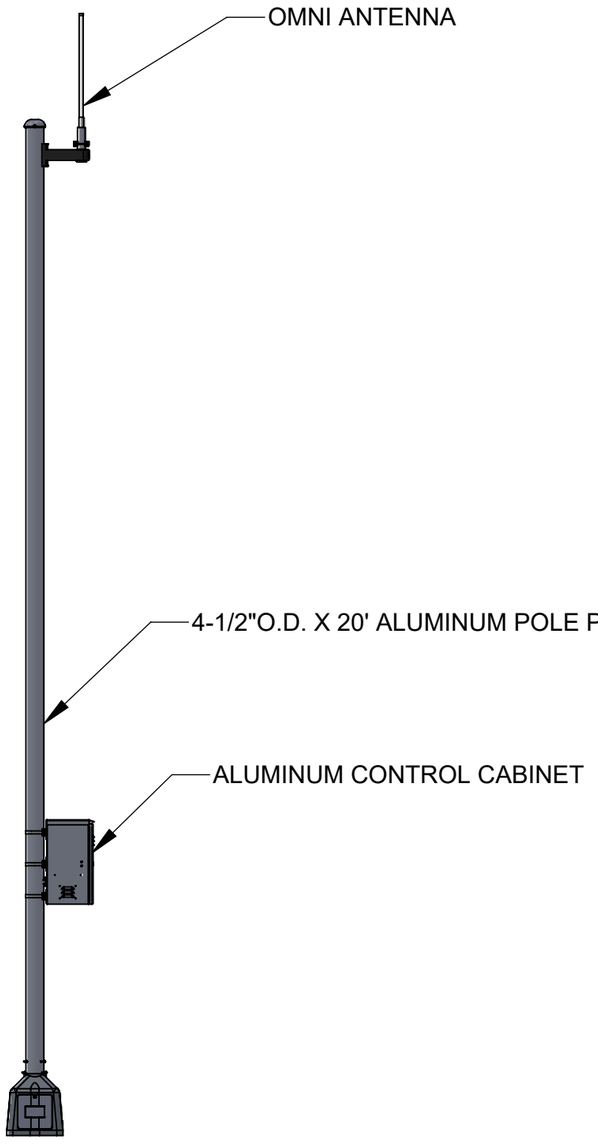
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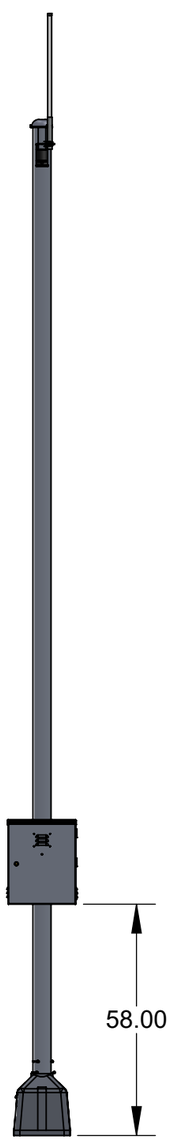
A/C NOTIFICATION POLE 4 ARRANGEMENT

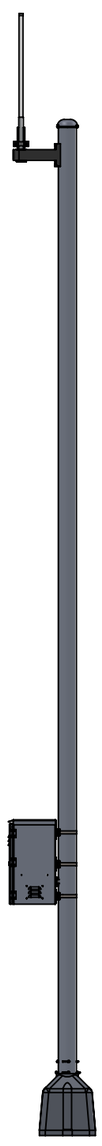
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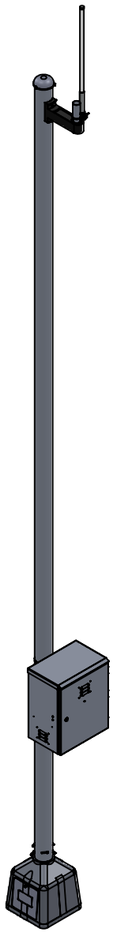
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A	INITIAL RELEASE	-	JP	01/25/2022

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.XX	±0.02
.XXX	±0.008
ANGLES	±1°

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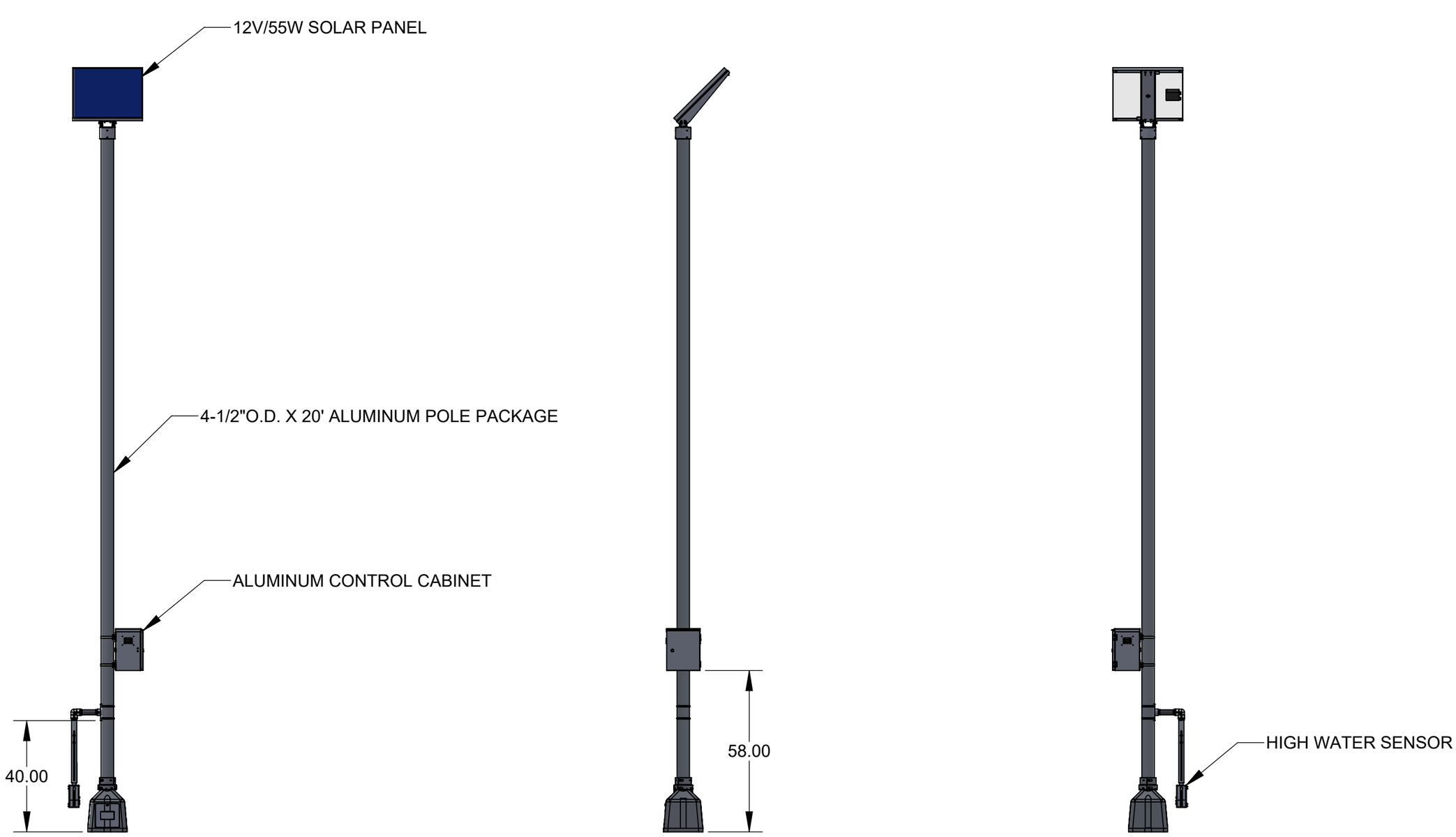
7840 North 86th Street
Milwaukee, WI 53224 USA

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A/C POWER POLE 5 ARRANGEMENT

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NOTES:

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A	INITIAL RELEASE	-	JP	01/25/2022

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ANGLES	±1°

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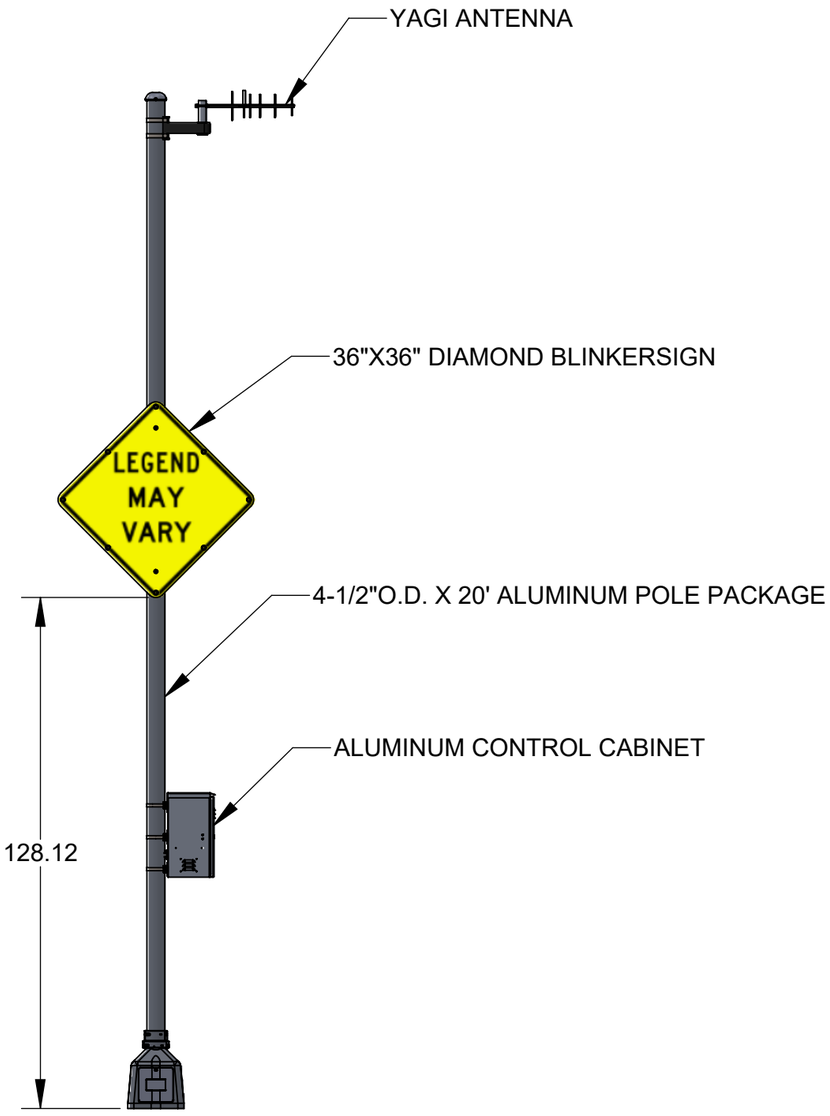
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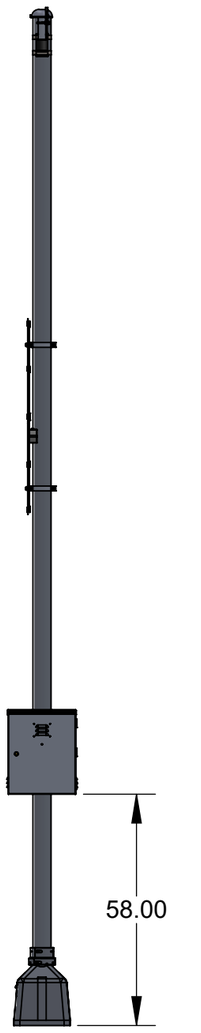
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FLOOD ZONE SENSOR, POLE 3 ARRANGEMENT

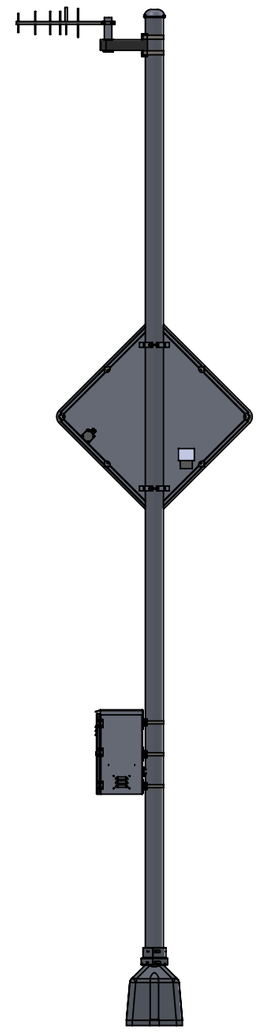
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REV.	DESCRIPTION	ECO	BY	DATE
A	INITIAL RELEASE	-	JP	01/25/2022

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ANGLES	±1°

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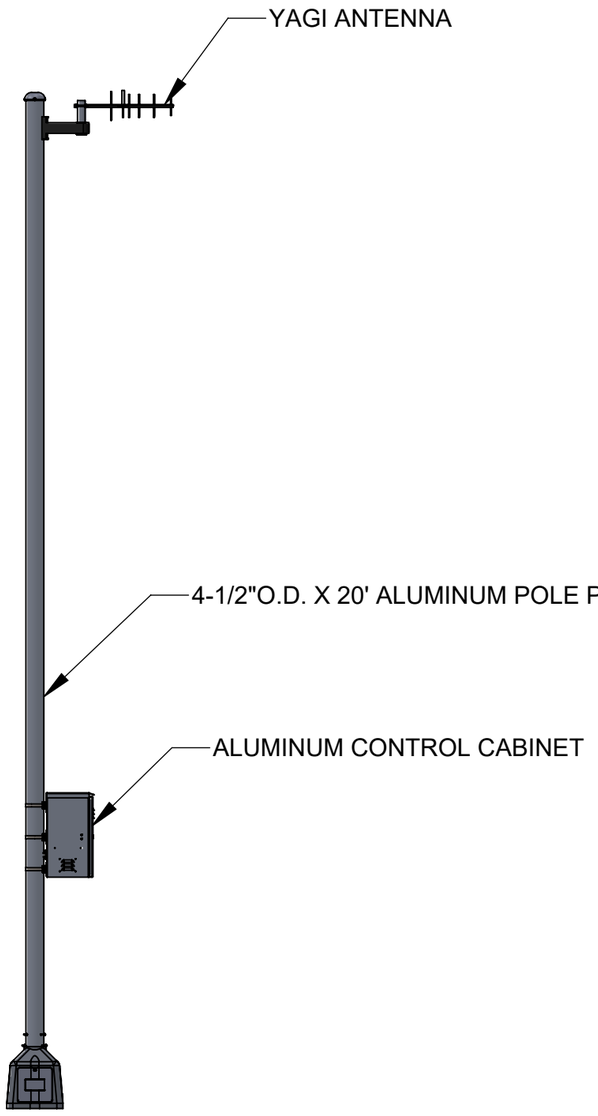
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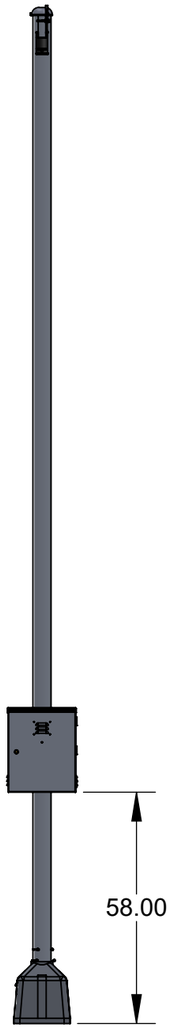
A/C BLINKERSIGN WARNING POLE 1 ARRANGEMENT

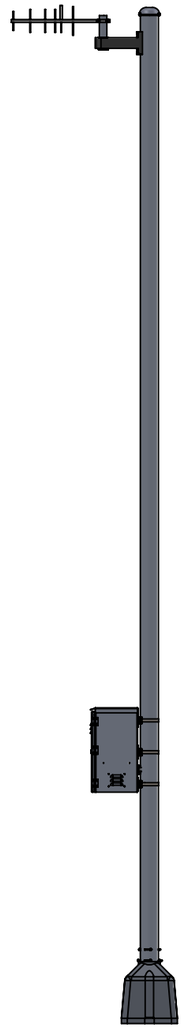
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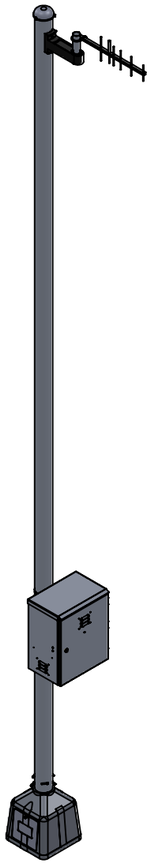
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.XX	±0.02
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ANGLES	±1°

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TITLE: HIGH WATER WARNING SYSTEM
A/C POLE 2 ARRANGEMENT

SIZE	DOCUMENT NO. (SEE TABLE FOR P/N)	REVISION
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Safe travels.

LARGE CABINET & MOUNTING BRACKETS

CABINET SPECIFICATIONS

CERTIFICATION	NEMA 3R type
MATERIAL	0.125" aluminum
MOUNTING OPTIONS	6 stainless steel studs for various mounting bracket options including banding, U-bolt, wall-mount, square pole and wood post.
HINGES	3 tamper-resistant stainless steel hinges
ACCESS	Replaceable #2 traffic lock with keys
VENTING	Screened vents on cabinet side and door
DRAINAGE	Screened drain holes on bottom of cabinet
UV RESISTANT LABEL	Applied to exterior of cabinet outlining model number, serial number, date of manufacture as well as any applicable regulatory information
CONTROL PANEL	All circuit components are attached or connected to removable control panel for maintenance
DOOR MOUNTED POUCH	Contains system documents
ENCLOSURE DIMENSIONS	17.5"W x 21.1"H x 11.6"D



FRONT



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ROUND POLE BANDING BRACKET

MATERIAL	Aluminum
POLE TYPE	2⅜" and larger round poles
HARDWARE TO MOUNT TO CABINET	Stainless steel hardware provided
HARDWARE TO MOUNT TO POLE	Customer supplied banding up to ¾" width. Worm drive clamp provided to assist with install.
BRACKET QUANTITY PER CABINET	3
DIMENSIONS	6.8"W x 3.7"H x 1.1"D



ROUND POLE BANDING BRACKET

SQUARE POLE BOLT-THROUGH BRACKET

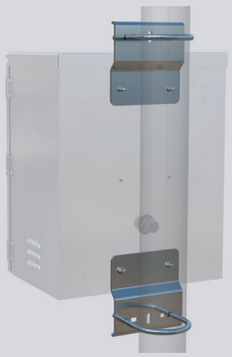
MATERIAL	Aluminum
POLE TYPE	2" to 6" square poles
HARDWARE TO MOUNT TO CABINET	Stainless steel hardware provided
HARDWARE TO MOUNT TO POLE	Strainless steel hardware provided specific to pole size
BRACKET QUANTITY PER CABINET	3
DIMENSIONS	Bolt length dependent upon pole size



SQUARE POLE BOLT-THROUGH BRACKET

MULTI-PURPOSE BRACKET

MATERIAL	Aluminum
POLE TYPE	2 ⅜" - 4 ½" round pole, square wood post or wall mount
HARDWARE TO MOUNT TO CABINET	Stainless steel hardware provided
HARDWARE TO MOUNT TO POLE	Customer supplied hardware for wall mounting. Stainless steel U-bolts provided for round pole mount. Lag bolts provided for square wood post mount.
BRACKET QUANTITY PER CABINET	2
DIMENSIONS	7"W x 7.2"H x 0.7"D



MULTI-PURPOSE BRACKET

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1026-01032-L 06/26/19

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MEDIUM CABINET & MOUNTING BRACKETS

CABINET SPECIFICATIONS

CERTIFICATION	NEMA 3R type
MATERIAL	0.080" aluminum
MOUNTING OPTIONS	4 stainless steel studs for various mounting bracket options including banding, U-bolt, wall-mount, square pole and wood post.
HINGES	2 tamper-resistant stainless steel hinges
ACCESS	Replaceable #2 traffic lock with keys
VENTING	Screened vents on cabinet side and door
DRAINAGE	Screened drain holes on bottom of cabinet
UV RESISTANT LABEL	Applied to exterior of cabinet outlining model number, serial number, date of manufacture as well as any applicable regulatory information
CONTROL PANEL	All circuit components are attached or connected to removable control panel for maintenance
DOOR MOUNTED POUCH	Contains system documents
ENCLOSURE DIMENSIONS	12.5"W x 15"H x 9.9"D



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ROUND POLE BANDING BRACKET

MATERIAL	Aluminum
POLE TYPE	2⅜" and larger round poles
HARDWARE TO MOUNT TO CABINET	Stainless steel hardware provided
HARDWARE TO MOUNT TO POLE	Customer supplied banding up to ¾" width. Worm drive clamp provided to assist with install.
BRACKET QUANTITY PER CABINET	2
DIMENSIONS	6.8"W x 3.7"H x 1.1"D



ROUND POLE BANDING BRACKET

SQUARE POLE BOLT-THROUGH BRACKET

MATERIAL	Aluminum
POLE TYPE	2" to 6" square poles
HARDWARE TO MOUNT TO CABINET	Stainless steel hardware provided
HARDWARE TO MOUNT TO POLE	Stainless steel hardware provided specific to pole size
BRACKET QUANTITY PER CABINET	2
DIMENSIONS	Bolt length dependent upon pole size



SQUARE POLE BOLT-THROUGH BRACKET

MULTI-PURPOSE BRACKET

MATERIAL	Aluminum
POLE TYPE	2⅜" - 4½" round pole, square wood post or wall mount
HARDWARE TO MOUNT TO CABINET	Stainless steel hardware provided
HARDWARE TO MOUNT TO POLE	Customer supplied hardware for wall mounting. Stainless steel U-bolts provided for round pole mount. Lag bolts provided for square wood post mount.
BRACKET QUANTITY PER CABINET	2
DIMENSIONS	7"W x 7.2"H x 0.7"D



MULTI-PURPOSE BRACKET

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XL CABINET & MOUNTING BRACKETS

CABINET SPECIFICATIONS

CERTIFICATION	NEMA 3R type
MATERIAL	0.125" aluminum
MOUNTING OPTIONS	6 stainless steel studs for mounting bracket options including banding and U-bolt.
HINGES	Continuous tamper-resistant stainless steel hinge
ACCESS	Replaceable #2 traffic lock with keys
VENTING	Screened vents on cabinet side and door
DRAINAGE	Drain hole on bottom of cabinet
UV RESISTANT LABEL	Applied to exterior of cabinet outlining model number, serial number, date of manufacture as well as any applicable regulatory information
CONTROL PANELS	All components are attached or connected to removable control panels for circuit maintenance
DOOR MOUNTED POUCH	Contains system documents
ENCLOSURE DIMENSIONS	24.6"W x 36.3"H x 19.6"D



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ROUND POLE BANDING BRACKET

MATERIAL	Aluminum
POLE TYPE	Larger than 4½" round poles
HARDWARE TO MOUNT TO CABINET	Stainless steel hardware provided
HARDWARE TO MOUNT TO POLE	Customer supplied banding up to ¾" width. Worm drive clamp provided to assist with install
BRACKET QUANTITY PER CABINET	3
DIMENSIONS	6.1"W x 9.0"H x 1.7"D



ROUND POLE BANDING BRACKET

U-BOLT BRACKET

MATERIAL	Aluminum
POLE TYPE	4½" round pole
HARDWARE TO MOUNT TO CABINET	Stainless steel hardware provided
HARDWARE TO MOUNT TO POLE	Stainless steel U-bolts provided for round pole mount
BRACKET QUANTITY PER CABINET	3
DIMENSIONS	6.3"W x 3.1"H x 2.3"D



U-BOLT BRACKET

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1026-01032-XL 07/02/19

Access

Access barrier



For economical access control

These access barriers from Magnetic are cost-optimised solutions for access control at car parks, company grounds, residential buildings and similar sites.

When the stipulated safety equipment is installed, these barriers – with their low impact forces – are approved for use wherever the movement of persons cannot be ruled out for structural reasons.*

At the heart of the Access series is the innovative MHTM™ drive that is distinguished by its energy efficiency, lack of maintenance and long service life – the Access series is designed for 10 million opening and closing cycles. Two basic variants are available, depending on requirements: the basis models Access and Access-L are characterised by a high level of underlying functionality.

The two Pro models also offer expansion potentials with plug-in modules and exclusive accessories. By the way, Magnetic quality lies not just in the detail, but is also easily recognisable to all thanks to stylish design. The Access series has already been awarded two design prizes.

* The Pro variant only with slow setting of the closing speed (2.5 s).



Low operating costs

Thanks to their high energy efficiency, extremely long service lives, and simple maintenance, barriers from Magnetic are particularly cost-effective – an investment that will certainly pay off!



Innovative drive technology

The MHTM™ drive unit is maintenance-free, energy-efficient and quiet. The high torque guarantees best possible operation even under extreme weather conditions.



Legal security

All Magnetic barriers have a Declaration of Conformity in compliance with the Machinery Directive and a Declaration of Performance in line with the Construction Products Directive. Thus operators and those responsible for commissioning are always on the safe side in questions of liability.



Easy access to components

Two simple steps: control systems and the drive unit are easily reached by removing the cover and front plate. This increases user-friendliness and accelerates commissioning and service.

MAGNETIC AUTOCONTROL GMBH
www.magnetic-access.com

Access

Access barrier

- High level of functionality for numerous applications
- Very low operating costs thanks to efficient and long-lived MHTM™ drive
- Ease-of-use and optimum accessibility thanks to well thought-out design
- Legal security with Declarations of Conformity and Performance
- Acclaimed design: German Design Award 2014 and Red Dot Design Award 2012
- Designed for 10 million opening and closing actions



Technical data	Access	Access-L	Access Pro	Access Pro-L
Lane width	Max. 3.5 m	Max. 5.0 m	Max. 3.5 m	Max. 6.0 m
Opening/closing time	2.2 s	4.0 s	1.3 s	4.0 s
Power consumption	Max. 25 W	Max. 30 W	Max. 95 W	Max. 25 W
Drive technology	MHTM™	MHTM™	MHTM™	MHTM™
Voltage	85–264 VAC, 50/60 Hz	85–264 VAC, 50/60 Hz	85–264 VAC, 50/60 Hz	85–264 VAC, 50/60 Hz
Duty cycle	100 %	100 %	100 %	100 %
Housing dimensions (W x D x H)	315 x 360 x 915 mm	315 x 360 x 915 mm	315 x 360 x 915 mm	315 x 360 x 915 mm
Enclosure rating	IP 54	IP 54	IP 54	IP 54
Temperature range	–30 to +55 °C	–30 to +55 °C	–30 to +55 °C	–30 to +55 °C
Weight	40 kg	40 kg	40 kg	40 kg

Features	Access	Access-L	Access Pro	Access Pro-L
Standard colours	RAL 2000	RAL 2000	RAL 2000, 9006, 9007	RAL 2000, 9006, 9007
VarioBoom barrier boom	Standard	Standard	Standard	Standard
Control system	MGC	MGC	MGC Pro	MGC Pro
Integrated 2-channel detector for induction loops	Standard	Standard	Standard	Standard
Modular expansion of control system	Radio receiver and other detector modules	Radio receiver and other detector modules	Freely expandable	Freely expandable
Variable I/O assignment	–	–	Standard	Standard
No. of digital inputs	8	8	8	8
No. of relays/digital outputs	6/4	6/4	6/4	6/4
Input for safety light barrier with test	1	1	1	1
Selectable closing speed	Standard	Standard	Standard	Standard
Selectable opening speed	–	–	Standard	Standard

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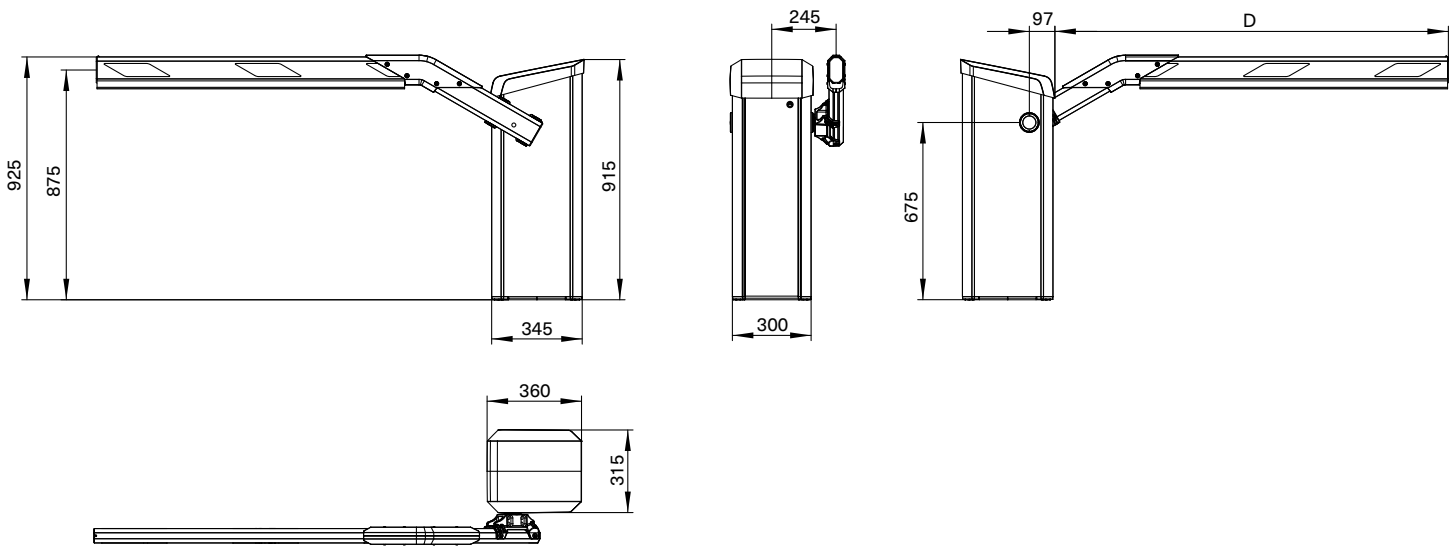
Options	Access	Access-L	Access Pro	Access Pro-L
Special colours	✓	✓	✓	✓
Boom extension set	✓	✓	✓	✓
Articulated boom*	✓	✓	✓	✓
Pendulum support**		✓		✓
Support post*	✓	✓	✓	✓
Boom drop contact	✓	✓	✓	✓
Boom interlock	✓	✓	✓	✓
Boom illumination, red	✓	✓	✓	✓
Light strips, red/green	✓	✓	✓	✓
Hood light	✓	✓	✓	✓
Key-operated switch	✓	✓	✓	✓
Radio module	✓	✓	✓	✓
Ethernet module			✓	✓
RS485 module			✓	✓
CAN module (counting)			✓	✓
Second detector module	✓	✓	✓	✓
GSM module	✓	✓	✓	✓
Safety light barrier	✓	✓	✓	✓
Battery backup	✓	✓	✓	✓

* max. 4.5 m lane width, max 3.5 m height
** Pendulum support or a support post are required from a boom length of 3.5 m.

Standard colours

Orange (RAL 2000)	White aluminium (similar to RAL 9006)	Grey aluminium (similar to RAL 9007)

Dimensional drawings



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MAGNETIC®
ACCESS TO PROGRESS

Access to Progress

Magnetic stands for pioneering products – in every way. Our access control systems for vehicles or pedestrians clear the way for thousands of people every day – at car parks, toll gates, stations, airports and in buildings. Our technology is also pioneering, however: with innovative drives, intelligent control systems and well thought-out details it provides maximum safety and longevity. Are you also on the path to Magnetic?



Vehicle barriers

Access barriers
Parking barriers
Toll barriers
Special barriers



Pedestrian gates

Turnstiles
Swing gates
Tripod gates
Retractable gates
Wing gates



Terminals

Cars
Trucks

Germany
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E-mail info@magnetic-germany.com

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Phone +971 4 3724193
E-mail info@magnetic-uae.com

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E-mail info@magnetic-usa.com

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284 22 Perstorp
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Selangor Darul Ehsan
Malaysia
Phone +60 3 5123 0033
E-mail info@magnetic-malaysia.com

5806.0046 EN_01.2018

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COMMPAK I/O8

Wireless Contact Closure On/Off Control 902-928MHz



OVERVIEW

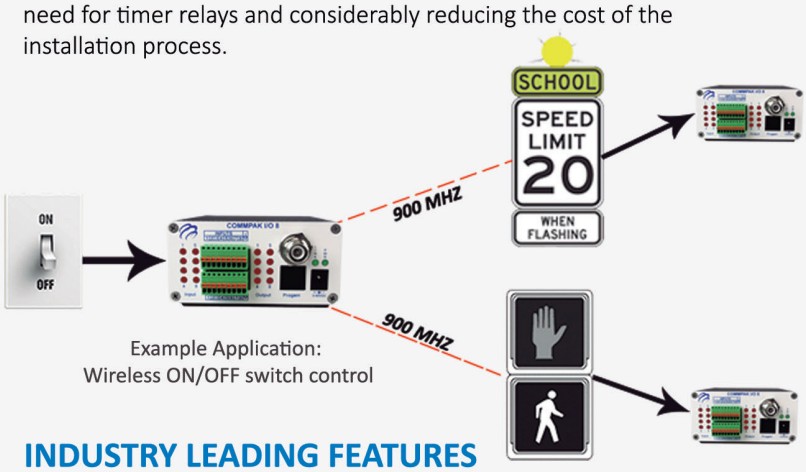
The COMMPAK I/O8 has been designed specifically for ON/OFF control and detection applications. This radio features Bi-Directional communications and the ability to confirm switch closure at a remote site.

INTUITIVE SOFTWARE

Using the I/O is extremely simple with ENCOM's flexible software giving the I/O routing infinite possibilities. This comprehensive software package includes a Configuration Utility, Remote Maintenance capabilities and Wireless Link Diagnostic features. A Spectrum Analyzer is also included, allowing end users to determine exact noise levels and select optimal operating frequencies.

All typical system designs are supported including Point-to-Point, Point-to-Multipoint and Multipoint-to-Multipoint operation modes.

The COMMPAK I/O8 features innovative timer outputs that can be pre-programmed to run on schedule or on-demand, eliminating the need for timer relays and considerably reducing the cost of the installation process.



Example Application:
Wireless ON/OFF switch control

INDUSTRY LEADING FEATURES

The I/O 8 employs ENCOM's License-Free 900MHz Frequency Hopping Spread Spectrum Tehcnology. This technology has been designed to provide reliable, long range wireless communications (up to 20 miles with L.O.S)

Eliminate the costs and time constraints associated with traditional hardwired systems by using an ENCOM COMMPAK I/O8. ENCOM's robust and reliable spread spectrum wireless serial modems continue to be the leading choice for communications. Our products provide unequalled performance in the most challenging environments.

Each unit is build and supported by over 28 years of industry experience, includes a 5 year warranty and comes with powerful, user-friendly ControlPAK or Zone WATCH software. These utilities provide highly visual, striaghtforward tools for remote maintenance and configuration.

KEY FEATURES

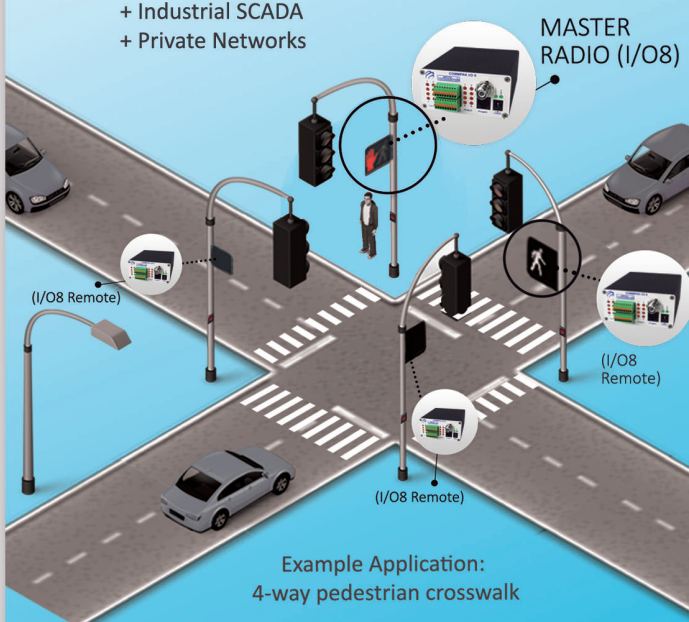
+ 8 Inputs and 8 Outputs
+ Robust on/off control
+ Can monitor multiple events
+ Covers a broad range of applications
+ Range up to 20 miles (L.O.S)
+ Extensive suite of security features

KEY BENEFITS

+ Over 28 years of broad industry experience
+ Unparalleled software management tools
+ Scaleable and future proof technology platforms
+ Unequalled warranty and support programs
+ Easily defined and measurable ROI

APPLICATIONS

+ Intelligent Transportation Systems
+ Water/Waste Water Management
+ Utilities
+ Industrial SCADA
+ Private Networks

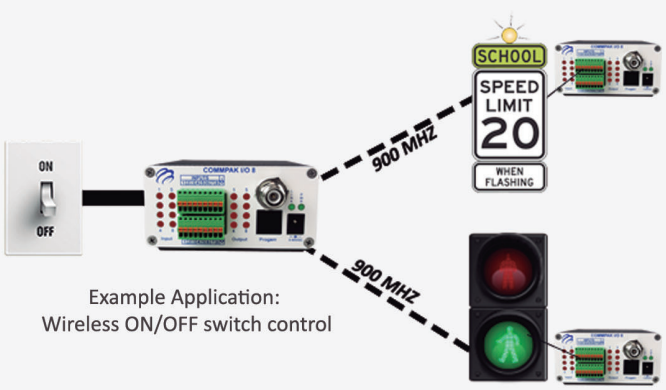


Example Application:
4-way pedestrian crosswalk

RADIO SPECIFICATIONS:	
Frequency Range:	902-928MHz
Output Power:	1mW, 10mW, 100mW, 1000mW
Software Programmable:	YES
Available Hop Patterns:	64
Number of RF Channels:	128
RF Channel Spacing:	200KHz
Error Checking:	16-bit CRC
Encryption:	128-bit AES
Receiver Sensitivity / ER:	-110 dBm @ 10-6 BER
System Gain:	145 dBm
Antenna Port:	RP TNC-F
Certification:	FCC, Industry Canada
Operating Modes:	Transceiver
System Configurations:	Point-to-Point, Point-to-Multipoint, Multipoint-to-Multipoint

GENERAL SPECIFICATIONS:			
Input Power:	6-30 VDC		
Power Consumption:	Typical @ 24 VDC		
	Normal	Low Current Mode	Sleep Mode
Master	45 mA	9 mA	N/A
Repeater	76 mA	9mA	N/A
Remote	45 mA	9 mA	7.5 mA
Operating Environment:	-40°F to 176°F		
Humidity:	0-95% non-condensing		
Enclosure Type:	Milled aluminum, black powder coat		
Warranty:	3 Years		

PHYSICAL SPECIFICATIONS:	
Dimensions:	4.75"W x 1.73"H x 3.75"D
Weight:	20 oz
INTERFACE SPECIFICATIONS:	
Programming Port	RJ12
Inputs	0-24VDC (ground activated)
Outputs	8 Digital open collector (max 500mA load current per output)
Indicators	Power, input, output and link
Connector	Terminal Block
SOFTWARE SPECIFICATIONS:	
ControlPAK	▪ Radio configuration ▪ I/O Mapping ▪ Spectrum analyzer ▪ Remote diagnostics and configuration

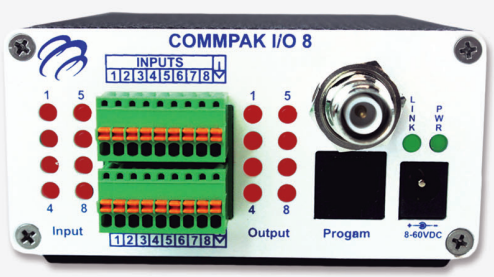


Example Application:
Wireless ON/OFF switch control

CANADIAN OFFICE
Toll Free: (800) 617-3487
Phone: +1 (403) 230-1122
#7 640 42nd Ave NE Calgary
Alberta T2E 7J9
Canada

USA OFFICE:
Toll Free: (800) 617-3487
Phone: +1 (972) 885-5170
3750 Arapaho Rd, Addison
Texas 75001
USA

Email: sales@encomwireless.com



ENCOM Broadband radios require professional installation.
Specifications subject to change without notice. Visit www.encomwireless.com for updates

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PRODUCT BRIEF

JANUS REMOTE COMMUNICATIONS

CF Socket Modem Series
LTE910CF CAT1 Embedded 4G Cellular Modem

Description



The Janus line of Common Footprint (CF) Socket Modems are footprint compatible, embedded cellular devices for use in LTE communication networks. They were specifically designed to provide customers with cost effective modules that are easily integrated into new and existing designs, require limited customer certification resources, and are completely interchangeable to allow for maximum network flexibility while removing the worry of product obsolescence.

The **AT&T LTE910CF v7.00** Common Footprint (CF) Socket Modem is an LTE Category 1 PTCRB and Carrier certified 4G cellular modem. They utilize the Telit LE910-NA1 module as their cellular engine. The LTE910CF v7.00 units operate in LTE bands (B13), (B12), (B5), (B4) and (B2), with fallback to HSPA+ networks as needed. End device certification allows users to implement the LTE910CF in their devices with no further North American carrier certification requirements

The **Verizon LTE910CF v6.00** Common Footprint (CF) Socket Modem is an LTE Category 1 Carrier end device certified 4G cellular modem. They utilize the Telit LE910-SV1 module as their cellular engine. The LTE910CF v6.00 units operate in LTE bands (B13), (B4), and (B2). End device certification allows users to implement the LTE910CF in their devices with no further North American carrier certification requirements.

LTE910CF CAT1 Features

- Data Rate: LTE: 10D/5U Mbps
- V6.00 Frequency bands (Verizon)
  - LTE Bands: B2(1900), B4(AWS1700), B13(700)
- V7.00 Frequency bands (AT&T)
  - LTE Bands: B12/B13(700), B5(850), B4(AWS1700), B2(1900)
  - 3G Bands: B5(850), B2(1900)
- TCP/IP stack access via AT commands
- SMS (MO / MT)
- Output power: Class 3
  - (0.2W, 23 dBm) @ LTE
  - (0.25W, 24 dBm) @ WCDMA
- Dimensions: 2.5” x 1.4” x 0.325”
- Operational temperature range: -40°C to 85°C
- Internal Switching Regulator:
  - Input Voltage Range: 4.75 to 5.25Vdc (5Vdc nominal)
  - Supply disable via terminal input pin
- Variable logic level (UART/GPIO)
  - Adjustable from 1.8 - 5.0Vdc
  - Defaults to 2.85v
- SIM Card
  - Locking SIM card socket, Mini (2FF size) SIM
  - Or, Optional SIM on a chip
- Cellular, Rx Diversity & MIMO DL 2x2 available via miniature RF connector

Available in two different versions for North America:

LTE910CF v6.00 (Verizon)

LTE910CF v7.00 (AT&T, T-Mobile, Rogers, Bell, Telus)

The LTE910CF is pin compatible with the full line of Janus Socket Modem CF Products.

Applications

Suitable for all M2M Applications

- Fleet Management
- Asset Tracking
- Security Systems
- Telemetry
- Telematics & Telecontrol
- Remote Monitoring Systems
- Remote Meter Reading
- Vending Machines

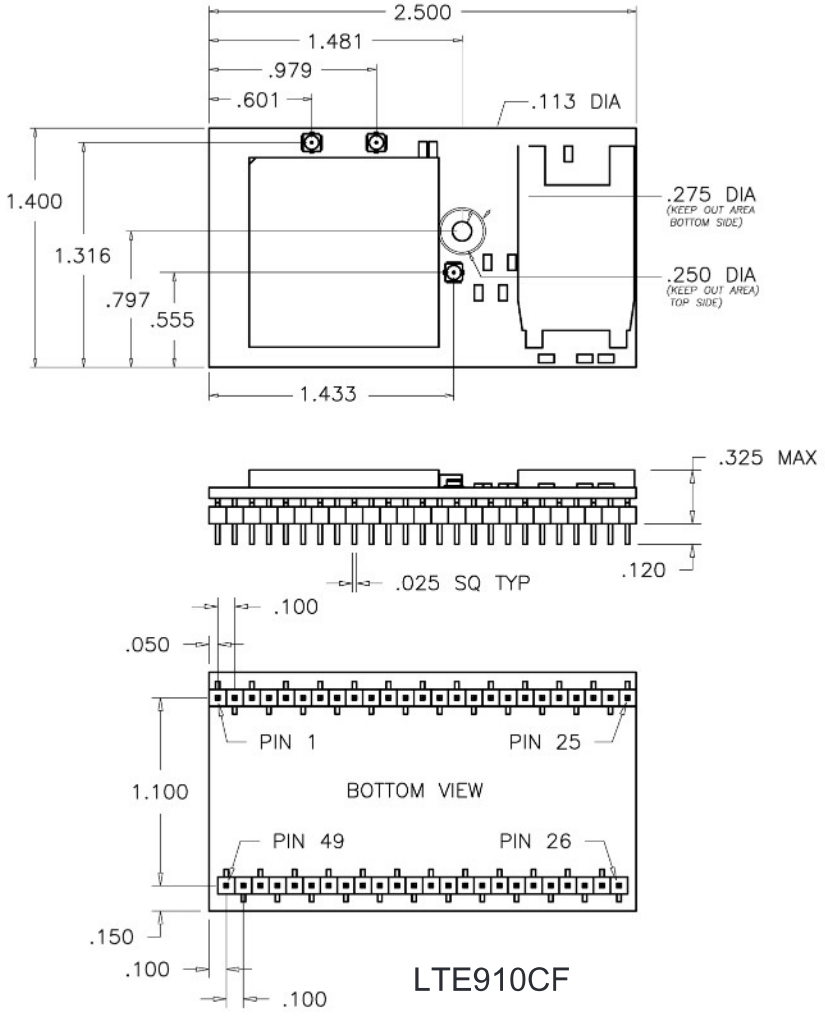
Take the complexity out of designing cellular IoT solutions with Janus Socket Modems.

Telit is in it.
Making machines talk.

2111 Comprehensive Dr.
Aurora, IL 60505
630.499.2121
info@janus-rc.com
www.janus-rc.com

Bulletin JA03-PB_LTECAT1
Revision 05
Date 22 Nov 2019

LTE910CF CAT1 CF Socket Modem Mechanical Drawings



Ordering Information

LTE910CF	V700	T	x*	U	V	N
Cellular Terminal **LTE** LTE910CF	**Carrier Certified & Version** **LTE** V600 = Verizon V700 = AT&T	**Modem Provider** T = Telit	**Firmware** * Call Sales Rep for most recent firmware version.	**Connector** U for U.FL	**Voltage** V = Variable	**Config Options** N = No Config P = Provisioning A = Activation S = SIM *Note 1*

Example: Part Number – LTE**910CFV700TAUVN** = LTE Cellular Plug-In Terminal; AT&T Certified; Telit Modem; Current Firmware with a U.FL Connector with a Variable Voltage with no configuration options.

Notes:

*1. **Config Options: Provisioning** is turning on a device on the network. **Activation** is assigning MEID's to a customer account. **SIM** designation is for installation of the SIM*

Contact Sales for Additional Special Order Options: Dave Jahr: djahr@janus-rc.com | 630-499-2121

Revision History

Revision	Revision Date	Note
P00	08/30/16	Initial Product Brief
P01	03/15/17	Updated Connector and Voltage Information
P02	04/12/17	Updated Telit Modules
P03	05/30/18	Updated Module Version and Descriptions
04	10/18/18	Updated Firmware Ordering Information
05	11/22/19	Updated Description and Firmware Ordering Information

JANUS REMOTE COMMUNICATIONS
Division of The Connor-Winfield Corporation
2111 Comprehensive Dr. • Aurora, IL 60505
630.499.2121 • info@janus-rc.com
www.janus-rc.com

Telit is in it.
Making machines talk.

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All Rights Reserved | See website for latest revision. | Not intended for life support applications.

TAPCO
Safe travels.

BlinkerSign® High Water Warning System Proposal



CUSTOMER NAME

City of Joplin, MO

SALES REPRESENTATIVE

Mr. Alex Horaitis
Senior Account Manager

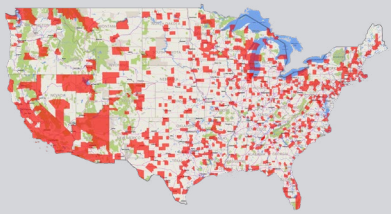


As an industry-leading innovator, TAPCO manufactures, services and distributes a wide portfolio of traffic and parking safety solutions designed to increase safe travels for all. Since 1956, we have set the standard for delivering reliable, cutting-edge traffic safety enhancements. From our world-renowned line of LED-enhanced BlinkerSign® solutions to our pedestrian crossing products and early detection warning systems, safety is at the heart of all TAPCO innovations.

Generations of Expertise

Working alongside traffic professionals for more than 60 years gives our team an exclusive perspective on the past, present and future needs of the traffic and parking safety industry.

Family owned. Family operated.
SINCE 1956



A Nationwide Reach

With successful solution installations throughout all 50 states, we understand the safety concerns communities face across the nation.

Innovative, Smart City Technology

Our mission is to continue to lead the industry with an innovative, customer-focused approach that evolves with the technological demands of our customers.





Award-Winning Mindset

As a family-owned company, we take pride in establishing and maintaining our innovative culture.

SYSTEM OVERVIEW

TAPCO High Water Warning Systems detect rising water levels and activate warning alerts, providing approaching drivers with advance warning of real-time road flooding.



BLINKERSIGN® LED-ENHANCED WARNING ALERTS

BlinkerSign® Flashing LED Signs are edge-lit signs engineered to capture drivers' attention and warn them of real-time road flooding. Each BlinkerSign® is MUTCD-compliant and flashes in accordance with MUTCD section 2A.07. Manufactured in Brown Deer, Wisconsin, every BlinkerSign® is designed to withstand the harshest environmental conditions. LEDs automatically dim based on ambient light, maintaining optimal LED output and extending battery life.

OPTIONAL SYSTEM ENHANCEMENTS

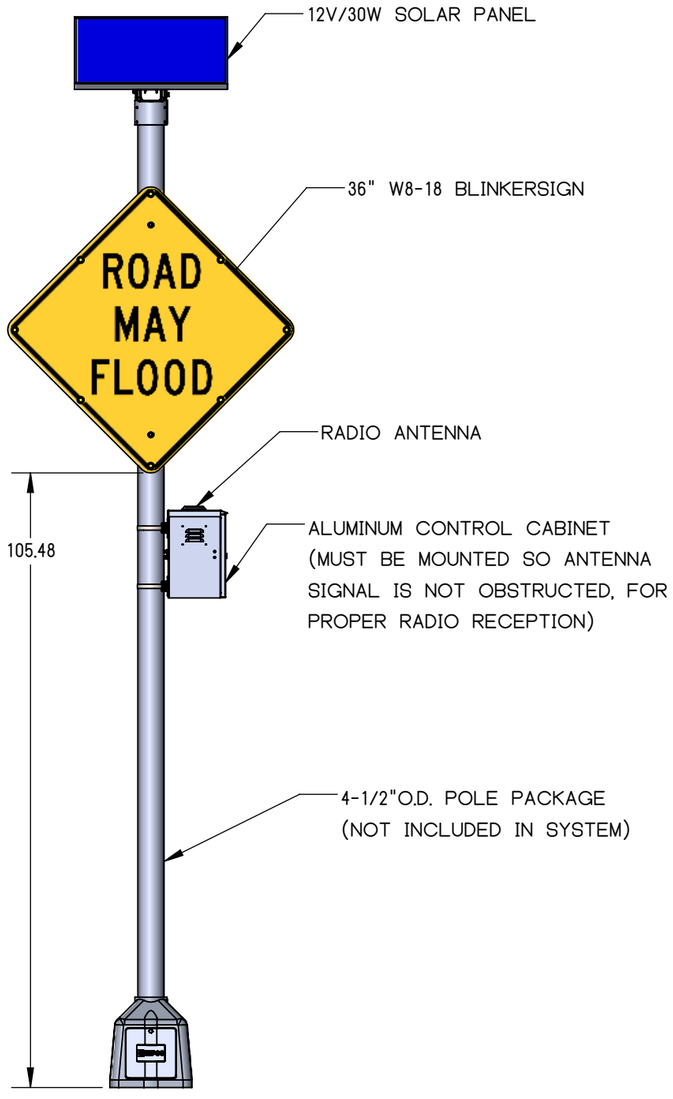
Not all proposals will include these enhancements.

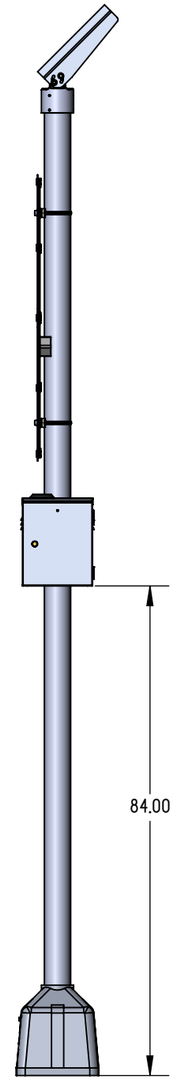
- BlinkLink® for system monitoring and event messaging
- Connected vehicle interface - system is ready for upgrade to DCRS or C-V2X technology
- Preventative maintenance service agreements
- Wired radio integration capabilities for easy system installation
- Camera and illuminator for visual confirmation of system activation

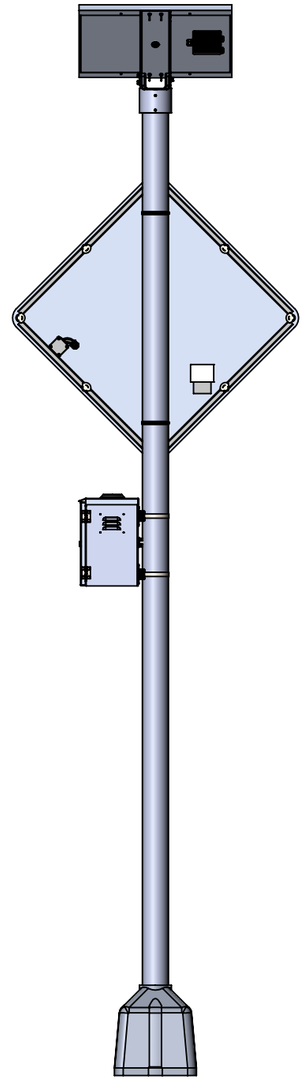


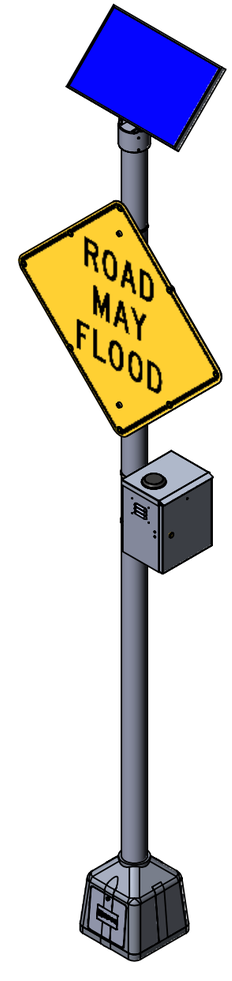
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REVISIONS				
REV.	DESCRIPTION	DATE	ECN #	AUTHOR/APPROVED
A	INITIAL RELEASE	5/21/2018	N/A	A.K./J.P.









NOTES:

1. ORIENT SOLAR PANEL TOWARDS SOUTHERN SKY FOR MAXIMUM SOLAR EXPOSURE
2. CONTROL CABINET HEIGHT MAY VARY.
3. SNAP LOCKS ARE PROVIDED, STANDARD 3/4" S/S BANDING IS RECOMMENDED
4. J-BOLTS NOT SHOWN
5. ALL DIMENSIONS ARE FOR REFERENCE ONLY.

TAPCO®
TRAFFIC & PARKING CONTROL CO., INC.

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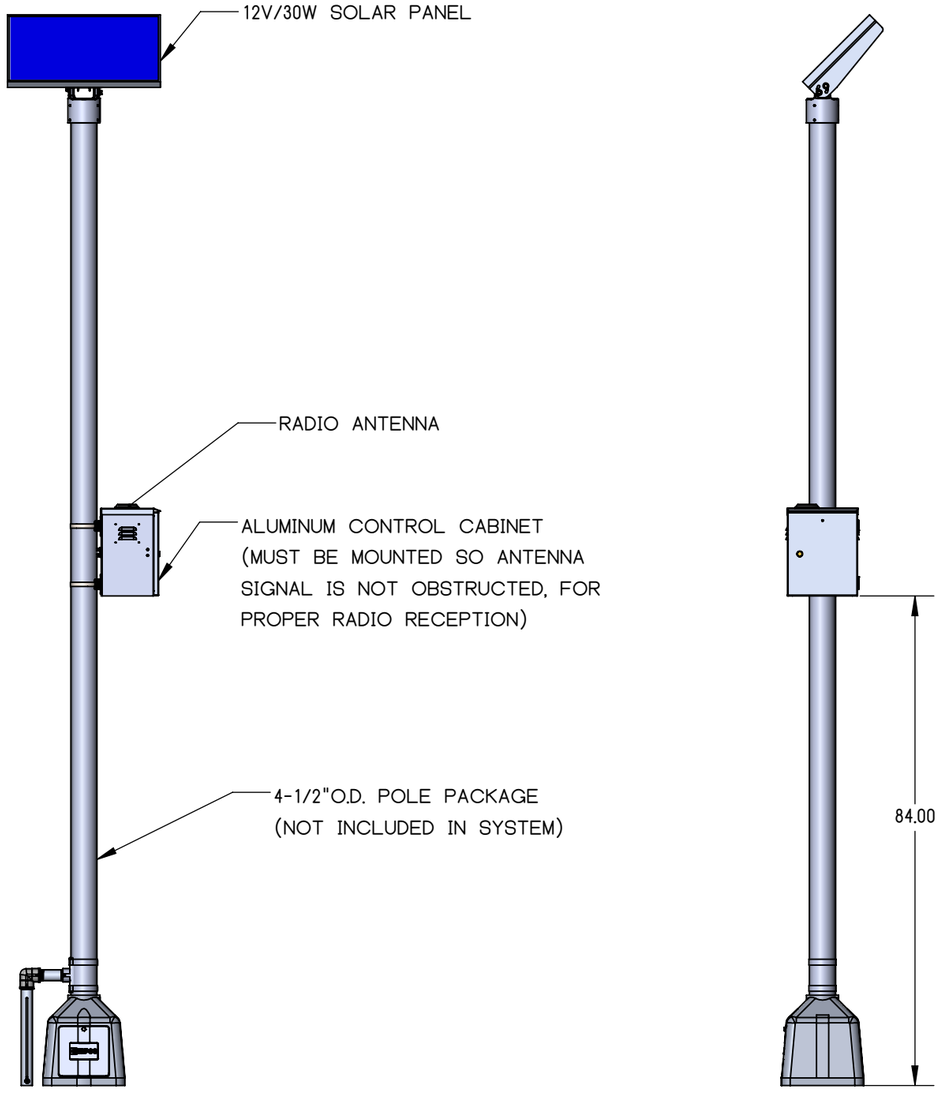
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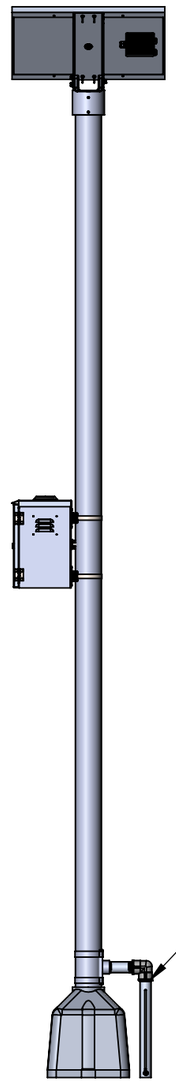
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DEC.	INCH
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XX	0.015
XXX	0.005
ANGULAR	0.5

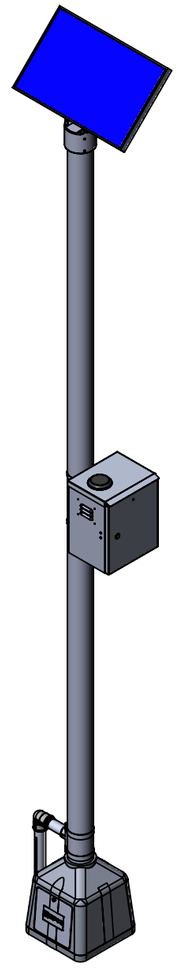
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FLOOD, BLINKERSIGN, SOLAR 30/35, SOP, SS, AMBER, 36", W8-18,
FY, POLE FIBER, H POLE X3, WARNING POLE ARRANGMENT

DESIGNED BY:	TAPCO		SIZE	DWG. NO.	REV	WEIGHT:
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MATERIAL		INTERPRET GEOMETRIC TOLERANCING PER: ASME Y14.5-2009
FINISH		REFERENCE:

TOLERANCE UNLESS OTHERWISE SPECIFIED	
HOLE	.003
DEC.	INCH
X	0.030
XX	0.015
XXX	0.005
ANGULAR	0.5

TITLE:
FLOOD, BLINKERSIGN, SOLAR 30/35, SOP, SS, AMBER, 36", W8-18,
FY, POLE FIBER, H POLE X3, SENSOR POLE ARRANGMENT

DESIGNED BY:	TAPCO		SIZE	DWG. NO.	REV	WEIGHT:
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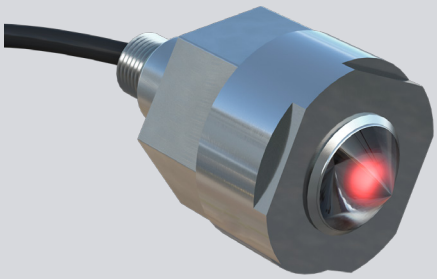
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TAPCO
Safe travels.

HIGH WATER WARNING SENSOR - PHOTOELECTRIC

SPECIFICATIONS

POWER INPUT	12VDC
MATERIAL	Stainless steel and polysulfone
SENSOR	Photoelectric (visible red shown)
ENCLOSURE	IP67 rating
OPERATING TEMPERATURE RANGE	-13°F to 151°F (-25°C to 66°C)
MOUNTING OPTIONS	Pole
CABLE LENGTH	15 or 50 feet
DIMENSIONS	1.57″W x 2.5″H x 1.57″D (not including mounting)



(800) 236-0112 TAPCOnet.com

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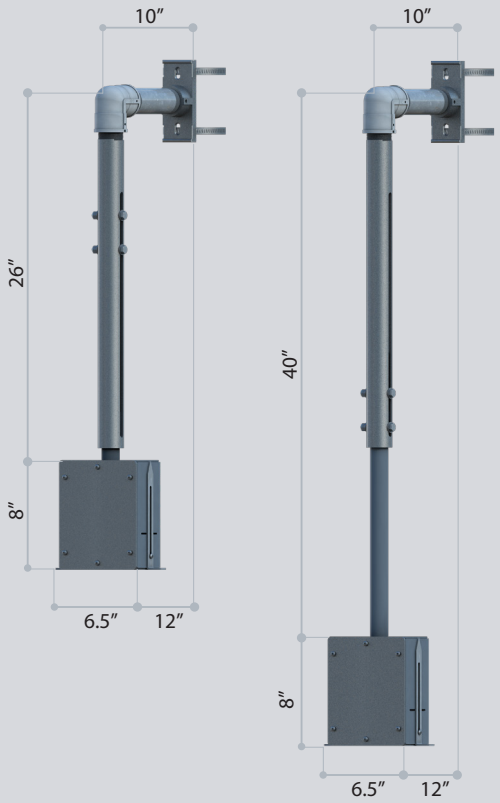
1026-00105 04/17/20

TAPCO
Safe travels.

HIGH WATER - DOG LEG ASSEMBLY

SPECIFICATIONS

HOLDS	TAPCO High Water Sensors
MATERIALS	Aluminum structure and stainless-steel hardware
MOUNTING	Banding
DIMENSIONS	34"- 48" L x 10"H



1026-01055 08/31/21

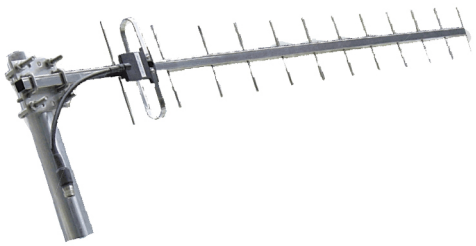
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Laird™

Smart Technology. Delivered.

900 MHz Yagi
Spread Spectrum Antenna



OUR PC YAGIS ARE ALL-WIELDED AND WEATHERPROOFED

Ruggedized mounting, all-welded joints, and complete weatherproofing are standard in Laird's 800 and 900 MHz Yagis. Because construction is critical at these frequencies, Laird engineers utilize special techniques to develop lasting antennas that will last. For example, six, ten, and thirteen element Yagis are mounted with two large stainless steel U-bolts. Elements are welded to a boom in all PC Yagis, but Laird positions the welds on the inside of the boom to enhance electrical performance.

Complete weatherability is ensured by enclosing the feed system in a potted PVC radome that stands up to the most demanding requirements. The pigtail feed withstands a 50 pound pull, making connector weatherproofing effortless. With no moveable components, adjustments or loose parts are not a concern. All hardware is stainless steel for longest life.

900 MHz MODELS: SPREAD SPECTRUM AND MORE

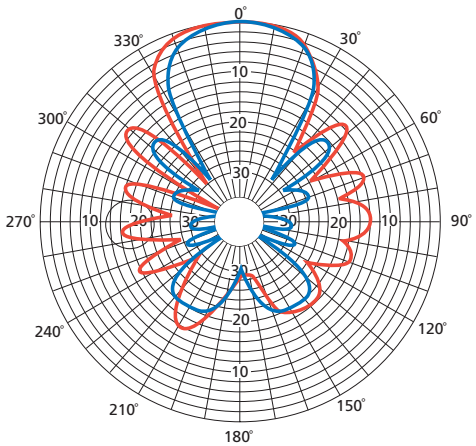
The four element PC904N, six element PC906N, and ten element PC8910N and PC9010N models are the right choice for long leaps on WLANS, multipoint systems, and other data transmission applications. Trunking, SCADA, alarm systems and telemetry are just a few of the activities for 896-960 MHz range, PC antennas

FEATURES RoHS

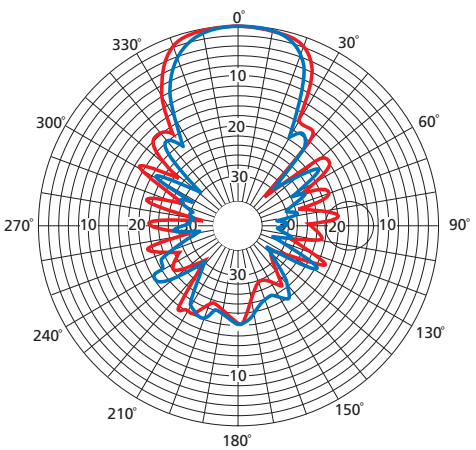
- All-welded unit construction eliminates electrical noise
- No adjustments needed
- Waterproof design
- Stainless steel hardware
- Pigtail mounted N-female connector

MODEL	FREQ. MHz	GAIN dBd	NO. ELEM.	F TO B dB	3dB BMWIDTH E-PLANE/H-PLANE	CONN. TYPE (female)	W/ SURF. AREA ft² (m²)	W/ SURV. mph (kph)	W/ ½" ICE	LENGTH in (cm)	WEIGHT lb. (kg)
PC9013N	902-928	13	13	20	35°/40°	N	0.46 (0.043)	125 (200)	100 (161)	53.5 (135.9)	3.12 (1.40)
PC9010N	928-960	12	10	30	40°/45°	N	0.38 (0.035)	125 (200)	100 (161)	41.4 (105.2)	2.31 (1.04)
PC926N	928-960	8.5	6	18	55°/65°	N	0.26 (0.024)	125 (200)	100 (161)	24.75 (62.9)	1.61 (0.72)
PC904N	896-980	6	4	15	70°/100°	N	0.11 (0.01)	125 (200)	100 (161)	13 (33)	1.12 (0.50)
PC906N	896-940	8.5	6	18	55°/65°	N	0.26 (0.024)	125 (200)	100 (161)	24.75	1.62 (0.73)

TYPICAL 10 ELEMENT



TYPICAL 13 ELEMENT



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ANT-DS-900MHZ YAGIS 0915

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AXIS P1214-E Network Camera

Miniature HDTV camera for discreet outdoor surveillance

AXIS P1214-E is a tiny HDTV 720p camera for exceptionally discreet surveillance, ideal for capturing subjects at close range. It offers a wide range of mounting options for indoor and outdoor installations. AXIS P1214-E comprises a main unit and a separate sensor unit that can be mounted up to 8 m (26 ft.) apart. The IP66-rated sensor unit can be mounted flush with a surface using the included mounting bracket, or mounted on a surface using the supplied housing. AXIS P1214-E offers powerful event management capabilities with intelligent video features such as tampering alarm, motion detection and support for third-party applications.

- > IP66-rated sensor unit
- > Functional and extremely discreet design
- > HDTV 720p
- > Edge storage
- > Multiple H.264 streams





AXIS P1214-E Network Camera

Camera	
Image sensor	Progressive scan RGB CMOS 1/4"
Lens	Fixed iris, Fixed focus 2.8 mm, F2.0 Horizontal angle of view: 81°
Light sensitivity	1.0-10000 lux
Shutter time	1/24500 s to 1/6 s
Video	
Video compression	H.264 (MPEG-4 Part 10/AVC), Motion JPEG
Resolutions	1280x720 to 320x180
Frame rate	Up to 25/30 fps (50/60 Hz) in all resolutions
Video streaming	Multiple, individually configurable streams in H.264 and Motion JPEG Controllable frame rate and bandwidth, VBR/CBR H.264
Image settings	Compression, Color, Brightness, Sharpness, Contrast, White balance, Exposure control, Exposure zones, Backlight compensation, Fine tuning of behavior at low light, Rotation, Text and image overlay, Mirroring of images, Privacy mask, Axis' Corridor Format
Network	
Security	Password protection, IP address filtering, HTTPS[a] encryption, IEEE 802.1X[a] network access control, Digest authentication, User access log, Centralized Certificate Management
Supported protocols	IPv4/v6, HTTP, HTTPS[a], SSL/TLS[a], QoS Layer 3 DiffServ, FTP, CIFS/SMB, SMTP, Bonjour, UPnP™, SNMP v1/v2c/v3 (MIB-II), DNS, DynDNS, NTP, RTSP, RTP, SFTP, TCP, UDP, IGMP, RTCP, ICMP, DHCP, ARP, SOCKS, SSH
System integration	
Application Programming Interface	Open API for software integration, including VAPIX® and AXIS Camera Application Platform; specifications at *www.axis.com* AXIS Video Hosting System (AVHS) with One-Click Connection. ONVIF Profile S; specification at *www.onvif.org*
Analytics	Video motion detection, Active tampering alarm Support for AXIS Camera Application Platform enabling installation of AXIS Video Motion Detection 3, AXIS Cross Line Detection, AXIS Digital Autotracking and third-party applications, see *www.axis.com/acap*
Event triggers	Analytics, External inputs, Video loss
Event actions	File upload: FTP, SFTP, HTTP, HTTPS, network share and email Notification: email, HTTP, HTTPS and TCP External output activation Video recording to edge storage Pre- and post-alarm video buffering
Built-in installation aids	Pixel counter
Data streaming	Event data
General	
Casing	**Main unit:** Polycarbonate casing **Sensor unit:** IP66- and NEMA 4X-rated metal casing (aluminum)
Memory	256 MB RAM, 128 MB Flash
Power	Power over Ethernet IEEE 802.3af/802.3at Type 1 Class 2 (max 6.49 W) 8-28 V DC max 4.7 W
Connectors	RJ45 for 10BASE-T/100BASE-TX PoE RJ12 for the sensor unit Terminal blocks for power, 1 alarm input and 1 output
Edge storage	Support for microSD/microSDHC/microSDXC card Support for recording to dedicated network-attached storage (NAS) For SD card and NAS recommendations see *www.axis.com*
Operating conditions	-20 °C to 50 °C (-4 °F to 122 °F) **Main unit:** Humidity 10-85% RH (non-condensing) **Sensor unit:** Humidity 10-100% RH (condensing)
Storage conditions	-40 °C to 65 °C (-40 °F to 149 °F)
Approvals	EN 55022 Class B, EN 55024, EN 61000-3-2, EN 61000-3-3, EN 61000-6-1, FCC Part 15 Subpart B Class B, ICES-003 Class B, VCCI Class B, C-tick AS/NZS CISPR 22 Class B, KCC KN22 Class B, KN24, IEC/EN/UL 60950-1, IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-6 Class 4M4, IEC 60068-2-27 Class 4M3, 60068-2-78 Class 3K3 **Sensor unit:** IEC/EN/UL 60950-22, IEC/EN 60529 IP66, NEMA 250 Type 4X, IEC 60068-2-14, IEC 60068-2-30, IEC 60068-2-78 Class 4K3
Dimensions	ø 20 x 52 mm (13/16 x 2 1/16 in)
Weight	**Main unit:** 109 g (0.24 lb) **Sensor unit:** 250 g (0.55 lb)
Included accessories	Mounting kit, Installation Guide, Windows decoder 1-user license, AVHS Authentication key
Optional accessories	Mounting brackets, AXIS T8120 Midspan 15 W 1-port, AXIS P7701 Video Decoder, AXIS P8221 Network I/O Audio Module
Video management software	AXIS Camera Companion, AXIS Camera Station, Video management software from Axis' Application Development Partners available on *www.axis.com/techsup/software*
Languages	German, French, Spanish, Italian, Russian, Simplified Chinese, Japanese, Korean, Portuguese
Warranty	Axis 3-year warranty and AXIS Extended Warranty option, see *www.axis.com/warranty*

a. *This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (http://www.openssl.org/), and cryptographic software written by Eric Young (eay@cryptsoft.com).*

More information is available at www.axis.com

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1496754/EN/M1.2/2015

AXIS T90D25

High-performance illuminator with ease of installation

Based on the latest LED technology, the new generation of Axis illuminators delivers more light where it is needed. They generate longer illumination distances, minimize light wastage, and prevent overexposure of foreground objects. With interchangeable lenses, the angle of illumination can be optimized to match your network camera's field of view. AXIS T90D25 W-LED Illuminators come with a AC/DC or PoE power input, for easy and flexible installation with PoE midspans or PoE switches. Thanks to integrated green features such as power adjust and telemetry control (on AC/DC model only), Axis illuminators enhance the potential for energy savings.

- > **Low power consumption**
- > **Flexible angle of illumination**
- > **Easy setup by remote control**
- > **Choice of AC/DC or PoE power input**
- > **Various mounting options**





AXIS T90D25

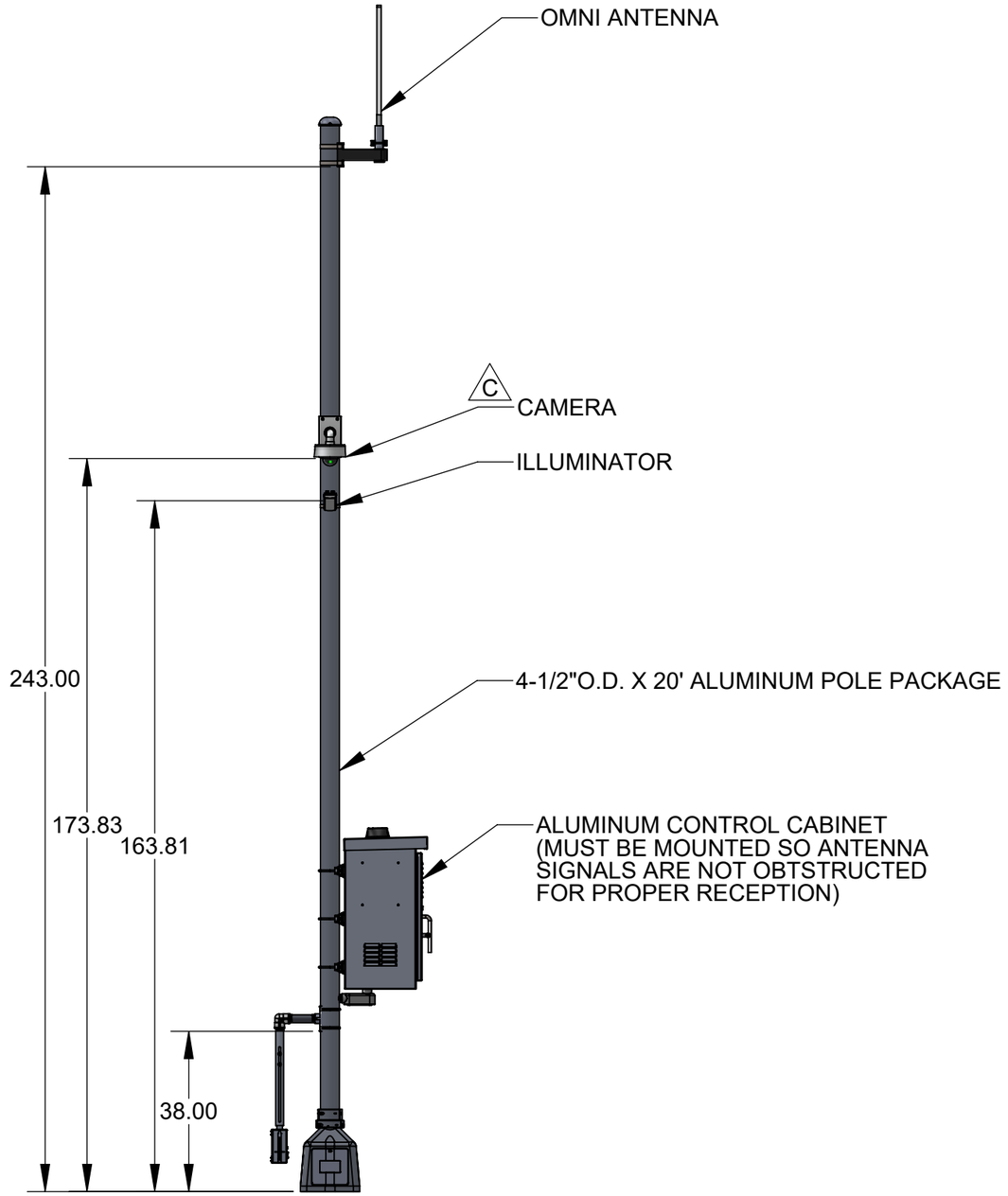
Models	AXIS T90D25 W-LED Illuminator, AC/DC variant AXIS T90D25 W-LED Illuminator, PoE variant
General	
Compatible products	All Axis network cameras
Distance	With standard lens 10° x 10°: 110 m (361 ft) With diverging lens 35° x 10°: 65 m (213 ft) With diverging lens 60° x 25°: 35 m (115 ft) With diverging lens 80° x 30°: 25 m (82 ft) With optional diverging lens 120° x 50°: 18 m (59 ft)
Power	**AC/DC variant** Power input: 12–24 V AC/DC AC frequency: 50-60 Hz Maximum light: 24 W Standby mode: 0.3 W **PoE variant** Power over Ethernet (PoE) IEEE 802.3at Type 2 Class 4 Maximum light: 25 W Standby mode: 4.5 W
Control technology	Through integrated push buttons or remote control: power level, photocell sensitivity, telemetry link for remote activation, timer
Type	6000 K Luminous power: 1863 lm
Angle	Without diverging lenses: 10° With diverging lenses: 35°, 60°, 80°, 120°[a]
Casing	Aluminum and polycarbonate Color: white and silver
Display and indicators	Indicator LEDs
Environment	Indoor and outdoor
Mounting	Wall, ceiling, pole, fixed box camera housing
Operating conditions	-50 °C to 50 °C (-58 °F to 122 °F) Humidity 10–100% RH (condensing)
Storage conditions	-50 °C to 70°C (-58 °F to 158 °F)
Approvals	**EMC** FCC Part 15.107 and 15.109 Class B, ICES-003 Issue 6 Class B, EN 55032 Class B, RCM AS/NZS CISPR 32 Class B, VCCI Class B, EN 55015, EN 55024, EN 50130–4, EN 61547 **Safety** IEC/EN 60598-1, IEC/EN 62471 (risk group 2), C22.2 No 250.0–08, UL 2108 UL 8750 **Environment** IEC/EN 60529 IP66, IEC/EN 62262 IK09
Dimensions	100 x 135 x 66 mm (4 x 5 x 2.5 in) Cable length: 2.5 m (8.2 ft)
Weight	950 g (2.11 lb)
Included accessories	Three diverging lenses with different beam angles: 35°, 60° and 80° IP66 cable coupler (for PoE variant only)
Optional accessories	AXIS T90B Remote Control AXIS WL Diverging Lens B 120° AXIS T90 Wall-and-Pole Mount AXIS T90 Single Bracket AXIS T90 Multi Bracket AXIS T8123–E Outdoor Midspan 30 W 1–port AXIS T8133 Midspan 30 W 1–port AXIS T81B22 DC 30 W Midspan 1–port AXIS T8134 60 W Midspan AXIS T8124–E Outdoor Midspan 60 W 1–port AXIS T8125 AC 24 V Midspan 60 W 1–port AXIS T8144 60 W Industrial Midspan AXIS T8508 PoE+ Network Switch AXIS T8516 PoE+ Network Switch AXIS T8524 PoE+ Network Switch AXIS T8504–E Outdoor PoE Network Switch Mains adaptor PS-24 Power Supply PS24 240 W For more accessories, see *www.axis.com*
Warranty	Axis 3-year warranty + additional 2 year extended warranty free of charge, see *www.axis.com/warranty*

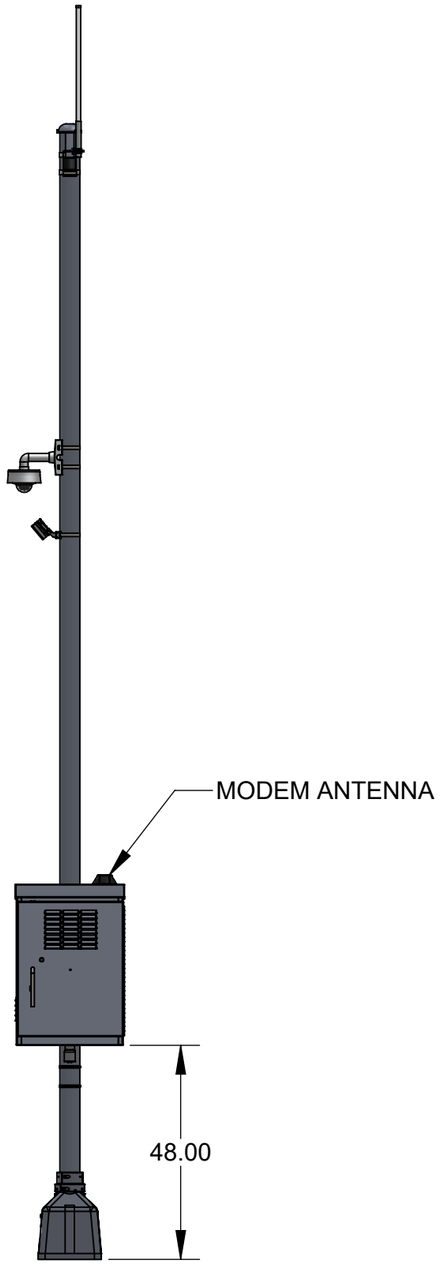
a. *120° diverging lenses as optional accessory*

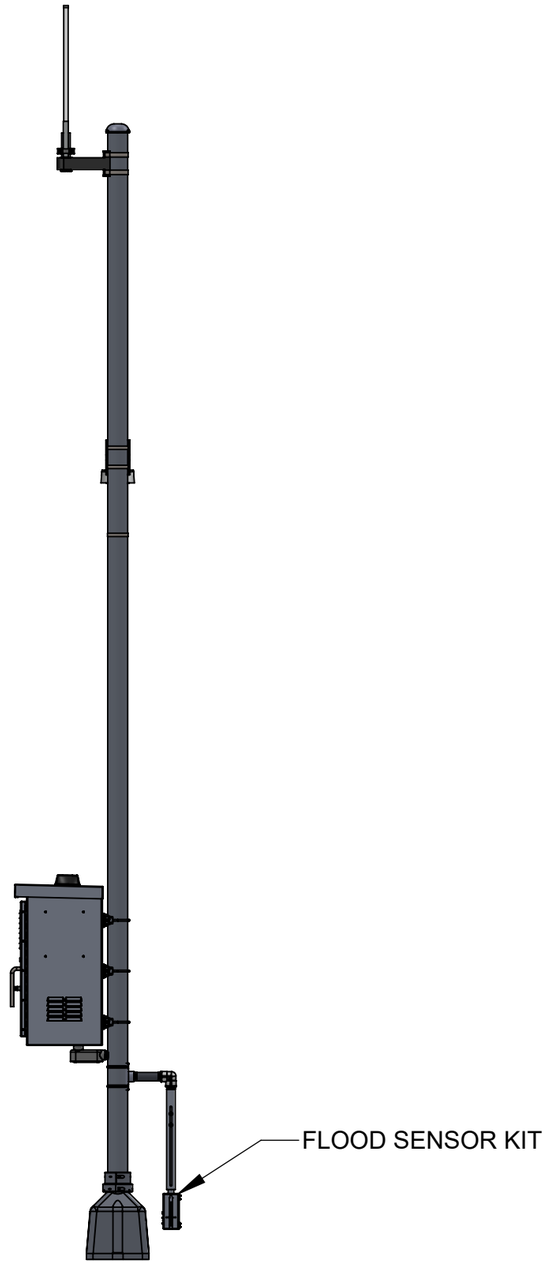
Environmental responsibility:

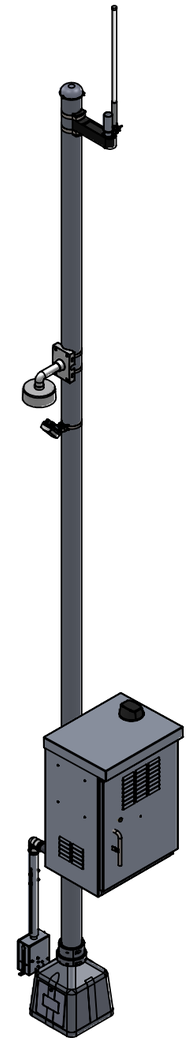
www.axis.com/environmental-responsibility

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NOTES:

1. ORIENT SOLAR PANEL TOWARDS SOUTHERN SKY FOR MAXIMUM SOLAR EXPOSURE
2. CONTROL CABINET HEIGHT MAY VARY.
3. WORM CLAMPS ARE PROVIDED, STANDARD 3/4" S/S BANDING IS RECOMMENDED
4. J-BOLTS NOT SHOWN
5. ALL DIMENSIONS ARE FOR REFERENCE ONLY.

REV.	DESCRIPTION	ECO	BY	DATE
C	UPDATED CAMERA, MOVED CONTROL CABINET ABOVE SENSOR		JP	10/28/2021
B	REMOVED SOLAR, CHANGED RADIO ANTENNA TO OMNI ANTENNA		JP	10/11/2021
A	INITIAL RELEASE		JP	09/22/2021

DIMENSIONS ARE INCH AND TOLERANCES ARE AS FOLLOWS UNLESS OTHERWISE SPECIFIED

.X	±0.1
.XX	±0.02
.XXX	±0.008
ANGLES	±1°

DESIGNED BY: AK — DATE: 09/22/2021
DRAWN BY: — DATE:
APPROVED BY: JP — DATE: 10/28/2021

TAPCO
TRAFFIC & PARKING CONTROL CO., INC.
5100 West Brown Deer Rd
Brown Deer, WI 53223 USA
7840 North 86th Street
Milwaukee, WI 53224 USA

TITLE: HIGH WATER WARNING SYSTEM
DETECTION POLE ARRANGEMENT

SIZE: B | DOCUMENT NO. (SEE TABLE FOR P/N): SD0273 | REVISION: C
SCALE: 1:34 | REFERENCE: Q1907769 | SHT: 1 of 1

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657.0100
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Pedestal Bases and Traffic Signal Standards

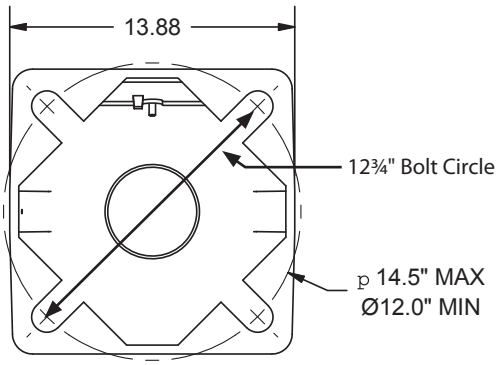
The TAPCO pedestal base is designed in accordance with the current AASHTO Specification for the Design and Construction of Structural Supports for Traffic Signals, Signs and Highway Light to withstand a 3 second gust wind speed of 90 miles per hour. These standards and tests for compliance were developed by the Wisconsin Department of Transportation.

Traffic Signal Standard

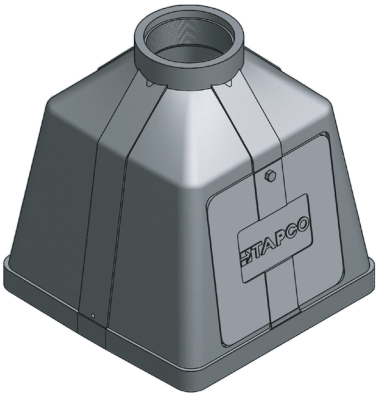
Pipes are cleaned of all mill scale, oil and foreign material. They are stocked unpainted, yet are able to be powder coated or anodized with color of your choice. They are made of Schedule 80 aluminum alloy 6061-T6 manufactured in accordance with ASTM B429. Pipe is threaded on one end. The outside dimensions are 4.5". Standard lengths are 3.5', 4', 8', 9', 10', 11', 13' and 15'.

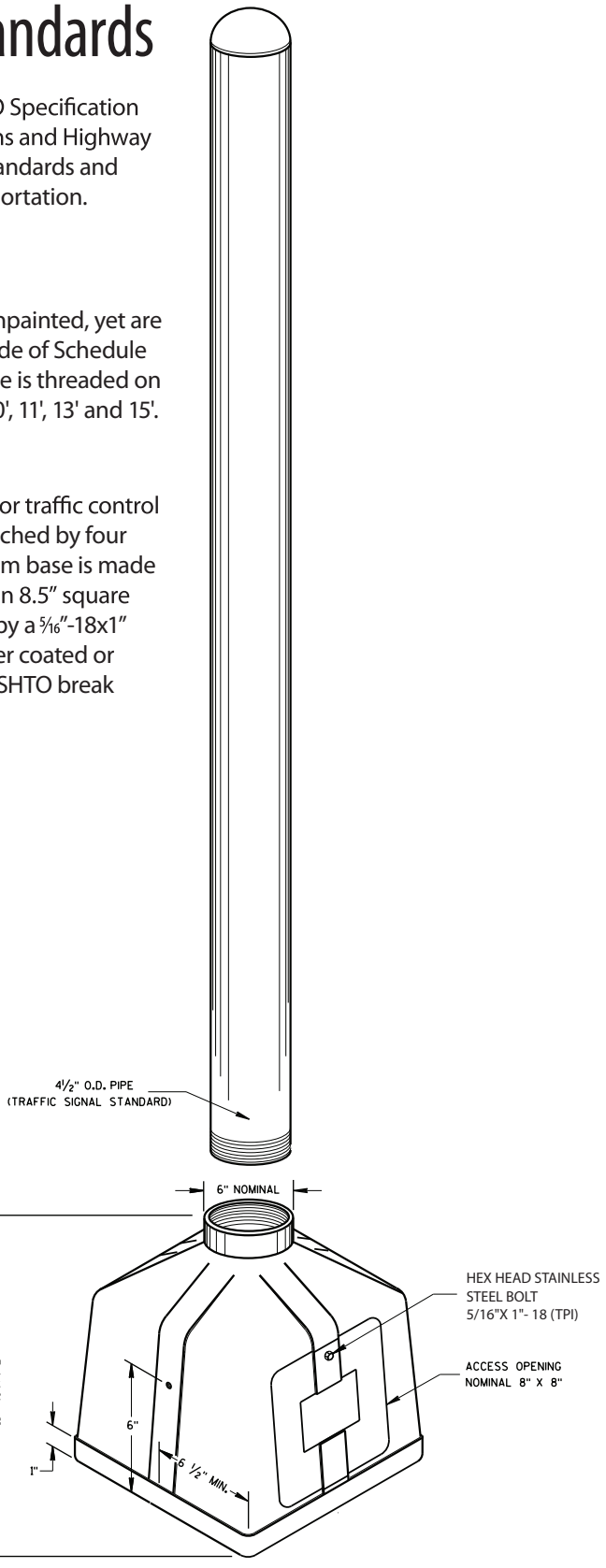
Pedestal Base

The TP-358 series base is used for mounting traffic signals, flasher assemblies or traffic control equipment. The base assembly is arranged to mount on a concrete base, attached by four internal galvanized anchor bolts (standard is 1"x42"). The square cast aluminum base is made of aluminum alloy 319 in accordance with WISDOT specifications. It includes an 8.5" square handhole cover that is also made of aluminum alloy 319. The door is secured by a 5/16"-18x1" stainless hex head bolt. They are stocked unpainted, yet are able to be powder coated or anodized with color of your choice. The base is FHWA certified and meets AASHTO break away requirements.



Base Bolt Circle





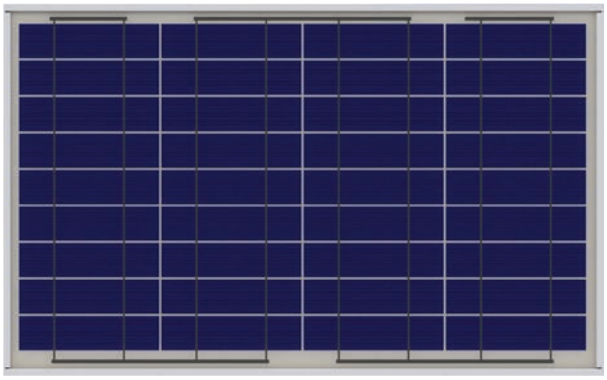
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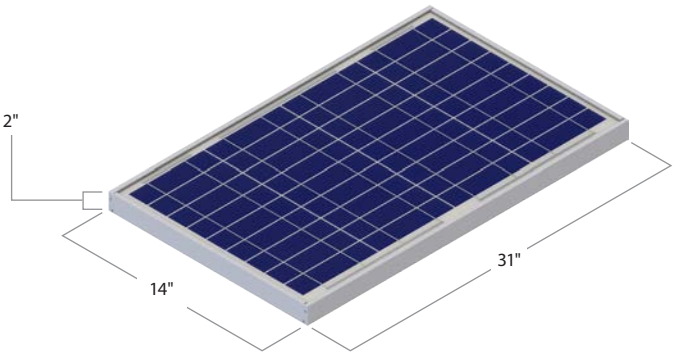
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1005-00138 (01/26/17)

TAPCO®
TRAFFIC & PARKING CONTROL COMPANY

30 Watt Solar Panel

Electrical Specifications	
Max Power	30W
Nominal Voltage	12V
Open Circuit Voltage (Voc)	21.0V
Short Circuit Current (Isc)	19.4A
Maximum Power Voltage (Vpm)	16.8V
Maximum Power Current (Ipm)	1.78A
Physical Dimensions (without brackets)	
Length	31"
Width	14"
Depth (thickness)	2"
Weight	10 lbs.
Glass	Tempered





1-800-236-0112 www.tapconet.com GSA Contract Holder GS-07F-5924R GS-07F-0234U U.S. COMMUNITIES GOVERNMENT PURCHASING ALLIANCE Contract Holder 2013-100

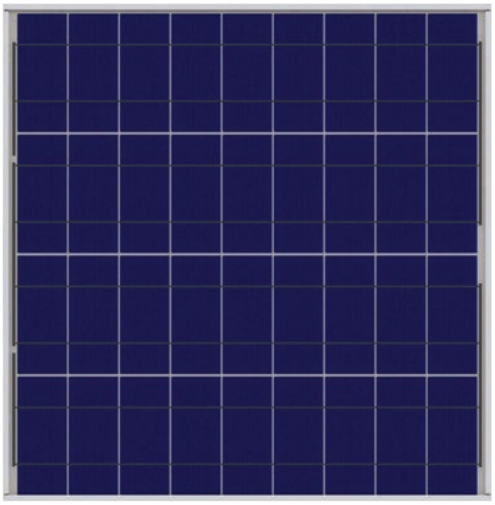
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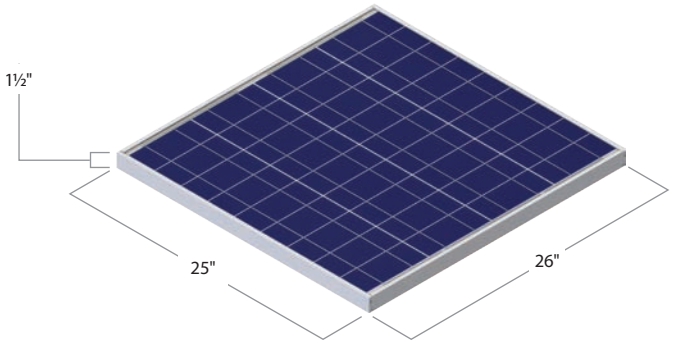
1005-XXXXXX (08/01/14)

TAPCO®
TRAFFIC & PARKING CONTROL COMPANY

55 Watt Solar Panel

Electrical Specifications	
Max Power	55W
Nominal Voltage	12V
Open Circuit Voltage (Voc)	22.1V
Short Circuit Current (Isc)	3.31A
Maximum Power Voltage (Vpm)	18.18V
Maximum Power Current (Ipm)	3.1A
Physical Dimensions (without brackets)	
Length	26"
Width	25"
Depth (thickness)	1½"
Weight	14 lbs.
Glass	Tempered





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GSA Contract Holder GS-07F-5924R GS-07F-0234U

U.S. COMMUNITIES GOVERNMENT PURCHASING ALLIANCE Contract Holder 2013-100

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1005-XXXXXX (08/01/14)

UPG No. 45976

UPG Sealed Lead-Acid Battery

STAY POWERED®

Absorbant Glass Mat (AGM) technology for superior performance. Valve regulated, spill proof construction allows safe operation in any position. Approved for transport by air. D.O.T., I.A.T.A., F.A.A. and C.A.B. certified. U.L. r ecognized under file number MH 20567.

UB12350

Maintenance-Free



Specification

Nominal Voltage	12 volts
Nominal Capacity	77° F (25° C)
20-hr. (1.75A)	35.00 Ah
10-hr. (3.26A)	32.55 Ah
5-hr. (5.95A)	29.75 Ah
1-hr. (21.00A)	21.00 Ah
Approximate Weight	23.2 lbs (10.5 kgs)
Internal Resistance (approx.)	10mΩ

Shelf Life (% of normal capacity at 77° F (25° C))

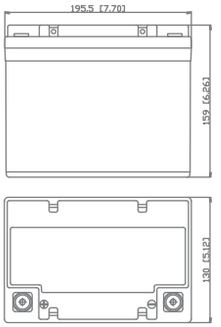
3 Months	6 Months	12 Months
91%	82%	64%

Temperature Dependancy of Capacity (20 hour rate)

104° F	77° F	32° F	5° F
102%	100%	85%	65%

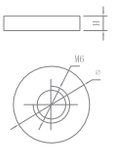
Charge Method (Constant Voltage)	
Cycle Use (Repeating Use)	
Initial Current	12.25 A or smaller
Control Voltage	14.5 - 14.9 V
Float Use	
Control Voltage	13.6 - 13.8 V

Physical Dimensions: in (mm)



L: 7.70 in (195.5 mm)
W: 5.12 in (130 mm)
H: 6.26 in (159 mm)
TH: 6.26 in (159 mm)
Tolerances are +/- 0.04 in. (+/- 1mm) and +/- 0.08 in. (+/- 2mm) for height dimensions. All data subject to change without notice.

Terminals



Dimension / Type	ø	H
I2	15	3

Constant Current Discharge Characteristics Unit:A (25°C, 77°F)

F.V/Time	5MIN	10MIN	15MIN	30MIN	1HR	2HR	3HR	4HR	5HR	8HR	10HR	20HR
9.60V	122.0	89.0	63.0	38.0	19.8	12.0	8.5	6.6	5.4	3.8	3.5	1.9
10.20V	108.0	81.0	56.0	36.0	18.6	11.0	8.3	6.4	5.3	3.8	3.4	1.8
10.50V	104.0	77.0	53.0	35.0	18.0	10.8	8.1	6.3	5.3	3.7	3.3	1.8
10.80V	100.0	73.0	50.0	34.0	17.0	10.5	7.9	6.2	5.1	3.6	3.3	1.8
11.10V	96.0	69.0	46.0	33.0	17.0	10.2	7.6	6.0	5.0	3.5	3.1	1.7

Constant Power Discharge Characteristics Unit:W (25°C, 77°F)

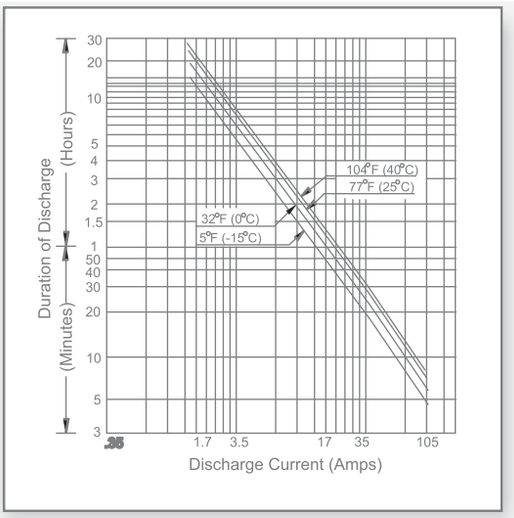
F.V/Time	5MIN	10MIN	15MIN	30MIN	1HR	2HR	3HR	4HR	5HR	8HR	10HR	20HR
9.60V	1297.0	946.0	666.0	403.0	229.0	134.0	98.0	76.0	63.0	44.0	40.0	21.7
10.20V	1194.0	901.0	623.0	399.0	216.0	128.0	96.0	75.0	62.0	43.0	39.0	21.1
10.50V	1175.0	876.0	599.0	397.0	209.0	125.0	93.0	73.0	61.0	43.0	39.0	20.9
10.80V	1160.0	853.0	576.0	396.0	203.0	122.0	91.0	72.0	60.0	42.0	38.0	20.7
11.10V	1139.0	825.0	550.0	393.0	200.0	122.0	90.0	71.0	60.0	42.0	37.0	20.1

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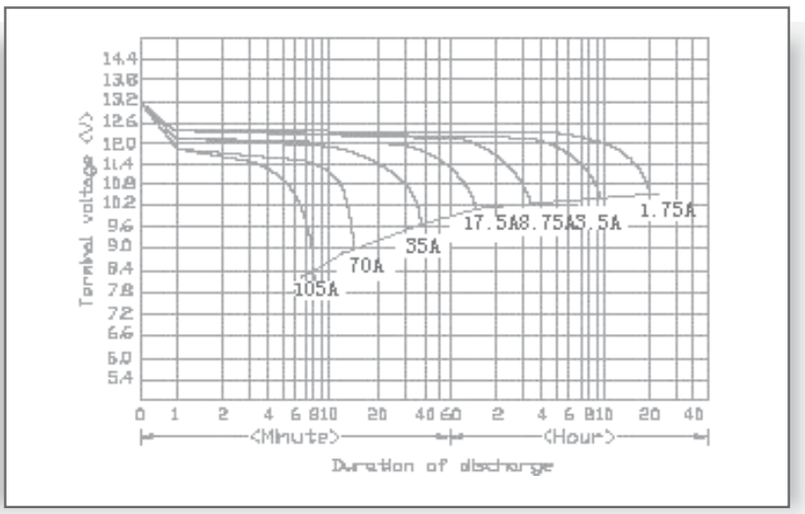
UB12350

Maintenance-Free

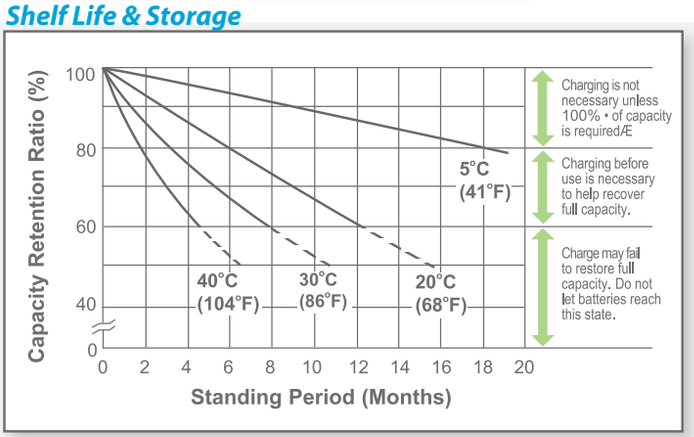
Discharge Time vs. Discharge Current



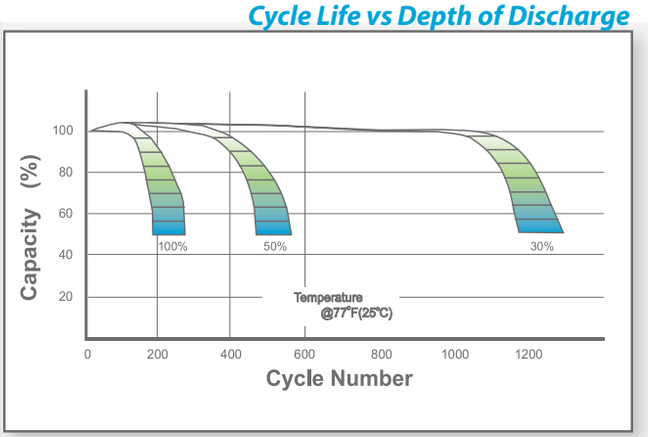
Discharge Characteristics



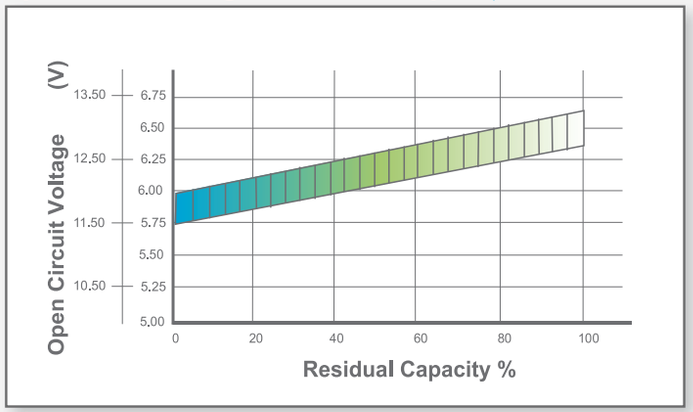
Shelf Life & Storage



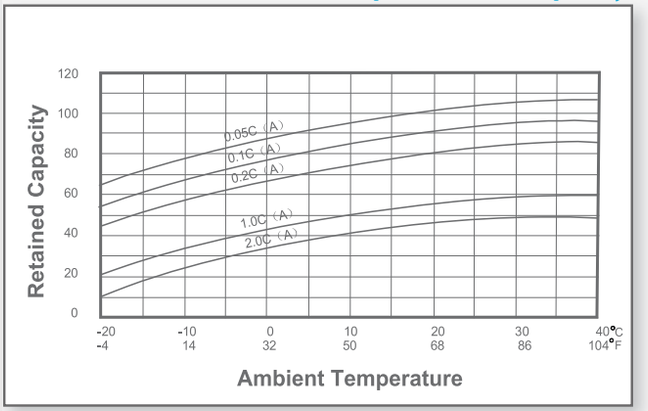
Cycle Life vs Depth of Discharge



Open Circuit Voltage vs Residual Capacity



Effect of Temperature on Capacity



Charge Current & Final Discharge Voltage

Application	Charge Voltage(V/Cell)			Max.Charge Current
	Temperature	Set Point	Allowable Range	
Cycle Use	25℃(77℉)	2.45	2.40~2.50	0.35C
Standby	25℃(77℉)	2.325	2.30~2.35	

Final Discharge Voltage V/Cell	1.75	1.70	1.60	1.30
Discharge Current(A)	0.2C>(A)	0.2C<(A)<0.5C	0.5C<(A)<1.0C	(A)>1.0C

UPG No. 46080

UPG Sealed Lead-Acid Battery

UB12500

Maintenance-Free

Absorbant Glass Mat (AGM) technology for superior performance. Valve regulated, spill proof construction allows safe operation in any position. Approved for transport by air. D.O.T., I.A.T.A., F.A.A. and C.A.B. certified. U.L. recognized under file number MH 20567.

Specification

Nominal Voltage	12 volts
Nominal Capacity	77º F (25º C)
20-hr. (2.50A)	50.0 Ah
10-hr. (4.65A)	46.5 Ah
5-hr. (8.50A)	42.5Ah
1-hr. (30.00A)	30.0Ah
Approximate Weight	32.23 lbs (14.62 kgs)
Internal Resistance (approx.)	9mΩ

Shelf Life (% of normal capacity at 68º F (20º C))

3 Months	6 Months	12 Months
91%	82%	64%

Temperature Dependancy of Capacity (20 hour rate)

104˚ F (40˚C)	77˚F (25˚C)	32˚F (0˚C)	5˚F (-15˚C)
102%	100%	85%	65%

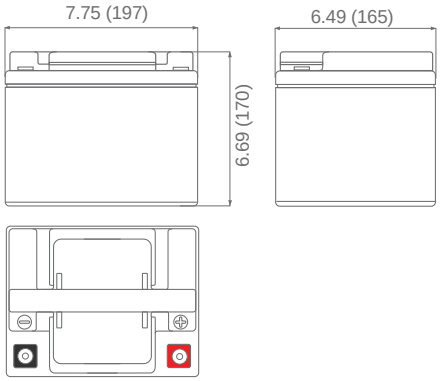
AGM Operational Temperature	
Charge	32˚F to 104˚F (0˚C to 40˚C)
Discharge	5˚F to 113˚F (-15˚C to 45˚C)
AGM Storage Temperature	5˚F to 104˚F (-15˚C to 40˚C)



Due to continuous improvements to our products, product may vary slightly from depiction.

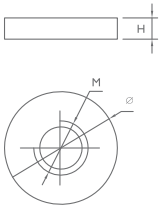
Charge Method (Constant Voltage)	
Cycle Use (Repeating Use)	
Initial Current	15 A or smaller
Control Voltage	14.6 - 14.8 V
Float Use	
Control Voltage	13.6 - 13.8 V

Physical Dimensions: in (mm)



L: 7.75 in (197 mm)
W: 6.49 in (165 mm)
H: 6.69 in (170 mm)
TH: 6.69 in (170 mm)
Tolerances are +/- 0.04 in. (+/- 1mm) and +/- 0.08 in. (+/- 2mm) for height dimensions. All data subject to change without notice.

Terminals



Type \ Dimension	M	∅	H
I6	6.00 mm 0.24 in	16.0 mm 0.63 in	4.00 mm 0.16 in

Constant Current Discharge Characteristics Unit: A (25˚C, 77˚F)

F.V/Time	5MIN	15MIN	30MIN	60MIN	2HR	3HR	5HR	8HR	10HR	20HR
1.60V	210.0	91.0	55.1	30.8	17.9	12.68	8.80	5.63	4.72	2.59
1.67V	202.0	89.0	53.8	30.5	17.5	12.63	8.73	5.60	4.68	2.57
1.70V	195.0	88.4	53.3	30.0	17.3	12.54	8.67	5.58	4.65	2.50
1.75V	181.0	85.8	51.7	29.3	16.8	12.49	8.50	5.55	4.57	2.45
1.80V	163.0	82.8	49.7	28.2	16.2	12.15	8.26	5.52	4.46	2.41

Constant Power Discharge Characteristics Unit: W (25˚C, 77˚F)

F.V/Time	5MIN	15MIN	30MIN	60MIN	2HR	3HR	5HR	8HR	10HR	20HR
1.60V	2124.0	1022.0	613.0	360.0	215.0	154.0	107.0	78.24	58.60	32.00
1.67V	2060.0	997.0	597.0	353.0	212.0	150.0	106.0	77.65	58.10	31.50
1.70V	2031.0	981.0	590.0	350.0	207.0	148.0	105.0	76.47	57.70	31.20
1.75V	1895.0	940.0	571.0	342.0	200.0	143.0	104.0	75.88	56.30	31.00
1.80V	1693.0	882.4	528.0	332.0	192.0	136.0	103.0	74.71	54.60	30.30

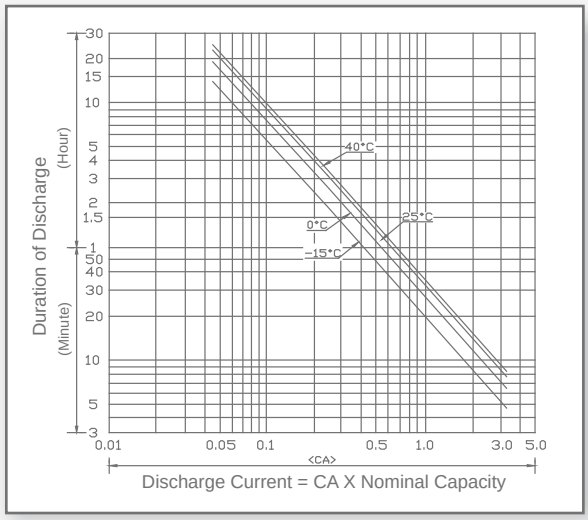
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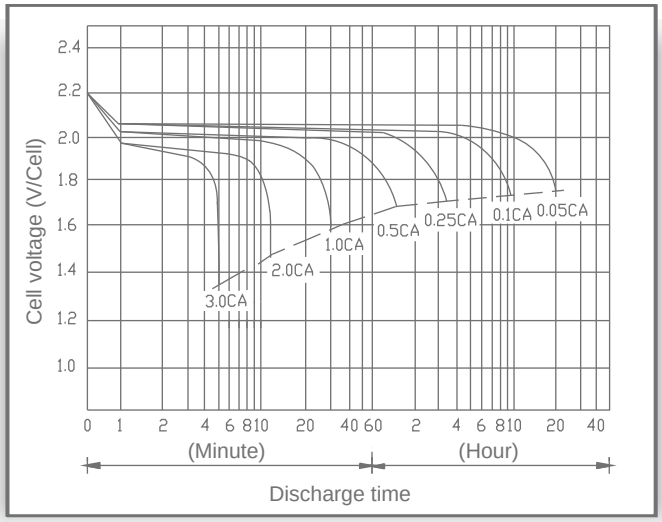
UB12500

Maintenance-Free

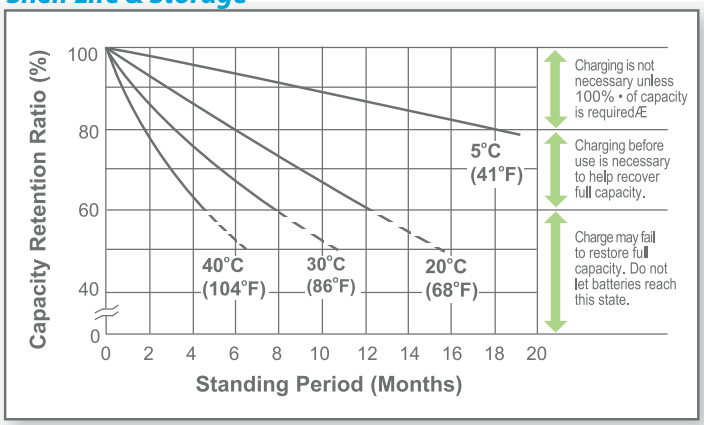
Discharge Time vs. Discharge Current



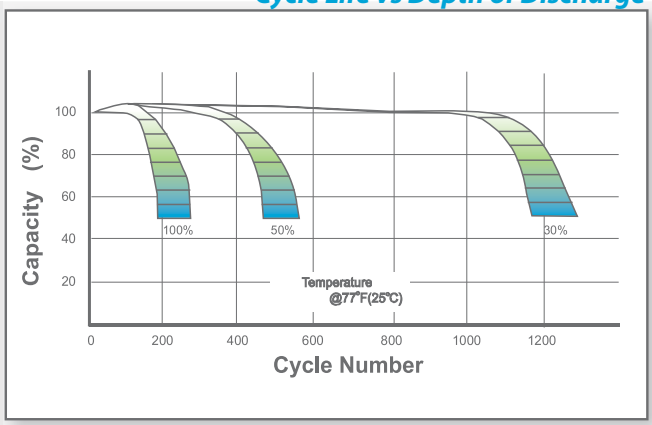
Discharge Characteristics



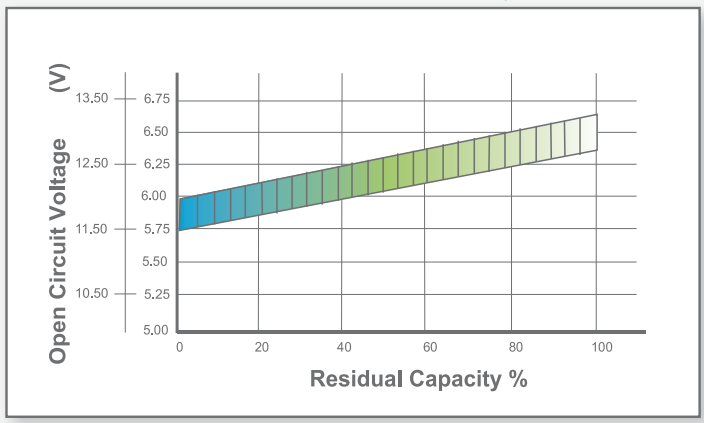
Shelf Life & Storage



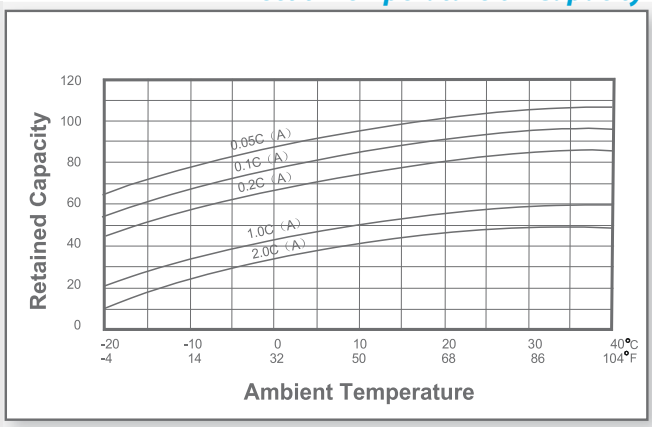
Cycle Life vs Depth of Discharge



Open Circuit Voltage vs Residual Capacity



Effect of Temperature on Capacity



Charge Current & Final Discharge Voltage

Application	Charge Voltage(V/Cell)			Max.Charge Current
	Temperature	Set Point	Allowable Range	
Cycle Use	25℃(77℉)	2.45	2.43~2.47	0.30C
Standby	25℃(77℉)	2.28	2.27~2.30	

Final Discharge Voltage V/Cell	1.75	1.70	1.60	1.30
Discharge Current(A)	0.2C>(A)	0.2C<(A)<0.5C	0.5C<(A)<1.0C	(A)>1.0C

UPG
STAY POWERED®

ISO 9001 :2008

Let UPG Power Your Life.

www.upgi.com

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TAPCO
Safe travels.

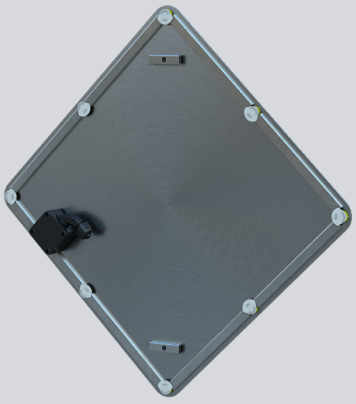
TAPCO-INTEGRATED BLINKERSIGN®

SPECIFICATIONS

POWER	12VDC or Low voltage, current controlled through TAPCO controller
SIGN LEGEND	Various MUTCD options available (W11-2 shown)
SIGN SUBSTRATE	.080" highway grade aluminum
REFLECTIVE SHEETING	3M™ DG3 with anti-graffiti overlay
DIMMING	Variable based on photocell sensor input or 6V solar panel
FLASH PATTERN	Various MUTCD-compliant options dependent upon sign legend
LED TYPE	Environmentally-sealed, high-power 1 watt LED
LED COLOR	Amber, red, white or orange (dependent on sign legend)
LED QUANTITY	Various options dependent upon sign legend
LED LIFE EXPECTANCY	100,000 hours
VISIBILITY	Daytime: more than 1,000 feet Nighttime: more than 1 mile
MOUNTING BRACKETS	Single post standard. Double post or Z-bar available
OPERATING TEMPERATURE RANGE	-40˚F to 122˚F (-40˚C to 50˚C)
DIMENSIONS	Various options dependent upon sign legend



FRONT



BACK

(800) 236-0112 TAPCOnet.com

© 2019 Traffic and Parking Control Co., Inc. 5100 West Brown Deer Rd., Brown Deer WI 53223 Phone (800) 236-0112 FAX 800-444-0331 www.TAPCOnet.com

1026-01011-ti 07/02/19

TAPCO
Safe travels.

LARGE CABINET & MOUNTING BRACKETS

CABINET SPECIFICATIONS

CERTIFICATION	NEMA 3R type
MATERIAL	0.125" aluminum
MOUNTING OPTIONS	6 stainless steel studs for various mounting bracket options including banding, U-bolt, wall-mount, square pole and wood post.
HINGES	3 tamper-resistant stainless steel hinges
ACCESS	Replaceable #2 traffic lock with keys
VENTING	Screened vents on cabinet side and door
DRAINAGE	Screened drain holes on bottom of cabinet
UV RESISTANT LABEL	Applied to exterior of cabinet outlining model number, serial number, date of manufacture as well as any applicable regulatory information
CONTROL PANEL	All circuit components are attached or connected to removable control panel for maintenance
DOOR MOUNTED POUCH	Contains system documents
ENCLOSURE DIMENSIONS	17.5"W x 21.1"H x 11.6"D



FRONT



BACK

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ROUND POLE BANDING BRACKET

MATERIAL	Aluminum
POLE TYPE	2⅜" and larger round poles
HARDWARE TO MOUNT TO CABINET	Stainless steel hardware provided
HARDWARE TO MOUNT TO POLE	Customer supplied banding up to ¾" width. Worm drive clamp provided to assist with install.
BRACKET QUANTITY PER CABINET	3
DIMENSIONS	6.8"W x 3.7"H x 1.1"D



ROUND POLE BANDING BRACKET

SQUARE POLE BOLT-THROUGH BRACKET

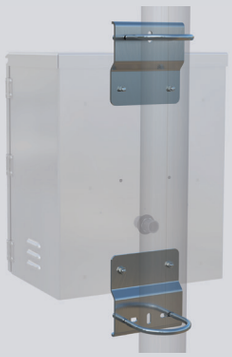
MATERIAL	Aluminum
POLE TYPE	2" to 6" square poles
HARDWARE TO MOUNT TO CABINET	Stainless steel hardware provided
HARDWARE TO MOUNT TO POLE	Strainless steel hardware provided specific to pole size
BRACKET QUANTITY PER CABINET	3
DIMENSIONS	Bolt length dependent upon pole size



SQUARE POLE BOLT-THROUGH BRACKET

MULTI-PURPOSE BRACKET

MATERIAL	Aluminum
POLE TYPE	2 ⅜" - 4 ½" round pole, square wood post or wall mount
HARDWARE TO MOUNT TO CABINET	Stainless steel hardware provided
HARDWARE TO MOUNT TO POLE	Customer supplied hardware for wall mounting. Stainless steel U-bolts provided for round pole mount. Lag bolts provided for square wood post mount.
BRACKET QUANTITY PER CABINET	2
DIMENSIONS	7"W x 7.2"H x 0.7"D



MULTI-PURPOSE BRACKET

TAPCO (800) 236-0112 TAPCOnet.com

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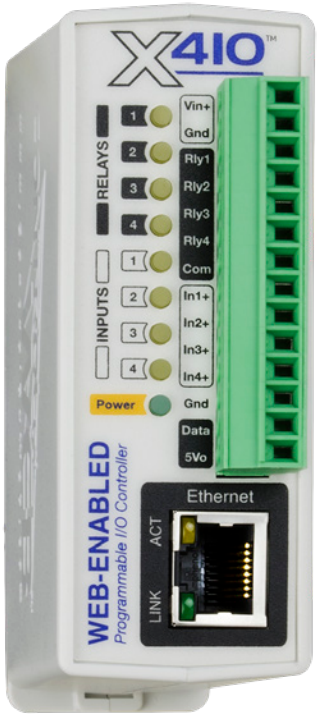
1026-01032-L 06/26/19

X-410™

Web-Enabled Programmable Controller

4 Digital Inputs, 4 Relays, up to 16 1-Wire sensors

PRODUCT OVERVIEW



The X-410™ is a multifunction web-enabled module for control and monitoring. The X-410 has four internal relays, four digital inputs, four pulse counters, 16 general purpose timers, 16 general purpose registers and a 1-Wire® bus. The 1-Wire bus supports up to 16 sensors for monitoring temperature, humidity and more.

It can be controlled and/or monitored over any TCP/IP network including private networks, IP-based industrial control networks, and the Internet. Users can operate the X-410 using a web browser, the CBW Mobile app, or custom applications written for a computer, PLC, or other automation controller.

The X-410's built-in interface allows you to create custom "Tasks" for simple and advanced control logic.

Create tasks based on time, input or outputs' status, or the responsiveness of remote devices. The X-410 also has a built-in BASIC interpreter for custom applications not achievable through the Task Builder system.

Other features are also included such as, email notification, event scheduling, and logging. The X-410 can control and monitor up to 32 remote devices, graph logged data, FTP logged data, email logged data, send encrypted emails, and monitor its power supply voltage.

The X-410 supports a number of Ethernet protocols including: HTTP/HTTPS, Modbus/TCP, SNMP V1,V2 & V3, NTP, SMTP(Encrypted), and FTP/FTPS. The status of the device can be retrieved in human readable formats XML and JSON.

The X-410 supports TLS V1.2 encryption as well as cloud integration(not required) for easier configuration and access. Specifically the X-410 supports HTTPS connections, can send encrypted emails, can communicate with remote devices using TLS, and send logged data to FTP servers over an encrypted connection.

In addition, the X-410 can be configured to automatically connect to ControlByWeb.cloud, ControlByWeb's cloud service. This feature is not required, but does simplify the configuration process and internet access to an X-410 installed behind a network router by eliminating manual configuration of the device and port forwarding setup on routers.

Features:

- Four electro-mechanical relays (shared common) independently controlled
- Four digital inputs (shared ground)
- 1-Wire Bus for up to 16 sensors (temperature, humidity, ultrasonic sensors, etc.)
- Control, monitor, and log 32 remote modules, or up to 100 I/O
- User Permissions: Admin, Manager, User
- Tasks
  - 50 Scheduled
  - 50 Conditional
  - 16 Automatic Reboot
  - 20 Override Schedules
- Send email alerts based on user-defined conditions (supports encrypted email servers, such as Gmail)
- Real-Time Clock with NTP server synchronization
- Automatic daylight savings and leap year adjustment
- Highly configurable - Almost any combination of input/relay control possible
- No software required
- Customizable web-based Control Page
- BASIC script support for advanced flexibility
- Configurable logging
- Graphing (logged data)
- HTTPS/TLS encrypted
- Static or DHCP IP address configuration
- Modbus, SNMP, Remote Service, IP Filtering
- Field updatable
- Removable 14-Terminal connector for easy installation
- Rugged DIN-Rail/wall-mountable enclosure
- 5-Year Warranty



Example Control Page

CONTROL by WEB™
www.ControlByWeb.com

Phone: 435-750-5999
Email: Sales@ControlByWeb.com

X-410™

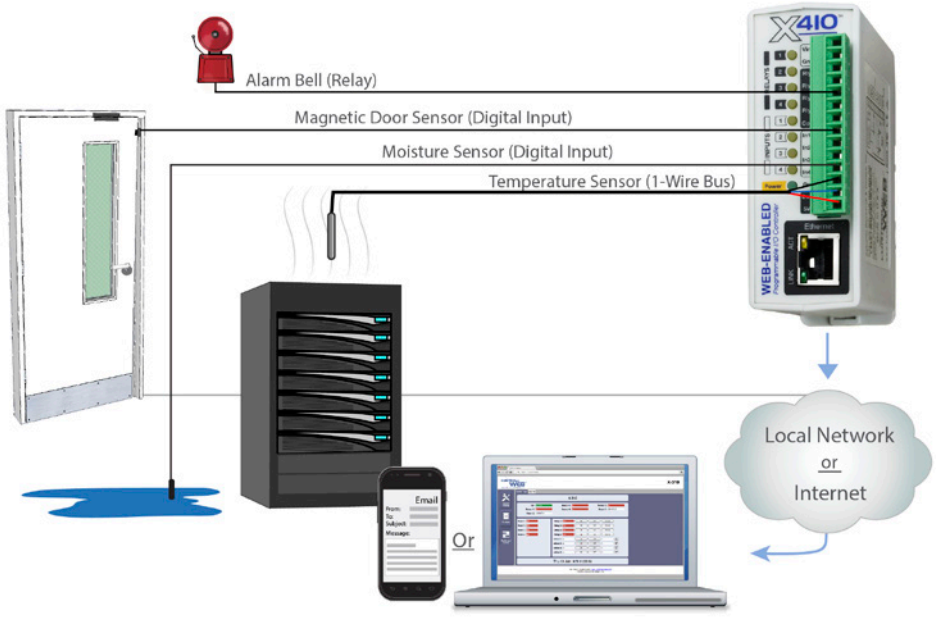
Web-Enabled Programmable Controller

4 Digital Inputs, 4 Relays, up to 16 1-Wire sensors

APPLICATIONS & SPECS

Server Room

Control & Monitoring



Power Requirements

- **Voltage:**
  - X-410-I: 9-28 VDC
  - X-410-E: POE and/or 9-28VDC
- **Max Current:** 240mA

Relays

- **Number of Relays:** 4
- **Max Voltage:** 28VAC, 24VDC
- **Max Current:** 1A
- **Contact Type:** SPST (Form 1A) - All relays have a shared common
- **Load Type:** General Purpose
- **Contact Resistance:** 1 milliohm max
- **Contact Material:** AgNi
- **Electrical Life:** 100K operations (Min)
- **Mechanical Life:** 5M cycles (Min)
- **Environmental Rating:** Over voltage Category II, Pollution Degree 2
- **Relay Modes:** ON/OFF or Pulsed
- **Pulse Timer Duration:** 0.1 to 86,400 Seconds (1-day)

Digital Inputs

- **Number of Inputs:** 4
- **Type:** Non-Isolated
- **Voltage Range:** 4-26 VDC
- **Current:** 950uA @ 4V, 8.5mA @ 26V
- **Minimum Hold Time:** 20mS
- **Input Functions:** Monitor State, Control Relays, Control Remote Relays, Scalable Counter, On Timer, Total On Timer, Frequency
- **Maximum Count:** 24-bit
- **Max Count Rate:** 20Hz Max (Dependent on Configuration)
- **Edge Trigger:** Rising, Falling or Both

Temperature Sensors

- **Maximum Number of Sensors:** 16
- **Type:** Dallas Semiconductor DS18B20
- **Temperature Range:** -67°F to 257°F (-55°C to +125°C)
- **Accuracy:** ±0.5°C (from -10°C to +85°C)
- **Sensor Functions:** Monitor Temperature, Log Temperature, Email Alerts, SNMP Traps
- **Humidity Type:** Xytronix Model X-DTHS-P sensor
- **Humidity Range:** 0-100% RH
- **Accuracy:** ±2%
- **Max Cable Length:** 600 feet (180m) maximum combined cable length

Real-Time Clock

- Manual or NTP(Network Time Protocol) setup
- **NTP Sync Period:** Once, Daily, Weekly, On Power-up
- Auto Daylight Savings Adjustment

Capacitor Power Backup

- **Backup Functions:** Retain Real-Time Clock, External Variables, Relay State, and Counters
- **Backup Duration:** 3 days minimum

Network

- **Type:** 10/100 Base-T Ethernet Port
- **Setup:** Static IP address assignment. TCP port selectable

Connectors

- **Power/Input/Relays:** 14-Position, 3.81mm, Removable
- **Network:** 8-pin RJ-45

LED Indicators

- **Number of LEDs:** 11
  - Power on
  - Relay coil energized 1-4
  - Digital Input 1-4
  - Network linked
  - Network activity

Physical

- **Operating Temperature:** -40°F to 150°F (-40°C to 65.5°C)
- **Size:**
  - 1.41in (35.7mm) wide
  - 3.88in (98.5mm) tall
  - 3.1in (78mm) deep (not including connector)
- **Weight:** 5 oz (142 grams)
- **Enclosure Material:** Lexan 940 Polycarbonate Plastic
- **Enclosure Flame Rating:** UL94 V0

Protocols

- HTTP, HTTPS, SSL, XML, Modbus TCP/IP, SNMP, SMTP, Remote Services

Logging

- **Log File Size:** 512K (up to 8,448 logs)
- **Storage:** Nonvolatile Flash
- **Buffer Architecture:** Circular Buffer
- *Log data can be periodically read and stored on a computer*

Advanced Features

- Task Builder
- BASIC interpreter
- Remote services

Password Settings

- **Password protection on setup page:** Yes
- **Password protection on control page:** Optional
- **Password Encoding:** Base 64
- **Max Password Length:** 18 Characters

Electromagnetic Compliance

- IEC CISPR 22, CISPR 24
- EU EN55024, EN55022
- X-410-I: FCC 47CFR15 (Class B)
- X-410-E: FCC 47CFR15 (Class A)

Product Safety Compliance

- UL 61010-1 (Electrical Equipment for Measurement, Control, and Laboratory Use)

CE

CONTROL by WEB™
www.ControlByWeb.com

Phone: 435-750-5999

Email: Sales@ControlByWeb.com

TAPCO
Safe travels.

MEDIUM CABINET & MOUNTING BRACKETS

CABINET SPECIFICATIONS

CERTIFICATION	NEMA 3R type
MATERIAL	0.080" aluminum
MOUNTING OPTIONS	4 stainless steel studs for various mounting bracket options including banding, U-bolt, wall-mount, square pole and wood post.
HINGES	2 tamper-resistant stainless steel hinges
ACCESS	Replaceable #2 traffic lock with keys
VENTING	Screened vents on cabinet side and door
DRAINAGE	Screened drain holes on bottom of cabinet
UV RESISTANT LABEL	Applied to exterior of cabinet outlining model number, serial number, date of manufacture as well as any applicable regulatory information
CONTROL PANEL	All circuit components are attached or connected to removable control panel for maintenance
DOOR MOUNTED POUCH	Contains system documents
ENCLOSURE DIMENSIONS	12.5"W x 15"H x 9.9"D



FRONT



BACK

(800) 236-0112 TAPCOnet.com

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ROUND POLE BANDING BRACKET

MATERIAL	Aluminum
POLE TYPE	2⅜" and larger round poles
HARDWARE TO MOUNT TO CABINET	Stainless steel hardware provided
HARDWARE TO MOUNT TO POLE	Customer supplied banding up to ¾" width. Worm drive clamp provided to assist with install.
BRACKET QUANTITY PER CABINET	2
DIMENSIONS	6.8"W x 3.7"H x 1.1"D



ROUND POLE BANDING BRACKET

SQUARE POLE BOLT-THROUGH BRACKET

MATERIAL	Aluminum
POLE TYPE	2" to 6" square poles
HARDWARE TO MOUNT TO CABINET	Stainless steel hardware provided
HARDWARE TO MOUNT TO POLE	Stainless steel hardware provided specific to pole size
BRACKET QUANTITY PER CABINET	2
DIMENSIONS	Bolt length dependent upon pole size



SQUARE POLE BOLT-THROUGH BRACKET

MULTI-PURPOSE BRACKET

MATERIAL	Aluminum
POLE TYPE	2⅜" - 4½" round pole, square wood post or wall mount
HARDWARE TO MOUNT TO CABINET	Stainless steel hardware provided
HARDWARE TO MOUNT TO POLE	Customer supplied hardware for wall mounting. Stainless steel U-bolts provided for round pole mount. Lag bolts provided for square wood post mount.
BRACKET QUANTITY PER CABINET	2
DIMENSIONS	7"W x 7.2"H x 0.7"D



MULTI-PURPOSE BRACKET

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1026-01032-M 06/26/19

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XL CABINET & MOUNTING BRACKETS

CABINET SPECIFICATIONS

CERTIFICATION	NEMA 3R type
MATERIAL	0.125" aluminum
MOUNTING OPTIONS	6 stainless steel studs for mounting bracket options including banding and U-bolt.
HINGES	Continuous tamper-resistant stainless steel hinge
ACCESS	Replaceable #2 traffic lock with keys
VENTING	Screened vents on cabinet side and door
DRAINAGE	Drain hole on bottom of cabinet
UV RESISTANT LABEL	Applied to exterior of cabinet outlining model number, serial number, date of manufacture as well as any applicable regulatory information
CONTROL PANELS	All components are attached or connected to removable control panels for circuit maintenance
DOOR MOUNTED POUCH	Contains system documents
ENCLOSURE DIMENSIONS	24.6"W x 36.3"H x 19.6"D



FRONT



BACK

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ROUND POLE BANDING BRACKET

MATERIAL	Aluminum
POLE TYPE	Larger than 4½" round poles
HARDWARE TO MOUNT TO CABINET	Stainless steel hardware provided
HARDWARE TO MOUNT TO POLE	Customer supplied banding up to ¾" width. Worm drive clamp provided to assist with install
BRACKET QUANTITY PER CABINET	3
DIMENSIONS	6.1"W x 9.0"H x 1.7"D



ROUND POLE BANDING BRACKET

U-BOLT BRACKET

MATERIAL	Aluminum
POLE TYPE	4½" round pole
HARDWARE TO MOUNT TO CABINET	Stainless steel hardware provided
HARDWARE TO MOUNT TO POLE	Stainless steel U-bolts provided for round pole mount
BRACKET QUANTITY PER CABINET	3
DIMENSIONS	6.3"W x 3.1"H x 2.3"D



U-BOLT BRACKET

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1026-01032-XL 07/02/19

Access

Access barrier



For economical access control

These access barriers from Magnetic are cost-optimised solutions for access control at car parks, company grounds, residential buildings and similar sites.

When the stipulated safety equipment is installed, these barriers – with their low impact forces – are approved for use wherever the movement of persons cannot be ruled out for structural reasons.*

At the heart of the Access series is the innovative MHTM™ drive that is distinguished by its energy efficiency, lack of maintenance and long service life – the Access series is designed for 10 million opening and closing cycles. Two basic variants are available, depending on requirements: the basis models Access and Access-L are characterised by a high level of underlying functionality.

The two Pro models also offer expansion potentials with plug-in modules and exclusive accessories. By the way, Magnetic quality lies not just in the detail, but is also easily recognisable to all thanks to stylish design. The Access series has already been awarded two design prizes.

* The Pro variant only with slow setting of the closing speed (2.5 s).



Low operating costs

Thanks to their high energy efficiency, extremely long service lives, and simple maintenance, barriers from Magnetic are particularly cost-effective – an investment that will certainly pay off!



Innovative drive technology

The MHTM™ drive unit is maintenance-free, energy-efficient and quiet. The high torque guarantees best possible operation even under extreme weather conditions.



Legal security

All Magnetic barriers have a Declaration of Conformity in compliance with the Machinery Directive and a Declaration of Performance in line with the Construction Products Directive. Thus operators and those responsible for commissioning are always on the safe side in questions of liability.



Easy access to components

Two simple steps: control systems and the drive unit are easily reached by removing the cover and front plate. This increases user-friendliness and accelerates commissioning and service.

MAGNETIC AUTOCONTROL GMBH
www.magnetic-access.com

Access

Access barrier

- High level of functionality for numerous applications
- Very low operating costs thanks to efficient and long-lived MHTM™ drive
- Ease-of-use and optimum accessibility thanks to well thought-out design
- Legal security with Declarations of Conformity and Performance
- Acclaimed design: German Design Award 2014 and Red Dot Design Award 2012
- Designed for 10 million opening and closing actions



Technical data	Access	Access-L	Access Pro	Access Pro-L
Lane width	Max. 3.5 m	Max. 5.0 m	Max. 3.5 m	Max. 6.0 m
Opening/closing time	2.2 s	4.0 s	1.3 s	4.0 s
Power consumption	Max. 25 W	Max. 30 W	Max. 95 W	Max. 25 W
Drive technology	MHTM™	MHTM™	MHTM™	MHTM™
Voltage	85–264 VAC, 50/60 Hz	85–264 VAC, 50/60 Hz	85–264 VAC, 50/60 Hz	85–264 VAC, 50/60 Hz
Duty cycle	100 %	100 %	100 %	100 %
Housing dimensions (W x D x H)	315 x 360 x 915 mm	315 x 360 x 915 mm	315 x 360 x 915 mm	315 x 360 x 915 mm
Enclosure rating	IP 54	IP 54	IP 54	IP 54
Temperature range	–30 to +55 °C	–30 to +55 °C	–30 to +55 °C	–30 to +55 °C
Weight	40 kg	40 kg	40 kg	40 kg

Features	Access	Access-L	Access Pro	Access Pro-L
Standard colours	RAL 2000	RAL 2000	RAL 2000, 9006, 9007	RAL 2000, 9006, 9007
VarioBoom barrier boom	Standard	Standard	Standard	Standard
Control system	MGC	MGC	MGC Pro	MGC Pro
Integrated 2-channel detector for induction loops	Standard	Standard	Standard	Standard
Modular expansion of control system	Radio receiver and other detector modules	Radio receiver and other detector modules	Freely expandable	Freely expandable
Variable I/O assignment	–	–	Standard	Standard
No. of digital inputs	8	8	8	8
No. of relays/digital outputs	6/4	6/4	6/4	6/4
Input for safety light barrier with test	1	1	1	1
Selectable closing speed	Standard	Standard	Standard	Standard
Selectable opening speed	–	–	Standard	Standard

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www.magnetic-access.com

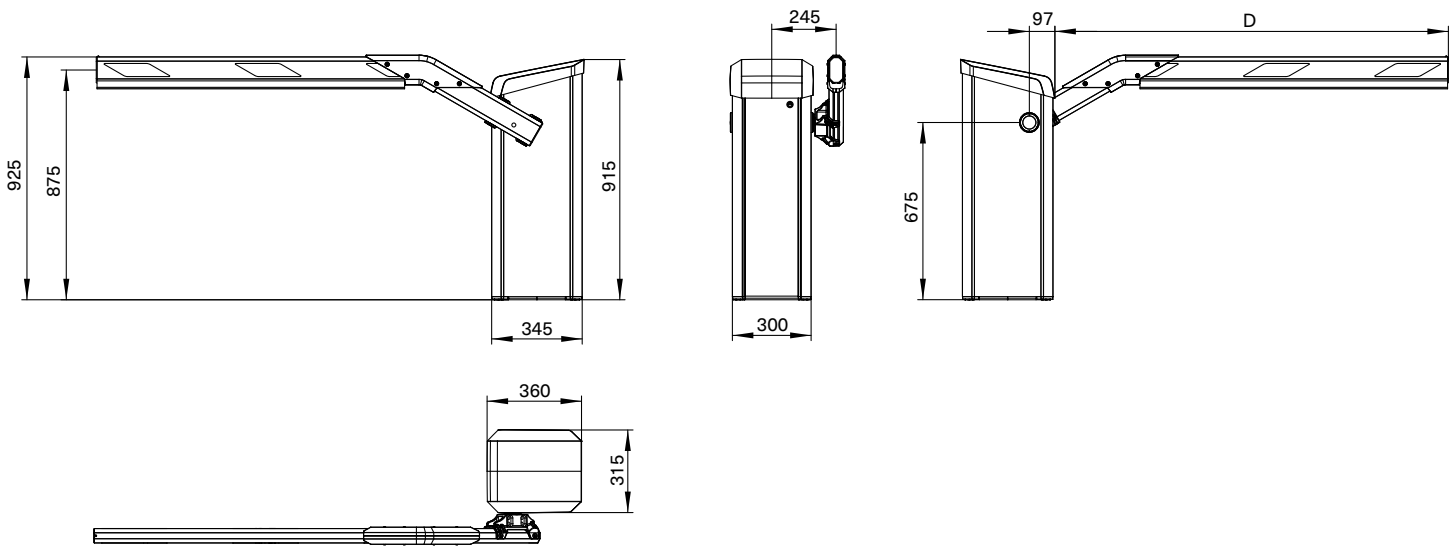
Options	Access	Access-L	Access Pro	Access Pro-L
Special colours	✓	✓	✓	✓
Boom extension set	✓	✓	✓	✓
Articulated boom*	✓	✓	✓	✓
Pendulum support**		✓		✓
Support post*	✓	✓	✓	✓
Boom drop contact	✓	✓	✓	✓
Boom interlock	✓	✓	✓	✓
Boom illumination, red	✓	✓	✓	✓
Light strips, red/green	✓	✓	✓	✓
Hood light	✓	✓	✓	✓
Key-operated switch	✓	✓	✓	✓
Radio module	✓	✓	✓	✓
Ethernet module			✓	✓
RS485 module			✓	✓
CAN module (counting)			✓	✓
Second detector module	✓	✓	✓	✓
GSM module	✓	✓	✓	✓
Safety light barrier	✓	✓	✓	✓
Battery backup	✓	✓	✓	✓

* max. 4.5 m lane width, max 3.5 m height
** Pendulum support or a support post are required from a boom length of 3.5 m.

Standard colours

Orange (RAL 2000)	White aluminium (similar to RAL 9006)	Grey aluminium (similar to RAL 9007)

Dimensional drawings



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MAGNETIC®
ACCESS TO PROGRESS

Access to Progress

Magnetic stands for pioneering products – in every way. Our access control systems for vehicles or pedestrians clear the way for thousands of people every day – at car parks, toll gates, stations, airports and in buildings. Our technology is also pioneering, however: with innovative drives, intelligent control systems and well thought-out details it provides maximum safety and longevity. Are you also on the path to Magnetic?



Vehicle barriers

Access barriers
Parking barriers
Toll barriers
Special barriers



Pedestrian gates

Turnstiles
Swing gates
Tripod gates
Retractable gates
Wing gates



Terminals

Cars
Trucks

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5806.0046 EN_01.2018

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www.magnetic-access.com

Member of FAAC group

COMMPAK I/O8

Wireless Contact Closure On/Off Control 902-928MHz



OVERVIEW

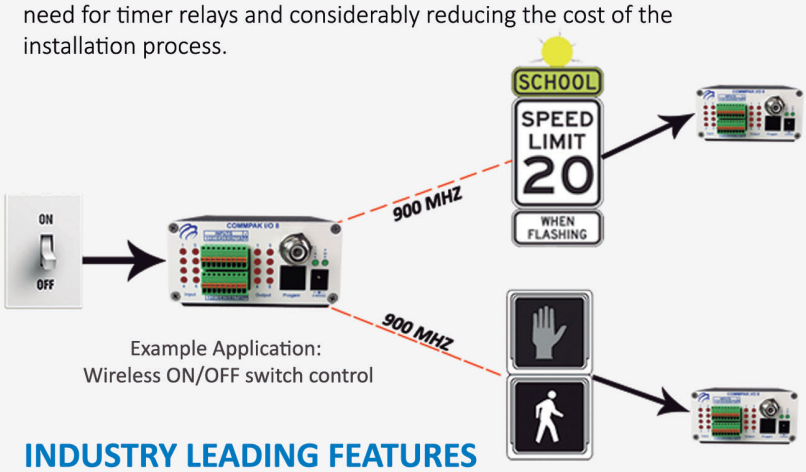
The COMMPAK I/O8 has been designed specifically for ON/OFF control and detection applications. This radio features Bi-Directional communications and the ability to confirm switch closure at a remote site.

INTUITIVE SOFTWARE

Using the I/O is extremely simple with ENCOM's flexible software giving the I/O routing infinite possibilities. This comprehensive software package includes a Configuration Utility, Remote Maintenance capabilities and Wireless Link Diagnostic features. A Spectrum Analyzer is also included, allowing end users to determine exact noise levels and select optimal operating frequencies.

All typical system designs are supported including Point-to-Point, Point-to-Multipoint and Multipoint-to-Multipoint operation modes.

The COMMPAK I/O8 features innovative timer outputs that can be pre-programmed to run on schedule or on-demand, eliminating the need for timer relays and considerably reducing the cost of the installation process.



Example Application:
Wireless ON/OFF switch control

INDUSTRY LEADING FEATURES

The I/O 8 employs ENCOM's License-Free 900MHz Frequency Hopping Spread Spectrum Tehcnology. This technology has been designed to provide reliable, long range wireless communications (up to 20 miles with L.O.S)

Eliminate the costs and time constraints associated with traditional hardwired systems by using an ENCOM COMMPAK I/O8. ENCOM's robust and reliable spread spectrum wireless serial modems continue to be the leading choice for communications. Our products provide unequalled performance in the most challenging environments.

Each unit is build and supported by over 28 years of industry experience, includes a 5 year warranty and comes with powerful, user-friendly ControlPAK or Zone WATCH software. These utilities provide highly visual, striaghtforward tools for remote maintenance and configuration.

KEY FEATURES

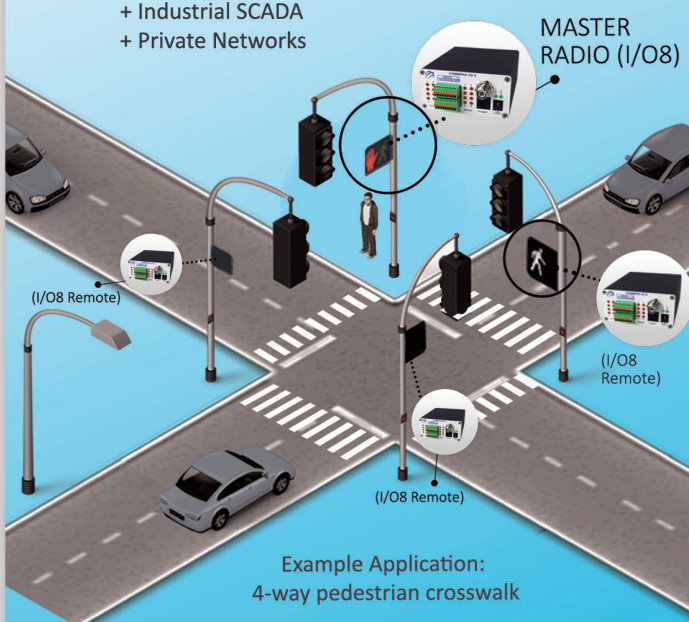
+ 8 Inputs and 8 Outputs
+ Robust on/off control
+ Can monitor multiple events
+ Covers a broad range of applications
+ Range up to 20 miles (L.O.S)
+ Extensive suite of security features

KEY BENEFITS

+ Over 28 years of broad industry experience
+ Unparalleled software management tools
+ Scaleable and future proof technology platforms
+ Unequalled warranty and support programs
+ Easily defined and measurable ROI

APPLICATIONS

+ Intelligent Transportation Systems
+ Water/Waste Water Management
+ Utilities
+ Industrial SCADA
+ Private Networks

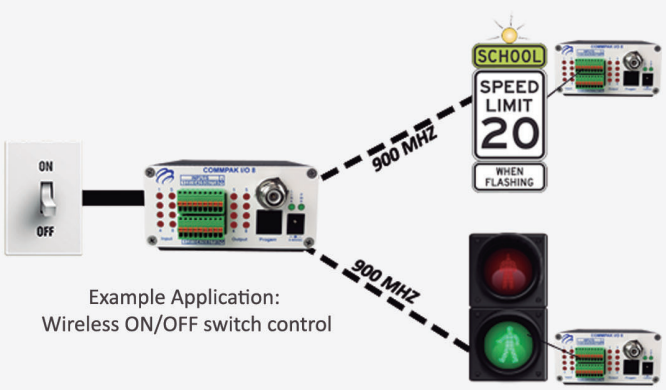


Example Application:
4-way pedestrian crosswalk

RADIO SPECIFICATIONS:	
Frequency Range:	902-928MHz
Output Power:	1mW, 10mW, 100mW, 1000mW
Software Programmable:	YES
Available Hop Patterns:	64
Number of RF Channels:	128
RF Channel Spacing:	200KHz
Error Checking:	16-bit CRC
Encryption:	128-bit AES
Receiver Sensitivity / ER:	-110 dBm @ 10-6 BER
System Gain:	145 dBm
Antenna Port:	RP TNC-F
Certification:	FCC, Industry Canada
Operating Modes:	Transceiver
System Configurations:	Point-to-Point, Point-to-Multipoint, Multipoint-to-Multipoint

GENERAL SPECIFICATIONS:			
Input Power:	6-30 VDC		
Power Consumption:	Typical @ 24 VDC		
	Normal	Low Current Mode	Sleep Mode
Master	45 mA	9 mA	N/A
Repeater	76 mA	9mA	N/A
Remote	45 mA	9 mA	7.5 mA
Operating Environment:	-40°F to 176°F		
Humidity:	0-95% non-condensing		
Enclosure Type:	Milled aluminum, black powder coat		
Warranty:	3 Years		

PHYSICAL SPECIFICATIONS:	
Dimensions:	4.75"W x 1.73"H x 3.75"D
Weight:	20 oz
INTERFACE SPECIFICATIONS:	
Programming Port	RJ12
Inputs	0-24VDC (ground activated)
Outputs	8 Digital open collector (max 500mA load current per output)
Indicators	Power, input, output and link
Connector	Terminal Block
SOFTWARE SPECIFICATIONS:	
ControlPAK	▪ Radio configuration ▪ I/O Mapping ▪ Spectrum analyzer ▪ Remote diagnostics and configuration

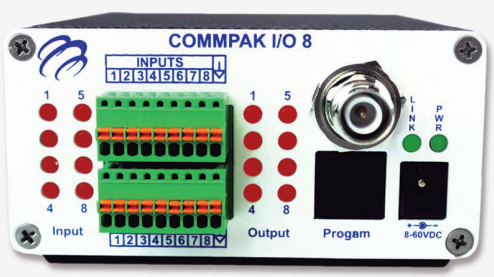


Example Application:
Wireless ON/OFF switch control

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Toll Free: (800) 617-3487
Phone: +1 (403) 230-1122
#7 640 42nd Ave NE Calgary
Alberta T2E 7J9
Canada

USA OFFICE:
Toll Free: (800) 617-3487
Phone: +1 (972) 885-5170
3750 Arapaho Rd, Addison
Texas 75001
USA

Email: sales@encomwireless.com



ENCOM Broadband radios require professional installation.
Specifications subject to change without notice. Visit www.encomwireless.com for updates

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OPTION

CloudGate



Smart IOT Gateway

- Transports & Logistics
- Industrial & Remote Asset Monitoring
- Smart Cities & Environmental Monitoring

CloudGate MODELS



LTE WW



CG LTE US rev 3



3G EMEA rev 3



Ethernet 2.0

		LTE WW	CG LTE US rev 3	3G EMEA rev 3	Ethernet 2.0
WWAN Modem LTE	Supported frequency bands	700/800/850/900/1800/1900/2100/2600/AWS (B 1-5, 7, 8, 13, 17, 18, 19, 20)	LTE FDD: 700/850/1900/AWS (B2/B4/B5/B13/B17)	Not applicable	
	Max. connectivity speeds	100Mbps down, 50Mbps up (Cat3) Theoretical LTE data rates	100Mbps Down, 50Mbps Up (Cat3)		
WWAN Modem 3G/2G	Supported frequency bands	• UMTS/HSDPA/HSUPA/HSPA+: 850/900/1900/2100 MHz and AWS band (1700/2100 MHz) (B 1, 2, 4, 5, 8) • GSM/GPRS/EDGE: 850/900/1800/1900 MHz	• UMTS/HSDPA/HSUPA/HSPA+: 850/1900/AWS (B2/B4/B5) • GSM/GPRS/EDGE: 850/900/1800/1900 Mhz	• UMTS/HSDPA/HSUPA/HSPA+: 900-2100 MHz (B1, 8) • GSM/GPRS/EDGE: 900/1900 MHz	Not included
	Max. connectivity speeds	• DC-HSPA+: 42 Mbps (Cat 24) down 5.76 (Cat 6) up	• DC-HSDPA: 42Mbps (Cat24) down, 5.76Mbps (Cat6) Up	• HSPA+: 14.4 Mbps (Cat 10) down 5.76 (Cat 6) up	Not included
	Rx Diversity	Simultaneous Equalization and Rx Diversity on all bands	Simultaneous Equalization and Rx Diversity on all bands	Simultaneous Equalization and Rx Diversity on all bands	Not included
WWAN Antenna	Antenna connector	• 1 x SMA: WWAN Main • 1 x SMA: WWAN Div/GPS	• 1 x SMA: WWAN Main • 1 x SMA: WWAN Mimo/Div/GPS	• 1 x SMA: WWAN Main • 1 x SMA: WWAN Div/GPS	Not included
GPS		• High sensitivity A-GPS /A-GLONASS receiver (SUPL 1.0 & SUPL 2.0) • Active GPS antenna support	• Standalone GPS, Assisted GPS, GPS OneXTRA™ • Wideband GPS processing (20MHz) for improved measurement accuracy • Passive/active GPS antenna support	• Standalone GPS, Assisted GPS, GPS OneXTRA™ • Wideband GPS processing (20MHz) for improved measurement accuracy • Passive/active GPS antenna support	Not included
SIM	USIM/SIM connection – Class B and Class C	✓	✓	✓	Not applicable
CPU		ARM926EJ-S @ 450 MHz Memory available for customer apps 512MB Flash (available : 20MB for data, 30MB for application, 372MB extra data partition) 128MB RAM (available : 85 MB)	ARM926EJ-S @ 450 MHz Memory available for customer apps 512MB Flash (available : 20MB for data, 30MB for application, 372MB extra data partition) 128MB RAM (available : 85 MB)	ARM926EJ-S @ 450 MHz Memory available for customer apps 512MB Flash (available : 20MB for data, 30MB for application, 372MB extra data partition) 128MB RAM (available : 85 MB)	ARM926EJ-S @ 450 MHz Memory available for customer apps 512MB Flash (available : 20MB for data, 30MB for application, 384MB extra data partition) 128MB RAM (available : 85 MB)
Ethernet (IEEE 802.3)	10/100Mb/s RJ45 Connector	✓	✓	✓	✓
microSD card holder		✓	Not included	Not included	Optional
Power control	Timed Wakeup	✓	• Timed wake-up possible with RTC and Cortex M0 in sleep mode • Remote modem wake-up	• Timed wake-up possible with RTC and Cortex M0 in sleep mode • Remote modem wake-up	• Timed wake-up possible with RTC and Cortex M0 in sleep mode
	Ignition Sensing	✓	✓	✓	✓
Power	DC Power in, 9-33 V DC	✓	✓	✓	✓
	Connector type Micro-Fit, Dual row, 4 circuits	✓	✓	✓	✓
Case	Dimension (115 x 105 x 45mm)	✓	✓	✓	✓
	Weight	304g	294g	294g	282g
	Mounting, Bulkhead, 4x M4 holes, DINrail with adapter	✓	✓	✓	✓
Environ-mentals	Operating temperature	-30°C to +70°C	-30°C to +70°C	-30°C to +70°C	-30°C to +70°C
	Storage temperature	-40°C to +70°C	-40°C to +70°C	-40°C to +70°C	-40°C to +70°C
	Humidity operational.: 5% - 95%	5% - 95%	5% - 95%	5% - 95%	5% - 95%
Certifications		CE, FCC, IC, PTCRB, E-mark, EN50155, AT&T, T-Mobile, Verizon, Latam, Australia, Singapore	FCC, IC, AT&T, T-Mobile, Verizon	CE, TRA, E-mark, RCM	CE, FCC, IC
Std. compliance	ROHS, Reach	✓	✓	✓	✓
CloudGate Universe	Device can be configured OTA using CloudGate Universe	✓	✓	✓	✓
Expansion cards	2 x expansion slots for adding cards	✓	✓	✓	✓
For developers	Support CloudGate development kit: Developer board, Breadboard, SDK, HDK	✓	✓	✓	✓
In the box	Accessories are available (i.e. Power cable, antenna's etc.)	CloudGate Gateway	CloudGate Gateway	CloudGate Gateway	CloudGate Gateway
Product Code		CG0114-12019	CG0199-12102	CG118-12043	C102-11972

CloudGate ACCESSORIES

- 1008855 3g/LTE antenna (Grandtek)
- 1008379 WiFi antenna (Taoglass)
- 1009568 External antenna LTE/GPS A/WiFi AP 1533-b 0,4m
- 1009607 External antenna LTE/GPS A/WiFi AP 1533-b 1,5m
- 1009608 External antenna LTE/GPS A/WiFi AP 1533-b 3m
- 1008098 868/900 MHz antenna (Pulse)
- 1008607 DC power cable with microfit connector 3m (3-wire)
- 1009120 AC power supply 12V/1.5A class 6 and cable with microfit connector 1.5m (interchangeable blades)
- 1008890 US interchangeable plug for power supply
- 1008889 EU interchangeable plug for power supply
- 1008891 UK interchangeable plug for power supply
- 1009077 AU interchangeable plug for power supply
- CG7101-12018 Telematics IO break-out board and cable
- 1008837 Telematics card IO connector (9x2)
- 1008836 Precrimped cables for Telematiccs card IO connector (300mm, 20 AWG)

CloudGate EXPANSION CARDS

STANDARD CARDS

Front slot



STANDARD SERIAL CARD CG1101-11919
- One RS-232 serial port 921,6 Kbaud maximum speed



INDUSTRIAL SERIAL CARD CG1102-11920
- One RS-232 serial port 921,6 Kbaud maximum speed
- One 2KV isolated RS-485 serial port 921,6 Kbaud maximum speed, full duplex or half duplex, 2 wire or 4 wire. Switchable termination.



ETHERNET EXPANSION CARD CG1104-11936
- 4-port 10/100 Base-T, µSD card holder



DEVELOPER CARD for SW developer CG1105-11937
- Extended format card for with headers for all interfaces.
- Includes headers for access to USB, USB on the go, RS-232, I2C, SPI/SD and GPIO lines.
- On board temperature sensor, relay, SD card slot and RS232 serial port.



TELEMATICS CARD - extended IO & CAN CG5106-11984
- Adds flexible IO and RS232/ RS485/USB/CAN connectivity for industrial and telematics applications to CloudGate
- Built-in 3 axis accelometer for movement detection and other applications
- Additional SIM card slot for back-up roaming SIM
- Built-in microcontroller offloads all IO from CloudGate
- Breakout card (CG7101-12018) available for developers



BLE Bluetooth Low Energy CARD CG1119-12096
- Bluetooth 4.2 LE
- Nordic Semiconductor nRF52 chipset
- Multiprotocol radio allows other protocol stacks as well
- OTA-DFU (Over-The-Air Device Firmware Update) capable
- Connect (i)Beacons to your CloudGate for RTLS applications



BREADBOARD CARD for HW developer CG1108-11980
- Ideal for prototyping your own expansion card.
- Supports 3 types of connections:
  - All signals on the back connector can be tapped off on breadboard area near this connector
  - 2.54 mm pitch components can be soldered on main breadboard area
  - 3.5 mm pitch connectors can be soldered on two front rows to provide a more reliable and longterm connection

Back slot



LoRaWAN CARD CG2118-12078 (868 MHz) CG2119-12091 (915 MHz) CG2121-12098 (433 MHz)
- Available for 433 MHz, 868 MHz and 915 MHz LoRa devices
- Connects LoRa sensors/actuators to private & public LoRa
- networks
- Optionally combined with WLAN connectivity



WLAN CARD Client & Access point CG2101-11921
- 802.11 a/b/g/n
- Access point up to 10 simultaneous users



MONNIT® CARD CG2111-12049 (868 MHz) CG2112-12050 (900 MHz) CG2113-12054 (433 MHz)
- Available for 433 MHz, 868 MHz and 900 MHz Monnit devices
- Connects up to 100 Monnit sensors

NON-STANDARD

Front slot

CG1109-11991	Ethernet card - 1 port
CG1103-11935	Ethernet card - 4 port with PoE
CG1106-11957	Telematics card
CG5106-11983	Telematics card with extended IO
CG5106-12052	Telematics card with extended IO (4-port current loop)
CG5106-12039	Telematics card with extended IO and CAN (4-port current loop)
CG1110-12012	KNX card
CG5221-12023	KNX bus with RS485 expander and P1
CG1121-12080	Xbee card
CG1118-12064	Smartcity card
CG1120-12079	M-bus slave - wM-bus card

Back slot

CG2102-11994	WXLAN access point card
CG2103-12047	Monnit® card with WLAN (868 MHz)
CG2104-12048	Monnit® card with WLAN (900 MHz)
CG2105-12053	Monnit® card with WLAN (433 MHz)
CG2117-12065	Xbee card
CG2120-12090	Smart Metering card

PARTNER CARDS

5A AiriCOM ATIM BiPOM FOXON Giga-concept PAKSENSE USRobotics

Front slot

- AiriCOM - Industrial grade IO card
- ATIM - LoRa card
- BiPOM - nano-WiPom card
- BiPOM -2-RS232 & USB card
- BiPOM - 4-port USB card
- BiPOM - SiFlex card
- BiPOM - Multiwireless card
- BiPOM - Monnit card
- BoilerConnect - GPIO card
- Foxon – IQRF card
- Giga Concept - RFID card
- Paksense - Temperature sensing card
- USRobotics - Modemulator card

Back slot

- 5A - MicroSD holder card

CloudGate APPLICATIONS

LuvitRED

Award-winning visually configurable CloudGate application for design and deployment of smart IoT solutions delivering true IoT edge computing.
Key features:
- 'Drag & drop and visual wiring' configuartion environment for Cloudgate devices
- 'Drag and drop' and visual wiring configuration with minimal programming
- Rapid application development in only minutes
- Supports a wide variety of sensors aka 'node sets'
- Reduces risk/lowers development cost
- Shorter sales cycles
- Drives innovation by enabling 'risktaking'

SRAS

SECURE REMOTE ACCESS SERVICE

Provides Secure Remote Access from your laptop/smartphone to your CloudGate gateways and the devices attached to it. VPN tunnel is set-up from the CloudGate gateway to the SRAS server and from your computer to the SRAS server, creating a secure end-to-end connection
Benefits:
- CloudGate gateway can create VPN tunnels upon request without the need for a permanent VPN tunnel thus reducing the data traffic associated with secure remote access
- VPN tunnel leverages built-in VPN clients of major OS suppliers and device manufacturers making life cycle management easier, robust & cost effective
- Self provisioning and support for bulk device provisioning via webbased UI
- Fully qualified domain names used to obtain access to the device
- Multi-tier support - device access based on permissions

CloudGate UNIVERSE

With CloudGate Universe Option supports its partners by providing the easiest and most cost effective deployment mechanism for their software solutions. A provisioning system dedicated to delivering Option and third party software and product configuration to CloudGate gateways.
CloudGate Universe is part of the CloudGate solution with no registraton cost or yearly fees and no competition with system integrator or software developer services and products.
Configure just one, some or all your devices for a particular site, application or customer and configure all your devices to the same device setting.

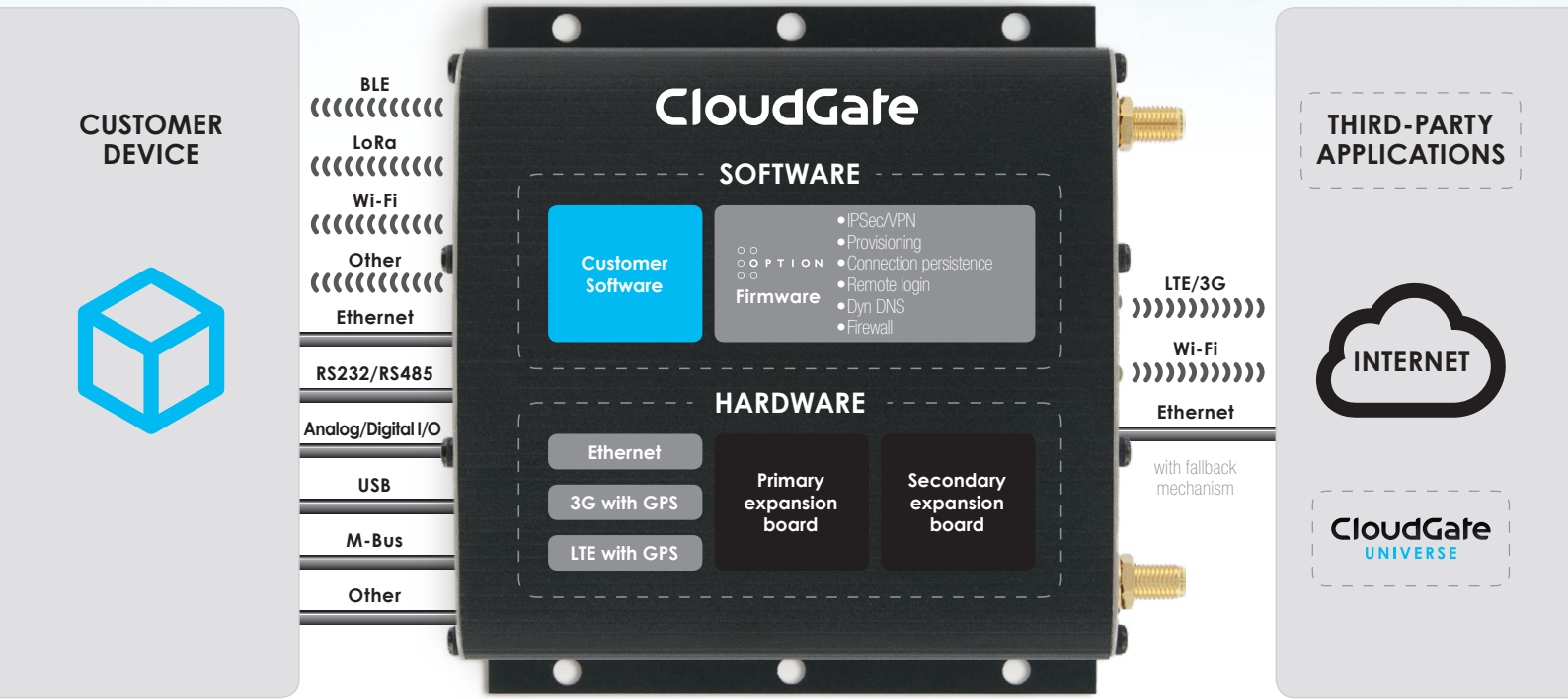
www.cloudgateuniverse.com

OPTION

CloudGate

Smart
IOT Gateway

Option Wireless Technology's CloudGate is the carrier-approved IoT solution platform that delivers device connectivity, security and processing power for global IoT applications.
It includes the world wide carrier-approved intelligent Cloudgate gateway that comes with CloudGate Universe, Option's cloud-based configuration and deployment platform, as well as the CloudGate SDK for rapid application development, the CloudGate HDK for prototyping custom expansion cards and award-winning LuvitRed, a visually configurable device agent with easy-to-use graphical, "drag and drop &visual wiring " configuration. LuvitRed overcomes complexities of the vast variety of protocols used in different IoT verticals and delivers true IoT Edge Computing capabilities on Cloudgate in an easy way. A pre-built library of software applications and modular hardware extensions ensure ease of deployment and maximum flexibility. Only Option delivers a complete M2M ecosystem.



option.com

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DataSheet_v1.5.4t

1. Select a CloudGate model with expansion cards and/or accessories to suit your needs

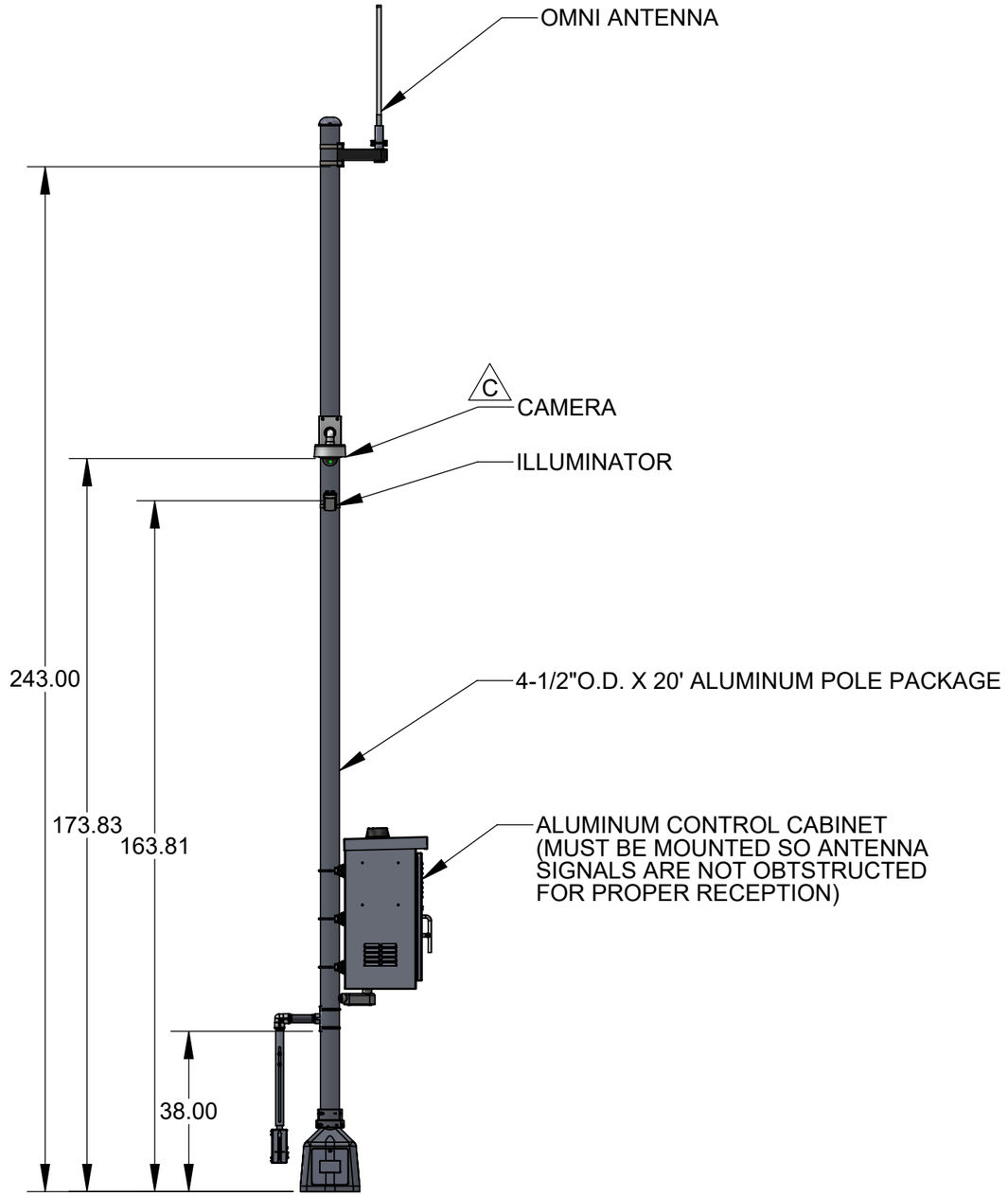


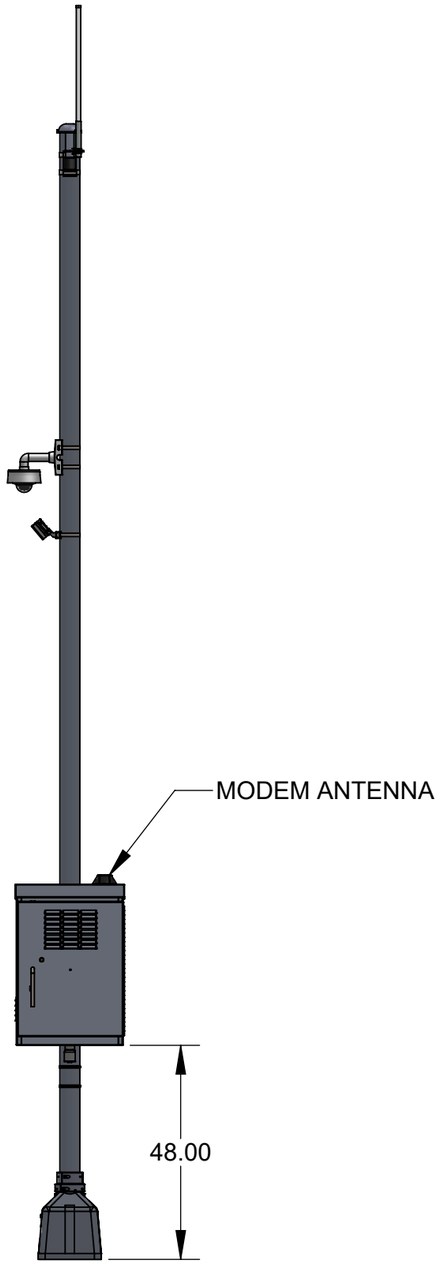
2. Configure CloudGate Universe, the provisioning server

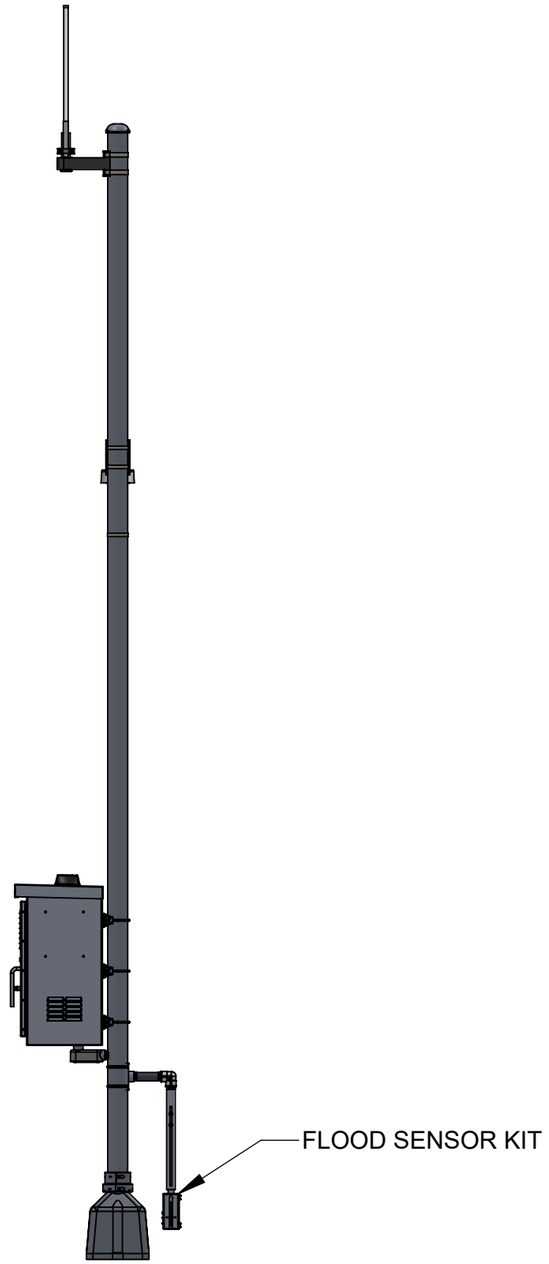


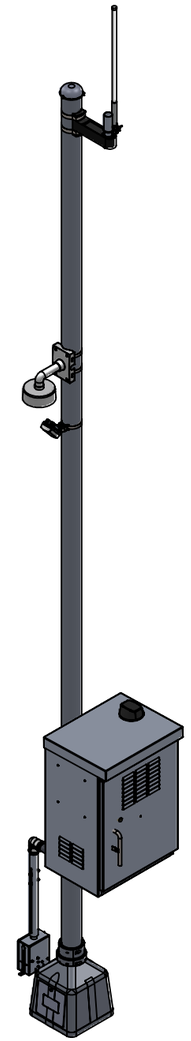
3. ...and start to CONNECT THINGS to the Cloud











NOTES:

1. ORIENT SOLAR PANEL TOWARDS SOUTHERN SKY FOR MAXIMUM SOLAR EXPOSURE
2. CONTROL CABINET HEIGHT MAY VARY.
3. WORM CLAMPS ARE PROVIDED, STANDARD 3/4" S/S BANDING IS RECOMMENDED
4. J-BOLTS NOT SHOWN
5. ALL DIMENSIONS ARE FOR REFERENCE ONLY.

REV.	DESCRIPTION	ECO	BY	DATE
C	UPDATED CAMERA, MOVED CONTROL CABINET ABOVE SENSOR		JP	10/28/2021
B	REMOVED SOLAR, CHANGED RADIO ANTENNA TO OMNI ANTENNA		JP	10/11/2021
A	INITIAL RELEASE		JP	09/22/2021

DIMENSIONS ARE INCH AND TOLERANCES ARE AS FOLLOWS UNLESS OTHERWISE SPECIFIED

.X	±0.1
.XX	±0.02
.XXX	±0.008
ANGLES	±1°

DESIGNED BY: AK — DATE: 09/22/2021
DRAWN BY: — DATE:
APPROVED BY: JP — DATE: 10/28/2021

TAPCO
TRAFFIC & PARKING CONTROL CO., INC.
5100 West Brown Deer Rd
Brown Deer, WI 53223 USA
7840 North 86th Street
Milwaukee, WI 53224 USA

TITLE: HIGH WATER WARNING SYSTEM
DETECTION POLE ARRANGEMENT

SIZE: B | DOCUMENT NO. (SEE TABLE FOR P/N): SD0273 | REVISION: C
SCALE: 1:34 | REFERENCE: Q1907769 | SHT: 1 of 1

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411A
657.0100
657.0405-.0450

Pedestal Bases and Traffic Signal Standards

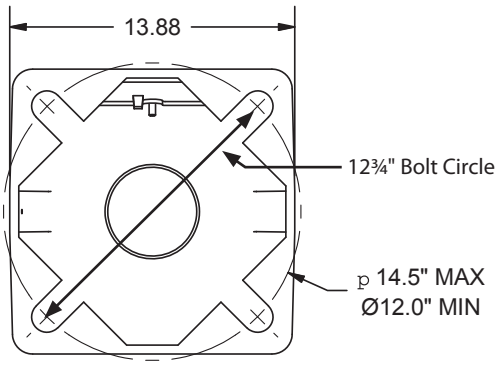
The TAPCO pedestal base is designed in accordance with the current AASHTO Specification for the Design and Construction of Structural Supports for Traffic Signals, Signs and Highway Light to withstand a 3 second gust wind speed of 90 miles per hour. These standards and tests for compliance were developed by the Wisconsin Department of Transportation.

Traffic Signal Standard

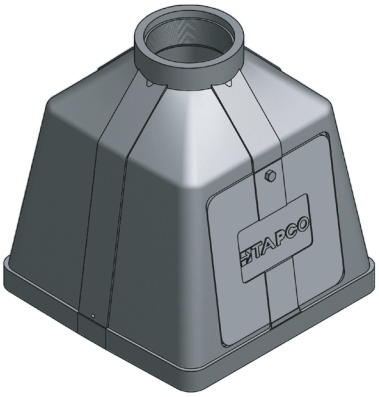
Pipes are cleaned of all mill scale, oil and foreign material. They are stocked unpainted, yet are able to be powder coated or anodized with color of your choice. They are made of Schedule 80 aluminum alloy 6061-T6 manufactured in accordance with ASTM B429. Pipe is threaded on one end. The outside dimensions are 4.5". Standard lengths are 3.5', 4', 8', 9', 10', 11', 13' and 15'.

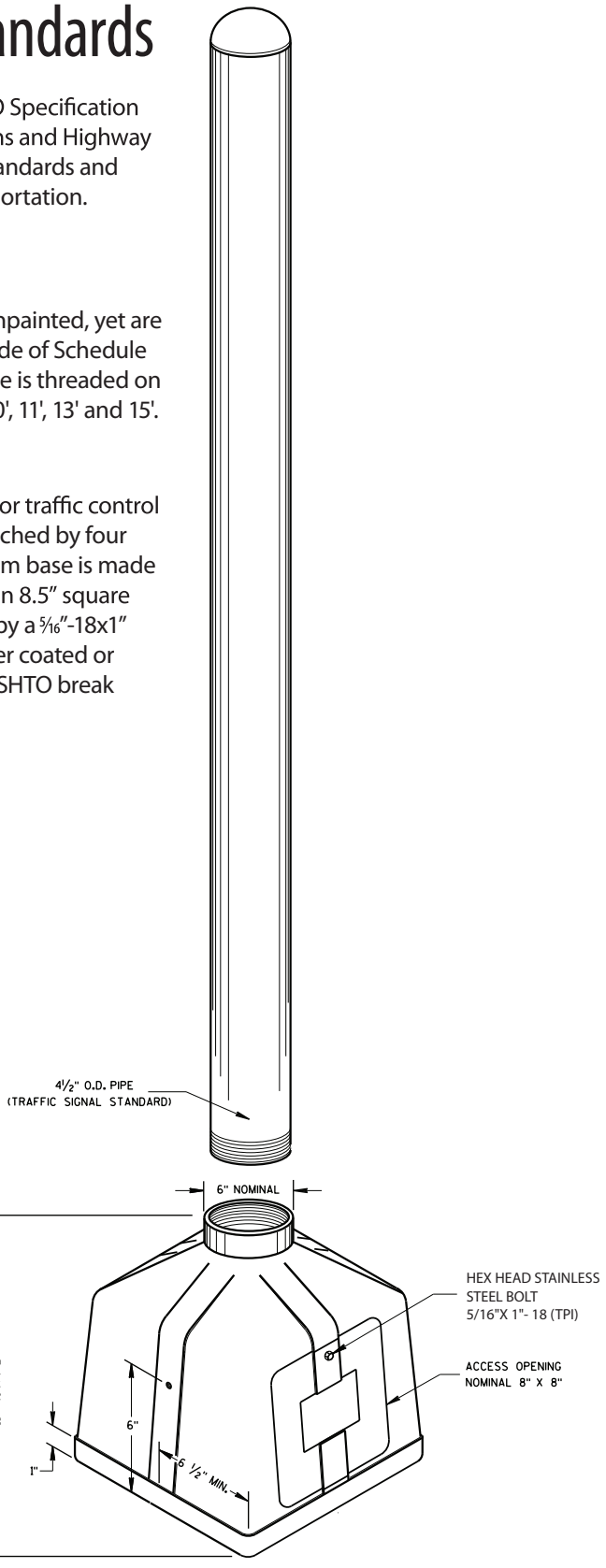
Pedestal Base

The TP-358 series base is used for mounting traffic signals, flasher assemblies or traffic control equipment. The base assembly is arranged to mount on a concrete base, attached by four internal galvanized anchor bolts (standard is 1"x42"). The square cast aluminum base is made of aluminum alloy 319 in accordance with WISDOT specifications. It includes an 8.5" square handhole cover that is also made of aluminum alloy 319. The door is secured by a 5/16"-18x1" stainless hex head bolt. They are stocked unpainted, yet are able to be powder coated or anodized with color of your choice. The base is FHWA certified and meets AASHTO break away requirements.



Base Bolt Circle





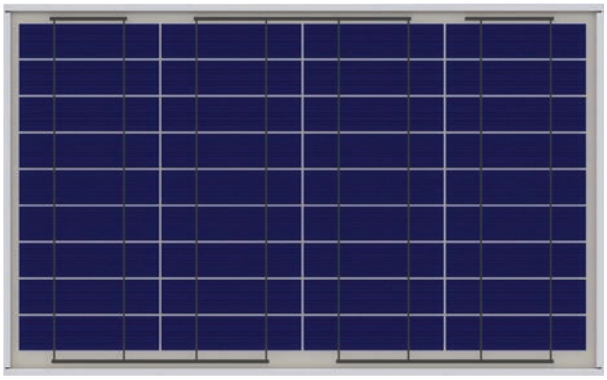
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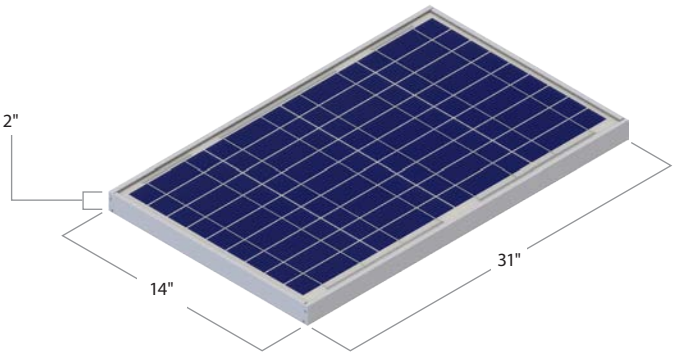
Traffic & Parking Control Co, Inc. 5100 West Brown Deer Road, Brown Deer WI 53223 U.S.A. Phone 800-236-0112 FAX 800-444-0331 www.tapconet.com
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1005-00138 (01/26/17)

TAPCO®
TRAFFIC & PARKING CONTROL COMPANY

30 Watt Solar Panel

Electrical Specifications	
Max Power	30W
Nominal Voltage	12V
Open Circuit Voltage (Voc)	21.0V
Short Circuit Current (Isc)	19.4A
Maximum Power Voltage (Vpm)	16.8V
Maximum Power Current (Ipm)	1.78A
Physical Dimensions (without brackets)	
Length	31"
Width	14"
Depth (thickness)	2"
Weight	10 lbs.
Glass	Tempered





1-800-236-0112 www.tapconet.com GSA Contract Holder GS-07F-5924R GS-07F-0234U U.S. COMMUNITIES GOVERNMENT PURCHASING ALLIANCE Contract Holder 2013-100

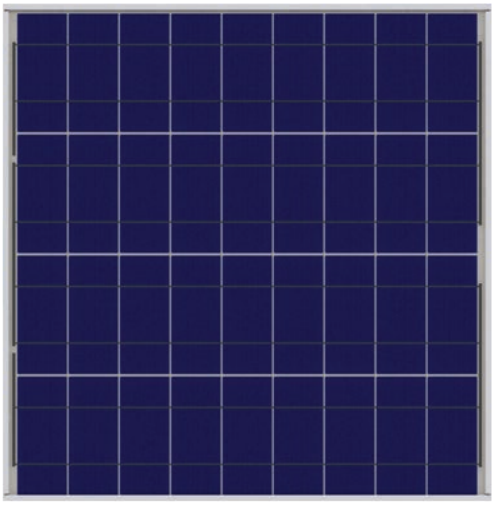
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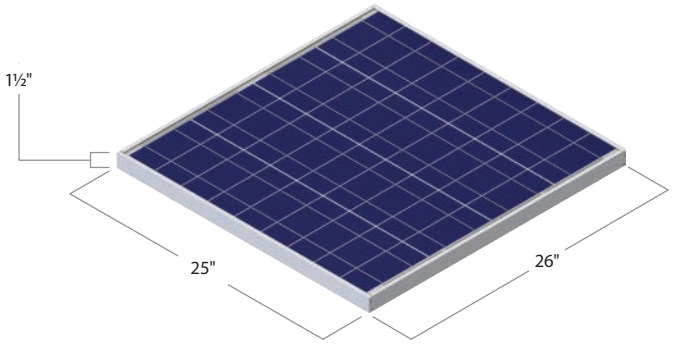
1005-XXXXXX (08/01/14)

TAPCO®
TRAFFIC & PARKING CONTROL COMPANY

55 Watt Solar Panel

Electrical Specifications	
Max Power	55W
Nominal Voltage	12V
Open Circuit Voltage (Voc)	22.1V
Short Circuit Current (Isc)	3.31A
Maximum Power Voltage (Vpm)	18.18V
Maximum Power Current (Ipm)	3.1A
Physical Dimensions (without brackets)	
Length	26"
Width	25"
Depth (thickness)	1½"
Weight	14 lbs.
Glass	Tempered





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GSA Contract Holder GS-07F-5924R GS-07F-0234U

U.S. COMMUNITIES GOVERNMENT PURCHASING ALLIANCE Contract Holder 2013-100

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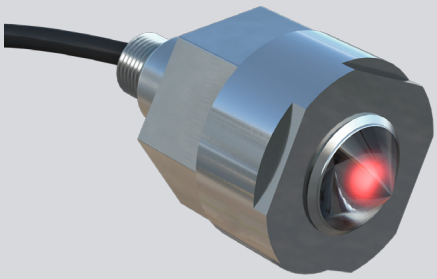
1005-XXXXXX (08/01/14)

TAPCO
Safe travels.

HIGH WATER WARNING SENSOR - PHOTOELECTRIC

SPECIFICATIONS

POWER INPUT	12VDC
MATERIAL	Stainless steel and polysulfone
SENSOR	Photoelectric (visible red shown)
ENCLOSURE	IP67 rating
OPERATING TEMPERATURE RANGE	-13°F to 151°F (-25°C to 66°C)
MOUNTING OPTIONS	Pole
CABLE LENGTH	15 or 50 feet
DIMENSIONS	1.57″W x 2.5″H x 1.57″D (not including mounting)



(800) 236-0112 TAPCOnet.com

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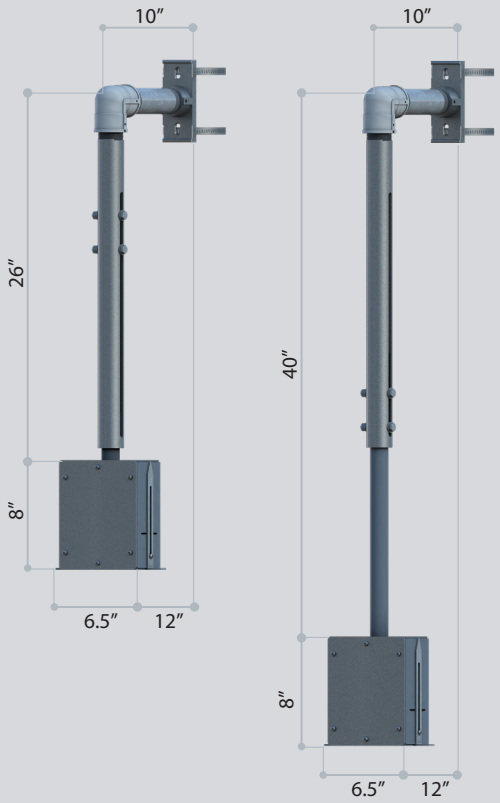
1026-00105 04/17/20

TAPCO
Safe travels.

HIGH WATER - DOG LEG ASSEMBLY

SPECIFICATIONS

HOLDS	TAPCO High Water Sensors
MATERIALS	Aluminum structure and stainless-steel hardware
MOUNTING	Banding
DIMENSIONS	34"- 48" L x 10"H



1026-01055 08/31/21

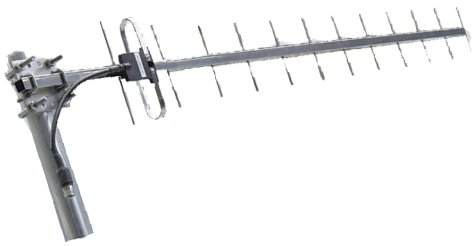
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Laird™

Smart Technology. Delivered.

900 MHz Yagi
Spread Spectrum Antenna



OUR PC YAGIS ARE ALL-WIELDED AND WEATHERPROOFED

Ruggedized mounting, all-welded joints, and complete weatherproofing are standard in Laird's 800 and 900 MHz Yagis. Because construction is critical at these frequencies, Laird engineers utilize special techniques to develop lasting antennas that will last. For example, six, ten, and thirteen element Yagis are mounted with two large stainless steel U-bolts. Elements are welded to a boom in all PC Yagis, but Laird positions the welds on the inside of the boom to enhance electrical performance.

Complete weatherability is ensured by enclosing the feed system in a potted PVC radome that stands up to the most demanding requirements. The pigtail feed withstands a 50 pound pull, making connector weatherproofing effortless. With no moveable components, adjustments or loose parts are not a concern. All hardware is stainless steel for longest life.

900 MHz MODELS: SPREAD SPECTRUM AND MORE

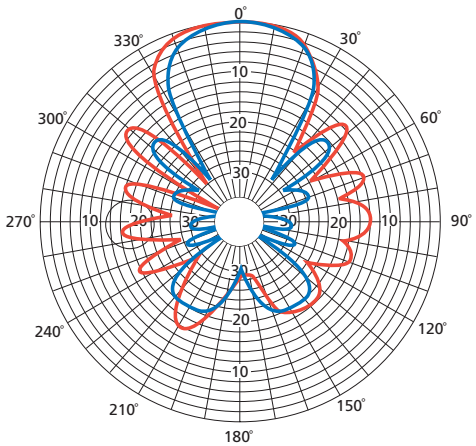
The four element PC904N, six element PC906N, and ten element PC8910N and PC9010N models are the right choice for long leaps on WLANS, multipoint systems, and other data transmission applications. Trunking, SCADA, alarm systems and telemetry are just a few of the activities for 896-960 MHz range, PC antennas

FEATURES RoHS

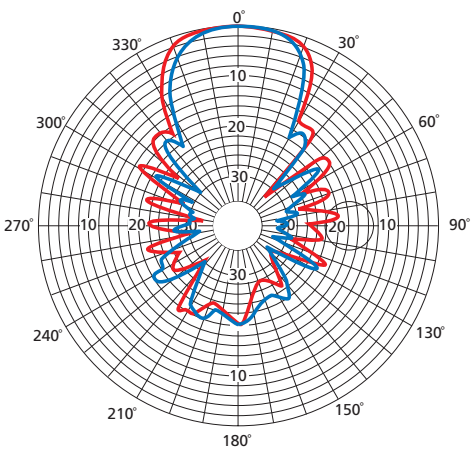
- All-welded unit construction eliminates electrical noise
- No adjustments needed
- Waterproof design
- Stainless steel hardware
- Pigtail mounted N-female connector

MODEL	FREQ. MHz	GAIN dBd	NO. ELEM.	F TO B dB	3dB BMWIDTH E-PLANE/H-PLANE	CONN. TYPE (female)	W/ SURF. AREA ft² (m²)	W/ SURV. mph (kph)	W/ ½" ICE	LENGTH in (cm)	WEIGHT lb. (kg)
PC9013N	902-928	13	13	20	35°/40°	N	0.46 (0.043)	125 (200)	100 (161)	53.5 (135.9)	3.12 (1.40)
PC9010N	928-960	12	10	30	40°/45°	N	0.38 (0.035)	125 (200)	100 (161)	41.4 (105.2)	2.31 (1.04)
PC926N	928-960	8.5	6	18	55°/65°	N	0.26 (0.024)	125 (200)	100 (161)	24.75 (62.9)	1.61 (0.72)
PC904N	896-980	6	4	15	70°/100°	N	0.11 (0.01)	125 (200)	100 (161)	13 (33)	1.12 (0.50)
PC906N	896-940	8.5	6	18	55°/65°	N	0.26 (0.024)	125 (200)	100 (161)	24.75	1.62 (0.73)

TYPICAL 10 ELEMENT



TYPICAL 13 ELEMENT



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IAS-EUSales@lairdtech.com

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IAS-AsiaSales@lairdtech.com

www.lairdtech.com

ANT-DS-900MHZ YAGIS 0915

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AXIS P1214-E Network Camera

Miniature HDTV camera for discreet outdoor surveillance

AXIS P1214-E is a tiny HDTV 720p camera for exceptionally discreet surveillance, ideal for capturing subjects at close range. It offers a wide range of mounting options for indoor and outdoor installations. AXIS P1214-E comprises a main unit and a separate sensor unit that can be mounted up to 8 m (26 ft.) apart. The IP66-rated sensor unit can be mounted flush with a surface using the included mounting bracket, or mounted on a surface using the supplied housing. AXIS P1214-E offers powerful event management capabilities with intelligent video features such as tampering alarm, motion detection and support for third-party applications.

- > IP66-rated sensor unit
- > Functional and extremely discreet design
- > HDTV 720p
- > Edge storage
- > Multiple H.264 streams





AXIS P1214-E Network Camera

Camera	
Image sensor	Progressive scan RGB CMOS 1/4"
Lens	Fixed iris, Fixed focus 2.8 mm, F2.0 Horizontal angle of view: 81°
Light sensitivity	1.0-10000 lux
Shutter time	1/24500 s to 1/6 s
Video	
Video compression	H.264 (MPEG-4 Part 10/AVC), Motion JPEG
Resolutions	1280x720 to 320x180
Frame rate	Up to 25/30 fps (50/60 Hz) in all resolutions
Video streaming	Multiple, individually configurable streams in H.264 and Motion JPEG Controllable frame rate and bandwidth, VBR/CBR H.264
Image settings	Compression, Color, Brightness, Sharpness, Contrast, White balance, Exposure control, Exposure zones, Backlight compensation, Fine tuning of behavior at low light, Rotation, Text and image overlay, Mirroring of images, Privacy mask, Axis' Corridor Format
Network	
Security	Password protection, IP address filtering, HTTPS[a] encryption, IEEE 802.1X[a] network access control, Digest authentication, User access log, Centralized Certificate Management
Supported protocols	IPv4/v6, HTTP, HTTPS[a], SSL/TLS[a], QoS Layer 3 DiffServ, FTP, CIFS/SMB, SMTP, Bonjour, UPnP™, SNMP v1/v2c/v3 (MIB-II), DNS, DynDNS, NTP, RTSP, RTP, SFTP, TCP, UDP, IGMP, RTCP, ICMP, DHCP, ARP, SOCKS, SSH
System integration	
Application Programming Interface	Open API for software integration, including VAPIX® and AXIS Camera Application Platform; specifications at *www.axis.com* AXIS Video Hosting System (AVHS) with One-Click Connection. ONVIF Profile S; specification at *www.onvif.org*
Analytics	Video motion detection, Active tampering alarm Support for AXIS Camera Application Platform enabling installation of AXIS Video Motion Detection 3, AXIS Cross Line Detection, AXIS Digital Autotracking and third-party applications, see *www.axis.com/acap*
Event triggers	Analytics, External inputs, Video loss
Event actions	File upload: FTP, SFTP, HTTP, HTTPS, network share and email Notification: email, HTTP, HTTPS and TCP External output activation Video recording to edge storage Pre- and post-alarm video buffering
Built-in installation aids	Pixel counter
Data streaming	Event data
General	
Casing	**Main unit:** Polycarbonate casing **Sensor unit:** IP66- and NEMA 4X-rated metal casing (aluminum)
Memory	256 MB RAM, 128 MB Flash
Power	Power over Ethernet IEEE 802.3af/802.3at Type 1 Class 2 (max 6.49 W) 8-28 V DC max 4.7 W
Connectors	RJ45 for 10BASE-T/100BASE-TX PoE RJ12 for the sensor unit Terminal blocks for power, 1 alarm input and 1 output
Edge storage	Support for microSD/microSDHC/microSDXC card Support for recording to dedicated network-attached storage (NAS) For SD card and NAS recommendations see *www.axis.com*
Operating conditions	-20 °C to 50 °C (-4 °F to 122 °F) **Main unit:** Humidity 10-85% RH (non-condensing) **Sensor unit:** Humidity 10-100% RH (condensing)
Storage conditions	-40 °C to 65 °C (-40 °F to 149 °F)
Approvals	EN 55022 Class B, EN 55024, EN 61000-3-2, EN 61000-3-3, EN 61000-6-1, FCC Part 15 Subpart B Class B, ICES-003 Class B, VCCI Class B, C-tick AS/NZS CISPR 22 Class B, KCC KN22 Class B, KN24, IEC/EN/UL 60950-1, IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-6 Class 4M4, IEC 60068-2-27 Class 4M3, 60068-2-78 Class 3K3 **Sensor unit:** IEC/EN/UL 60950-22, IEC/EN 60529 IP66, NEMA 250 Type 4X, IEC 60068-2-14, IEC 60068-2-30, IEC 60068-2-78 Class 4K3
Dimensions	ø 20 x 52 mm (13/16 x 2 1/16 in)
Weight	**Main unit:** 109 g (0.24 lb) **Sensor unit:** 250 g (0.55 lb)
Included accessories	Mounting kit, Installation Guide, Windows decoder 1-user license, AVHS Authentication key
Optional accessories	Mounting brackets, AXIS T8120 Midspan 15 W 1-port, AXIS P7701 Video Decoder, AXIS P8221 Network I/O Audio Module
Video management software	AXIS Camera Companion, AXIS Camera Station, Video management software from Axis' Application Development Partners available on *www.axis.com/techsup/software*
Languages	German, French, Spanish, Italian, Russian, Simplified Chinese, Japanese, Korean, Portuguese
Warranty	Axis 3-year warranty and AXIS Extended Warranty option, see *www.axis.com/warranty*

a. *This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (http://www.openssl.org/), and cryptographic software written by Eric Young (eay@cryptsoft.com).*

More information is available at www.axis.com

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1496754/EN/M1.2/2015

AXIS T90D25

High-performance illuminator with ease of installation

Based on the latest LED technology, the new generation of Axis illuminators delivers more light where it is needed. They generate longer illumination distances, minimize light wastage, and prevent overexposure of foreground objects. With interchangeable lenses, the angle of illumination can be optimized to match your network camera's field of view. AXIS T90D25 W-LED Illuminators come with a AC/DC or PoE power input, for easy and flexible installation with PoE midspans or PoE switches. Thanks to integrated green features such as power adjust and telemetry control (on AC/DC model only), Axis illuminators enhance the potential for energy savings.

- > **Low power consumption**
- > **Flexible angle of illumination**
- > **Easy setup by remote control**
- > **Choice of AC/DC or PoE power input**
- > **Various mounting options**





AXIS T90D25

Models	AXIS T90D25 W-LED Illuminator, AC/DC variant AXIS T90D25 W-LED Illuminator, PoE variant
General	
Compatible products	All Axis network cameras
Distance	With standard lens 10° x 10°: 110 m (361 ft) With diverging lens 35° x 10°: 65 m (213 ft) With diverging lens 60° x 25°: 35 m (115 ft) With diverging lens 80° x 30°: 25 m (82 ft) With optional diverging lens 120° x 50°: 18 m (59 ft)
Power	**AC/DC variant** Power input: 12–24 V AC/DC AC frequency: 50-60 Hz Maximum light: 24 W Standby mode: 0.3 W **PoE variant** Power over Ethernet (PoE) IEEE 802.3at Type 2 Class 4 Maximum light: 25 W Standby mode: 4.5 W
Control technology	Through integrated push buttons or remote control: power level, photocell sensitivity, telemetry link for remote activation, timer
Type	6000 K Luminous power: 1863 lm
Angle	Without diverging lenses: 10° With diverging lenses: 35°, 60°, 80°, 120°[a]
Casing	Aluminum and polycarbonate Color: white and silver
Display and indicators	Indicator LEDs
Environment	Indoor and outdoor
Mounting	Wall, ceiling, pole, fixed box camera housing
Operating conditions	-50 °C to 50 °C (-58 °F to 122 °F) Humidity 10–100% RH (condensing)
Storage conditions	-50 °C to 70°C (-58 °F to 158 °F)
Approvals	**EMC** FCC Part 15.107 and 15.109 Class B, ICES-003 Issue 6 Class B, EN 55032 Class B, RCM AS/NZS CISPR 32 Class B, VCCI Class B, EN 55015, EN 55024, EN 50130–4, EN 61547 **Safety** IEC/EN 60598-1, IEC/EN 62471 (risk group 2), C22.2 No 250.0–08, UL 2108 UL 8750 **Environment** IEC/EN 60529 IP66, IEC/EN 62262 IK09
Dimensions	100 x 135 x 66 mm (4 x 5 x 2.5 in) Cable length: 2.5 m (8.2 ft)
Weight	950 g (2.11 lb)
Included accessories	Three diverging lenses with different beam angles: 35°, 60° and 80° IP66 cable coupler (for PoE variant only)
Optional accessories	AXIS T90B Remote Control AXIS WL Diverging Lens B 120° AXIS T90 Wall-and-Pole Mount AXIS T90 Single Bracket AXIS T90 Multi Bracket AXIS T8123–E Outdoor Midspan 30 W 1–port AXIS T8133 Midspan 30 W 1–port AXIS T81B22 DC 30 W Midspan 1–port AXIS T8134 60 W Midspan AXIS T8124–E Outdoor Midspan 60 W 1–port AXIS T8125 AC 24 V Midspan 60 W 1–port AXIS T8144 60 W Industrial Midspan AXIS T8508 PoE+ Network Switch AXIS T8516 PoE+ Network Switch AXIS T8524 PoE+ Network Switch AXIS T8504–E Outdoor PoE Network Switch Mains adaptor PS-24 Power Supply PS24 240 W For more accessories, see *www.axis.com*
Warranty	Axis 3-year warranty + additional 2 year extended warranty free of charge, see *www.axis.com/warranty*

a. *120° diverging lenses as optional accessory*

Environmental responsibility:

www.axis.com/environmental-responsibility

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UPG No. 45976

UPG Sealed Lead-Acid Battery

STAY POWERED®

Absorbant Glass Mat (AGM) technology for superior performance. Valve regulated, spill proof construction allows safe operation in any position. Approved for transport by air. D.O.T., I.A.T.A., F.A.A. and C.A.B. certified. U.L. r ecognized under file number MH 20567.

UB12350

Maintenance-Free



Specification

Nominal Voltage	12 volts
Nominal Capacity	77° F (25° C)
20-hr. (1.75A)	35.00 Ah
10-hr. (3.26A)	32.55 Ah
5-hr. (5.95A)	29.75 Ah
1-hr. (21.00A)	21.00 Ah
Approximate Weight	23.2 lbs (10.5 kgs)
Internal Resistance (approx.)	10mΩ

Shelf Life (% of normal capacity at 77° F (25° C))

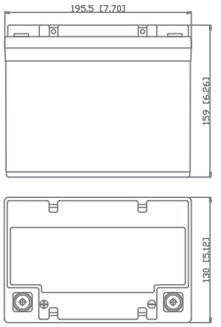
3 Months	6 Months	12 Months
91%	82%	64%

Temperature Dependancy of Capacity (20 hour rate)

104° F	77° F	32° F	5° F
102%	100%	85%	65%

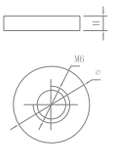
Charge Method (Constant Voltage)	
Cycle Use (Repeating Use)	
Initial Current	12.25 A or smaller
Control Voltage	14.5 - 14.9 V
Float Use	
Control Voltage	13.6 - 13.8 V

Physical Dimensions: in (mm)



L: 7.70 in (195.5 mm)
W: 5.12 in (130 mm)
H: 6.26 in (159 mm)
TH: 6.26 in (159 mm)
Tolerances are +/- 0.04 in. (+/- 1mm) and +/- 0.08 in. (+/- 2mm) for height dimensions. All data subject to change without notice.

Terminals



Dimension / Type	ø	H
I2	15	3

Constant Current Discharge Characteristics Unit:A (25°C, 77°F)

F.V/Time	5MIN	10MIN	15MIN	30MIN	1HR	2HR	3HR	4HR	5HR	8HR	10HR	20HR
9.60V	122.0	89.0	63.0	38.0	19.8	12.0	8.5	6.6	5.4	3.8	3.5	1.9
10.20V	108.0	81.0	56.0	36.0	18.6	11.0	8.3	6.4	5.3	3.8	3.4	1.8
10.50V	104.0	77.0	53.0	35.0	18.0	10.8	8.1	6.3	5.3	3.7	3.3	1.8
10.80V	100.0	73.0	50.0	34.0	17.0	10.5	7.9	6.2	5.1	3.6	3.3	1.8
11.10V	96.0	69.0	46.0	33.0	17.0	10.2	7.6	6.0	5.0	3.5	3.1	1.7

Constant Power Discharge Characteristics Unit:W (25°C, 77°F)

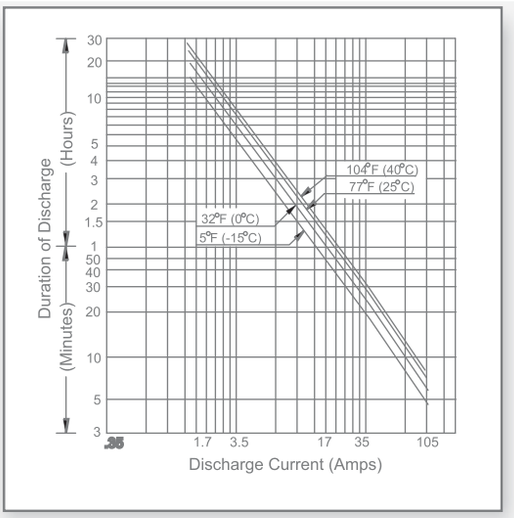
F.V/Time	5MIN	10MIN	15MIN	30MIN	1HR	2HR	3HR	4HR	5HR	8HR	10HR	20HR
9.60V	1297.0	946.0	666.0	403.0	229.0	134.0	98.0	76.0	63.0	44.0	40.0	21.7
10.20V	1194.0	901.0	623.0	399.0	216.0	128.0	96.0	75.0	62.0	43.0	39.0	21.1
10.50V	1175.0	876.0	599.0	397.0	209.0	125.0	93.0	73.0	61.0	43.0	39.0	20.9
10.80V	1160.0	853.0	576.0	396.0	203.0	122.0	91.0	72.0	60.0	42.0	38.0	20.7
11.10V	1139.0	825.0	550.0	393.0	200.0	122.0	90.0	71.0	60.0	42.0	37.0	20.1

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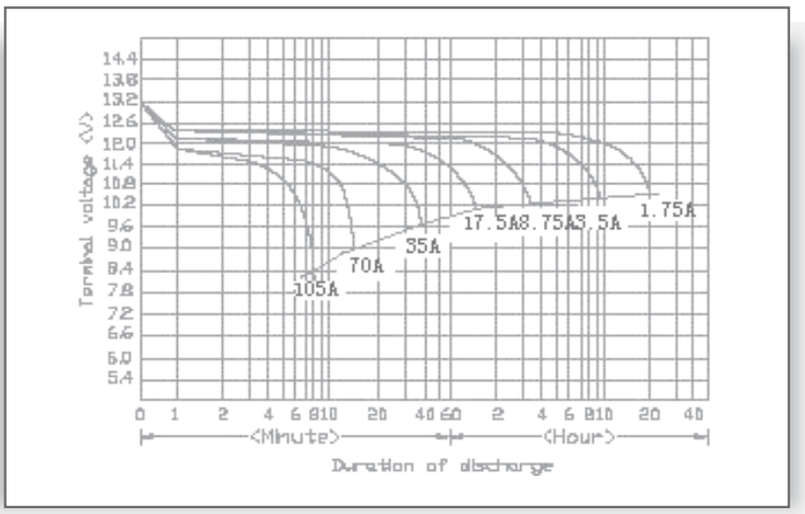
UB12350

Maintenance-Free

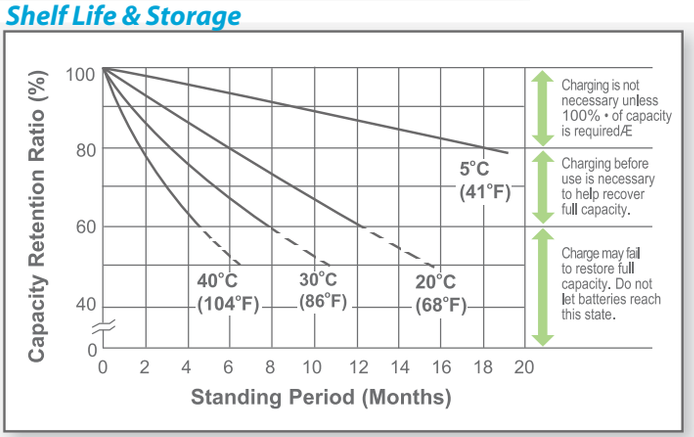
Discharge Time vs. Discharge Current



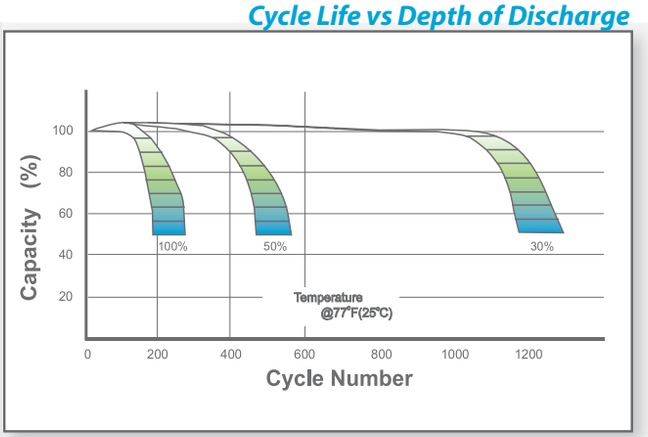
Discharge Characteristics



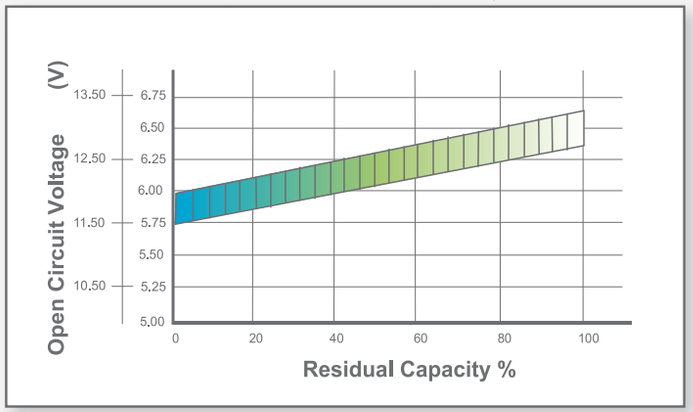
Shelf Life & Storage



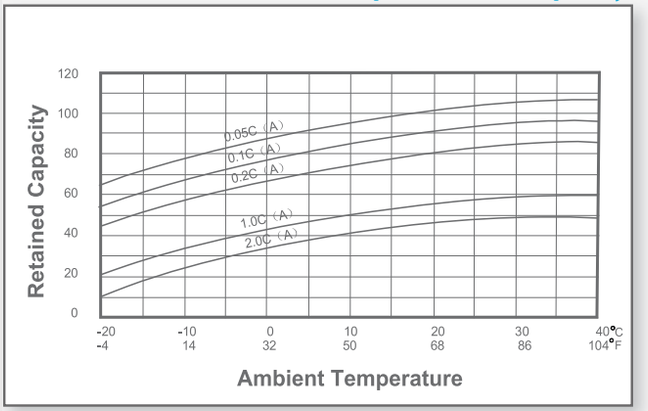
Cycle Life vs Depth of Discharge



Open Circuit Voltage vs Residual Capacity



Effect of Temperature on Capacity



Charge Current & Final Discharge Voltage

Application	Charge Voltage(V/Cell)			Max.Charge Current
	Temperature	Set Point	Allowable Range	
Cycle Use	25℃(77℉)	2.45	2.40~2.50	0.35C
Standby	25℃(77℉)	2.325	2.30~2.35	

Final Discharge Voltage V/Cell	1.75	1.70	1.60	1.30
Discharge Current(A)	0.2C>(A)	0.2C<(A)<0.5C	0.5C<(A)<1.0C	(A)>1.0C

UPG No. 46080

UPG Sealed Lead-Acid Battery

UB12500

Maintenance-Free

Absorbant Glass Mat (AGM) technology for superior performance. Valve regulated, spill proof construction allows safe operation in any position. Approved for transport by air. D.O.T., I.A.T.A., F.A.A. and C.A.B. certified. U.L. recognized under file number MH 20567.

Specification

Nominal Voltage	12 volts
Nominal Capacity	77º F (25º C)
20-hr. (2.50A)	50.0 Ah
10-hr. (4.65A)	46.5 Ah
5-hr. (8.50A)	42.5Ah
1-hr. (30.00A)	30.0Ah
Approximate Weight	32.23 lbs (14.62 kgs)
Internal Resistance (approx.)	9mΩ

Shelf Life (% of normal capacity at 68º F (20º C))

3 Months	6 Months	12 Months
91%	82%	64%

Temperature Dependancy of Capacity (20 hour rate)

104˚ F (40˚C)	77˚F (25˚C)	32˚F (0˚C)	5˚F (-15˚C)
102%	100%	85%	65%

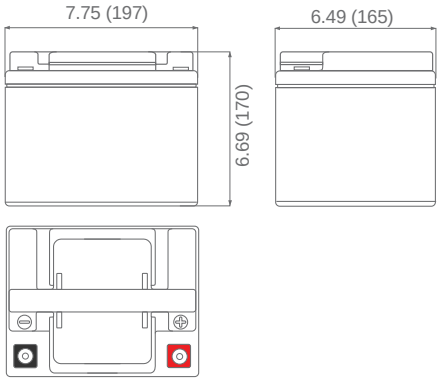
AGM Operational Temperature	
Charge	32˚F to 104˚F (0˚C to 40˚C)
Discharge	5˚F to 113˚F (-15˚C to 45˚C)
AGM Storage Temperature	5˚F to 104˚F (-15˚C to 40˚C)



Due to continuous improvements to our products, product may vary slightly from depiction.

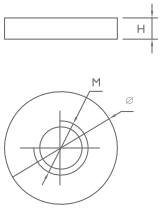
Charge Method (Constant Voltage)	
Cycle Use (Repeating Use)	
Initial Current	15 A or smaller
Control Voltage	14.6 - 14.8 V
Float Use	
Control Voltage	13.6 - 13.8 V

Physical Dimensions: in (mm)



L: 7.75 in (197 mm)
W: 6.49 in (165 mm)
H: 6.69 in (170 mm)
TH: 6.69 in (170 mm)
Tolerances are +/- 0.04 in. (+/- 1mm) and +/- 0.08 in. (+/- 2mm) for height dimensions. All data subject to change without notice.

Terminals



Type \ Dimension	M	∅	H
I6	6.00 mm 0.24 in	16.0 mm 0.63 in	4.00 mm 0.16 in

Constant Current Discharge Characteristics Unit: A (25˚C, 77˚F)

F.V/Time	5MIN	15MIN	30MIN	60MIN	2HR	3HR	5HR	8HR	10HR	20HR
1.60V	210.0	91.0	55.1	30.8	17.9	12.68	8.80	5.63	4.72	2.59
1.67V	202.0	89.0	53.8	30.5	17.5	12.63	8.73	5.60	4.68	2.57
1.70V	195.0	88.4	53.3	30.0	17.3	12.54	8.67	5.58	4.65	2.50
1.75V	181.0	85.8	51.7	29.3	16.8	12.49	8.50	5.55	4.57	2.45
1.80V	163.0	82.8	49.7	28.2	16.2	12.15	8.26	5.52	4.46	2.41

Constant Power Discharge Characteristics Unit: W (25˚C, 77˚F)

F.V/Time	5MIN	15MIN	30MIN	60MIN	2HR	3HR	5HR	8HR	10HR	20HR
1.60V	2124.0	1022.0	613.0	360.0	215.0	154.0	107.0	78.24	58.60	32.00
1.67V	2060.0	997.0	597.0	353.0	212.0	150.0	106.0	77.65	58.10	31.50
1.70V	2031.0	981.0	590.0	350.0	207.0	148.0	105.0	76.47	57.70	31.20
1.75V	1895.0	940.0	571.0	342.0	200.0	143.0	104.0	75.88	56.30	31.00
1.80V	1693.0	882.4	528.0	332.0	192.0	136.0	103.0	74.71	54.60	30.30

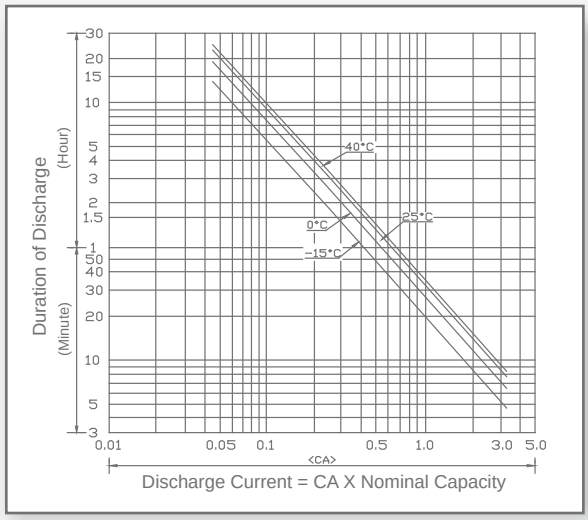
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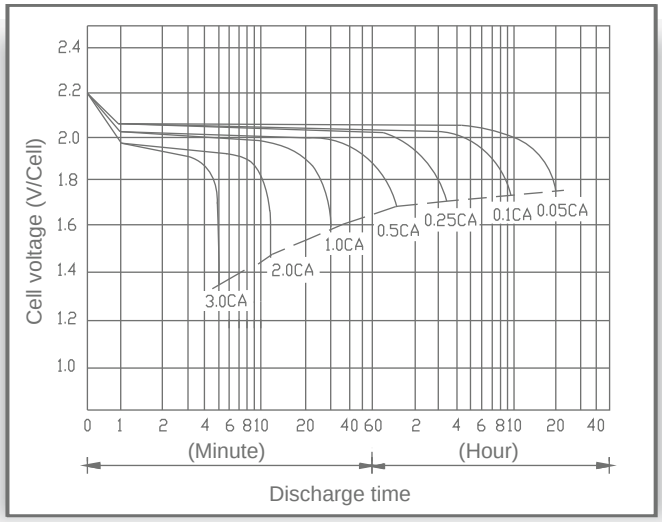
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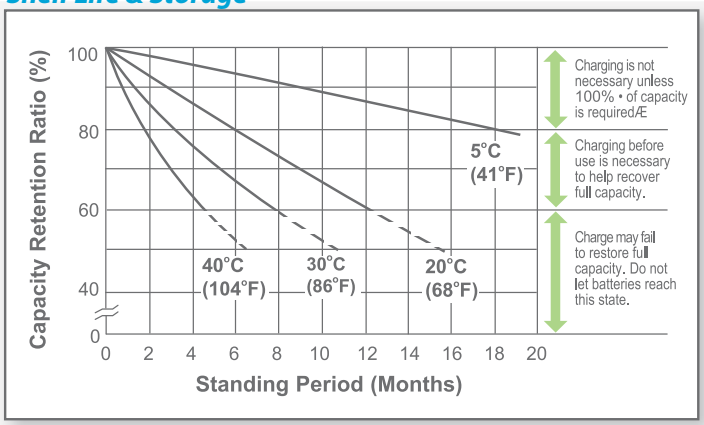
Discharge Time vs. Discharge Current



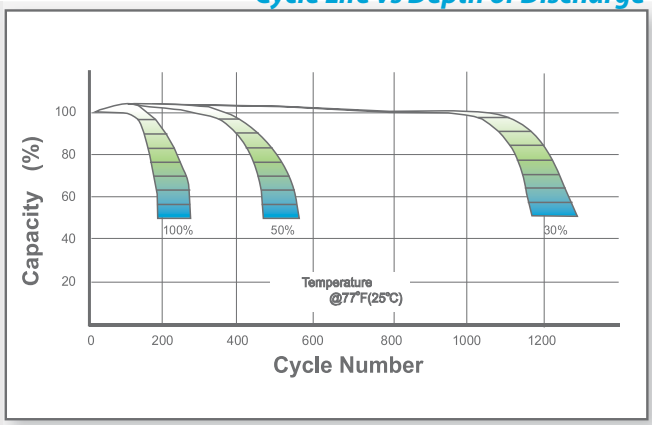
Discharge Characteristics



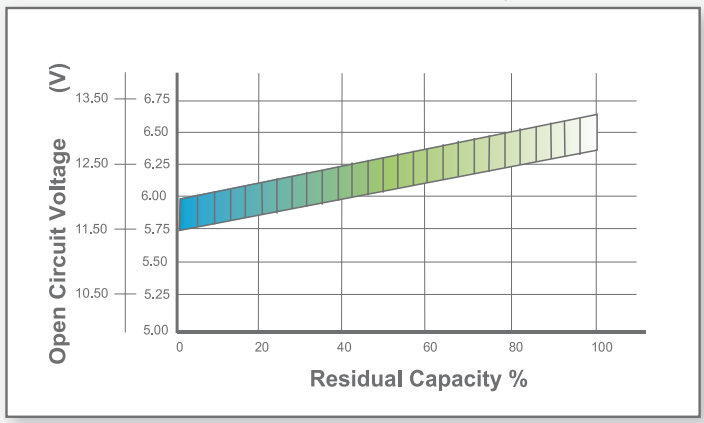
Shelf Life & Storage



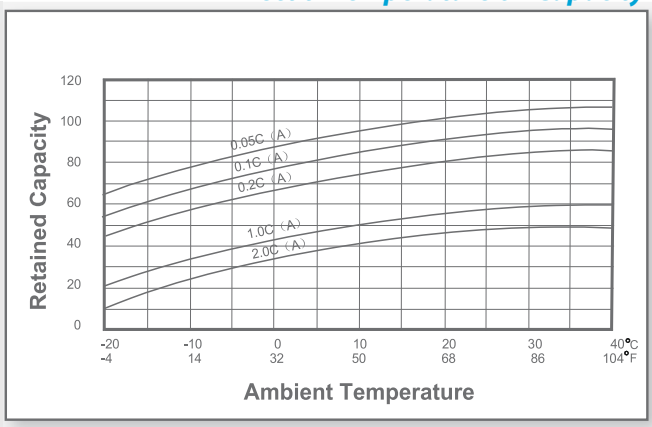
Cycle Life vs Depth of Discharge



Open Circuit Voltage vs Residual Capacity



Effect of Temperature on Capacity



Charge Current & Final Discharge Voltage

Application	Charge Voltage(V/Cell)			Max.Charge Current
	Temperature	Set Point	Allowable Range	
Cycle Use	25℃(77℉)	2.45	2.43~2.47	0.30C
Standby	25℃(77℉)	2.28	2.27~2.30	

Final Discharge Voltage V/Cell	1.75	1.70	1.60	1.30
Discharge Current(A)	0.2C>(A)	0.2C<(A)<0.5C	0.5C<(A)<1.0C	(A)>1.0C

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Let UPG Power Your Life.

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TAPCO
Safe travels.

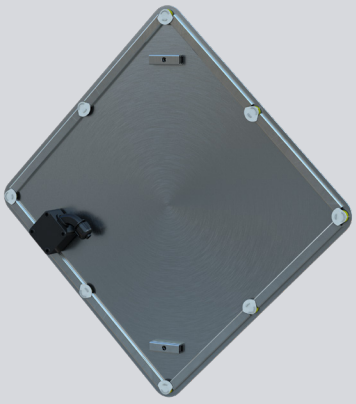
TAPCO-INTEGRATED BLINKERSIGN®

SPECIFICATIONS

POWER	12VDC or Low voltage, current controlled through TAPCO controller
SIGN LEGEND	Various MUTCD options available (W11-2 shown)
SIGN SUBSTRATE	.080" highway grade aluminum
REFLECTIVE SHEETING	3M™ DG3 with anti-graffiti overlay
DIMMING	Variable based on photocell sensor input or 6V solar panel
FLASH PATTERN	Various MUTCD-compliant options dependent upon sign legend
LED TYPE	Environmentally-sealed, high-power 1 watt LED
LED COLOR	Amber, red, white or orange (dependent on sign legend)
LED QUANTITY	Various options dependent upon sign legend
LED LIFE EXPECTANCY	100,000 hours
VISIBILITY	Daytime: more than 1,000 feet Nighttime: more than 1 mile
MOUNTING BRACKETS	Single post standard. Double post or Z-bar available
OPERATING TEMPERATURE RANGE	-40˚F to 122˚F (-40˚C to 50˚C)
DIMENSIONS	Various options dependent upon sign legend



FRONT



BACK

(800) 236-0112 TAPCOnet.com

© 2019 Traffic and Parking Control Co., Inc. 5100 West Brown Deer Rd., Brown Deer WI 53223 Phone (800) 236-0112 FAX 800-444-0331 www.TAPCOnet.com

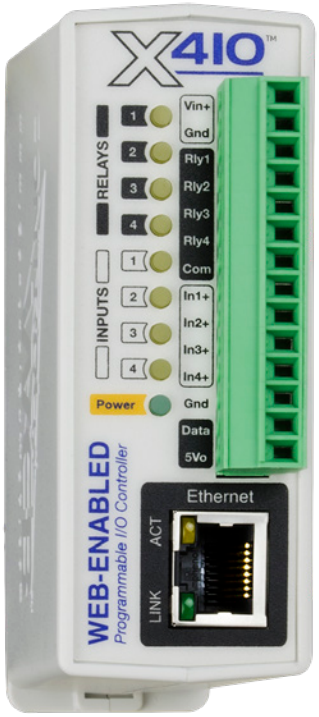
1026-01011-ti 07/02/19

X-410™

Web-Enabled Programmable Controller

4 Digital Inputs, 4 Relays, up to 16 1-Wire sensors

PRODUCT OVERVIEW



The X-410™ is a multifunction web-enabled module for control and monitoring. The X-410 has four internal relays, four digital inputs, four pulse counters, 16 general purpose timers, 16 general purpose registers and a 1-Wire® bus. The 1-Wire bus supports up to 16 sensors for monitoring temperature, humidity and more.

It can be controlled and/or monitored over any TCP/IP network including private networks, IP-based industrial control networks, and the Internet. Users can operate the X-410 using a web browser, the CBW Mobile app, or custom applications written for a computer, PLC, or other automation controller.

The X-410's built-in interface allows you to create custom "Tasks" for simple and advanced control logic.

Create tasks based on time, input or outputs' status, or the responsiveness of remote devices. The X-410 also has a built-in BASIC interpreter for custom applications not achievable through the Task Builder system.

Other features are also included such as, email notification, event scheduling, and logging. The X-410 can control and monitor up to 32 remote devices, graph logged data, FTP logged data, email logged data, send encrypted emails, and monitor its power supply voltage.

The X-410 supports a number of Ethernet protocols including: HTTP/HTTPS, Modbus/TCP, SNMP V1,V2 & V3, NTP, SMTP(Encrypted), and FTP/FTPS. The status of the device can be retrieved in human readable formats XML and JSON.

The X-410 supports TLS V1.2 encryption as well as cloud integration(not required) for easier configuration and access. Specifically the X-410 supports HTTPS connections, can send encrypted emails, can communicate with remote devices using TLS, and send logged data to FTP servers over an encrypted connection.

In addition, the X-410 can be configured to automatically connect to ControlByWeb.cloud, ControlByWeb's cloud service. This feature is not required, but does simplify the configuration process and internet access to an X-410 installed behind a network router by eliminating manual configuration of the device and port forwarding setup on routers.

Features:

- Four electro-mechanical relays (shared common) independently controlled
- Four digital inputs (shared ground)
- 1-Wire Bus for up to 16 sensors (temperature, humidity, ultrasonic sensors, etc.)
- Control, monitor, and log 32 remote modules, or up to 100 I/O
- User Permissions: Admin, Manager, User
- Tasks
  - 50 Scheduled
  - 50 Conditional
  - 16 Automatic Reboot
  - 20 Override Schedules
- Send email alerts based on user-defined conditions (supports encrypted email servers, such as Gmail)
- Real-Time Clock with NTP server synchronization
- Automatic daylight savings and leap year adjustment
- Highly configurable - Almost any combination of input/relay control possible
- No software required
- Customizable web-based Control Page
- BASIC script support for advanced flexibility
- Configurable logging
- Graphing (logged data)
- HTTPS/TLS encrypted
- Static or DHCP IP address configuration
- Modbus, SNMP, Remote Service, IP Filtering
- Field updatable
- Removable 14-Terminal connector for easy installation
- Rugged DIN-Rail/wall-mountable enclosure
- 5-Year Warranty



Example Control Page

CONTROL by WEB™
www.ControlByWeb.com

Phone: 435-750-5999
Email: Sales@ControlByWeb.com

X-410™

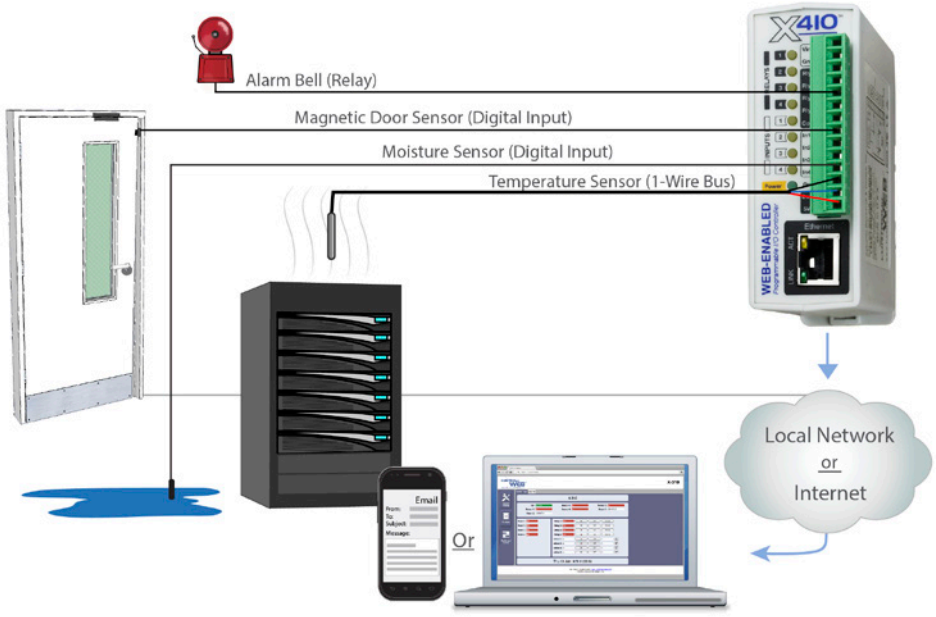
Web-Enabled Programmable Controller

4 Digital Inputs, 4 Relays, up to 16 1-Wire sensors

APPLICATIONS & SPECS

Server Room

Control & Monitoring



Power Requirements

- **Voltage:**
  - X-410-I: 9-28 VDC
  - X-410-E: POE and/or 9-28VDC
- **Max Current:** 240mA

Relays

- **Number of Relays:** 4
- **Max Voltage:** 28VAC, 24VDC
- **Max Current:** 1A
- **Contact Type:** SPST (Form 1A) - All relays have a shared common
- **Load Type:** General Purpose
- **Contact Resistance:** 1 milliohm max
- **Contact Material:** AgNi
- **Electrical Life:** 100K operations (Min)
- **Mechanical Life:** 5M cycles (Min)
- **Environmental Rating:** Over voltage Category II, Pollution Degree 2
- **Relay Modes:** ON/OFF or Pulsed
- **Pulse Timer Duration:** 0.1 to 86,400 Seconds (1-day)

Digital Inputs

- **Number of Inputs:** 4
- **Type:** Non-Isolated
- **Voltage Range:** 4-26 VDC
- **Current:** 950uA @ 4V, 8.5mA @ 26V
- **Minimum Hold Time:** 20mS
- **Input Functions:** Monitor State, Control Relays, Control Remote Relays, Scalable Counter, On Timer, Total On Timer, Frequency
- **Maximum Count:** 24-bit
- **Max Count Rate:** 20Hz Max (Dependent on Configuration)
- **Edge Trigger:** Rising, Falling or Both

Temperature Sensors

- **Maximum Number of Sensors:** 16
- **Type:** Dallas Semiconductor DS18B20
- **Temperature Range:** -67°F to 257°F (-55°C to +125°C)
- **Accuracy:** ±0.5°C (from -10°C to +85°C)
- **Sensor Functions:** Monitor Temperature, Log Temperature, Email Alerts, SNMP Traps
- **Humidity Type:** Xytronix Model X-DTHS-P sensor
- **Humidity Range:** 0-100% RH
- **Accuracy:** ±2%
- **Max Cable Length:** 600 feet (180m) maximum combined cable length

Real-Time Clock

- Manual or NTP(Network Time Protocol) setup
- **NTP Sync Period:** Once, Daily, Weekly, On Power-up
- Auto Daylight Savings Adjustment

Capacitor Power Backup

- **Backup Functions:** Retain Real-Time Clock, External Variables, Relay State, and Counters
- **Backup Duration:** 3 days minimum

Network

- **Type:** 10/100 Base-T Ethernet Port
- **Setup:** Static IP address assignment. TCP port selectable

Connectors

- **Power/Input/Relays:** 14-Position, 3.81mm, Removable
- **Network:** 8-pin RJ-45

LED Indicators

- **Number of LEDs:** 11
  - Power on
  - Relay coil energized 1-4
  - Digital Input 1-4
  - Network linked
  - Network activity

Physical

- **Operating Temperature:** -40°F to 150°F (-40°C to 65.5°C)
- **Size:**
  - 1.41in (35.7mm) wide
  - 3.88in (98.5mm) tall
  - 3.1in (78mm) deep (not including connector)
- **Weight:** 5 oz (142 grams)
- **Enclosure Material:** Lexan 940 Polycarbonate Plastic
- **Enclosure Flame Rating:** UL94 V0

Protocols

- HTTP, HTTPS, SSL, XML, Modbus TCP/IP, SNMP, SMTP, Remote Services

Logging

- **Log File Size:** 512K (up to 8,448 logs)
- **Storage:** Nonvolatile Flash
- **Buffer Architecture:** Circular Buffer
- *Log data can be periodically read and stored on a computer*

Advanced Features

- Task Builder
- BASIC interpreter
- Remote services

Password Settings

- **Password protection on setup page:** Yes
- **Password protection on control page:** Optional
- **Password Encoding:** Base 64
- **Max Password Length:** 18 Characters

Electromagnetic Compliance

- IEC CISPR 22, CISPR 24
- EU EN55024, EN55022
- X-410-I: FCC 47CFR15 (Class B)
- X-410-E: FCC 47CFR15 (Class A)

Product Safety Compliance

- UL 61010-1 (Electrical Equipment for Measurement, Control, and Laboratory Use)

CE

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