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Tramco Services, DBA Kanawha Electric and Machine Company
141 Campbells Creek Drive
Charleston, WV 25306

DIVISION OF HIGHWAYS

Request for Quotation

Full Matrix Trailer Mounted Solar Powered Message Board

RFQ Number 7012EC05

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WV PURCHASING
DIVISION



WANCO WTMMB-SLL (A)

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ATTACHMENTS:

- A: WANCO Technical Information
 - Enclosure One, Detailed Technical Specifications
 - Enclosure Two, General Information Variable Message Signs
 - Enclosure Three, WTMMB-SLL(A) Dimensions
 - Enclosure Four, WANCO Standard Warranty



Kanawha Electric & Machine Company

141 Campbells Creek Road Charleston, WV 25306
PH 304-926-2650 1-800-649-4926 FAX 304-926-6623
www.tramcoservices.com

Company Information

Company Name:	Tramco Services, DBA Kanawha Electric and Machine Company
Office Address:	141 Campbells Creek Drive, Charleston, WV 25306
Remittance Address:	141 Campbells Creek Drive, Charleston, WV 25306
Phone Number:	304-926-2650
Fax Number:	304-926-6623
Principal Contact:	Stephen S. Kappa

Type of Company

Corporation:			
State incorporated in:	West Virginia	Date:	2000
President:	Mr. Thomas E. Sheppard		
Vice President:	Mr. Larry Ward Jr.		
Chief Financial Officer	Mr. Wally Weddington		
Sole Proprietorship:	Sole Owner is Mr. Thomas E. Sheppard		
WV Vendor Number	707143136		



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Description: Kanawha Electric and Machine Company (KEMC) is an SBA registered Small Business that is also HUBZone certified. KEMC operates as an electrical apparatus repair facility, a mechanical apparatus repair and machine shop facility, certified welding facility and an authorized warranty repair and distribution center for premium brand electric motors, generators, light towers and solar/diesel powered message board products. Our electrical apparatus repair services includes AC & DC motors, generators, light towers, message boards and pump rewinding, refurbishing, redesign and testing of these components to specifications compliant with our ISO Quality Assurance Program. Our services cover a full range of electric motors, pumps and generators including light towers, message boards, random wound stators, rotors and armatures, form wound stators and armatures; synchronous stators and rotating fields; explosion proof motors; UL motors; MSHA approved motors; and submersible pump motors.

Strengths: KEMC services customers in seven states: West Virginia, Tennessee, Kentucky, Virginia, Ohio, Maryland and Pennsylvania. To better serve customer needs, KEMC maintains scheduled Emergency Response Teams 24 hours a day, seven days a week, and 365 days a year. Our Emergency Response Service ensures that experienced help and timely, dependable solutions are just a phone call away. Kanawha Electric and Machine Company is the only ISO 9001-2008 certified and registered electrical repair and rebuild facility on the east coast. Our ISO certified system governs every aspect of our service to our customers. KEMC is housed in a modern, three year old facility containing nearly 50,000 square feet. **Kanawha Electric is an authorized Warranty Repair Center for Baldor Electric Motors, Generators and Light Towers, Magnum Generators and Light Towers, Wanco Light Towers and Message Boards and Ver-Mac Message Boards.**

Experience: Kanawha Electric & Machine Company has been in continuous operation since 1937. Our employees are all highly trained and skilled associates with an average of over 20 years of service experience each. Our workforce incorporates requirements and standards acceptable to EASAQ rebuild specifications and SKF Electric Motor Rebuilder standards. Company machinist are trained on both CNC and manual machining equipment and commonly work with many exotic metals including Hastelloy, Titanium and Tungsten. Kanawha Electric and Machine Company is certified by the American Welding Society as a welding facility and is also certified by AWS to conduct welder certification training and welder certification testing.

Solving Your Electrical Apparatus, Generator, Message Board, Machining and Welding Challenges

- New electric motor & pump sales
- Motor & pump repair, rebuild, redesign
- Service & Warranty repair generators & light towers
- Service & Warranty repair message boards
- Repair of dewatering and trash pumps
- Authorized motor warranty repair
- Emergency response service
- Predictive onsite maintenance
- AWS certified welding facility
- AWS certified training and testing
- CNC and manual machining solutions
- Custom fabrication and machining

Company Data:

Cage Code: 4E5H4 DUNS #: 005009774 HUBZone Certification # 43813, May 18, 2011

Primary NAICS Codes: 811310, 423610, 335312, 334416, 333131, 332999, 332721, 332710, 326291



Proposal Preface

Tranco Services, DBA Kanawha Electric and Machine Company, acknowledges that the specifications included in RFQ Number 7012ECO5, as may be amended by mutual agreement, are acceptable as operating conditions and further, that at the State of West Virginia's Purchasing Division option, this RFQ and Kanawha Electric's proposal will be binding on both parties, and may become an integral part of the contract as an exhibit.

This proposal is based on providing the Division of Highways, State of West Virginia, a Full Matrix Trailer Mounted Solar Powered Message Board, Model WTMMB-SLL (A), manufactured by WANCO. The Message Board will be equipped with a Modem Option, as outlined in the Detailed Technical Specification Options listed in Enclosure One. The State of West Virginia may order additional optional equipment or features to the basic unit based upon a mutually agreed upon price which may be established at any time during the life of the contract. A complete description of all options available with the unit is outlined in the Detailed Technical Specifications.

Kanawha Electric and Machine Company agrees to extend the price, terms and conditions of the Bid to County, School, and Municipal and other local government bodies and political subdivisions.

Questions regarding this Bid may be directed to Mr. Stephen Kappa, Government Programs Manager, at telephone 304-926-2650, fax 303-926-6623 or email kappa@solutionk.com

RFQ No. 7012EC05

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

West Virginia Code §5A-3-10a states: No contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and the debt owned is an amount greater than one thousand dollars in the aggregate

DEFINITIONS:

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

"Debtor" means any individual, corporation, partnership, association, Limited Liability Company or any other form or business association owing a debt to the state or any of its political subdivisions. "Political subdivision" means any county commission; municipality; county board of education; any instrumentality established by a county or municipality; any separate corporation or instrumentality established by one or more counties or municipalities, as permitted by law; or any public body charged by law with the performance of a government function or whose jurisdiction is coextensive with one or more counties or municipalities. "Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceeds five percent of the total contract amount.

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

Under penalty of law for false swearing (*West Virginia Code §61-5-3*), it is hereby certified that the vendor affirms and acknowledges the information in this affidavit and is in compliance with the requirements as stated.

WITNESS THE FOLLOWING SIGNATURE

Vendor's Name: Tranco Services, DBA Kanawha Electric & Machine Company

Authorized Signature: Larry Ward, VP of Opns *[Signature]* Date: 17 Nov 2011

State of West Virginia

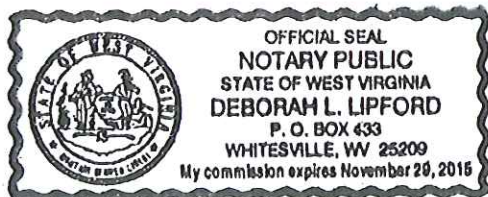
County of Kanawha, to-wit:

Taken, subscribed, and sworn to before me this 17 day of November 2011

My Commission expires November 29, 2015

AFFIX SEAL HERE

NOTARY PUBLIC *[Signature: Deborah L. Lifford]*



Rev. 09/08

State of West Virginia
VENDOR PREFERENCE CERTIFICATE

Certification and application* is hereby made for Preference in accordance with *West Virginia Code*, §5A-3-37. (Does not apply to construction contracts). *West Virginia Code*, §5A-3-37, provides an opportunity for qualifying vendors to request (at the time of bid) preference for their residency status. Such preference is an evaluation method only and will be applied only to the cost bid in accordance with the *West Virginia Code*. This certificate for application is to be used to request such preference. The Purchasing Division will make the determination of the Resident Vendor Preference, if applicable.

1. Application is made for 2.5% resident vendor preference for the reason checked:
 Bidder is an individual resident vendor and has resided continuously in West Virginia for four (4) years immediately preceding the date of this certification; or,
 Bidder is a partnership, association or corporation resident vendor and has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; or 80% of the ownership interest of Bidder is held by another individual, partnership, association or corporation resident vendor who has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; or,
 Bidder is a nonresident vendor which has an affiliate or subsidiary which employs a minimum of one hundred state residents and which has maintained its headquarters or principal place of business within West Virginia continuously for the four (4) years immediately preceding the date of this certification; or,
2. Application is made for 2.5% resident vendor preference for the reason checked:
 Bidder is a resident vendor who certifies that, during the life of the contract, on average at least 75% of the employees working on the project being bid are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; or,
3. Application is made for 2.5% resident vendor preference for the reason checked:
 Bidder is a nonresident vendor employing a minimum of one hundred state residents or is a nonresident vendor with an affiliate or subsidiary which maintains its headquarters or principal place of business within West Virginia employing a minimum of one hundred state residents who certifies that, during the life of the contract, on average at least 75% of the employees or Bidder's affiliate's or subsidiary's employees are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; or,
4. Application is made for 5% resident vendor preference for the reason checked:
 Bidder meets either the requirement of both subdivisions (1) and (2) or subdivision (1) and (3) as stated above; or,
5. Application is made for 3.5% resident vendor preference who is a veteran for the reason checked:
 Bidder is an individual resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard and has resided in West Virginia continuously for the four years immediately preceding the date on which the bid is submitted; or,
6. Application is made for 3.5% resident vendor preference who is a veteran for the reason checked:
 Bidder is a resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard, if, for purposes of producing or distributing the commodities or completing the project which is the subject of the vendor's bid and continuously over the entire term of the project, on average at least seventy-five percent of the vendor's employees are residents of West Virginia who have resided in the state continuously for the two immediately preceding years.

Bidder understands if the Secretary of Revenue determines that a Bidder receiving preference has failed to continue to meet the requirements for such preference, the Secretary may order the Director of Purchasing to: (a) reject the bid; or (b) assess a penalty against such Bidder in an amount not to exceed 5% of the bid amount and that such penalty will be paid to the contracting agency or deducted from any unpaid balance on the contract or purchase order.

By submission of this certificate, Bidder agrees to disclose any reasonably requested information to the Purchasing Division and authorizes the Department of Revenue to disclose to the Director of Purchasing appropriate information verifying that Bidder has paid the required business taxes, provided that such information does not contain the amounts of taxes paid nor any other information deemed by the Tax Commissioner to be confidential.

Under penalty of law for false swearing (*West Virginia Code*, §61-5-3), Bidder hereby certifies that this certificate is true and accurate in all respects; and that if a contract is issued to Bidder and if anything contained within this certificate changes during the term of the contract, Bidder will notify the Purchasing Division in writing immediately.

Bidder: LARRY WARD, VP of OPERATIONS

Signed: 

Date: 17 November 2011

Title: VICE PRESIDENT OPNS, TRAMCO SERVICES

DBA Kanawha Electric & Machine Company

*Check any combination of preference consideration(s) indicated above, which you are entitled to receive.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
EQUIPMENT DIVISION

BIDDER'S EVALUATION REPORT

PROCUREMENT SPECIFICATIONS FOR OPEN END CONTRACT
NO. 843-1-H

FULL MATRIX
TRAILER MOUNTED SOLAR POWERED MESSAGE BOARD

NOTE TO BIDDER: Procurement Specification No. 843-1-G, Paragraph 2.0 recommends the completion and submittal of this Report with your bid. Purpose of this Report is to enable the West Virginia Division of Highways Evaluation Committee to make full and fair evaluation of the bid. Addendums in order, along with a summary of exception as a separate attachment, should be with Bidder's Evaluation Report.
FAILURE TO SUBMIT THIS REPORT, COMPLETE IN ITS ENTIRETY, MAY SUBJECT THE BIDDER TO DISQUALIFICATION.

Reference Requisition No.: 7012EC05

Bidder's Name: Tramco Services, DBA Kanawha Electric & Machine Company

Address: 141 Campbells Creek Drive, Charleston, WV 25306

Telephone Number: 304-926-2650 Cell Phone: 304-549-3436

Years Bidder has been registered to do business with the State of West Virginia: 10 YRS.

Years Company has been an authorized dealer for proposed unit: Eighteen Months YRS.

X3.2 Have you complied with all mandatory specifications? YES NO

X4.2 DELIVERY:

X4.2.1 Delivery date of completed representative unit: 18 Calendar Days After
Receipt of Purchase Agreement

X4.2.2 Delivery date of balance of completed units: 30 Calendar Days After Receipt of
Purchase Agreement

NOTE: Vendor should type Bidder's Evaluation Report

The "Bidder's Evaluation Report" is available for download on Purchasing's Web site at
www.state.wv.us/admin/purchase

X5.0 AWARD CRITERIA;

X5.1 Price per unit: \$17,240 per unit

X6.0 SPECIFICATIONS - GENERAL

X6.1 Manufacturer, model, series, and date of manufacture of proposed unit:

Wanco Full Matrix Sigh WTMMB-SLL(A) with Modem option

Is descriptive literature, fully describing proposed unit attached to your bid? YES NO

If not, why? _____

X6.2 Will the required number of service manuals, and complete parts list be delivered to the Equipment Division at Buckhannon upon completion of delivery of total units?
 YES NO

Will the required Equipment Preventive Maintenance Form (Section X6.2 of Bidders Evaluation Report) be provided upon inspection of the pilot unit?
 YES NO

X6.2
2-10-00

EQUIPMENT PREVENTATIVE MAINTENANCE QUESTIONNAIRE

THIS FORM MUST BE COMPLETED IN ITS ENTIRETY BY SUCCESSFUL BIDDER OR MANUFACTURER'S TECHNICAL REPRESENTATIVE PRIOR TO DELIVERY OF PILOT MODEL TO THE WVDOH.

DESCRIPTION: Full Matrix Message Sign MAKE: WANCO

MODEL: WTMMB-SLL(A) YEAR: 2011 PURCHASE AMOUNT: \$17,240

ENGINE: MAKE: NA Solar MODEL: NA FUEL TYPE: SOLAR POWER

HORSEPOWER: NA CYLINDER: NA ENGINE SERIAL: NA

COOLING SYSTEM CAPACITY: NA

BELTS: DESCRIPTION: _____ PART NUMBERS: _____
NA NA

GVW: 2650 lbs AXLE CAPACITY:FRONT: 3500 lbs REAR: NA

TIRES: FRONT MAKE & SIZE: ST205/75 R15

REAR MAKE & SIZE: ST205/75 R15

DIMENSIONS OF UNIT: LENGTH: _____ WIDTH: _____ LENGTH: _____ Height

VENDOR CONTACT PERSON: STEPHEN KAPPA PHONE: 304-926-2650

PARTS:

BATTERY MAKE: _____ MODEL: _____ CCA: _____

TOP OR SIDE POST: _____ DIMENSIONS: LENGTH _____ WIDTH _____ HEIGHT _____

SPARK PLUGS OR FUEL INJECTORS MAKE: _____ PART #: _____

FUEL PUMP OR INJECTION PUMP MAKE: _____ MODEL: _____

ALTERNATOR MAKE: _____ PART #: _____

STARTER MAKE: _____ PART #: _____

TURBO CHARGER MAKE: _____ PART #: _____

TRANS. MAKE: _____ MODEL: _____ AUTO/MANUAL: _____

HYDRAULIC PUMP MAKE: _____ MODEL: _____

FILTERS	MAKE	PART NO.	LUBRICANT	MANUFACTURER TYPE
OIL	<u>NA</u>	_____	ENGINE	<u>NA</u>
AIR INNER	<u>NA</u>	_____	TRANSMISSION	<u>NA</u>
AIR OUTER	<u>NA</u>	_____	POWER STEERING	_____
FUEL PRIMARY	<u>NA</u>	_____	HYDRAULIC	<u>NA PA</u>
FUEL SECONDARY	<u>NA</u>	_____	DIFFERENTIALS	_____
COOLANT	<u>NA</u>	_____	BRAKE FLUID	<u>NA</u>
HYDRAULIC	<u>NA</u>	_____	COOLANT	<u>NA</u>
OTHER	<u>NA</u>	_____	OTHER	<u>NA</u>

X6.3 TRAINING:

Will training seminar be conducted on Preventive Maintenance, Operator and Mechanic Training YES NO

Will you conduct training with each purchase order against this open end contract?
By Distributor Kanawha Electric & Machine Co YES NO

Will training be conducted within 2 working days from the delivery of the pilot unit on the individual purchase order? YES NO

If NO, explain time frame Two weeks notice to conduct training requirement.

Will an Operator's Manual be furnished directly to Training Academy prior to the delivery of the pilot? YES NO

X6.4 If you are the successful vendor, will you furnish all training aids, i.e., videos, projectors, required in conducting the training? YES NO

X6.4.1 Will all manuals, booklets, etc. explaining preventive maintenance, operator procedures, and service schedule be delivered with each unit? YES NO
If NO, explain _____

X6.5 WARRANTY AND SERVICE POLICY

Will the warranty and service you provide comply with all areas as stated in Section 6.5 of specifications YES NO

Is warranty literature attached? YES NO

Is a minimum two (2) year bumper to bumper basic parts and labor warranty excluding abuse and normal wear items included? YES NO
Describe:

Warranty is Five Years, minus tires and batteries.

X6.5 WARRANTY AND SERVICE POLICY QUESTIONNAIRE

THIS FORM MUST BE COMPLETED IN ITS ENTIRETY AND SUBMITTED WITH YOUR BID.

(If additional lines are needed, make copies of form.)

1. Define the terms of the standard warranty. If not offered, so state. (Attach copy)

See Standard Wanco Warranty that is attached. Wanco Message Boards are warranted for a period of five years after being put into service, not to include tires and batteries.

2. Define warranty service to be performed at DOH facilities and warranty service to be performed at manufacturer's representative facility. List name and location of manufacturer's representative.

Tranco Services, DBA Kanawha Electric & Machine Company is Wanco's authorized Warranty and Repair provider in WV. Company is located at 141 Campbells Creek Drive, Charleston, WV 25306. Routine warranty and maintenance will be performed at the DOH facility by Kanawha Electric & Machine Company.

3. List locations for parts inventories that are within the State of West Virginia. Also, list availability levels, if known.

Repair and warranty parts will be maintained by Kanawha Electric at its shop facilities located at 141 Campbells Creek Drive in Charleston, WV. Replacement parts not carried in local inventory will be available from Wanco within 24 hours by next day air delivery to Charleston, WV from Wanco.

4. During the term of warranty, list the guarantee discount to manufacturer's published list price for parts that bidder will sell the parts to owner.

A.	Terms: Net 30	Manufacturer's published list price less: <u>0</u> % discount
B.	Terms: Net 60	Manufacturer's published list price less: <u>0</u> % discount
C.	Terms: Net 90	Manufacturer's published list price less: <u>0</u> % discount

5. During the term of warranty, will all manufacturers or engineering improvements be submitted to Division of Highways? X YES NO

6. During the term of warranty, list the guaranteed rates charged for repair to the unit.

A.	Shop Rate	\$ <u>87.00</u> per mechanic hour
B.	Travel Time Charge (Specify if one-way)	\$ <u>50.00</u> per mechanic hour <u> </u> ; port to port <u>Port to Port</u>
C.	Mileage Charge (Specify if one-way)	\$ <u>No Charge</u> per vehicle mile <u> </u> ; port to port <u> </u>
D.	Field Mechanic Rate	\$ <u>87.00</u> per mechanic hour

E. Specify period of time that prices are in effect: From Bid Approval to Contract Expiration in Three Yrs.

F. Surcharge for miscellaneous items: NA %

X6.6 EVALUATION COMMITTEE REQUIREMENTS

Is all component specifications, product literature, component models provided for Evaluation Committee bid determination? YES NO

X6.7 Will all parts, equipment, accessories, material, design and performance characteristics not specified herein, but which are necessary to provide a complete unit, be furnished with the unit and conform in strength, quality of material, and quality of workmanship to those which are advertised and provided to the market in general by the unit industry?
 YES NO

X6.7.1 Are all parts and accessories adequate and regularly supplied as standard to be included except those which may be duplications of specifications herein, and except these by specification are not to be furnished?
 YES NO

X6.7.2 Are all standard safety features that are required by Federal and State statutes of law included?
 YES NO

X7.0 SPECIFICATIONS OF THE QUOTED UNIT:

The bidder should complete the following schedule in order for the Division to compare the actual bid unit to the specifications. Should the bidder except a requirement, then such exception may be only on the basis that such feature is not offered by the manufacturer. **The Division will have the sole discretion as to whether the bidder's substitution meets the requirements of the specification.**

Manufacturer: WANCO Model: WTMMB-SLL(A)

Is unit a trailer mounted Full – Matrix Message Board consisting of an optically enhanced L.E.D.'s.
 YES NO

Are the L.E.D.s minimum of a 30° vertical and 30° horizontal cone of visibility.
 YES NO

Is the full matrix panel powered by a bank of batteries in order to convey bright, distinctive messages to the traveling public
 YES NO

Are full matrix variable message boards tested by AASHTO's National Transportation Product Evaluation Program (NTPEP).
 YES NO

X7.1 Are batteries automatically recharged by a group of solar panels located at highest point on the unit? YES NO

X7.1.1 Is unit designed to have sufficient energy backup to operate for 30 days without any sun? YES NO

X7.1.2 Will solar panel generator recharge the battery bank at 2.5 hours sun to one (1) 24 hour period usage? YES NO

X7.2 Sign Panel Construction:

X7.2.1 Is sign panel aluminum constructed or fabricated with powder coated sheet metal and in a flat black finish YES NO

All exposed panels and seams are corrosion proof for a minimum of ten (10) years YES NO

With construction, are all panels/parts assembled as to prevent corrosion or to prevent dissimilar metal reaction for occurring YES NO

X7.2.2 Is sign panel frame a welded assembly and constructed of aluminum alloy channel or from steel panels powder coated in a corrosion proof manner for a minimum of ten (10) years YES NO

X7.2.3 What is length of sign panel 138 inches?

X7.2.4 Does face of sign incorporate measures to prevent fading from UV light, such as polycarbonate or lexan face with UV inhibitors incorporated YES NO

Is another method used? YES NO Has it been reviewed and approved? YES NO

X7.2.5 Does sign face have size to display three (3) separate lines of eight (8) characters YES NO

Size of characters: 18 inches tall and 12 inches wide?

Spacing of characters: 3 inches apart

X7.2.6 Does each character configuration contains 54 LED lamp pixels in six (6) element horizontal by nine (9) element vertical arrangement? Wanco is (5) X (7) YES NO

X7.2.7 Each pixel consists of 4 LED'S

X7.2.8 Message color: 590 nanometers

X7.3 Does sign have capability to display six (6) messages in sequence, with variable timing in 1/4 second increments under computer control? YES NO

X7.5.3 Batteries are recharged by a solar panel array producing 165 watts of power

X7.5.4 Does unit have a built-in battery charger with minimum 25 amp per hr rating? YES NO

X7.5.5 Is battery bank housed in lockable heavy duty weatherproof battery boxes? YES NO

X7.5.6 Are the two (2) power sources enclosed in protective housing? YES NO

X7.5.7 Are batteries capable of being recharged by a commercial 110 volt battery charger? YES NO

X7.6 Control Requirements:

X7.6.1 Is unit controlled in all functions by an on-board dedicated computer of solid state design and removable? YES NO

X7.6.2 Does unit have keyboard which user originated messages may be entered for display or storage? YES NO

X7.6.3 Does unit have an LCD display screen, where messages are reviewed before being displayed? YES NO

X7.6.4 Computer stores 150 Custom 250 total programmed messages for display when called upon by user through keyboard YES NO

X7.6.5 Capability of storing Six message sequences

X7.6.6 Does unit maintain stored message list? YES NO

X7.6.7 Does unit provide password coding or key entry? YES NO

X7.6.8 Will unit provide control programming to present sequences messages under operator control through keyboard entry? YES NO

X7.6.9 Does unit provide control for moving arrow displays? YES NO

X7.7 Solar Panel Control Unit:

X7.7.1 Is computer and power control unit housed in weather resistant, shock resistant lockable control box including lighting for night time operation? YES NO

X7.7.2 Does power control unit contain two (2) current meters; One (1) shows amperage generated with battery charger operating and one (1) indicates amperage generated from the solar panels be stored in battery bank? YES NO

X7.7.3 Does power control unit incorporate a PV regulator with thermal compensation for variances in ambient temperature to regulate the charge rate to the battery bank? YES NO

X7.7.4 Does unit incorporate an automatic intensity control feature to keep L.E.D. lamp matrix intensity constant with a reduction in voltage? YES NO

X7.7.5 Does message unit provide a photocell to reduce lamp intensity at night eliminating blinding? YES NO

X7.8 Trailer:

X7.8.1 Is two (2) wheel trailer structurally adequate to serve as both platform for components? YES NO

X7.8.2 Are fenders made of steel and installed over each wheel? YES NO

X7.8.3 Is trailer equipped with hydraulic brake actuator system? YES NO

X7.8.4 Is unit equipped with four (4) crank type, HD industrial leveling jacks; one (1) installed on each corner of the trailer deck? YES NO

X7.9 Lighting:

X7.9.1 Does unit include LED taillights, stop lights, turn signals, license mount with light and all necessary reflectors? YES NO

X7.9.2 Are trailer electrical cable and connector (Cole Hersee Pt #12081 male or equal) compatible with towing vehicles installed? YES NO

X7.9.3 Is all trailer wiring encased in heavy duty hypalon type industrial wire looms clamped to underside of trailer structural tubing? YES NO

X7.9.4 Does unit have two (2) inch ball type trailer hitch _____ pound capacity with double safety chains in accordance with SAE J684F installed? YES NO

X7.10 Hydraulic Power Pack:

X7.10.1 Does unit have 12 volt DC motor, pump, valve, reservoir, manual hand pump or approved equal? YES NO

X7.11 Message Cabinet Dimensions: (approximate)

X7.11.1 Length: 138 inches

X7.11.2 Height: 75 inches

X7.12 Central Processing Unit - CPU specifications (Minimum):

X7.12.1 Microprocessor Based 27.1 MHz YES NO

If No, you must specify _____.

- X7.12.2 Power requirements: 1 TO 2mA DC at 12 volts DC
- X7.12.3 Specify screen size: 67 1/2 IN character lines with 4 X12characters per line
- X7.12.4 Are interfaces (2) RS232 9 pin D connectors and documentation on port numbers and pins?
X YES ___ NO

In addition, is one (1) USB port or one (1) ETHERNET Port with USB adaptor provided
X YES ___ NO

- X7.12.5 Will application source code be delivered with unit
OR
held in escrow X YES ___ NO
and provided to WVDOT in case company goes out of business? X YES ___ NO

- X7.12.6 Will technical documentation for unit and for application programs be provided?
X YES ___ NO

- X7.12.7 Features considered as standard equipment but not addressed:
-

- X7.12.8 Does unit comply with OSHA of 1979 and subsequent amendments? X YES ___ NO

- X7.12.9 Will unit be painted manufacturers standard colors and materials X YES ___ NO

- X7.12.10 Does unit meet guidelines for advertising? X YES ___ NO

- X7.12.11 Will Manufacturer or Dealer provide training and training aids as specified? X YES ___ NO

X7.13 Communications:

- X7.13.1 Will unit be guarded from any unwanted outside RF interference which would include but not be limited to VHF/FM receiver, 2 way radio receiver, cell phones etc. X YES ___ NO

- X7.13.2 Is each PVMS controlled and monitored by its own sign controller directly from the control console inside the control cabinet on the trailer itself X YES ___ NO

- X7.13.3 Is the PVMS sign controller able to receive instructions from and provide information to a computer containing PVMS control software compliant using NTCIP compliant communications modes X YES ___ NO

- X7.3.1 **Is arrow display and flashing caution functions included as part of the manufacturer's pre-programmed message sequences** YES NO
- Will all arrow and flashing caution displays described in the current MUTCD provided** YES NO
- X7.3.2 **Are all abbreviations used in pre-programmed messages in compliance with the current MUTCD** YES NO
- X7.3.3 **Does the entire sign have capability to change all lines of message copy in not more than 100 milliseconds** YES NO
- X7.3.4 **Will sign be clearly visible a minimum of 4500 feet** YES NO
- X7.3.5 **Will sign legend be legible from a minimum distance of 1,000 feet under daylight conditions as determined by NTPEP for two non-traffic word message.** YES NO
- X7.3.6 **Will sign legend be legible from a minimum distance of 900 feet under night-time conditions as determined by NTPEP for a two non-traffic word message** YES NO
- X7.3.7 **Under variable light conditions, will the unit automatically adjust light source so as to meet the visibility requirements, without being too bright or too dim** YES NO
- X7.4 **Solar Message Board Support:**
- X7.4.1 **Will solar message board sign panel be supported on a telescoping upright member in order to permit raising the sign panel for operation and lowering for transport?** YES NO
- Is the upright capable of 360 degrees rotation and to lock into any position to which it manually or electrically rotated** YES NO
- X7.4.2 **Raise and lower travel: 57 IN feet and accomplished by a hydraulic power pack** YES NO
- X7.4.3 **Bottom of sign 7 feet above ground level when in raise position**
- X7.4.4 **When transporting, will sign orient to the longitudinal axis of the trailer in a manner that effectively reduces aerodynamic drag during towing?** YES NO
- X7.5 **Power and Miscellaneous Equipment:**
- X7.5.1 **Is unit designed to accept two (2) power sources; one (1) being a battery bank consisting of four (4) size 4D, deep cycle, lead acid 12 volt DC batteries wired in parallel (or as designed to meet power/time requirements** YES NO
- X7.5.2 **Does second power supply to have capability to accept existing 120 volt commercial electric service?** YES NO

X7.13.4 Remote Communications control via wireless communications with a remotely located computer
 YES NO

Does the system communications backbone, as well as all field modems or signal converters, provide the PVMS sign controller with a RS232 signal having a baud rate between 2,400 bps and 115,200 bps.
 YES NO

Is communications static IP based with a static IP based modem installed on the trailer
 YES NO

X7.13.5 Is local communications control accomplished via direct connection with a laptop computer that is connected directly to the sign control using a null modem connection and baud rate between 2,400 bps and 115,200 bps.
 YES NO

X7.13.6 Is local communications control available via a keypad and LCD interface
 YES NO

Are the features of additional or removal of message or message(s) from the PVMS list of playing messages, adjustment of luminosity to manual or automatic, and the monitoring of miscellaneous data like battery voltage, photocells reading, etc. included
 YES NO

State of West Virginia
VENDOR PREFERENCE CERTIFICATE

Certification and application* is hereby made for Preference in accordance with *West Virginia Code*, §5A-3-37. (Does not apply to construction contracts). *West Virginia Code*, §5A-3-37, provides an opportunity for qualifying vendors to request (at the time of bid) preference for their residency status. Such preference is an evaluation method only and will be applied only to the cost bid in accordance with the *West Virginia Code*. This certificate for application is to be used to request such preference. The Purchasing Division will make the determination of the Resident Vendor Preference, if applicable.

1. Application is made for 2.5% resident vendor preference for the reason checked:
 Bidder is an individual resident vendor and has resided continuously in West Virginia for four (4) years immediately preceding the date of this certification; or,
 Bidder is a partnership, association or corporation resident vendor and has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; or 80% of the ownership interest of Bidder is held by another individual, partnership, association or corporation resident vendor who has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; or,
 Bidder is a nonresident vendor which has an affiliate or subsidiary which employs a minimum of one hundred state residents and which has maintained its headquarters or principal place of business within West Virginia continuously for the four (4) years immediately preceding the date of this certification; or,
2. Application is made for 2.5% resident vendor preference for the reason checked:
 Bidder is a resident vendor who certifies that, during the life of the contract, on average at least 75% of the employees working on the project being bid are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; or,
3. Application is made for 2.5% resident vendor preference for the reason checked:
 Bidder is a nonresident vendor employing a minimum of one hundred state residents or is a nonresident vendor with an affiliate or subsidiary which maintains its headquarters or principal place of business within West Virginia employing a minimum of one hundred state residents who certifies that, during the life of the contract, on average at least 75% of the employees or Bidder's affiliate's or subsidiary's employees are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; or,
4. Application is made for 5% resident vendor preference for the reason checked:
 Bidder meets either the requirement of both subdivisions (1) and (2) or subdivision (1) and (3) as stated above; or,
5. Application is made for 3.5% resident vendor preference who is a veteran for the reason checked:
 Bidder is an individual resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard and has resided in West Virginia continuously for the four years immediately preceding the date on which the bid is submitted; or,
6. Application is made for 3.5% resident vendor preference who is a veteran for the reason checked:
 Bidder is a resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard, if, for purposes of producing or distributing the commodities or completing the project which is the subject of the vendor's bid and continuously over the entire term of the project, on average at least seventy-five percent of the vendor's employees are residents of West Virginia who have resided in the state continuously for the two immediately preceding years.

Bidder understands if the Secretary of Revenue determines that a Bidder receiving preference has failed to continue to meet the requirements for such preference, the Secretary may order the Director of Purchasing to: (a) reject the bid; or (b) assess a penalty against such Bidder in an amount not to exceed 5% of the bid amount and that such penalty will be paid to the contracting agency or deducted from any unpaid balance on the contract or purchase order.

By submission of this certificate, Bidder agrees to disclose any reasonably requested information to the Purchasing Division and authorizes the Department of Revenue to disclose to the Director of Purchasing appropriate information verifying that Bidder has paid the required business taxes, provided that such information does not contain the amounts of taxes paid nor any other information deemed by the Tax Commissioner to be confidential.

Under penalty of law for false swearing (*West Virginia Code*, §61-5-3), Bidder hereby certifies that this certificate is true and accurate in all respects; and that if a contract is issued to Bidder and if anything contained within this certificate changes during the term of the contract, Bidder will notify the Purchasing Division in writing immediately.

Bidder: LARRY WARD, VP of OPERATIONS Signed: _____

Date: 17 November 2011 Title: VICE PRESIDENT OPNS, TRAMCO SERVICES

DBA Kanawha Electric & Machine Company

*Check any combination of preference consideration(s) indicated above, which you are entitled to receive.

RFQ No. 7012EC05

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

West Virginia Code §5A-3-10a states: No contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and the debt owned is an amount greater than one thousand dollars in the aggregate

DEFINITIONS:

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

"Debtor" means any individual, corporation, partnership, association, Limited Liability Company or any other form or business association owing a debt to the state or any of its political subdivisions. "Political subdivision" means any county commission; municipality; county board of education; any instrumentality established by a county or municipality; any separate corporation or instrumentality established by one or more counties or municipalities, as permitted by law; or any public body charged by law with the performance of a government function or whose jurisdiction is coextensive with one or more counties or municipalities. "Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceeds five percent of the total contract amount.

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

Under penalty of law for false swearing (*West Virginia Code §61-5-3*), it is hereby certified that the vendor affirms and acknowledges the information in this affidavit and is in compliance with the requirements as stated.

WITNESS THE FOLLOWING SIGNATURE

Vendor's Name: Tranco Services, DBA Kanawha Electric & Machine Company

Authorized Signature: Larry Ward, VP of Opns Date: 17 Nov 2011

State of West Virginia

County of Kanawha, to-wit:

Taken, subscribed, and sworn to before me this 17 day of November 2011

My Commission expires _____, 20 _____

AFFIX SEAL HERE

NOTARY PUBLIC _____



5870 Tennyson St.
Arvada, CO 80003

Ph: (303) 427-5700
Fx: (303) 427-5725

FULL-MATRIX SOLAR ASSISTED MESSAGE DIRECTOR, WTMMB-SLL(A)10

The purpose of these specifications is to briefly describe the Wanco PCMS matrix message sign.

DETAILED TECHNICAL SPECIFICATIONS

(Last date revised: May14, 2010)

MESSAGE SIGN:

Basic information

Cabinet Size: 138" long x 74.5" high x 12" thick, a 5 degree taper from top to bottom helps reduce glare.

Letter Arrangement: Full matrix arrangement, 48 pixels wide x 27 pixels high (1296 total pixels)

Number of fonts: 12

Smallest: 4 w x 5 h

Default size: (5 x 7 pixel): 16.34" (41.5cm) high x 11.14" (28.30cm) wide

Character Spacing for standard three line message: 9.6" between lines and 4.45" between letters

Largest: 11w x 23h

Characters/ line: Minimum letter size will produce 4 lines of 10 letters
Maximum letter size will produce one line of 7 letters

Sign Construction:

Cabinet:

Material: Aluminum sheet 5052-H32, 0.062" thick

Construction: All panels riveted together, internal ribs to add lateral strength.

Paint: Interior and exterior has flat black powder coating and oven baked for added durability and corrosion.

Door:

Type: Single piece construction hinged at top for easier servicing of sign.

Material: Aluminum extruded frame with sheet metal corner brackets.

Paint: Powder coated flat black

Window: Lexan solar grade polycarbonate, 0.150" thick. Bulb type weather seal ensures tight fit and seal between window and extrusion.

Serviceability: When sign in stored position, door fully opens to service the sign.

ENCL ONE

Hardware:

Hinges: Stainless steel butt hinges are bolted to top of cabinet and to door assembly.
Door props: Each side of the sign has telescoping prop slides to hold door open for service.
Fans: The circulation of air throughout the cabinet keeps the electronics components cooler. It is proven that electronic components, including LED's, degrade in extreme heat conditions. Without the cooling fans the message board cabinets can reach over 200 degree Fahrenheit. Two cooling fans located at top of cabinet provide circulation through and out of cabinet. A duct is located at the top of the cabinet to ensure even airflow. The temperature sensor is mounted on the photocell pc board. Each fan has different thermal settings adjustable by the on-board computer so it will not waste battery power.

Vibration Mounts: Each letter character is mounted to the sign by six rubber vibration isolators. This decreases any physical shock to each letter module during transportation and isolates characters from chassis ground

Wiring:

Type: All harnesses are modularized for easy service. All wiring terminates at a single terminal strip inside sign cabinet.
Certification: All connectors and procedures are per CSA standards.
Protection: Wiring service loop from computer box to sign is routed inside liquid tight loom and P-clamped to trailer frame. Service loop length designed for 360-degree sign rotation.
Letter module connectors: All characters have quick connect connectors for easy service.

Serviceability: Each module can be exchanged in less than 2 minutes. The only tools needed are a 5/16" nut driver socket or a Flat tip screwdriver. All letters are identical. They can move from one location to another without any physical changes to letter character. Initialization is done through console software.

LETTER CHARACTERS

Physical characteristics:

Character nominal size: 20.0"(50.8cm) wide x 22.5"(57.2cm) high

Pixel type: Four amber LED's form a pixel.

Number of pixels per character: 8 wide x 9 high, total = 72

Size of LED pixel = 0.75"(19mm) x 0.75"(19mm)

Pixel pitch: 66mm, horizontal and vertical

Pc board material:

Type: FR4 material, double sided, black solder mask w/ white silkscreen.

Board thickness: 0.094"

Copper size: 1 OZ

Operating temperature: All electronics are selected with extended temperature range. -40C - +80C

Relative humidity: Each letter module is conformal coated with Dow Corning 1-2577 Low Voc Silicone Conformal Coating a mil-spec coating, to protect it from corrosion or shorts due to high humidity. The characters are completely coated with coverage of 1-2 mil thick. This coating is rated up to 95% relative humidity.

Mounting: Each letter module mounts to the cabinet with four studded rubber vibration mounts. The vibration mounts isolate the characters from road vibration and chassis ground.

Program chip: A program chip is socket replaceable for easy program upgrading.

LED information:

Type: AllnGap II technology, T-1 $\frac{3}{4}$ size, through hole auto-insertion
Color: Amber color range of 589.5 – 592 nm
Peak pulsed forward current: 100ma
Operating temperature: -40C - + 100C

Optical Lenses and Sunshades:

Purpose: Optical lenses and sunshades enhance the brightness and angularity of the LED's, while greatly improving the power consumption of the sign. This LED enhancement enables the message sign to operate at approximately $\frac{1}{2}$ the power over message signs without enhancement. This dramatic energy savings enables the system to operate with $\frac{1}{2}$ the solar panels and batteries while providing 30-day battery autonomy without sun. Reducing the number of solar panels and batteries reduce the trailer weight and reduce future maintenance cost.

Sunshades: Each letter module has polycarbonate sunshades over the character face to prevent sun washout. The sunshades snap onto the pc board requiring no tools.

Lenses: Each pixel has an optical lens over the pixel. Each LED of the four LED pixel has optical enhancement. The lens snaps into the polycarbonate sunshade. The lens redirects the light output of each LED.

Viewing performance:

NTPEP results: 2008

Visibility Distance: 4800 ft

Legibility Distance (Word recognition, standard 5 x 7 font): 814 - 960 ft

Angularity: 42.8 – 54.6 degrees total viewing area

Photocell dimming:

Purpose: Two photocells track the level of ambient light on the message sign. These photocells in conjunction with the computer, adjust the brightness to the LED's. The brighter the ambient light the brighter the LED's. The computer adjusts the LED brightness to the photocell with the brightest light reading.

Location: Photocells are mounted in the sign, one facing rear and one facing front.

Software design:

Driver design: The LED's are controlled through 30ma pulse-width modulation design.

Addressing: Each letter characters address is selected through a software command. This address will not change until re-programmed. No dipswitches are used. This special addressing prevents the message from shifting due to an individual character failure.

Pixel test: Each character is equipped with individual pixel failure notification.

CONTROL CONSOLE

Type: Self contained on-board computer. No lap top computer required to program or run sign display.

Operator can sit on trailer frame to comfortably program unit.

Location: Centered on front drawbar of trailer frame.

Console box:

Type: Dust and weatherproof steel box. Rated IP43

Size: 24.0"(61cm) W x 16.0"(40.6cm) H x 9.5"(24.1cm) D

Material: 14ga CRS

Locking latch: A keyed, 3-point lockable handle locks door closed.

Color: Powder coated equipment white.

Manual holder: A bracket on the drop down door holds the computer operation manual.

Manual pages laminated for weather protection.

Serviceability: Entire console box is removable for service. All wiring has quick connect plugs.

Control panel:

Operation instructions: Front face of control panel has easy to follow silk-screened labels and instructions. No stickers or decals.

Panel light: A night-light controlled by magnetic reed switch on door illuminates the control panel and manual area for nighttime reading. The light will automatically shut off if no keyboard activity.

LCD Display:

Type: Dot matrix, 160 w x 128h

Pixel size: Large pixel size for better viewing

Viewing Angle: 6:00

Back lighting: LED backlight / Yellow-green

Contrast adjustment: Rotary switch adjusts the contract brightness for optimum viewing.

Activation switch: A toggle switch activates the LCD and keyboard.

Temperature rated: 0C to +50C

PC Boards:

Master computer board:

Type: 32 bit micro processor

Size: 8.75"w x 6.25"h

Connectors: All keyed and labeled for easy serviceability.

Protections: Reverse polarity and over current protected.

Memory capacity: 265Mb Flash, 64 Mb RAM

Construction: multi-layer pc board w/ surface mounted components

Number of serial ports: Five

Number of USB ports: Two

Keyboard port: ISA 101 keyboard

Real time clock: Battery backed with 20-year battery.

Reset indicator: Amber LED

Running indicator: Green LED

Power glitch indicator: Red LED

Conformal coating: Each assembly is conformal coated with a mil-spec coating to protect it from corrosion or shorts due to high humidity. This coating rated up to 95% relative humidity.

Operating temperature: -20C - +80C

Power board:

Function: Monitors and controls environmental parameters of message sign.

Slave to master computer board.

Type: High efficiency micro-controller with analog conversion.

Size: 8.50" w x 3.13" h

Connectors: All keyed and labeled for easy serviceability.

Protections:

Board: Reverse polarity, over current protected and over voltage / over current protected.

System: Replaceable automotive style fuses for battery and solar panel circuits.

Current monitoring: Monitors the solar panel charging current as well as sign output current.

Construction: multi-layer pc board with surface mounted solid-state circuitry. No mechanical relays.

Conformal coating: Each assembly is conformal coated with a mil-spec coating to protect it from corrosion or shorts due to high humidity. This coating rated up to 95% relative humidity.

Operating temperature: -20C - +80C

Switchboard:

Function: Auxiliary interface and status indicator board. Eliminates excessive wiring.

Size: 3.38" w x 3.00" h

Switches: Hydraulic tower lift switch and computer system reset switch

Connectors: All keyed and labeled for easy serviceability.

Indicator LED's: Indicates "ON" conditions, i.e., battery saver shutdown, sign powered, radar powered, schedule program activated.

Protection: Over current replaceable fuse

Conformal coating: Each assembly is conformal coated with a mil-spec coating to protect it from corrosion or shorts due to high humidity. This coating rated up to 95% relative humidity.

Keyboard: A 104 key keyboard is provided, and is removable for easy service.

Connector: USB straight cable

CONTROLLER SOFTWARE

Type: Full NTCIP compliant software

Password protection: Three levels of password protection.

Messaging:

Quick messaging:

Instant new quick message programming, extremely easy to program a message.

One-touch quick message selection from 12 pre-programmed function keys on keyboard.

One-touch sign blanking / power off

Permanent messages: over 50 including arrows and FHWA standards

Changeable messages: 100 changeable messages stored in NV flash

Temporary/ Volatile messages: 10, for ITS systems

Maximum number of frames per sequence: Six

Sequencing speed: 0.1sec to 25.5sec.

Text alignment: Selectable from: left, center or right

Fonts: Standard 5 x 7 pixel font supported.

Blinking: Each character can individually blink. Adjustable timing and duty cycle

Display viewing: WYSIWYG (What You See Is What You Get) while programming.

Clock: Real-time clock/ calendar with DST control

Troubleshooting help: A status and diagnostic menu available to assist in troubleshooting.

Arrow board functions: Sign can display the following full size arrow functions:

Number of modes: 12

Type: Single flashing left or right arrow, Sequencing left or right arrow, Sequencing

stem left or right arrow, Chevron left or right arrows, Four-corner caution warning,

Caution bar warning, and Alternating diamonds.

Bold graphics: Each arrow and bar is 5 pixels wide

Fast key activation: All 12 modes are activated by key board function keys F1 - 12

TRAILER CONSTRUCTION

Frame weldment: Trailer frame constructed of rectangular steel tubing 2" x 3" x 3/16" wall

Tie down loops: A steel loop on each corner is welded to the frame.

Drawbar: A non-removable A-frame drawbar is welded as part of the trailer frame.

Hitch: Trailer has 2" multi-fit ball coupler class 2 (up to 3500 lb. capacity) on removable adjustable height bracket in 2" increments (12.5" total). Pintle hitch 3" id is optional.

Safety chains: 3/8" dia. x 36"L with slip latching hooks, chain is attached to steel loops that are connected with a link to A-frame tongue.

Sign storage cradle: Sign assembly stores for travel in two self-locating cradles. No pins are required to store sign for travel.

Fenders: Rectangular jeep style fenders are bolted to the trailer frame. Each fender classified as stand-on. Sign side equipped with non-skid tape.

Paint Finish:

Pre-wash: Steel parts are run through a five stage wash and phosphate system for added corrosion protection.

Coating: Powder coated safety orange color and oven baked for maximum durability and corrosion protection.

Axle Assembly: 3500lb. capacity with a 4" drop axle and a 5 on 4.5" B.C idler hub.

Optional: Hydraulic surge brakes or electric brakes available

Springs: Double eye leaf springs

Tires: ST205/75 D15 steel belted trailer tires with load rating B

Stabilizers: Swivel jack with 2000LB capacity is located on each corner of the trailer. A caster wheel jack is located on the trailer tongue to make moving easier.

Optional telescoping outriggers: Foot print of stabilizers with outriggers extended: 120" lg. x 126" wide.

Wind stability: In the operation position and in the worst case scenario (Position 2, Case 1) the maximum sustainable wind speed to overturning for the unit supported by the jack stands (tires off the ground) is 72mph.

Trailer lights:

Type: Sealed, combination stop, turn and tail light, oval shape with snap in rubber grommet.

No screws to mount taillight.

Harness: Two-piece harness assembly, all ends with molded connectors. No crimping required.

All wiring in UV protective sleeve, no exposed wires.

Harness mounting: P-clamps riveted to trailer frame.

Trailer plug: Flat four-molded connector on harness.

Tower Assembly:

Type: Sign is raised by a hydraulic power unit pressurizing a cylinder and lowered by gravity return. Control switch mounted inside control box.

Height: When fully telescoped, the bottom of sign is 7ft from ground

Rotation: 360 degree, locks in place with disk brake / caliper and adjustable lever.

Cylinder: Single stage hydraulic, rated to 1500 PSI, bottom end cap is keyed to prevent the cylinder from rotating.

Hydraulic power unit:

Type: Electric motor driven,

Voltage: 12Vdc

Flow rate: 1.5 gpm

Factory set PSI rating: 950psi

Mounting: Unit mounted vertically to separate bracket mounted to swivel base.

Fluid used: AW-15 hydraulic oil

Tank capacity: 1.2 gal, usable capacity 0.766gal.

Cover: Sheet metal cover protects the power unit from vandalism and weather. Security screws are used fasten cover to power unit.

Optional Hand pump: A mechanical hand pump can raise and lower the sign if batteries go dead. Pump handle stored inside battery box.

Tower Material: Two sections made of square steel tubing. The inner section telescopes inside the outer tubing. Nylon guide blocks keep the sections tight. These guides eliminate the need to grease the tower, which prevents dirt build up on the inner tower section. Dirt build up will cause future problems and maintenance issues. The inner section is zinc plated to prevent corrosion.

Swivel base: A steel tubular weldment is bolted to the trailer frame. The outer tower section rotates inside this swivel base. Outer tower sits on thrust bearing and washers inside the swivel base to reduce rotating friction.

Tower Brake: Mechanical friction caliper, caliper clamping by adjustable brake handle.

Brake disk: A ½" thick round disk is bolted to the outer tower section. This disk is zinc plated.

Sight Tube: A sight tube for aiming the message sign to desired location is located on the tower mast.

Dimensions of unit:

Length with hitch: 186" (473cm)

Trailer width: 95" (241cm)

Operating height: 159" (404cm)

Traveling height: 105" (267cm)

Approximate weight: 2640lbs. (1193kg)

POWER / CHARGING SYSTEM

Type: The message board unit operates from a 12VDC power system.

Battery Box:

Type: Riveted together all steel construction. All parts washed and powder coated before assembling.

Location: Left hand side of trailer centered over axle.

Latches: Dual pad lockable latches secure the lid closed.

Ventilation: Sides of the battery box are louvered for cross ventilation. Batteries may be charged with 110 volt A.C. charger with lid closed and locked.

Flexibility: The standard box configured to hold (8) 6Vdc golf cart type batteries.

Safety label: A safety / maintenance label is mounted on the battery box lid.

Standard batteries:

Type: Deep cycle golf cart type, wired parallel/series to obtain 12Vdc.

Number: Six

Voltage: 6Vdc

Wet Weight: 63 lbs. each

Bank capacity: 675 AH

Optional batteries: Many choices of batteries available, contact factory or rep for more details.

Remote Charger:

Location: Inside battery box on divider opposite batteries.

Output Volts (DC): 13.4Vdc @full load

Standard float voltage: 13.6V

Boost charge: 14.2Vdc with dual voltage jack plugged in.

Output Capacity: 45A

Max AC amp draw: 12A

Input voltage: 96 - 140Vac, three-prong plug

Frequency: 40 - 70 Hz

Cooling: Fan cooled when charger temperature reaches 35C

Protection: Automotive style replaceable fuses

SOLAR PANELS

Type: High efficiency multi-crystal photovoltaic module

Number of modules: Two

Location: Behind message sign over tower. Array lays flat, raises and rotates with message sign.

No shadowing affect of any trailer component.

Maximum system power: (Total power =170 Watts)

Maximum system current: 9.5A

Maximum Voltage: 17.9V

Open short circuit current: 10.3A

Open short circuit voltage: 21.8V

Regulation: Solar panels regulated by controller power board.

Security: Solar panel array bolted to message sign frame with security screws and special security nut. Tool nut for array mounted inside computer control console

OPTIONAL LARGER SOLAR ARRAY:

Purpose: For geographic locations with smaller solar charging potential or customers wishing a better year around charging system.

Array sizes available: 215W, 260W, 390 watt

MANUALS

Trailer programming manual: A laminated operators programming manual is located on the control console door.

Parts manual: A trailer operators / parts manual is supplied loose for service department.

Manuals downloadable on Wanco website.

OPTIONAL EQUIPMENT

The options below can be added to any WTMMB-SLL(A)10 Message Director.

CELLULAR MODEM PACKAGE

Cellular Modem:

Purpose: The remote communications package enables the message sign(s) to be monitored, programmed and diagnosed from a remote location other than at the trailer. This remote service saves travel time and training of off site personnel.

Requirements: Customer must provide the following items to operate remotely.

Cellular/Digital provider service: Each trailer must be assigned an active data service plan (phone number). It is up to the customer to sign a contract with the carrier of choice for each trailer(s) phone number(s).

Office computer: Customer must provide a desktop or laptop computer that runs any Windows system with .NET installed and have Internet access.

Type: All cellular modems now digital.

Modem:

Digital service type: 1900 / 850 MHz GPRS (General Packet Radio System), IP

Location: Modem mounted inside computer console

Transmit frequency: 1850 -1910 MHz and 824 -849 MHz

Input voltage: 9Vdc to 28Vdc

Input current: 40ma to 200ma

Antenna connection: 50 Ohm TNC

Serial interface: RS-232 DB-9F

Operating temperature: -30deg.C to +70deg.C

Antenna:

Type: Stub

Location: Over the message sign cabinet mounted to a circular steel disk serving as ground plane.

Coverage: 360 degrees

Gain: 3db

Wanco Remote NTCIP central software

Description: The Wanco NTCIP central control software gets installed on the customer supplied desktop or laptop computer. This is the main software that interacts between the operator computer and the Wanco NTCIP trailer(s).

Communication standards: NTCIP compliant

Connectivity: Capable of direct TCP/IP communication without RS-232 conversions. (No GPRS modem required at operator computer.)

Computer Requirements: Any Windows based computer running Microsoft .NET add-on and capable of connecting to the Internet.

Maximum number of signs: Unlimited

Software upgrades: Free upgrades downloadable from Wanco web site.

Wanco Remote HTML Control software

Description: The Wanco HTML Control software allows operators to control the message board using a web browser. This HTML software is accessible from any platform that supports a modern web browser (such as Mozilla Firefox, Microsoft Internet Explorer 7, Opera or Safari) and JavaScript. Platforms that support these browsers include Smart Cell Phones, laptops and desktop PCs.

Communication standards: HTML and JavaScript

Cell Phone Requirements: Droid or iPhone

Maximum number of signs: Unlimited

Software upgrades: Free upgrades downloadable from Wanco web site.

Password protected: Multi level password protection

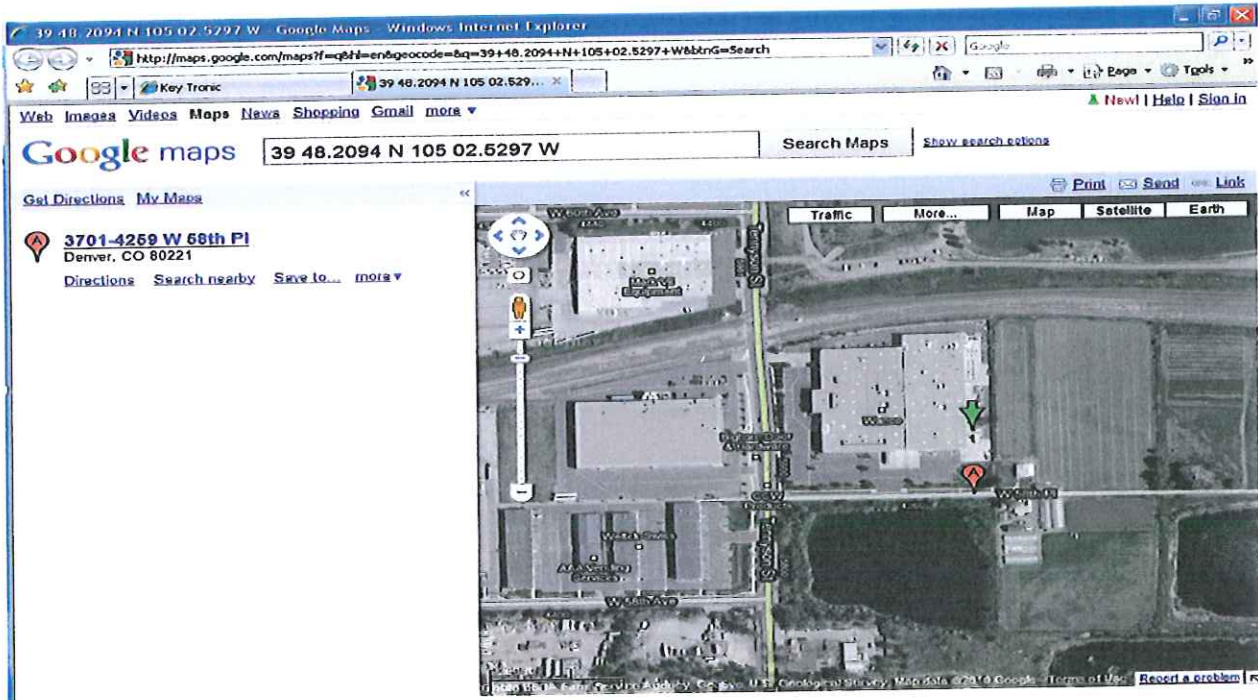
OPTIONAL EQUIPMENT

The options below can be added to any WTMMB-SLL(A)10 Message Director.

CELLULAR MODEM with GPS LOCATION PACKAGE

Cellular Modem:

Purpose: The remote communications package enables the message sign(s) to be monitored, programmed and diagnosed from a remote location other than at the trailer. This remote service saves travel time and training of off site personnel. Internal to the modem is a GPS locator PC board. Using Wanco NTCIP remote software, map the location of the message sign.



Requirements: Customer must provide the following items to operate remotely.

Cellular/Digital provider service: Each trailer must be assigned an active data service plan (phone number). It is up to the customer to sign a contract with the carrier of choice for each trailer(s) phone number(s).

Office computer: Customer must provide a desktop or laptop computer that runs any Windows system with .NET installed and have Internet access.

Type: All cellular modems now digital.

Modem:

Digital service type: 1900 / 850 MHz GPRS (General Packet Radio System), IP

Location: Modem mounted inside computer console

Transmit frequency: 1850 -1910 MHz and 824 -849 MHz

Input voltage: 9Vdc to 28Vdc

Input current: 40ma to 200ma

Antenna connection: 50 Ohm TNC

Serial interface: RS-232 DB-9F

Operating temperature: -30deg.C to +70deg.C (-22deg.F to 185deg.F)

Antenna:

Type: Stub

Location: Over the message sign cabinet mounted to a circular steel disk serving as ground plane.

Coverage: 360 degrees

Gain: 3d

Second GPS antenna required mounts on top of control cabinet.

OPTIONAL EQUIPMENT

The options below can be added to any WTMMB-SLL(A)10 Message Director.

RADAR SPEED MONITORING PACKAGE

Purpose: Convey a message to speeding motorist that they are speeding. With Wanco program, show motorist their actual speed or display a statement to slow down.

Type: Approach only, picks up the largest moving mass that is coming toward the message trailer.

Manufacturer: Decatur Electronics, model SI-3 or equivalent.

Location: Antenna head is mounted on the bottom of the message sign and is just off center on trailer for maximum effect regardless of which side of the road it is on.

Weather protected: The antenna head is sealed to withstand the elements. An aluminum cover goes over the antenna head to protect it from outside impacts.

Distance range: 1000 feet for mid-size vehicle

Speed range: 10 to 99 mph

Protection: Fused and reverse polarity protected.

TELESCOPING OUTRIGGERS:

Purpose: Gives trailer added wind loading support. Each corner of trailer is equipped with a telescoping outrigger (jack extensions).

Foot print: 126 "W x 120" L

COMBINATION TRAILER HITCH:

Purpose: Enables trailer to be towed by vehicle equipped with A 2" ball hitch and a 3"ID x 1-5/8" cross section pintle hitch.

LARGER SOLAR ARRAY:

Purpose: For geographic locations with smaller solar charging potential or customers wishing a better year around charging system.

Array sizes available: 215W, 260W, 390 watt

LARGER BATTERY BANK:

Purpose: For geographic locations with smaller solar charging potential, colder weather or customers wishing a better year around charging system.

Options: Call factory for other choices of batteries not listed here.

Selections:

Standard golf cart batteries

Add two, four or six standard 6Vdc batteries to any message sign.

Two extra batteries gives the bank a 900 AH capacity

Four extra batteries gives the bank a 1125 AH capacity

Six extra batteries gives the bank a 1350 AH capacity (larger battery box for this option required)

Top of the line:

Battery Type: Sealed Absorbed Glass Mat (AGM)

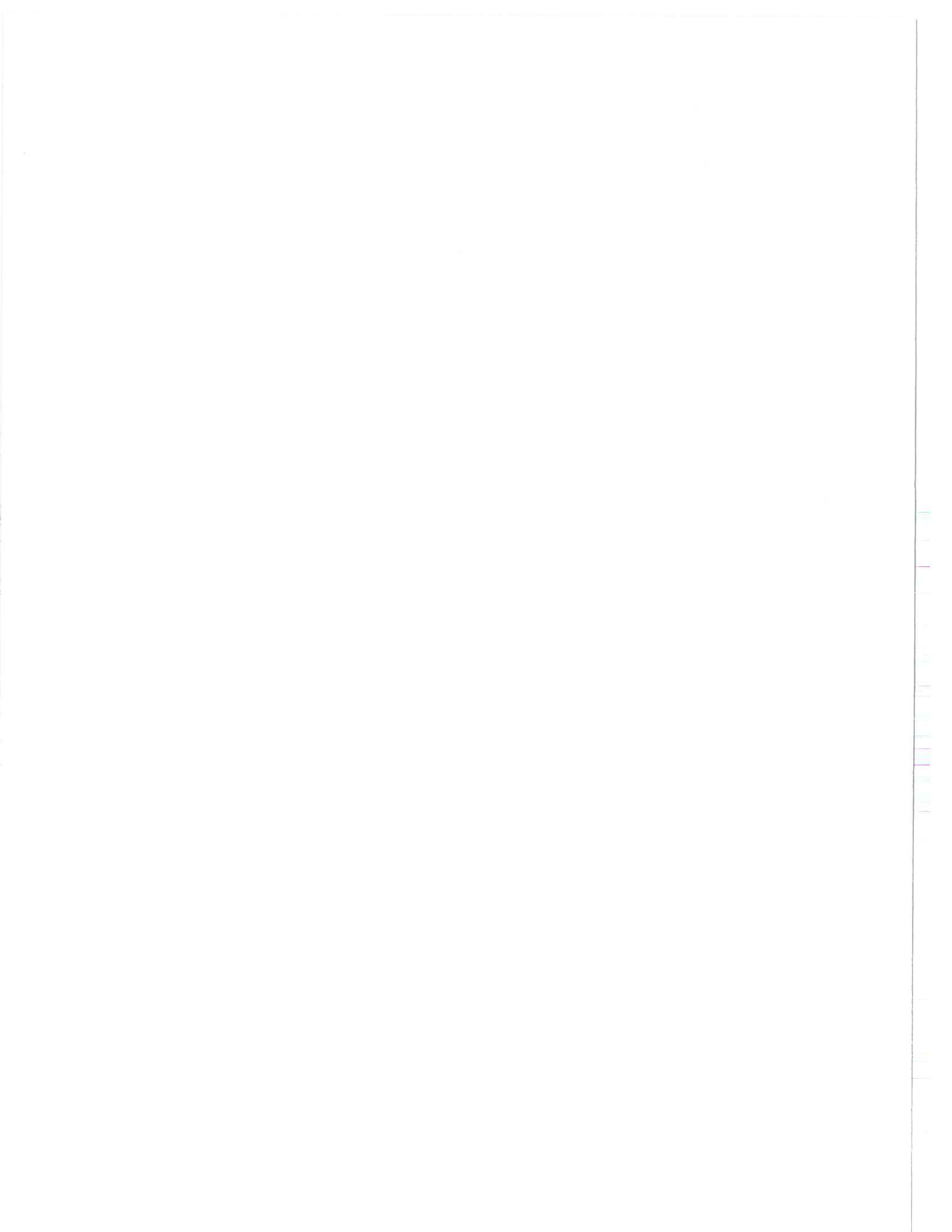
Features: 100% maintenance free, faster recharge than conventional batteries, high freeze resistance, spill proof

Number of batteries: Three

Size: Group 8D, 158 lbs each

Capacity: 1350 CCA @ 0deg. F., 245AH per battery (735 AH total capacity)

Voltage: 12Vdc



OPTIONAL EQUIPMENT

The options below can be added to any WTMMB-SLL(A)10 Message Director.

REMOTE VIDEO TRAFFIC MONITORING PACKAGE (109542-001)

Purpose: Remotely monitor activity via video around the trailer. Camera is controlled remotely and can be panned, tilted and zoomed by operator. Package comes with telescoping mast assembly getting camera 6ft above the message sign top. A cellular service contract must be purchased to view cameras. Cellular router is included in this package. No onboard video recording is done with this package, only remote recording. Contact Wanco if recording on the trailer is required.

Tower Assembly:

Location: Mounts to the back of the message sign support frame. Tower goes up with the message sign tower.
Max. height: 21.5 ft from ground
Storage: When in the down position the tower camera is protected just below the solar panels.
Number of sections: Three
Winch: an electric 12vdc winch raises and lowers the tower. Winch comes with friction safety brake to allow any telescoped height.
Capacity: 1500 lbs
Winch switch: A heavy duty momentary switch is located in the message board computer box. This switch is locked up with the message sign controls.

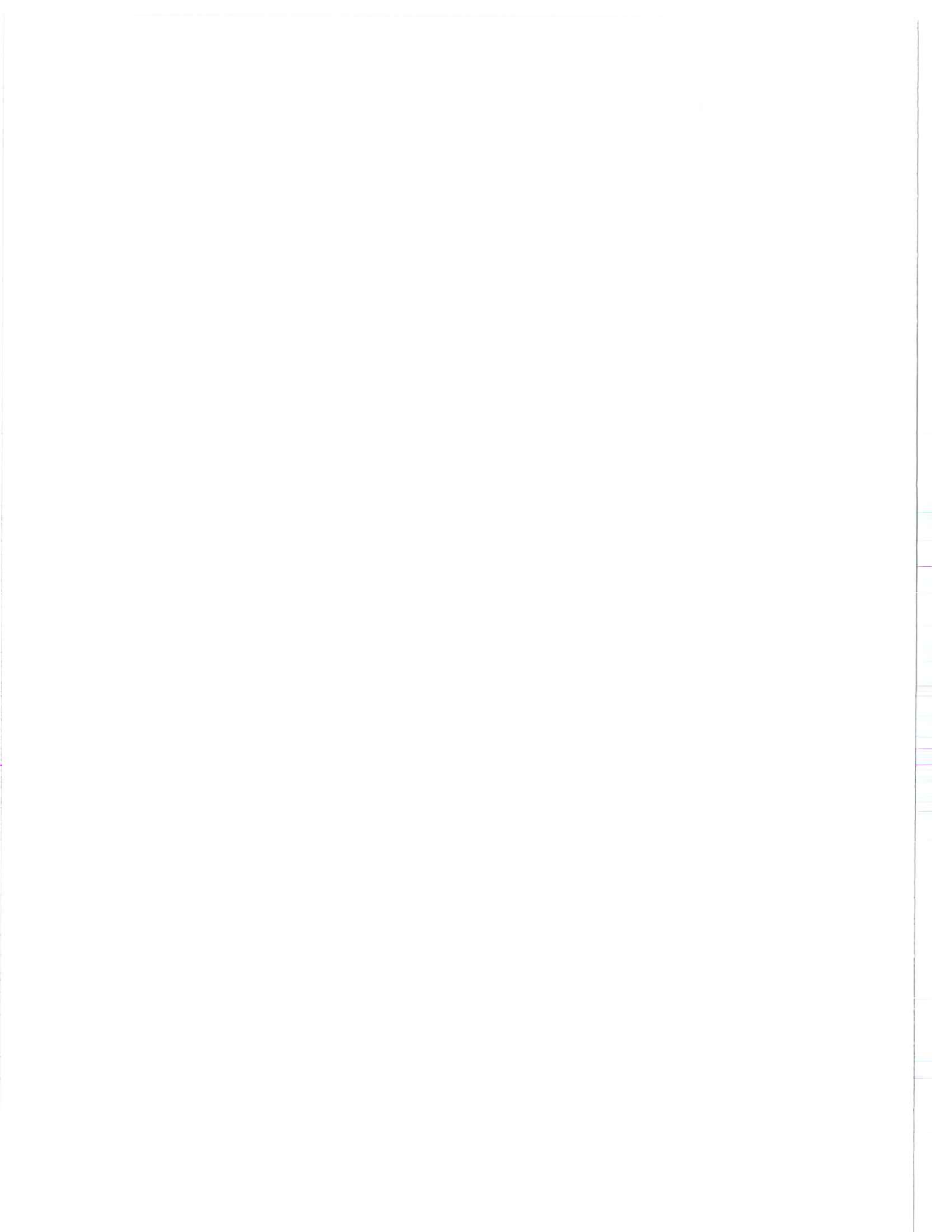
Camera:

Type: Dome day / night PTZ camera
Manufacturer: Vicon or Pelco (contact factory for other choices)
Model: Surveyor or Spectra IV
Mounting: Environmental pendent, 1-1/2" NPT
Pan Movement: 360 degrees continuous
Vertical tilt: Unobstructed 2deg to -92deg
Low light sensitivity: In B/W mode, 0.02 lux
Zoom: optical 23X standard 35X optional, 12X digital
Resolution: 768 x 494
Input voltage: 24Vdc
Input power: 70VA nominal with heaters on.
Operating temperature: -60F to 140F

Video Server:

Purpose: Like network cameras, it contains a built-in Web server, a compression chip and an operating system so that incoming analog feeds can be converted into digital video, transmitted and recorded over the computer network for easier accessibility and viewing. The video server eliminates the need for on-board DVR and monitor. Viewing and camera PTZ control software are included with the video server.

Number of channels: one
Video Compression: Motion JPEG, MPEG-4 part 2
Resolutions: Selectable; 4CIF, 2CIFExp, 2CIF, CIF QCIF
Frame rate: Motion JPEG up to 30/25 fps at 4CIF
MPEG-4 up to 30/25 fps at 2CIF and 21/17 fps at 4CIF
(Realistic frame rate using a cellular connection is approximately 5fps)
Security: Multiple user access levels with password protection, IP address filtering, HTTPS encryption, IEEE 802.1x network access control
Pan/tilt & zoom: Control camera remotely, 20 presets, guard tour and PTZ queue
Alarm and event management: Events triggered by video motion detection, external inputs, PTZ presets, product restart, and video loss or according to schedule.
Images upload over FTP, email HTTP
Notification over TCP, email, HTTP, external outputs
Max. number of remote video clients: 20
Input power: 7-20Vdc, Max 8W



Cellular Router:

Purpose: The ConnectPort WAN VPN is an upgradeable, commercial grade 3G cellular router that provides secure high speed wireless connectivity to remote sites and devices. This one cellular router controls both camera system and message sign.

Cellular service: Customer must obtain a service contract with a cellular company that supports either, GSM GPRS /Edge/UMTS/HSDPA or CDMA 1xRTT/ EvDO

Antenna set up: Two antennas are used, one on top of camera tower, one on top of message sign area

Ports: 2 serial (RS-232), 4 Ethernet (RJ-45) , 1 USB Type A

Input power: 9-30Vdc,

Power consumption: idle = 3.1W; Max. = 11.5W

Low Voltage disconnect module (LVDM):

Purpose: This electronic module provides power management control to the camera system. The Camera system can operate independently from the Message Director system.

Location: Inside the message sign controller on the same panel as the electric winch switch.

Toggle switch: A toggle switch turns the camera LVDM on and off.

Serial interface: Displays the battery voltage and temperatures readings onto its own program that can be remotely viewed. This serial interface can also remotely turn on/off auxiliary equipment like radar, GPS options

LVD Settings: Voltage and temperature settings can be adjusted through the LVD program though the computer administrator level.

Fuse Protected: 60A Maxi type

Disconnect setting: 11.5Vdc conventional batteries (10.5Vdc for AGM batteries)

Reconnect voltage: 12.6Vdc conventional batteries (11.6Vdc for AGM batteries)

Maximum rated power input: 60A

LED warning light: A LED indicator shows if unit is operating, is in low voltage shut down or out of low temperature start range.

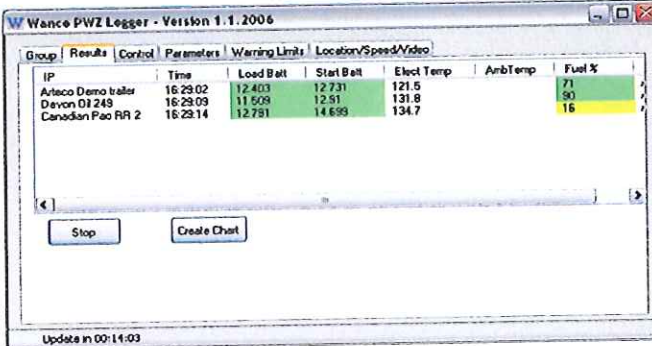
PWZ Logger health monitoring software:

Purpose: This Wanco remote software enables a user to remotely keep track of the health of the trailer fleet.

Required equipment: Cellular router

Results Tab:

Software remotely calls each trailer grabbing readings from each trailer. Each reading taken is color coded, green, yellow and red to indicate the status of each trailer. The monitoring operator can see at a glance if there is a problem with any trailer in the fleet.



The screenshot shows the 'Wanco PWZ Logger - Version 1.1.2006' application window. It has several tabs: 'Results', 'Control', 'Parameters', 'Warning Limits', and 'Location/Speed/Video'. The 'Results' tab is active, displaying a table with the following data:

Group	Time	Load Batt	Start Batt	Elect Temp	Amb Temp	Fuel %
Arteco Demo trailer	16:29:02	12.403	12.731	121.5		71
Devon 01249	16:29:09	11.509	12.51	131.8		50
Canadian Pao RR 2	16:29:14	12.791	14.893	134.7		16

Below the table are 'Stop' and 'Create Chart' buttons. At the bottom of the window, it says 'Update in 00:11:03'.

Control Tab:

Control:

Remotely reset the engine control panel using ECU button

Remotely turn ON – OFF cabinet fans using Fan1 button

Remotely turn ON – OFF LVD using

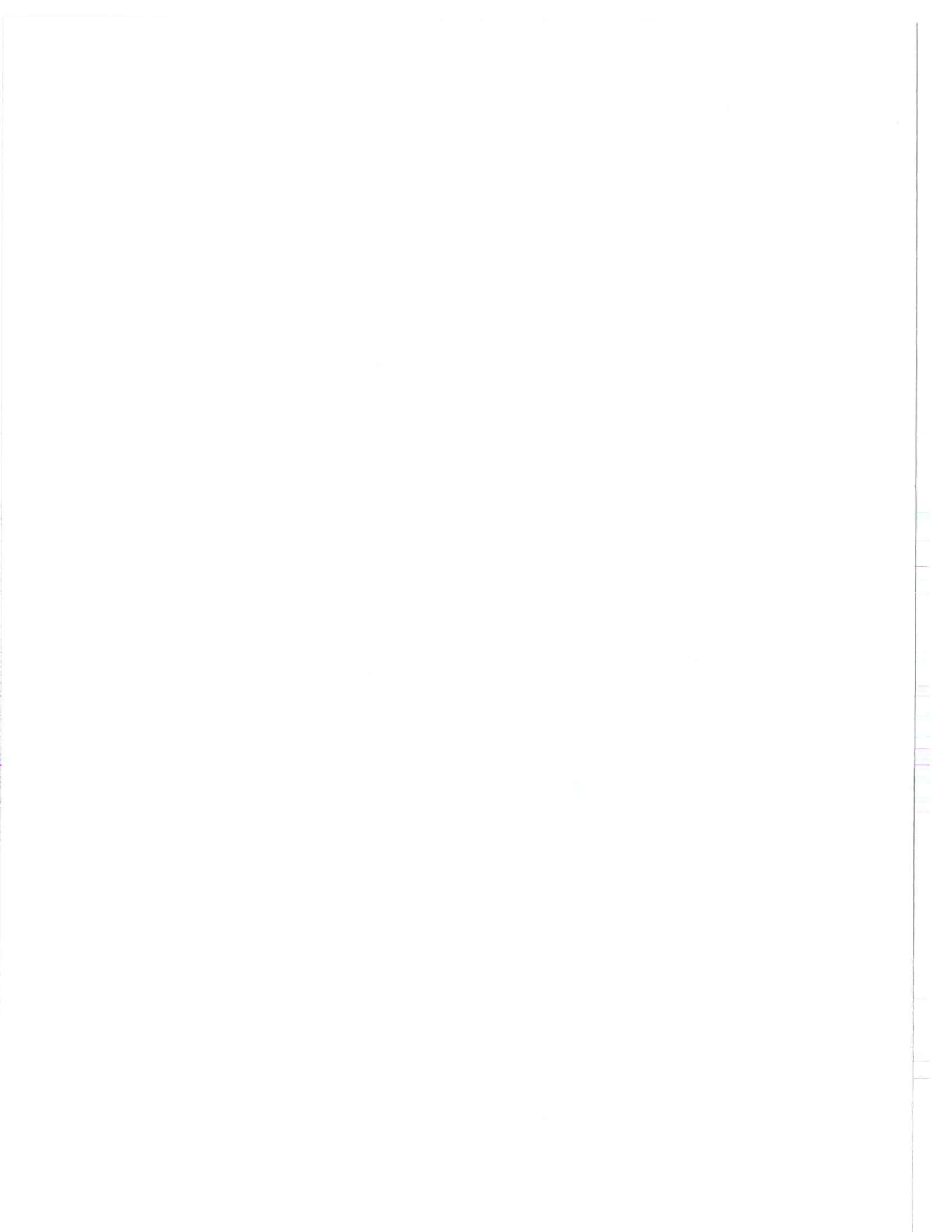
Readings:

Control one trailer at a time

Voltages: Load bank batteries and engine start battery.

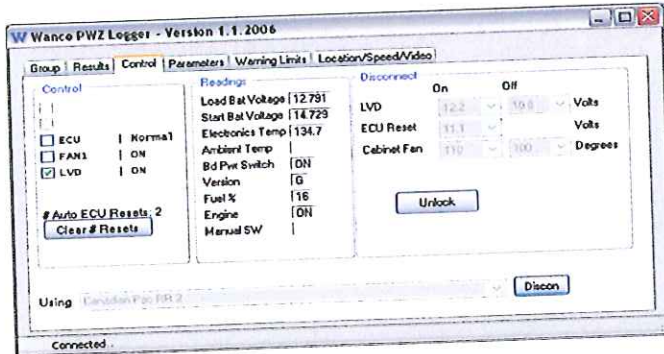
DVR temperature: Displays case temperature of computer

Fuel level: Reads a percentage of fuel remaining (Ambient Temp. if not equipped with engine)

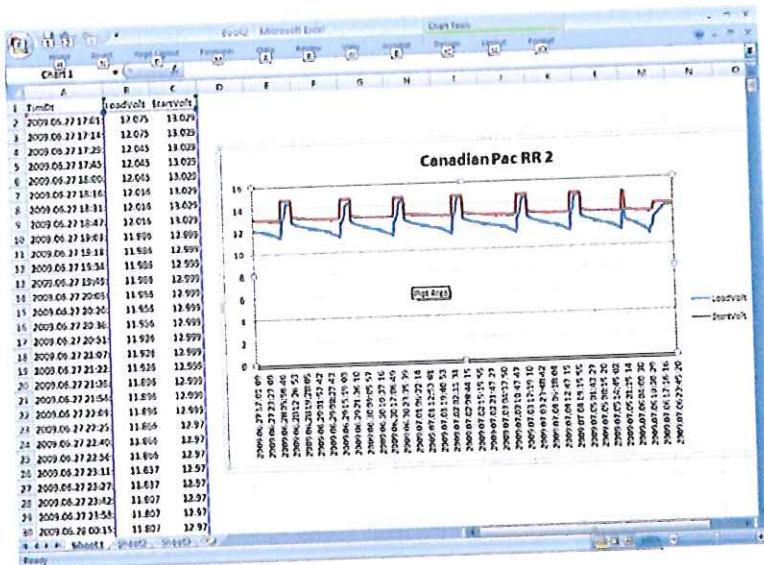


Indicates Master board switch: Will note if trailer master switch is ON or OFF
 Indicates engine status: Will note if engine is OFF or ON

Disconnect:
 Remotely set the ON and Off values for the Low voltage disconnect, cabinet fans and engine control unit reset



Logging:
 The logging feature of the software takes the grabbed data and displays into an Excel spread sheet.
 This logging feature is helpful in fuel management and in trouble shooting engine problems remotely.



Power supply increase:

Purpose: The added power drain on the 12Vdc system requires the solar panel and the battery bank to be slightly increased in size. The below numbers are what the total power system will be due to adding this package to the Message Director. For customers in geographic locations with a cold or heavy snow winter wishing for extended run times, you might consider the optional Hybrid-Diesel Auto start package.

Solar panels: Increased to 260Watt total array

Batteries: Increased to 10 – 6Vdc batteries. Total bank capacity is 1125AH

Telescoping Outriggers:

Purpose: Due to the extra weight of the camera tower assembly, larger sign support frame and extra solar panels, four corner telescoping outriggers will be considered standard equipment with this package.

Number: Four

Telescope foot print: Foot print of stabilizers with outriggers extended: 120" lg. x 126" wide

OPTIONAL EQUIPMENT

The options below can be added to any WTMMB-SLL(A)10 Message Director.

HYBRID DIESEL AUTO-START CHARGING SYSTEM (109178-001)

Purpose: To recharge the main load bank batteries as fast as possible, then shut down allowing the trailer to run on battery power only. Recharging is dependent on condition of batteries. The more power demand put on battery bank the more often the run cycles. A typical run time between fillings is 60-90 days when equipped with one PTZ camera.

Auto starting Controller:

Purpose: The Wanco controller closely monitors the main battery bank condition. When the main battery bank drops to 11.0Vdc the engine controller automatically starts the engine start sequence. When the battery bank is charged, the engine automatically shuts off waiting for the next cycle to begin.

Location: Inside engine enclosure

Start warning: An audible alarm sounds during the pre-heat cycle. This audible alarm warns mechanics or field personnel that the engine will be starting.

Number of start attempts: Engine will attempt to start five times before throwing a start error that needs outside attention.

Slow charge ramp: The alternator power output is slowly ramped up to full power allowing the engine to warm up.

Manual starting: A second toggle switch enables the start sequence to happen immediately not waiting for the battery bank voltage to drop. This switch is useful in trouble shooting and topping off the voltage on the battery bank.

Temperature compensation: The system monitors the temperature of the battery bank and the alternator. Charging is automatically adjusted to meet the temperature conditions for both hot and cold conditions.

Hour meter: Indicates the run time of the engine.

Enclosure:

Purpose: To protect the engine, fuel tank, controller and start battery from the elements.

Location: Left side of trailer, where the standard battery bank used to be.

Access: The top 1/3 of the compartment pivots at the rear to gain access to the engine compartment.

Engine stability: Virtually no engine vibration is observed through the cameras when the unit is charging.

Engine:

Type: Single cylinder air-cooled diesel engine.

Manufacturer: Kohler Diesel (Lombardini)

Model: 15LD-350D

Horse Power: 5.9 @ 3600 rpm

Oil system:

Type: A pressurized oil system ensures proper lubrication.

Safety shut down: A low oil pressure sending unit shuts down the engine if low oil pressure is detected.

Deep sump: A 2 qt deep sump provides extra run time between oil fillings and provides added oil cooling.

Filter: Replaceable cartridge type

Stability: Counter balanced shaft makes engine run smooth.

Starting: Electric 12Vdc start motor with a recoil rope pull backup.

Safety shut downs: Low oil and high temperature

Start battery charging: An integral 12vdc flywheel charging with voltage regulator charges the start battery.

Cold weather starting aid: Electric pre-heat glow plug is installed on the down side of the air filter.

Alternator:

Type: Heavy-duty automotive

Amperage rating: 150 amps max.

Voltage: 12Vdc

Voltage regulator: An external voltage regulator monitors the load bank battery condition at all times allowing the batteries to be charged to their appropriate level. Adjustability is available for different battery banks.

Cooling: Hot alternator air is ducted out the bottom of the engine compartment.

Belts: A dual V-belt system is required to handle the required horsepower

Genset mounting:

Vibration mounts: Four rubber vibration mounts are located at the center of gravity of the genset to help reduce the vibration of the engine assembly.

Start battery:

Location: Inside engine compartment in front for easy access.

Size: Group 24, 450CCA

Voltage: 12Vdc

Charged by: Engine flywheel alternator with separate voltage regulator

Fuel Tank:

Location: Inside the engine compartment protected from weather elements and vandalism

Size: 30 gallons

Filler neck size: 3"NPT angled at 45 degrees

Material: Crosslink polycarbonate, natural color

Mounting: Mounts with two steel straps to deck of engine enclosure.

Fuel level monitoring: A remote sensor mounts to the top of the fuel tank. This sensor along with Wanco Remote Status monitoring software allows the user to remotely see the percentage of fuel left in tank along with the battery voltages.

Battery Bank:

Purpose: The main battery bank gets changed from the 6vdc golf cart type batteries to a higher quality sealed AGM type battery.

Location: These batteries require zero maintenance and are now located on the right side of the trailer between message sign and fender. Because there is zero maintenance the battery box lid is bolted closed.

Battery Type: Sealed Absorbed Glass Mat (AGM)

Features: 100% maintenance free, faster recharge than conventional batteries, high freeze resistance, spill proof

Number of batteries: Three

Size: Group 8D, 158 lbs each

Capacity: 1350 CCA @ 0deg. F., 245AH per battery (735 AH total capacity)

Voltage: 12Vdc

Variable Message Signs

Full-Matrix and Three-Line



ENCL TWO

WANCO[®] Driving traffic safety.

800-972-0755
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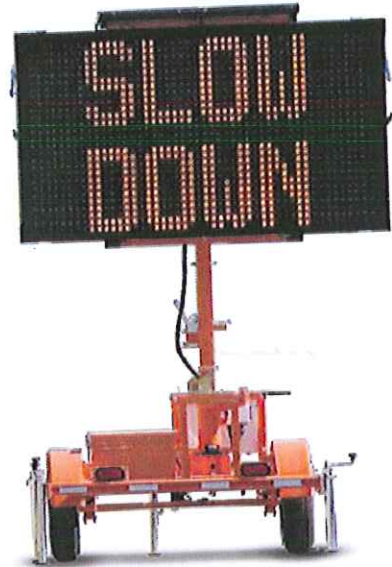
The safest means for notifying motorists of changes in traffic patterns and road conditions.

Unsurpassed quality, engineering and value, paired with a multitude of functions and options, make these signs perfect for a wide variety of applications.

- Onboard controller
- Easiest programming in the industry
- Solar charging
- Low power consumption and more uptime
- Meets MUTCD and is NTCIP-compliant

Wanco full-matrix message signs are an ideal choice when you need to get information to the public. The full matrix allows the greatest flexibility for displaying any type of message—large or small letters, symbols and graphics.

Wanco three-line message signs are capable of displaying three rows of alphanumeric characters. The three-line's highly legible, ultra-bright LEDs display your message clearly.



Mini Matrix Sign

WVTM(A) Hydraulic lift

WVTM Manual winch

Full-Matrix Sign

(shown on front cover)

WTMMB-SLL(A) Hydraulic lift

WTMMB-SLL(B) Manual winch



Three-Line Sign

WTLMB-SLL(A) Hydraulic lift

WTLMB-SLL(B) Manual winch

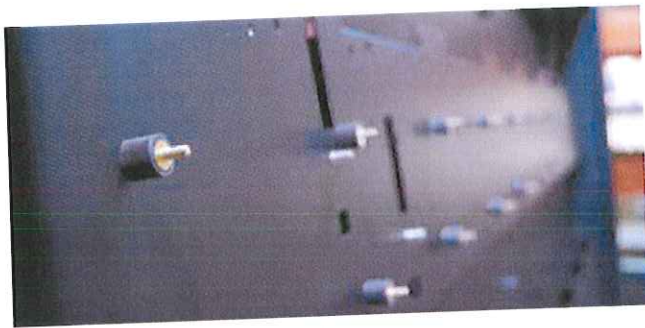


Mini Three-Line Sign

WVT3(A) Hydraulic lift

WVT3 Manual winch

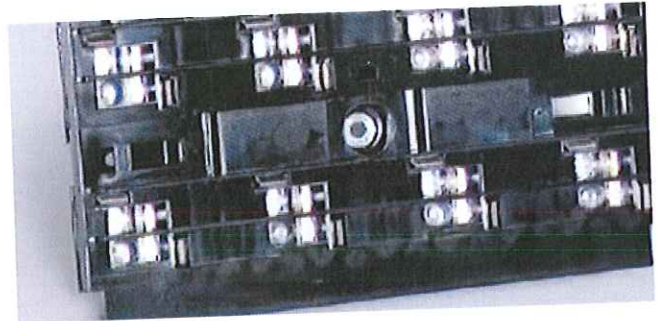
Signs are available as trailer-mount models, as well as truck-, pole-, and wall-mount versions. Optional accessories include radar-speed detection and traffic data collection, remote communications, GPS and more. For details, visit www.wanco.com.



Rubber vibration-isolation mounts

Rubber vibration mounts decrease physical shock to the LED character modules and isolate them from chassis ground. This mounting technique prolongs the life of the modules, increasing both reliability and uptime.

The face of the sign cabinet is covered by an impact-resistant clear polycarbonate resin thermoplastic door that further protects the characters. The door is angled to reduce glare.



LED pixels

Characters feature clusters of four LEDs that comprise the "pixels." An optical lens over each pixel magnifies the intensity of the LEDs and increases angularity. A visor shades each row of pixels from sunlight, maximizing brightness.

All Wanco character boards feature 5-mil silicone conformal coating, to provide long-term protection against moisture and other atmospheric contaminants.

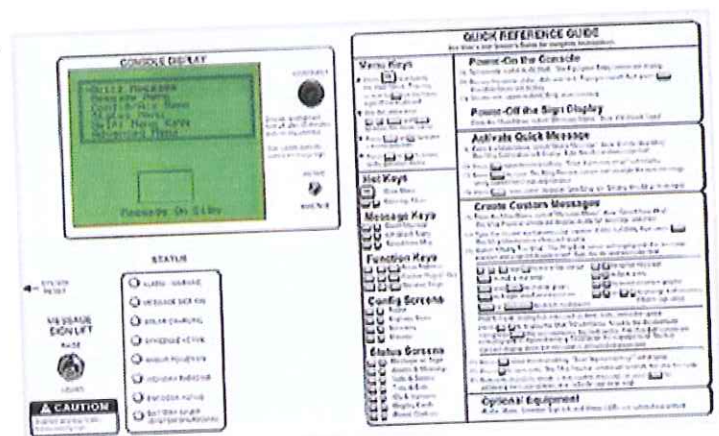


Wanco matrix signs provide a variety of font sizes and styles—many more than are shown here—as well as standard and custom symbols and graphics.

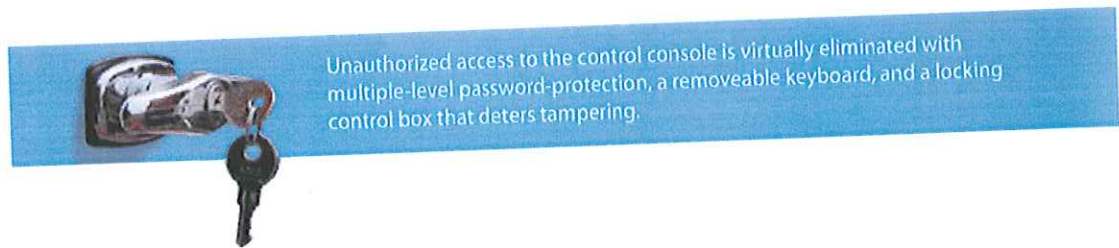
Wanco portable message signs have a self-contained onboard controller, making a laptop or external controller unnecessary.

Changing the message is simple, as Wanco signs feature the easiest programming in the industry. The control console includes an LCD display and quick-reference instructions for many common commands.

Signs come configured with preprogrammed standard messages. A quick-message function provides for display of select messages with a keystroke. Multiple programming options provide flexibility for multiple applications.



Matrix sign control panel



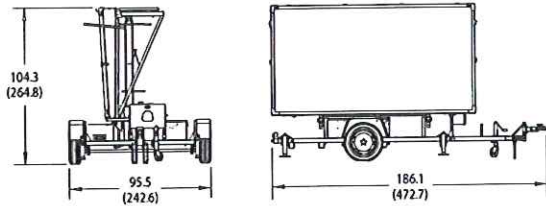
Unauthorized access to the control console is virtually eliminated with multiple-level password-protection, a removeable keyboard, and a locking control box that deters tampering.

Brief specifications

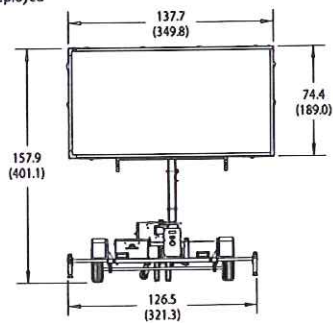
Full-size signs

Physical

Travel Position



Deployed



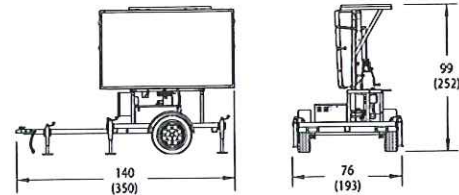
Dimensions in inches (cm)

Weight Approx. 2640 lbs. (1193 kg)
Tires ST205/75 D15

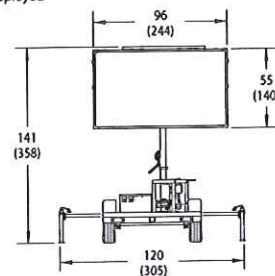
Mini signs

Physical

Travel Position



Deployed



Dimensions in inches (cm)

Weight Approx. 1580 lbs. (717 kg)
Tires ST205/75 D15

Matrix Signs

Display

Resolution Four amber LEDs form each pixel
Matrix 48 pixels wide, 27 pixels high
Smallest characters 4 lines, up to 12 characters per line
Largest characters 1 line, up to 6 characters

Power

Batteries Six 6 V dc golf cart-type, wired for 12 V dc power
Battery capacity 675 Ah total
Solar panels¹ Two 80/85 W
Optional solar panels² One 130 W and one 85 W
Optional diesel engine² Lombardini 15 LD 350D
7.5 hp (5.5kW) @ 3600 RPM
1.3 qt. (1.2 L) deep oil sump
Transparent polyethylene fuel tank, 30-gallon capacity

¹ Mini-size signs only.

² Full-size signs only.

Three-Line Signs

Display

Resolution Four amber LEDs form each pixel
Character size 5 pixels wide, 7 pixels high
Characters 3 lines, 8 characters per line

Power

Batteries Six 6 V dc golf cart-type, wired for 12 V dc power
Battery capacity 675 Ah total
Solar panels Two 80/85 W

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Full-Matrix Message Signs

WTMMB

Full-size, full-matrix Wanco Variable Message Signs are the ideal choice when you need to get information to the public. The full matrix allows the greatest flexibility for displaying any type of message — large or small letters, graphics and symbols. Perfect for a wide variety of applications, a multitude of functions and options make these signs extremely versatile.



Specifications†

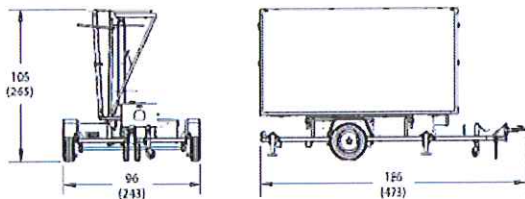
Dimensions — inches (cm)

ENCL THREE

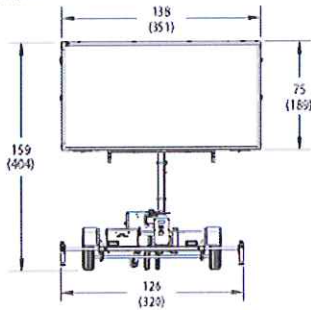
Specifications†

Dimensions — inches (cm)

Travel Position



Deployed



Weight

Approx. 2640 lbs. (1193 kg)

Construction

Trailer	MIG-welded, 2 x 3-inch steel tubing
Sign cabinet	Aluminum sheet and welded channels
Coating	Powder-coated and oven-baked
Axle assembly	3500-lb. capacity 4-inch drop axle 5 on 4.5-inch BC idler hub Double eye leaf springs
Tires	ST205/75 D15

Display

Resolution	Four amber LEDs form each pixel
Matrix	48 pixels wide, 27 pixels high
Smallest characters	4 lines, 12 characters
Largest characters	1 line, 6 characters
Legibility	Approx. 600 to 3200 ft. (183 to 976 m)

Power — standard

Batteries	Four 6 V dc golf cart-type, wired in series and parallel for 12 V dc power supply
Battery capacity	450 Ah total
Battery charger	15 A
Solar panels	130 W

Power — optional

Batteries & solar	Six 6 V dc golf cart-type, wired in series and parallel for 12 V dc power supply, 675 Ah total battery capacity 150 W or 170 W solar power
Diesel engine	Lombardini 15 LD 350D 7.5 hp (5.5kW) @ 3600 RPM 1.3 qt. (1.2 L) deep oil sump Transparent polyethylene fuel tank, 30-gallon capacity

†Specifications subject to change without notice



Standard Wanco Warranty

MANUFACTURER'S LIMITED WARRANTY

WANCO INC. (WANCO) warrants to the original user that each product of its manufacture is free from defects in material and workmanship if properly installed, serviced, and operated under normal conditions.

WANCO's obligation under this warranty is limited to correcting without charge at its factory any part or parts thereof which shall be returned to its factory prepaid within one year after being put into service or 12 months after purchase by the original user, whichever is earlier, and which upon examination shall disclose to WANCO's satisfaction to have been originally defective. In any event, warranty will not extend beyond one year (12 months) from the date of original purchase from WANCO, except as described in the following paragraph.

Under the conditions described above, WANCO variable message signs, WANCO LegiBrite™ message signs, WANCO trailer-mounted arrow boards, and WANCO skid-mounted arrow boards purchased after February 15, 2010, are warranted for a period of five years after being put into service or 60 months after purchase by the original user, whichever is earlier. In any event, warranty will not extend beyond five years (60 months) from the date of original purchase from WANCO. WANCO engine-driven light towers, radar-speed signs, and traffic data collector are warranted for a period of two years after being put into service or 24 months after purchase by the original user or 2,000 hours of operation, whichever is earliest. In any event, warranty on WANCO light towers will not extend beyond two years (24 months) from the original purchase date from WANCO.

This warranty shall not apply to any WANCO product that must be replaced because of normal wear, that has been subject to misuse, negligence or accident, or that has been repaired or altered outside of WANCO's factory unless authorized by WANCO.

WANCO makes no warranties with respect to engines or other component parts or accessories not manufactured by WANCO, same being subject only to such warranties, if any, as may be made by their respective manufacturers. WANCO does warrant that it will put forth its best efforts on behalf of original users of its products to assure that such manufacturer's warranties are satisfactorily performed.

THIS WARRANTY, AND THE MANUFACTURER'S OBLIGATION HEREUNDER, IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS, IMPLIED, OR STATUTORY, INCLUDING ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, and all other obligations or liabilities including special or consequential damages or contingent liabilities arising out of the failure of any product or part to operate properly. WANCO shall not be liable for any special, indirect, incidental or consequential damages whether in contract, tort, under any warranty or otherwise, beyond the warranty quoted herein for products or parts.

No person is authorized to give any other warranty or to assume any additional obligation on WANCO's behalf unless made in writing and signed by an officer of the Manufacturer.



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ENCL FOUR