



K&K Systems, inc.
Traffic Safety Products Manufacturer



ARROW BOARD

OPERATING MANUAL



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THANK YOU FOR YOUR BUSINESS!

To Our Valued Customer,

K&K Systems, Inc. is excited that you have purchased our product.

Our company has been serving the traffic industry since 1997. Since that time we have risen to become a leader in the traffic industry. We offer a complete line of traffic safety products that include message boards, arrow boards, radar speed monitors, solar school zone flashers, solar 24-hour flashers and many other quality products that serve our industry today.

At K&K Systems, Inc., we strive to improve the quality of our products. We are dedicated to the concept that our customers are our most valuable resource. We strive to serve our customers as we would want to be served.

Tim Keith,
President





INTRODUCTION

This trailer mounted (LED) arrow board is solar powered with a smart charge controller. The sign dimensions are 48" x 96". It is fabricated from aluminum with a flat black powder coat finish to give a smooth look and prevent rust. Our standard systems have 36 amps of battery backup power and (4) four swivel type jacks – one on each corner of the trailer and (1) one tongue jack.

The solar panel provides a charge to the battery bank while exposed to the sun. It has LVD (low voltage disconnect). An optional fully automatic battery charger can be used instead of the solar panels. Solar panels need to be in direct sunlight for an extended period of time to charge the battery.

The truck mounted arrow board is a mobile arrow board that is static mounted on to a service vehicle. It is fabricated from aluminum with a flat black powder coat finish to give a smooth look and prevent rust. The standard arrow boards feature a frame with folding frame activated by an actuator. The arrow board folds out automatically when the unit is powered on, and automatically folds down when the unit is powered off.



TRAILER MOUNT MODELS

FOLD&GO

The Fold & Go is designed so that the display folds down for less wind resistance in transit. The solar panel on the back of the display allows the batteries to charge while folded. Simply crank the winch to raise the board into the upright/deployed position.

FOLD&GO TRAILER SPECS

Width: 96"
Length without Tongue: 76"
Length with Tongue: 115"
Transport Height: 82"
Weight: 605 lbs.



Available in 15 and 25 Lamp Models

360° ROTATING TELESCOPIC

The Telescopic 360° Rotating Arrow Board extends to a full height of 7 feet to the bottom of the board with a transport height of 87". It can rotate a full 360° left and right.

360° TRAILER SPECS

Width: 69"
Length without Tongue: 96"
Length with Tongue: 126"
Transport Height: 93.5"
Weight: 605 lbs.



The display rotates a full 360° for the best visibility without having to reposition the trailer.





VEHICLE MOUNT MODELS

Vehicle Mounted Arrow Board models are come in various sizes with numerous mounting options. All feature an aluminum display with a folding frame activated using a 12V linear actuator with built-in limit switches and 6" stroke. The arrow board includes an auto raise/lower function when the unit is powered on or off. Optional wireless and wired remotes are available. K&K's standard mounting choices include 90° Manual and 90° Auto, 180° Flip Manual, 180° Flip Auto, Low Profile, Over-the-cab, Rail, Hitch, Attenuator, and Skid.

The TruWireless option eliminates all wires connecting the arrow board to the vehicle by utilizing solar to power the unit. It can be applied to any unit.

MODEL	DESCRIPTION	LAMPS
AV143055	30" x 55" Display. Black Finish. LED Lamps	14
AV153060	30" x 60" Display. Black Finish. LED Lamps	15
AV253060	30" x 60" Display. Black Finish. LED Lamps	25
AV153672	36" x 72" Display. Black Finish. LED Lamps	15
AV253672	36" x 72" Display. Black Finish. LED Lamps	25
AV154896	48" x 96" Display. Black Finish. LED Lamps	15
AV254896	48" x 96" Display. Black Finish. LED Lamps	25



30" x 60" AV253060
TruWireless Option Shown



Silhouette AV143055
Low Profile Hitch Mount Shown



30" x 60" AV153060 / AV253060
90° Auto Mount Shown



36" x 72" AV153672 / AV253672
Over-the-Cab Low Profile Mount Shown



48" x 96" AV154896 / AV254896
Low Profile Skid Mount Shown



48" x 96" AV154896 / AV254896
Scorpion Mount Shown



COMPONENTS

POWER SOURCE

Our products incorporate a battery pack wired for 12V operation, depending on the requirements of the design. The battery bank is regulated by and protected by a solid-state charge controller/low voltage disconnect. This prevents gassing and over discharging of the batteries, which can result in premature failure. A thermal compensation and related circuitry adjusts the charge rate of the system with variances in temperature.

The truck mounted arrow board comes standard with a 25ft power cable that is to be integrated into the vehicles existing power system. The smart controller prevents the arrow board from draining the vehicles battery while it is in the OFF mode during storage. The arrow board is designed to be operated while the vehicles engine is on, to prevent the draining of its battery, but can be operated sparingly while the vehicle is off.

CONCEALED BATTERY COMPARTMENT

Our sleek design is attributed to the easily accessible battery compartment located inside the display. It neatly houses the batteries to create a clean, smooth look while deterring theft. A second solar panel mounted on the back of the panel allows the batteries to charge while the Fold & Go Arrow Board is in the transportation configuration.



CONTROLLERS

Every K&K Arrow Board has a standard built-in controller on the panel face. Optional wireless or wired remotes are available for easy operation and mode selection. It is used to select one of the display patterns or turn the unit on/off.





ARROW BOARD FUNCTIONS BUILT-IN CONTROLLER

DISPLAY SELECTOR SWITCH

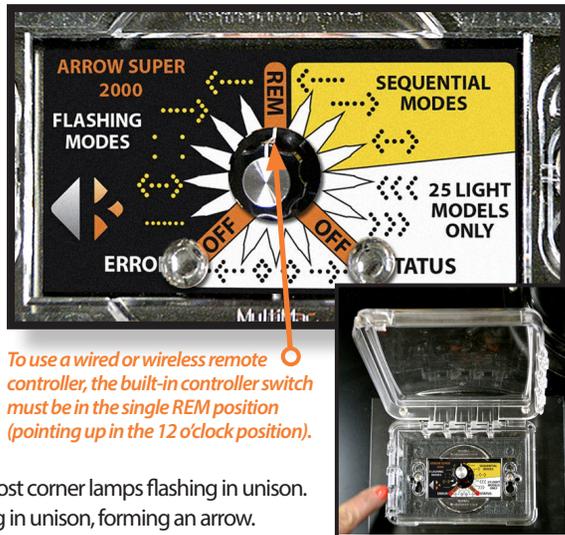
This is the only switch on the unit and is used to select one of the display patterns or turn the unit off. The display patterns are listed below:

15 LIGHT PATTERNS:

- **Warning Bar or Caution Bar** - 7 horizontal lamps flashing in unison.
- **Double Arrow** - 5 lamps in each arrow head and 3 lamps in a common shaft all flashing in unison.
- **Four Point Caution** - 4 outermost corner lamps flashing in unison.
- **Right Arrow** - 10 lamps flashing in unison, forming an arrow.
- **Left Arrow** - 10 lamps flashing in unison, forming an arrow.
- **Sequencing Arrow Left** - 5 lamps in the arrow head and 5 lamps in the shaft sequencing left.
- **Sequencing Arrow Right** - 5 lamps in the arrow head and 5 lamps in the shaft sequencing right.
- **Sequencing Double Arrow** with arrow shaft sequencing left and right to arrow heads left and right consisting of 5 lamps per arrow head.
- All unused positions and 25 Lamp sequential patterns listed below are considered OFF for 15 lamp signs.

25 LIGHT PATTERNS: (includes all 15 light patterns plus the following)

- Sequencing Chevron Left - 3 chevrons of 5 lamps each, sequencing in a right to left direction.
- Sequencing Chevron Right - 3 chevrons of 5 lamps each, sequencing in a left to right direction.
- Sequencing arrow head moving right with 5 lamps in arrow head
- Double Diamond - 2 sets of 8 lamps forming two diamonds flashing alternately.
- Sequencing arrow head moving left with 5 lamps in arrow head
- All unused positions are considered OFF.



To use a wired or wireless remote controller, the built-in controller switch must be in the single REM position (pointing up in the 12 o'clock position).



NOTE: To use a wired or wireless remote controller, the built-in controller switch must be in the single REM position (pointing up in the 12 o'clock position).

LED INDICATORS

There are 2 LED Indicators for BATTERY STATUS and ERROR CONDITION. Details of operation are listed as follows.

BATTERY STATUS INDICATOR

A single multi-color LED displays the status of the battery at a glance. A constant on condition indicates charging from the solar panel is happening. A flashing condition will indicate that the battery is not being charged.

- **Red color** indicates the battery voltage is low.
 - **Blue color** indicates the battery voltage is fair.
 - **Green color** indicates the battery voltage good.
- Maximum Battery Voltage (MBV) is determined.*

ERROR LED

This red LED indicates one of the following errors.

LVD1 (Low Battery Voltage Detected) (-)

When the battery voltage falls below the set point this LED begins flashing. During LVD1 the unit discontinues flashing of the selected arrow pattern and begins displaying the 4 corners lamp pattern. This will continue until the battery voltage increases to the recovery voltage. At this time the unit will resume normal operation and the error LED will go off.

LVD2 (Low Battery Voltage Disconnect) (-)

When the battery voltage falls below the LVD2 voltage this LED begins double flashing. During LVD2 the unit discontinues flashing of the 4 corners pattern and goes into a low power state and all the lamps are off. This will continue until the battery voltage increases to the recovery point. When this happens the unit will resume normal operation and the error LED will go off.

OV (Over Voltage Condition)

When the battery voltage rises above the Max Battery Voltage (MBV), as determined by the battery voltage and temperature, this error LED will illuminate continuously. The unit will continue to operate in a normal fashion. If the battery voltage falls below MBV the ERROR LED will go off. This is a condition that should not occur and the unit should be removed from service until the problem is resolved.

NOTE: If the unit is in LVD mode, charge the batteries manually using a battery charger to properly test. The solar panels will not charge a dying battery.

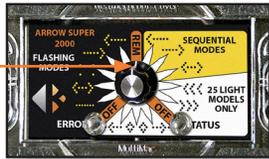


PAIRING THE OPTIONAL WIRELESS REMOTE



1. Remove the battery cover on the back of the Wireless Remote to expose the pairing switch and yellow pairing LED.

2. Set the built-in controller switch to the REM position. If reattempting to pair, move the knob to another position and then back to REM to re initiate the pairing cycle.



3. Initiate pairing within 60 seconds after setting the built-in controller to the REM position.

4. Press and hold the pairing button for 10 seconds until the yellow LED comes on and then release. The pairing yellow LED should respond with a blink and then remain lit for 45 seconds to indicate a successful pairing. If the LED blinks rapidly and then turns OFF, the pairing has failed, start from step 2 again.

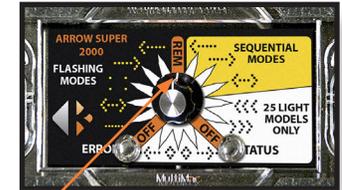


Selection Knob: sets desired mode

Status Light: indicates errors and connection status



PAIRING THE OPTIONAL WIRED REMOTE



Set the built-in controller switch on the face of the unit to the single REM position for the Optional Wired Remote controller to take command. If not in this position, the remote controller will not function.

Selection Knob to select desired function.

The remote comes standard with a 20 ft. cable that connects to a weatherproof port on the bottom of the arrow board frame.



TOWING AND LONG-TERM STORAGE

TOWING

Failure to follow these instructions exactly can cause hitch ball failure or loss of trailer attachment resulting in a vehicle crash and/or personal injury.

Use the hitch ball only for towing trailers or vehicles connected to the ball with a socket-type coupler. The ball diameter must match the coupler socket size. Do not exceed the gross trailer weight shown on the ball.

Improper tightening can cause hitch ball failure or loss of trailer attachment.

- The threaded shank must protrude beyond the bottom of nut when tightened. If it does not, the ball shank is too short for the application and loss of attachment may occur.
- Check the nut tightness every time you hook up the trailer and at the beginning of each towing day. Tow only if the nut is tightened as specified.
- Replace any damaged or worn parts (except finish).
- Never attach a tow rope, chain, or stretch type elastic rope to the hitch ball.
- Do not fasten the trailer safety chain or any other type of attachment to or with, the ball.
- Lubricate the ball and coupler to minimize wear and friction. The coupler must not bind on the ball.

This product complies with V.E.S.C. Regulation V-5, C.S.A. Standard D-264 and the Safety Specifications and Requirements for Connection Devices and Towing Systems.

TRAILER MOUNT LONG-TERM STORAGE

When the arrow board is to be stored for extended periods of time, it is recommended to store the unit outdoors and in a sunny area to allow the unit to maintain the charge on the batteries. If it is to be stored indoors, keep the unit plugged into the AC charger when possible. When the arrow board is to begin operation again, a thorough inspection of all systems is advised before the sign is towed to the job site. Check the battery state of charge to confirm over 12 volts.

VEHICLE MOUNT LONG-TERM STORAGE

When the arrow board is to be stored for extended periods of time, the POWER switch should be turned OFF. When the arrow board is to begin operation again, a thorough inspection of all systems is advised before the arrow board is put into operation.



SETUP FOR FOLDING TRAILER

Caution: If there is any portion of this instruction guide that is not understood, contact your local dealer or K&K Systems, Inc. at 888-414-3003.

BEFORE BEGINNING TRAILER SETUP:

1. Check Battery Level indicator "Status" LED located on the face of arrow board panel.

The battery status indicator:

- Red color indicates the battery voltage is low.
- Blue color indicates the battery voltage is fair.
- Green color indicates the battery voltage good.

2. Power on unit and set to desired arrow pattern using the controller.
3. Make sure all bulbs are working properly in the pattern you chose.



TRAILER SETUP

1. Position trailer in desired location so that the unit is directed toward traffic.
2. Unhook trailer from vehicle, blocking wheels first.
3. Use jacks to brace and level trailer.
4. Remove tongue from trailer (if desired).
5. Remove the locking pin.
6. Turn the crank on the winch to raise the display.
7. Replace the locking pin.



To return the display to the travel position:

1. Remove the locking pin.
2. Turn the crank on the winch to lower the display.
3. Replace the locking pin.



SETUP FOR SINGLE MAST TRAILER

Caution: If there is any portion of this instruction guide that is not understood, contact your local dealer or K&K Systems, Inc. at 888-414-3003.

BEFORE BEGINNING TRAILER SETUP:

1. Check Battery Level indicator "Status" LED located on the face of arrow board panel.

The battery status indicator:

- Red color indicates the battery voltage is low.
- Blue color indicates the battery voltage is fair.
- Green color indicates the battery voltage good.

2. Power on unit and set to desired arrow board pattern using controller.
3. Make sure all bulbs are working properly in the pattern you chose.

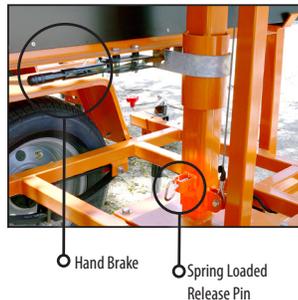


TRAILER SETUP

1. Position trailer in desired location so that the unit is directed toward traffic.
2. Remove trailer from vehicle, blocking wheels first.
3. Use jacks to brace and level trailer.

ELEVATING SIGN (if applicable)

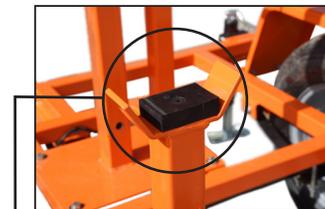
1. Verify that the sign is in proper position and that the entire unit is level.
2. Clear all unnecessary personnel from sign area to ensure safety.
3. **Remove safety pin from support frame.**
4. Locate crank winch located on support frame.
5. Rotate crank winch to raise sign until sign is in its full upright position.
6. Replace safety pin into the support frame.



Hand Brake Spring Loaded Release Pin

LOWERING SIGN (if applicable)

1. Verify that the sign is in proper position and that the entire unit is level.
2. Clear all unnecessary personnel from sign area to ensure safety.
3. Remove safety pin from support frame.
4. Locate crank winch located on support frame.
5. Rotate crank winch to lower sign until sign is in its horizontal position.
6. Replace safety pin into the support frame.



Stabilizing cradle with cushioning block supports the arrow board while traveling.



PRECAUTIONS, SAFETY, AND MAINTENANCE

The following are K&K Systems' recommendations for safe and responsible use. Please remember that the best assurance against accidents is a careful and responsible operator.

PRECAUTIONS

Inspect your unit upon delivery. Wires and plugs may have loosened during shipment which will cause operational issues. Even though the system arrives ready to run, inspect all components and test before use. Test the unit before use for convenient working conditions.

- Periodically inspect the trailer and/or unit. This includes but is not limited to wheels, tongue, pins, safety chains, taillights, nuts, bolts, cable clamps, etc. Tighten, repair, or replace when and where necessary.
- Off-load traffic cones and barricades prior to arrow sign deployment.
- The trailer should always be properly setup and leveled with the jack stands before the arrow board is raised.
- Always use safety chains and properly sized hitch ball when towing the unit.
- Always tow trailer units in the down position.

BATTERIES

The batteries are sealed. Check all terminals for proper connection, tightness, and corrosion. Check the battery condition and charge when necessary or after storage. It is recommended that the batteries be charged every 3 to 6 months, regardless of weather conditions. Use an apron, gloves, and safety glasses when working on batteries. When the batteries have come to the end of their life cycle, please dispose of them in accordance with your local laws and regulations.

BATTERY CHARGER SAFETY

The battery charger is preset in automatic position. **DO NOT CHANGE THESE SETTINGS** because of possible overcharging of batteries. Plug cord into a standard 120 volt AC for charging.

SOLAR PANELS

During operation, keep the solar panel clean of excessive dirt and debris by using only soapy water and a soft cloth or sponge. Periodically check the integrity of the wiring connections in the junction box. Inspect for signs of damage to the solar panel's glass or frame.



MAINTENANCE

BATTERIES

The batteries are located in the battery compartment on the back of the arrow board panel.

To replace the batteries:

1. Remove the battery compartment cover with a Phillips head screw driver.
2. Locate the wiring connectors.
3. Remove the wires from the connector by lifting the orange locking switch.
4. Remove the wires from the battery poles by gently sliding the connector off of the clip.
5. Lift the battery out.
6. Remove the poles connectors and install on the new battery.
7. Place the new batteries into the compartment.
8. Reconnect the proper wire connectors to the pole clips. *(black goes to black and red goes to red)*
9. Reconnect the proper wires to the wiring connectors.
10. Replace the compartment cover.



TRAILER

Periodically inspect the wheels, tires, axle assembly, wheel bearings, taillights, tongue, safety chains, and all components related to safe towing. Check the tightness of all nuts and bolts. Replace worn parts when necessary.



Fold&Go



SOLAR PANELS

During operation, keep the solar panel clean of excessive dirt and debris by using soapy water and a soft cloth or sponge only. Periodically check the integrity of wiring connections in the junction box. Inspect for signs of damage to the solar panel glass or frame.

- K&K recommends that the user clean the solar panels every 6 months. Over time the solar panels may build up a thin layer of dust/dirt/road grime that can adversely affect their efficiency significantly.
- Check the battery every 6 months to ensure proper charging. If below 12.3 volts, charge to keep power reserves high. Check solar system by cleaning the panel and inspecting wiring for wear and secure connection.



Vehicle Model with TruWireless option



TROUBLESHOOTING

NOTE: If the unit is in LVD mode, charge the batteries manually using a battery charger to properly test. The solar panels will not charge a dying battery.

ARROW BOARD DOES NOT POWER ON

If the unit does not power on, then check the following:

1. Check that the mode selection switch is not in "Lamps Off" position.
2. Check Battery or Batteries connections.
3. Check "Status" LED indicator located on arrow board face.

A single multi-color LED displays the status of the battery at a glance. A constant on condition indicates charging from the solar panel is happening. A flashing condition will indicate that the battery is not being charged.

- **Red color** indicates the battery voltage is low.
- **Blue color** indicates the battery voltage is fair.
- **Green color** indicates the battery voltage good. Maximum Battery Voltage is determined.



Check "Error" LED indicator located on the front of the arrow board display.

LVD1 (Low Battery Voltage Detected) (-) When the battery voltage falls below the set point this LED begins flashing. During LVD1 the unit discontinues flashing of the selected arrow pattern and begins displaying the 4 corners lamp pattern. This will continue until the battery voltage increases to the recovery voltage. At this time the unit will resume normal operation and the error LED will go off.

LVD2 (Low Battery Voltage Disconnect) (-) When the battery voltage falls below the LVD2 voltage this LED begins flashing. During LVD2 the unit discontinues flashing of the 4 corners pattern and goes into a low power state and all the lamps are off. This will continue until the battery voltage increases to the recovery point. When this happens the unit will resume normal operation and the error LED will go off.

OV (Over Voltage Condition) When the battery voltage rises above the Max Battery Voltage (MBV), as determined by the battery voltage and temperature, this error LED will illuminate continuously. The unit will continue to operate in a normal fashion. If the battery voltage falls below MBV the error LED will go off. This is a condition that should not occur and the unit should be removed from service until the problem is resolved.



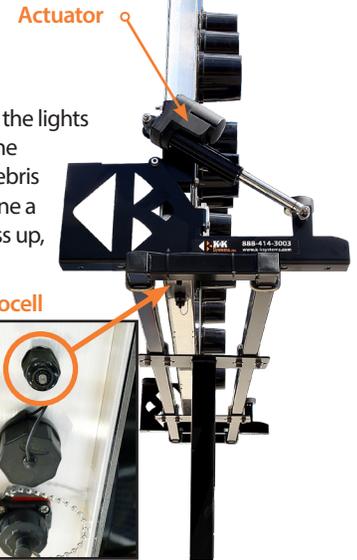
4. The remote will not communicate with the arrow board. If a wireless remote, try new batteries. If wired, check the connection at both ends. Check that the main controller is on **REM Mode**. If wireless, try re-syncing your remote. If wired, try using a new cable, it is a standard CAT5 cable readily available locally or through K&K. If changing the cable does not work, you can remove the main controller and plug the CAT5E cable directly into the port on the PCB, thus testing to see if the port on the frame is malfunctioning.

5. The arrow board will not fold up or down. Is the actuator power cord plugged in? Check for power at the plug. When the board goes up it should be a positive 12V. When it goes down it should be a negative 12V. Tap the body of the actuator lightly with a hammer to see if it attempts to move. Check for a blue light on your actuator controller that is mounted on the back (inside the board) of the main controller. It is a small green PCB board stacked onto the main controller. If the light is not on, your controller is not receiving power or is malfunctioning.



6. The lights are too dim or too bright.

Your arrow board is fitted with a photocell to auto adjust the lights for the time of the day. It is located on bottom of the frame inside a black bulkhead. If this becomes obstructed by debris it could cause your arrow board to dim down. To test, shine a light directly into it and see if your arrow board brightness up, or cover it with a piece of black tape.



LAMP OUT (LED)

If lamp is not lit when it should be on:

1. Suspect loose or broken wires. Loosen the (4) screws holding the hood in place. Remove the lamp and loosen the two screws.
2. Check to ensure all wires are present, referring to the wiring diagram (Page 21).
3. Check for voltage at the terminals: With the arrow board flashing, check that voltage is present. If so, then the bulb is burnt out. Replace LED lamp.
4. If voltage is not present: a power wire is defective or missing. Refer to the wiring diagram to trace the wire. Reach inside the panel to feel the power wire hanging on the inside of the frame. Install or replace the wire. Replace the lamp into the sign aligning the lamp tab properly with the notch in the sign panel. *Only this orientation projects the light out toward the motorist at the correct viewing angles.*

MANY LAMPS OUT (LED)

1. Suspect poor battery connections.
2. Possible internal wiring harness damage. Lights are wired in a series. If the chain is cut other lights in the path may be out.

STEADY BURN LAMP (LED)

1. Disconnect control power cable.
2. Check for grounded or shorted wires and replace or repair where needed.

Questions? Please email service@k-systems.com or call 888-414-3003.

Disclaimer of Liability

We at K&K Systems have taken precautions to insure that the K&K Systems products are safe and reliable. However, we cannot be held responsible for any injuries or accidents as a result of the use or misuse of this product. It is the user's responsibility to insure that this product is used in a safe and responsible manner and to understand that he/she is the only liable party. Any liability of K&K Systems is limited strictly to the Manufacturer's Warranty attached. K&K Systems, Inc., reserves the right to make any changes to this product, user guide or specifications without notice.

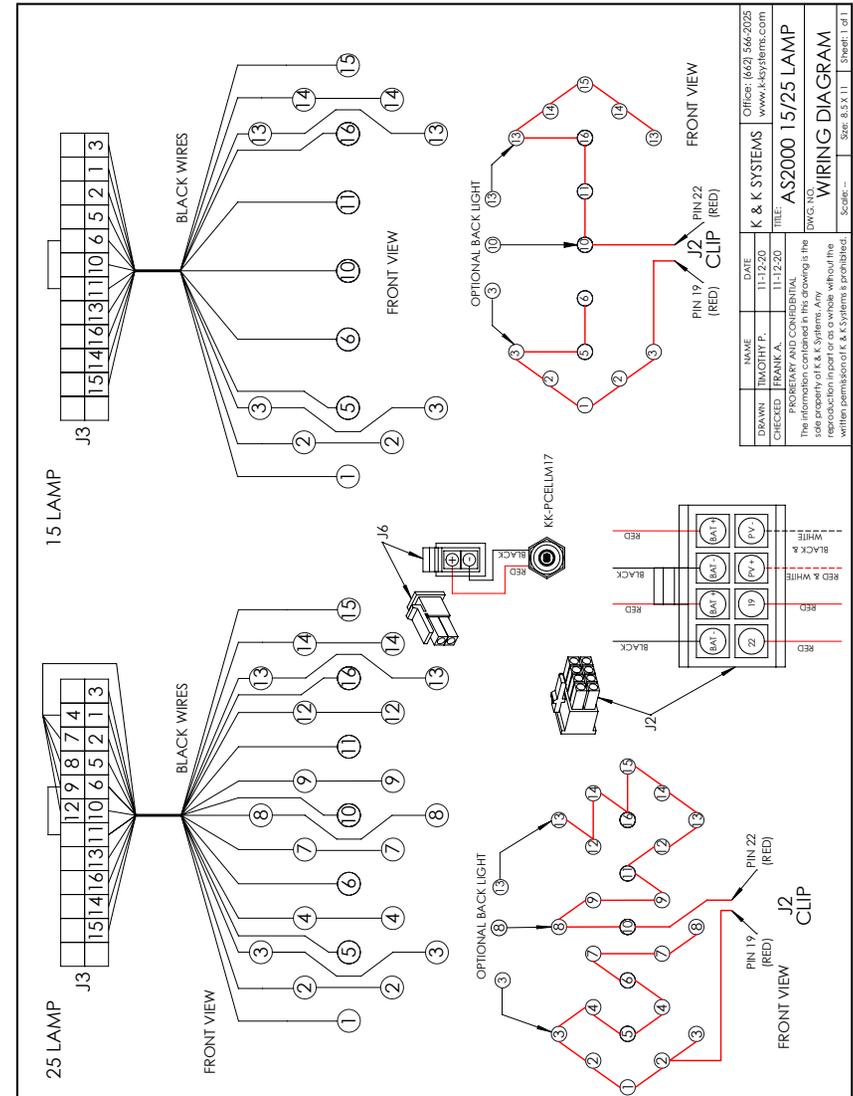


ARROW BOARD PARTS LIST

PART NUMBER	DESCRIPTION
ABH-46	Par 46 Shade/Hood
ABP-46	Par 46 LED
AS2000	2000 Super 2000 Arrow Board Controller (Specify 15 or 25 lamp) with built-in solar charge controller.
OPTIONS	
A3BL	Three small amber indicator lights added to the back of display.
AC-ABV	Convert Vehicle Mounted Arrow Boards to AC by adding 20W power supply (includes installation)
ADDBAT12018	Add battery pack - 18 amp, 12V, AGM battery, Dimensions: 7.13"x2.99"x6.54"
DS-A1-10	10 WATT SOLAR PANEL
DS-A1-20	20 WATT SOLAR PANEL
DS-A1-30	30 WATT SOLAR PANEL
AS2000-WKIT	Wired handheld controller for AS2000 only. Includes 15' Ethernet Cable (RJ45C15)
AS2000-RFKIT	Wireless handheld controller for AS2000 only that has RF. Includes Super 2000 RF Host (AS2000-RF-HOST)
PC-25	Power cable; 25'
PC-40	Power cable; 40'
PC-60	Power cable; 60'
RJ45C15	15' Cat 5E Molded Snagless Patch Cable Black - Professional Series - 50 Micron gold Plated RJ45 Connectors
RJ45C25	25' Cat 5E Molded Snagless Patch Cable Black - Professional Series - 50 Micron gold Plated RJ45 Connectors
RJ45C50	50' Cat 5E Molded Snagless Patch Cable Black - Professional Series - 50 Micron gold Plated RJ45 Connectors

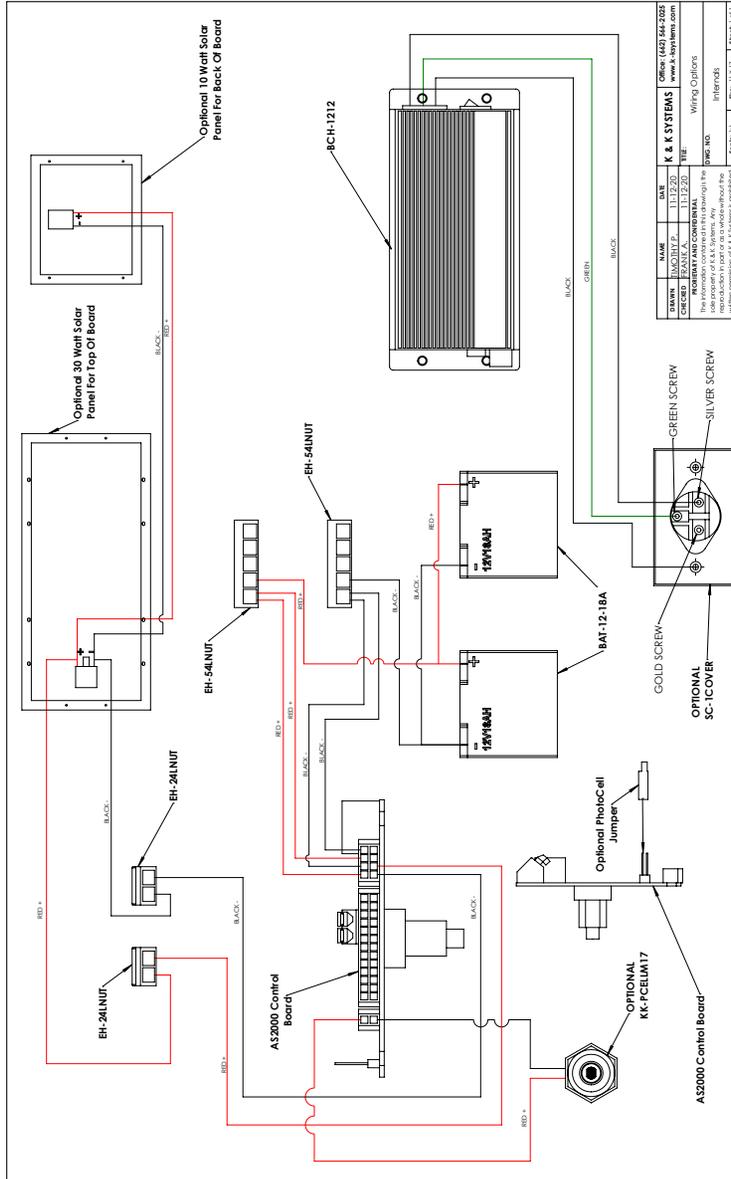


LAMP WIRING DIAGRAM FOR TRAILER AND VEHICLE MOUNT

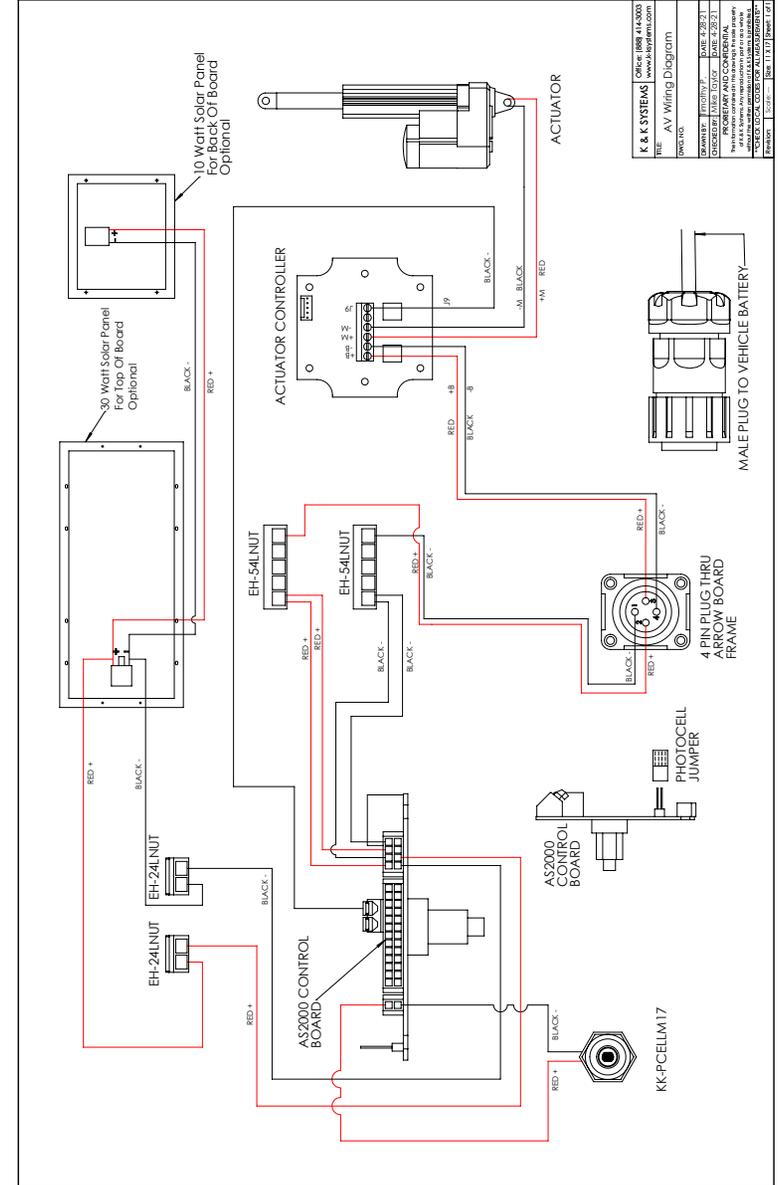




INTERNAL WIRING DIAGRAM FOR TRAILER AND VEHICLE MOUNT

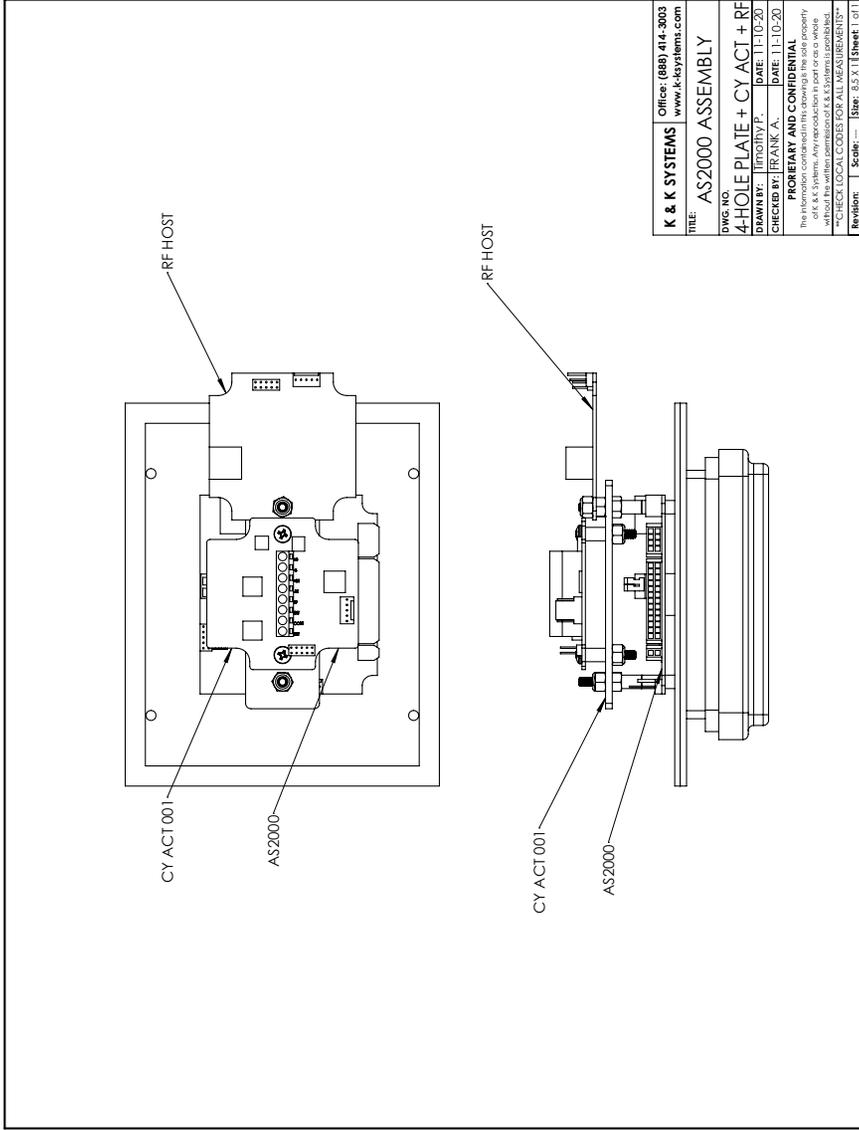


WIRING DIAGRAM FOR VEHICLE MOUNT

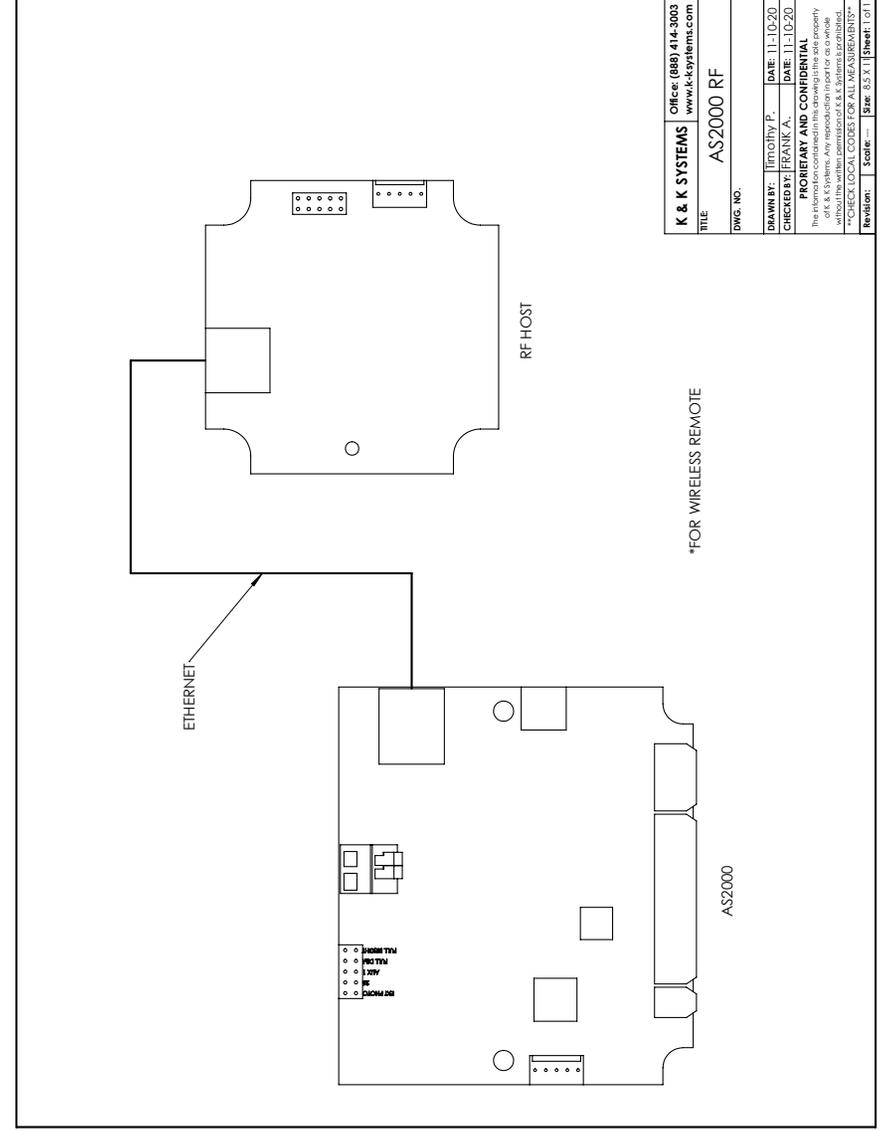




AS2000 CONTROLLER ASSEMBLY FOR TRAILER AND VEHICLE MOUNT



AS2000 RF HOST ASSEMBLY FOR TRAILER AND VEHICLE MOUNT





MANUFACTURER'S WARRANTY

1. The manufacturer warrants that all products manufactured by K&K Systems, Inc. will be free from defects in material and workmanship for a period of one (1) year from date of shipment, subject to the conditions and restrictions contained herein.
2. This warranty does not apply to a product that has not been installed or maintained in accordance with the manufacturer's instructions, has been subjected to damage in an accident, abused or neglected during operation, repaired or modified by persons other than manufacturer, its employees or authorized agents unless authorized by K&K Systems, Inc. technical support, or failed to have normal maintenance.
3. The buyer expressly agrees that the buyer's sole remedy and the manufacturer's sole responsibility, in respect to a warranty claim, is exclusively limited to repair or replacement at the manufacturer's option, of product or a portion thereof found by the manufacturer to be defective. The manufacturer is not responsible for labor or other expended charges by buyer including transportation charges, and shall not be liable for any incidental or consequential damages connected with repair of a product deemed to be defective or with installation or replacement of repaired product. Further, the manufacturer disclaims any liability for any incidental or consequential damages, including lost or duplicated time or expense accruing for any reason, to the owner or user of any products sold by the manufacturer, whether claim is made in contract or in tort or under any theory of warranty, negligence or otherwise.
4. The manufacturer reserves the right to make changes in its products from time to time, without incurring any obligation to incorporate such improvements in any products previously sold or in service.
5. The terms and conditions of the warranty cannot be altered without the written consent of the manufacturer.
6. The foregoing warranty is exclusive and in lieu of all other express, statutory and implied warranties **INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR ANY PARTICULAR PURPOSE**. There are no warranties which extend beyond the language in the previous six (6) paragraphs.

If you have any further questions, please feel free to call us at our toll-free number, 888-414-3003, email info@k-systems.com or look us upon the internet at www.k-systems.com.



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