



K&K Systems, inc.
Traffic Safety Products Manufacturer



MESSAGE BOARD

PROGRAMMING 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

TRAILER MOUNT MESSAGE DISPLAY

Model MB14281 is capable of three lines of alphanumeric 18" high text and graphics/animations. It has an all LED display with self-contained on-board computer, multiple alphanumeric fonts, and powder coat paint system. The display size is 142" x 81". It is mounted on a hydraulic style trailer.

This model supports up to 260 predefined messages (text and graphics). It also supports storage of up to 100 changeable messages. The system comes standard with eight (8) 6-volt batteries (totaling 900 12V amps) and 220 watts of solar. It is NTCIP compliant.

BATTERY BOX

The ventilated battery box is steel fabricated with lockable rotary latches and hinged top, to protect batteries and charger.

CONTROL BOX

The control box contains the control panel, on/off switch, main processing unit, keyboard and solar charge controller.

MESSAGE BOARD

The display housing is framed in extruded aluminum and has a polycarbonate plastic that provides U.V. protection along with glare resistance. The message board uses LED (light emitting diodes) to produce text and images.

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.

TRAILER

The trailer is fabricated from tubular steel and coated with safety orange, black or white powder coat paint (other colors available upon request). The trailer is equipped with a tubular steel axle. Adjustable jacks are mounted at each corner of the trailer. The tail lights are dual combination reflective lights with stop, tail and turn signal. The wheels are five lug wheels and tires are sized appropriately.



SAFETY / WARNINGS / PRECAUTIONS

The following are the MFGs' recommendations for the safe and responsible use of your K&K Systems trailer units.

- Periodically inspect the trailer. This includes but is not limited to wheels, tongue, pins, safety chains, and taillights.
- Traffic cones and barricades should be off-loaded from trailer prior to message board deployment.
- The trailer should always be properly setup and leveled with the jack stands before the message board is raised.
- Periodically check all nuts, bolts, cable clamps, etc. and tighten, repair, or replace when and where necessary.
- Always tow the unit in the down position.
- Always use safety chains and properly sized hitch ball when towing the unit.

Please remember that the best assurance against accidents is a careful and responsible operator.

BATTERY SAFETY

It is important that you know that, while 12V DC is not likely to cause electrical shock, these batteries can produce unbelievable amounts of current that can instantly melt large tools, burn wires, and heat jewelry to skin searing temperatures. Batteries produce hydrogen gas in the course of normal operation and will explode under certain conditions with disfiguring consequences. One component of a battery, sulfuric acid, will permanently damage clothing, corrode metal, severely irritate your skin, and blind you if it gets into your eyes. You should become familiar with how batteries operate so that you will know how to avoid the dangerous characteristics of a battery.

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 SAFETY

To reduce the risk of shock or burn during maintenance, solar panels should be covered with an opaque material and power converter/battery charger should be disconnected from AC power supply.



MESSAGE BOARD

DESCRIPTION OF CONTROLS

The Control Cabinet contains the components to operate the message board including powering it on, raising and lowering, solar charging, and displaying a message. door of the control cabinet.

Solar Controller

Manual Hydraulics Controller to raise/lower the display. *Release mast hand brake before attempting to use.*

Powered Hydraulics Controller to raise/lower the display. *Release mast hand brake before attempting to use.*

Hydraulics Fluid Reservoir



Fuses

Left: Solar Circuit
Center: Battery Circuit
Right: Load Circuit

Message Board Power ON/Off Switch

Manual Load ON or OFF

Keyboard

LCD Display

Quick Selection Thumb Wheel

QUICK SELECTION THUMB WHEEL

The **Quick Selection Thumb Wheel** located on the top right corner of the keyboard controller allows access to the 16 most used messages. Roll the wheel to the desired message to automatically display. No login needed.





DISPLAY A CHANGEABLE MESSAGE

A changeable message is a message you have created. These messages can be modified or deleted from the system. Reference the changeable message list in the back of this manual. **** If you have not created a changeable message, yet, you will not be able to display a changeable message.**

```
K&K SYSTEMS
User name: KAK
Password: ***
```

1) **Login:** Enter username: KAK

**NOTE: username is case sensitive - use ALL CAPS*

Press Enter

Enter Password: 123

Press Enter

```
MAIN MENU <FAULT - UNDEFINED>
1. DISPLAY MESSAGE
2. CREATE/EDIT MESSAGE
3. STATUS
4. SEQUENCE
Choice: 1
```

2) **Press the number 1**

to select the option: *DISPLAY MESSAGE*

Press Enter

```
DISPLAY MESSAGE
1. MESSAGE TYPE          CHANGEABLE
2. MESSAGE NUMBER        1
3. MESSAGE DURATION      FOREVER
4. DISPLAY
Choice: 1
```

3) **Press the number 1**

to select the option: *MESSAGE TYPE*

Press Enter

```
MESSAGE TYPE
1. PERMANENT
2. CHANGEABLE
3. BLANK
Choice: 1
```

4) **Press the number 2**

to select the option: *CHANGEABLE for messages you have created*

Press Enter

```
DISPLAY MESSAGE
1. MESSAGE TYPE          CHANGEABLE
2. MESSAGE NUMBER        1
3. MESSAGE DURATION      FOREVER
4. DISPLAY
Choice: 2
```

5) **Press the number 2**

to select the option: *MESSAGE NUMBER*

Press Enter

```
MESSAGE NUMBER
CURRENT: 1
NEW: 150
ESC TO RETURN : ENTER TO CHANGE
```

6) **Enter the message number**

from your list of created messages

Press Enter

```
DISPLAY MESSAGE
1. MESSAGE TYPE          CHANGEABLE
2. MESSAGE NUMBER        150
3. MESSAGE DURATION      FOREVER
4. DISPLAY
Choice: 4
```

7) **Press the number 4**

to select the option: *DISPLAY*

Press Enter

Tips

* Choose your changeable message from the list you created in the back of this manual (pages 9-10).

* Press the ESC key at any time to go back.



MAKE A MESSAGE FLASH

Changeable Messages are custom messages created by the user

Make messages flash to conserve energy and draw drivers' attention to the message board.



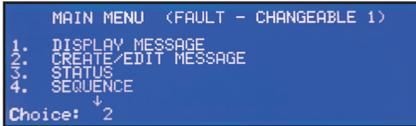
1) **Login:** Enter username: KAK

**NOTE: username is case sensitive - use ALL CAPS*

Press Enter

Enter Password: 123

Press Enter



2) **Press the number 2 from the main menu** to select the option:

CREATE/EDIT MESSAGE

Press Enter



3) **Enter the next available 1-99 number not assigned to a message** on the list of changeable messages previously created.
Press Enter



4) **Press F5 key** to start flash

5) **Enter the message** you want to display

In the example to the left,

"ROAD" enter key

"WORK" enter key

"AHEAD"



6) **Press F6 key** to end flash.

7) **Press F9** to select the option:
ACTIVATE when you are finished creating your message.

** NOTE: This will SAVE and DISPLAY your message.*

*If you do not want to display the message immediately, **Press F8** to SAVE only.*



CREATE AND EDIT A MESSAGE SEQUENCE

with only user created Changeable Messages

The following steps will show you how to create one message that shows two or more messages. For Example: You create message number 2 to read "ROAD WORK AHEAD" or "USE EXTREME CAUTION." Now when you select message number two from the Changeable Message List, all three messages will display.

- 1) **Login:** Enter username: KAK
 *NOTE: username is case sensitive - use ALL CAPS
Press Enter
Enter Password: 123
Press Enter

- 2) **Press the number 2 from the main menu** to select the option:
CREATE/EDIT MESSAGE
Press Enter

- 3) **Enter the Message Number** you wish to edit or a new number for a new message
Press Enter
 **NOTE: Changeable messages can only be numbered 1 through 99

- 4) **Enter the 1st Message** that you wish to display
 *REMEMBER: Each line can only contain 8 characters, including spaces and punctuation.
 *Press Enter to move the next line

Example



In the example above, "ROAD" enter key "WORK" enter key "AHEAD" enter key

When the enter key is pressed after "AHEAD" [nl] automatically changed to [np] meaning next page. When you have three lines of text, and then press enter, it will automatically change to the next page and provide a blank screen for creating another message.



- 5) **Enter the next Message** you wish to display



- 6) **Press F9** to select the option: **ACTIVATE** when you are finished creating your message.
 *NOTE: This will SAVE and DISPLAY your message. If you do not want to display the message immediately, **Press F8** to SAVE only.

Tips

- * Use the PgUp and PgDn keys to adjust the contrast of the LCD Screen.
- * Press the ESC key at any time to go back.
- * Permanent Messages cannot be deleted or modified.
- * There is a list of Permanent Messages on the inside of the cabinet door, and starting on page 11.
- * Graphics are only for Full Matrix Message boards.



CONFIGURE A MESSAGE SEQUENCE OR MULTI-PAGE MESSAGE with preprogrammed Permanent and user created Changeable Messages

A Message Sequence is a changeable message that contains 2 or more permanent and/or changeable messages within it. For example: When Changeable Message Number 2 is selected to display, the messages "Mowers Ahead", "Slow Down", and "Move Over" will continuously interchange. Stores up to 99 messages.

```
K&K SYSTEMS
User name: KAK
Password: ***
```

- 1) Login:** Enter username: KAK
*NOTE: username is case sensitive - use ALL CAPS
Press Enter
Enter Password: 123
Press Enter

```
MAIN MENU <CENTRAL - CHANGEABLE 1>
1. DISPLAY MESSAGE
2. CREATE/EDIT MESSAGE
3. STATUS
4. SEQUENCE
Choice: 4
```

- 2) Press the number 4** on your keyboard to select the option: **SEQUENCE**
Press Enter

```
SELECT SLOT FOR SEQUENCE
CURRENT: 2
NEW: 1
ESC TO RETURN ! ENTER TO CHANGE
*NOTE* Corresponding sequence and
message slots are the same memory
```

- 3) Enter the next available 1-99 number** on the list of changeable messages previously created.
Press Enter
Press ESC

```
SEQUENCE
1. SELECT SLOT FOR SEQUENCE 2
2. ADD MESSAGE TO SEQUENCE
3. SELECT RATE
4. SAVE AND CLOSE
Choice: 2
```

- 4) Press the number 2** to select the option: **ADD MESSAGE TO SEQUENCE**
Press Enter

```
ADD MESSAGE TO SEQUENCE
ADD (Format Pnnn or Cnnn): P050
ENTER TO ADD ! ESC TO RTN
[?o]MOWERS[?n]NEXT[?n]10 MILES
```

- 5) Enter the message number** you wish to display. **You must enter **P** or **C** for **Permanent** or **Changeable** message and a 3 digit number.
(Ex: P050 = Permanent Message #50)
Press Enter

```
ADD MESSAGE TO SEQUENCE
ADD (Format Pnnn or Cnnn): P002
ENTER TO ADD ! ESC TO RTN
[?o]MOWERS[?n]NEXT[?n]10 MILES[?n][?o]
60 SLOW[?n]TRAFFIC[?n]AHEAD
```

- Repeat to enter another message** if you wish to display
Press ESC

** Once you press Enter, the message you entered will show here.

```
SEQUENCE
1. SELECT SLOT FOR SEQUENCE 1
2. ADD MESSAGE TO SEQUENCE
3. SELECT RATE
4. SAVE AND CLOSE
Choice: 3
```

- 6) Save and Activate** option saves your message sequence to the slot you chosen in step 2 AND activates the message.
Press the number 4 if you do NOT want the message to display now or **Press the number 5** to display your message.

Tips

* Once you create your Message Sequence, you will save it as a changeable message.



CHECK MESSAGE BOARD STATUS

This menu selection lets you view the system status of current message, sign temperature, battery, and software version. These cannot be edited from this menu.

1. CURRENT MESSAGE	Displays current message that is active on the message board
2. SIGN TEMPERATURE	Optional
3. POWER VOLTAGE SUPPLY	Optional
4. BRIGHTNESS LEVELS	Photocell level (ambient lighting level 0-15) Brightness level (current LED brightness 0-15) Brightness mode (manual or photocell controlled)
5. CABINET DOOR STATUS	Optional
6. SOFTWARE VERSIONS	Displays current firmware revisions of the Main and Menu processor codes.
7. LOCATION	Optional

1. GET DEVICE ADDRESS	Display the address of the sign
2. DATE AND TIME	Get the current date and time of the Message Board Set the date and time
3. SET LCD CONTRAST	Modify the contrast level of the LCD screen
4. SET BRIGHTNESS MODE	Specify LED brightness to be determined by the PHOTOCELL (automatically) or MANUALLY SET
5. SET MANUAL BRIGHTNESS	SET ONLY WHEN BRIGHTNESS MODE IS SET TO MANUAL. Specify the sign brightness.
6. SET RADAR MESSAGE (if applicable)	Select the message to be activated when the radar speed threshold is reached or exceeded.
7. SET RADAR SPEED (if applicable)	Specify the speed threshold (MPH) above which the RADAR MESSAGE is to be displayed.
8. SET DROP OUT VOLTAGE	Drop out voltage not used at this time
9. SET USER NAME AND PASSWORD	Add/Change the user ID and password to log in.
10. WEATHER MESSAGES (if applicable)	Optional

Schedule

Schedule message activations

1. SCHEDULE NUMBER	Specify the desired schedule number to create or edit(1-12)
2. SCHEDULE TIME	Specify the activation time of day
3. SCHEDULE DAY/DATE	Specify the day and/or date of activation
4. SCHEDULE MESSAGE	Specify the message (permanent, changeable, or blank) to be scheduled.
5. ACTIVATE SCHEDULE	Activates the scheduling feature. This mode of operation will remain activated until either a new ACTIVATE SCHEDULE is performed, or a DISPLAY MESSAGE command is selected.



PERMANENT MESSAGE LIST: TEXT

1. 1 HOUR DELAY
2. 15 MINUTE DELAY
3. 30 MINUTE DELAY
4. ACCIDENT AHEAD
5. ACCIDENT CENTER LANE
6. ACCIDENT ON LEFT
7. ACCIDENT ON RIGHT
8. AMBER ALERT MISSING CHILD
9. BE PREPARED TO STOP
10. BRIDGE CLOSED AHEAD
11. BRIDGE WORK AHEAD
12. CALL 911
13. CAUTION ACCIDENT AHEAD
14. CAUTION BUMP AHEAD
15. CAUTION DETOUR AHEAD
16. CAUTION DIP AHEAD
17. CAUTION FLAGGER AHEAD
18. CAUTION FLOODED ROAD
19. CAUTION ICE ON ROAD
20. CAUTION ICE ON BRIDGE
21. CAUTION LOOSE GRAVEL
22. CAUTION MERGE AHEAD
23. CAUTION ROUGH ROAD
24. CAUTION SHOULDER DROP OFF
25. CAUTION SLOW TRAFFIC
26. CAUTION SOFT SHOULDER
27. CAUTION TRUCKS CROSSING
28. CAUTION TWO WAY TRAFFIC
29. CAUTION VEHICLES CROSSING
30. CAUTION WRECK AHEAD
31. CENTER LANE CLOSED
32. CURVE AHEAD
33. DENSE FOG AHEAD
34. DO NOT PASS
35. EXIT CLOSED AHEAD
36. EXIT HERE <---
37. EXIT HERE --->
38. EXPECT DELAY
39. FORM ONE LINE LEFT
40. FORM ONE LINE RIGHT
41. FORM TWO LINES LEFT
42. FORM TWO LINES RIGHT
43. FRESH TAR
44. GO SLOW ACCIDENT AHEAD
45. GO SLOW DETOUR AHEAD
46. GO SLOW FLAGGER AHEAD
47. GO SLOW MOVING VEHICLE
48. GO SLOW ROAD FLOODED
49. GO SLOW STOP AHEAD
50. GO SLOW TRAFFIC AHEAD
51. GO SLOW YIELD AHEAD
52. HEAVY TRAFFIC AHEAD
53. ICE ON ROAD
54. KEEP <--- LEFT
55. KEEP ---> RIGHT
56. KEEP LEFT
57. KEEP LEFT <---
58. KEEP RIGHT
59. KEEP RIGHT --->
60. LANE CONTROL AHEAD
61. LANE ENDS AHEAD
62. LANE NARROWS AHEAD
63. LANES SHIFT AHEAD
64. LEFT TWO LANES CLOSED
65. LEFT LANE CLOSED
66. LEFT LANE NARROWS
67. LIMITED SIGHT DISTANCE
68. LOOSE GRAVEL AHEAD
69. LOW BRIDGE AHEAD
70. MAX SPEED 25 MPH
71. MAX SPEED 30 MPH
72. MAX SPEED 35 MPH
73. MAX SPEED 40 MPH
74. MAX SPEED 45 MPH
75. MAX SPEED 50 MPH
76. MAX SPEED 55 MPH
77. MAXIMUM SPEED 30 MPH
78. MAXIMUM SPEED 10 MPH
79. MAXIMUM SPEED 20 MPH
80. MAXIMUM SPEED 30 MPH
81. MAXIMUM SPEED 40 MPH
82. M'CYCLES USE CAUTION
83. MEDIAN WORK AHEAD
84. MEN WORKING AHEAD
85. MERGE <--- LEFT
86. MERGE ---> RIGHT
87. MERGE AHEAD
88. MERGE LEFT
89. MERGE LEFT <---
90. MERGE RIGHT
91. MERGE RIGHT --->
92. MERGING TRAFFIC AHEAD
93. METAL PLATES AHEAD
94. MINIMUM SPEED 20 MPH



PERMANENT MESSAGE LIST: TEXT

95. MINIMUM SPEED 25 MPH
96. MINIMUM SPEED 30 MPH
97. MINIMUM SPEED 35 MPH
98. MINIMUM SPEED 40 MPH
99. MOWERS AHEAD
100. MOWERS NEXT 10 MILES
101. MOWERS NEXT 5 MILES
102. NEXT 10 MILES
103. NEXT 2 MILES
104. NEXT 3 MILES
105. NEXT 4 MILES
106. NEXT 5 MILES
107. NEXT 6 MILES
108. NEXT 7 MILES
109. NEXT 8 MILES
110. NEXT 9 MILES
111. NEXT MILE
112. NIGHT WORK AHEAD
113. NO PASSING
114. NO SHOULDER
115. OIL ON ROAD
116. ONE LANE BRIDGE AHEAD
117. ONE LANE TRAFFIC
118. PAINT CREW AHEAD
119. PASS LEFT
120. PASS RIGHT
121. PAVEMENT ENDS
122. PILOT CAR AHEAD
123. PREPARE TO MERGE
124. PREPARE TO STOP
125. RAMP CLOSED
126. RAMP CLOSED AHEAD
127. REDUCE SPEED
128. REDUCE SPEED 15 MPH
129. REDUCE SPEED 20 MPH
130. REDUCE SPEED 25 MPH
131. REDUCE SPEED 30 MPH
132. REDUCE SPEED 35 MPH
133. REDUCE SPEED 40 MPH
134. REDUCE SPEED 45 MPH
135. REDUCE SPEED 50 MPH
136. RIGHT 2 LANES CLOSED
137. RIGHT LANE CLOSED
138. RIGHT LANE NARROWS
139. ROAD CLOSE 1/2 MILE
140. ROAD CLOSED
141. ROAD CLOSED 1 MILE
142. ROAD CLOSED 1/4 MILE
143. ROAD CLOSED 3/4 MILE
144. ROAD CLOSED AHEAD
145. ROAD MACHINES AHEAD
146. ROAD NARROWS AHEAD
147. ROAD PAVING AHEAD
148. ROAD WORK
149. ROAD WORK 1 MILE
150. ROAD WORK 1/2 MILE
151. ROAD WORK 1000 FT
152. ROAD WORK 1500 FT
153. ROAD WORK 2 MILES
154. ROAD WORK 500 FT
155. ROAD WORK AHEAD
156. ROAD WORK NEXT 10M
157. ROAD WORK NEXT 1MI
158. ROAD WORK NEXT 2MI
159. ROAD WORK NEXT 3MI
160. ROAD WORK NEXT 4MI
161. ROAD WORK NEXT 5MI
162. ROAD WORK NEXT 6MI
163. ROAD WORK NEXT 7MI
164. ROAD WORK NEXT 8MI
165. ROAD WORK NEXT 9MI
166. ROCKS ON ROAD AHEAD
167. ROUGH ROAD AHEAD
168. RUNAWAY TRUCK RAMP
169. SHARP CURVE AHEAD
170. SHOULDER DROP OFF
171. SHOULDER WORK AHEAD
172. SIGNAL AHEAD
173. SIGNAL NOT WORKING
174. SINGLE LANE AHEAD
175. SLOW ACCIDENT AHEAD
176. SLOW DETOUR AHEAD
177. SLOW FLAGGER AHEAD
178. SLOW MOVING VEHICLE
179. SLOW ROAD FLOODED
180. SLOW STOP AHEAD
181. SLOW TRAFFIC AHEAD
182. SLOW YIELD AHEAD
183. SNOW BLOWERS AHEAD
184. SPEED LIMIT ENFORCED
185. STAY IN LANE
186. STEEP GRADE
187. STOP AHEAD
188. SURVEY CREW AHEAD



PERMANENT MESSAGE LIST: TEXT

- 189. SWEEPER AHEAD
- 190. TRACTION DEVICES REQUIRED
- 191. TRAFFIC EXIT RIGHT
- 192. TRAFFIC EXIT LEFT
- 193. TRAFFIC EXIT LEFT
- 194. TRAFFIC MUST EXIT
- 195. TRAFFIC MUST STOP
- 196. TRUCK CROSSING
- 197. TRUCKS USE LFT LANE
- 198. TRUCKS USE LOW GEAR
- 199. TUNE TO LOCAL RADIO
- 200. TUNNEL CLOSED AHEAD
- 201. TWO LANE TRAFFIC AHEAD
- 202. TWO WAY TRAFFIC AHEAD
- 203. UNEVEN PAVEMENT AHEAD
- 204. UNMARKED LANES AHEAD
- 205. USE CAUTION
- 206. USE DETOUR ROUTE
- 207. USE LEFT LANE
- 208. USE NEXT EXIT
- 209. USE RIGHT LANE
- 210. WATCH FOR TRUCKS
- 211. WATER ON ROAD
- 212. WEIGHT LIMIT AHEAD
- 213. WET PAINT
- 214. WORKERS IN TUNNEL
- 215. YIELD AHEAD



PERMANENT MESSAGE LIST: GRAPHICS

Graphic messages are only available to Full Matrix message boards.

Permanent message number can be either of the two listed numbers.

When entering the graphic code, the brackets must be included (example: [g1]).

Graphic	Description	Static Graphic	Animated Series
	Right Turn	216: [g1]	
	Left Turn	217: [g2]	
	Right Curve	218: [g3]	
	Left Curve	219: [g4]	
	Right "S" Bend	220: [g5]	
	Left "S" Bend	221: [g6]	
	Lane Shift Right	222: [g7]	
	Lane Shift Left	223: [g8]	
	Circle Around	224: [g9]	
	Curves Ahead	225: [g10]	
	Crossroad	226: [g11]	
	Crossroad	227: [g12]	
	Road Right	228: [g13]	
	Road Left	229: [g14]	
	Right Exit	230: [g15]	
	"T" Junction	231: [g16]	
	Fork	232: [g17]	
	Left Merge	233: [g18]	
	Right Merge	234: [g19]	
	Road Narrows	235: [g20]	



PERMANENT MESSAGE LIST: GRAPHICS

Graphic	Description	Static Graphic	Animated Series
	Road Widens	236: [g21]	
	Narrow Bridge	237: [g22]	
	Divided Road Ahead	238: [g23]	
	Divided Road Ends	239: [g24]	
	Two Way Road	240: [g25]	
	Steep Grade	241: [g26]	
	Cycle Steep Grade	242: [g27]	
	Slippery When Wet		243: [pt800][g28] [np][g29][np] [pt1600]SLIPPERY [n]WHENWET
	Uneven Pavement	244: [g30]	
	Two Lane Shift Right	245: [g31]	
	Two Lane Shift Left	246: [g32]	
	Three Lane Shift Right	247: [g33]	
	Three Lane Shift Left	248: [g34]	
	Flagger Ahead		249: [pt400][g35][np] [g36][np][g37] [np][pt1500] FLAGGER[n]AHEAD
	Manual Stop	250: [g38]	
	Workers Ahead		251: [pt400][g39][np] [g40][np][g41][np] [pt1500]WORKERS [n]AHEAD



PERMANENT MESSAGE LIST: GRAPHICS

Graphic messages are only available to Full Matrix message boards.

Permanent message number can be either of the two listed numbers.

When entering the graphic code, the brackets must be included (example: [g1]).

Graphic	Description	Static Graphic	Animated Series
	Railroad	252: [g42]	
	Railroad Crossing	253: [g43]	
	Railroad Crossing	254: [g44]	
	Railroad Crossing	255: [g45]	
	Railroad Crossing	256: [g46]	
	Railroad Crossing	257: [g47]	
	Railroad Crossing	258: [g48]	
	Cycles	259: [g49]	
	Pedestrians	260: [g50]	
	Deer	261: [g51]	
	Cattle	262: [g52]	
	Tractor	263: [g53]	
	Snowmobile	264: [g54]	
	Horses	265: [g55]	
	Firetruck	266: [g56]	
	Disabled	267: [g57]	
	Trucks	268: [g58]	
	Detour Right	269: [g59]	
	Detour Left	270: [g60]	

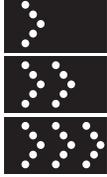
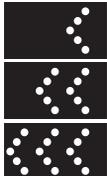


PERMANENT MESSAGE LIST: GRAPHICS

Graphic messages are only available to Full Matrix message boards.

Permanent message number can be either of the two listed numbers.

When entering the graphic code, the brackets must be included (example: [g1]).

Graphic	Description	Static Graphic	Animated Series
	Arrow Right		271: [pt16o8][g61]
	Arrow Left		272: [pt16o8][g62]
	Both Arrows		273: [pt16o8][g63]
	Corners		274: [pt16o8][g64]
	Right Chevron		275: [pt10o0][g65] [np][g66][np] [g67][np]
	Left Chevron		276: [pt10o0][g68] [np][g69][np] [g70][np]



CUSTOM MESSAGE LOG

Record your custom programmed messages below.
Numbers 1-16 will automatically be accessible from the
Quick Selection Thumb Wheel.



QUICK SELECTION LIST

1	17
2	18
	19
3	20
	21
4	22
	23
5	24
	25
6	26
	27
7	28
	29
8	30
	31
9	32
	33
10	34
	35
11	36
	37
12	38
	39
13	40
14	
15	
16	

41	71
42	72
43	73
44	74
45	75
46	7
47	6
48	77
49	78
50	79
51	80
52	81
53	82
54	83
55	84
56	85
57	86
58	87
59	88
60	89
61	90
62	91
63	92
64	93
65	94
66	95
67	96
68	97
69	98
70	99



TOWING AND LONG-TERM STORAGE

TOWING

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

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

Improper tightening can cause ball failure or loss of attachment.

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

Failure to follow instructions exactly can cause ball failure or loss of attachment resulting in vehicle crash and/or personal injury. Use this hitch ball only for towing trailers or vehicles connected to the ball with a socket-type coupler.

LONG-TERM STORAGE

When the sign is to be stored for extended periods of time, the POWER switch should be turned off, and the solar charge controller should be left on, allowing the solar panel array to continuously charge the sign battery bank. If possible, place the unit in a sunny area to allow the unit to maintain the charge on the batteries. When the sign is to begin operation again, a thorough inspection of all systems is advised before the sign is towed to the job site. Check battery state of charge to confirm over 12 volts.



Caution: If there is any portion of this instruction guide that is not understood, contact your local dealer or manufacturer.

BEFORE BEGINNING TRAILER SETUP:

1. Check charge controller/battery level.
2. Check all jacks to make sure they are properly attached.

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.
4. Remove tongue from trailer (if desired).

ELEVATING SIGN (IF APPLICABLE)

1. Verify that the display is in proper position and that the entire unit is level.
2. Clear all unnecessary personnel from sign area to ensure safety.
3. Locate toggle switch marked RAISE/LOWER on the control panel.
4. Hold the switch in the "RAISE" position until it extends 10-12 inches.
5. Check for proper alignment with traffic. If not properly aligned, release hand brake and turn toward traffic. Lock hand brake.
6. Finish raising display to desired height.
7. Insert locking pin into the hole in the inner mast shaft. (CAUTION: The locking pin can only be inserted if the mast is at its maximum height).

LOWERING SIGN (IF APPLICABLE)

1. Verify that the unit is level.
2. Clear all unnecessary personnel from sign area to ensure safety.
3. Remove safety pin from the inner mast shaft.
4. Hold the switch in the "DOWN" position until the unit is approximately 10-12" from the docking station.
5. Unlock the hand brake and turn to align with docking station.
6. Lower display completely into docking station.
7. Lock hand brake.



MAINTENANCE

BATTERIES

The batteries hydrolyze some of the water in each cell in the normal course of operation. The rate at which water gets lost in this process increases with heavy usage. Depending on the usage of the sign, the water level of each 2V cell should be checked weekly or monthly. Use only distilled water to refill the cells, and be careful not to overfill. Refilling the cells of a battery will dilute the acid which causes it to act partly discharged. Water should be added before the batteries are put on the charger to ensure a full charge. Also, check all terminals for proper connection, tightness and corrosion. Check 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.

SOLAR PANELS

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

TRAILER

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



FREQUENTLY ASKED QUESTIONS AND TROUBLESHOOTING

MESSAGE BOARD DOES NOT POWER ON

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

1. Check fuses.
2. Ensure that all cables are connected to controller.
3. Solar charge controller is "on". (there should be display on LCD screen)
4. There is output voltage at load terminals of solar charge controller and polarity of all connections is correct.
5. Check battery voltage – low voltage will cause controller to shut off until battery is recharged.
6. Check for broken or loose wires at connectors and terminal strips.

MESSAGE BOARD DOES NOT DISPLAY

1. Check to make sure that a message has been sent.

TROUBLE LOGGING IN

1. Username: KAK, enter (make sure caps lock is on)
2. Password: 123, enter

TROUBLESHOOTING TOOLS NEEDED

1. digital voltmeter
2. Phillips head screwdriver
3. straight screwdriver

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



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, 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 or 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-ksystems.com or look us upon the internet at www.k-ksystems.com.



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