MEGA

RADIO REMOTE CONTROL SYSTEM

INSTALLATION AND OPERATION MANUAL

J&M
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DESCRIPTION

The MEGA REMOTE is a state of the art microprocessor based Radio Frequency (RF) control system. It will provide the operator the ability to wirelessly operate equipment. The operator is required to follow all OSHA www.osha.gov and other applicable safety standards when operating the equipment. Do not use high power radio devices in close proximity of this product.

The remote control system consists of: the radio transmitter, receiver module, and associated optional equipment such as wiring harnesses and Gate interface tools.

The transmitter is equipped with pushbutton switches for the various functions and an LCD display to show equipment functions and status. The transmitter runs on 2 AA alkaline batteries.

The system's radio receiver has ON/OFF outputs to accommodate the functions available on the transmitter. All outputs are current-sourcing. It also includes a port for RS-232 communication, used for linking external equipment to the receiver and performing any software updates via the optional Gate interface tool.

OPERATION

Power must be applied to the receiver module for the system to work.

Pressing the POWER button will turn on the transmitter. Pressing

and holding the POWER button until the LCD display goes blank will turn off the transmitter. If the transmitter goes out of range for more than 2 seconds, all latched outputs will turn off as a safety feature (unless in auto dispense mode).

Use the buttons on the keypad to operate the desired functions. The throttle up and throttle down outputs are only operational on the main screen.

The lines on the right hand side of the screen show the RF communication and battery status. When the batteries are low and need to be replaced the LCD will display LOW. When the system is in AUTO mode the LCD will display AUT where RF percent is shown.

NOTE – when operating the system in manual mode: if a door has been opened and communication is lost, the door will continue to remain open

Tare

In order to tare the unit, hold down the TARE pushbutton on the main screen for 3 seconds.

Weight to dispense

In the Weight To Dispense screen, to set the default **Weight To Dispense** press and hold the TARE pushbutton for 3 seconds. The weight will start to blink. Using the UP/DOWN buttons the weight can be changed, to move to the next or previous digit press the LEFT/RIGHT buttons. Pressing SCROLL once will give the control to change the default gate. **Holding the TARE**

pushbutton for another 3 seconds will save the new weight and gate number.

Gate Number

In the Gate Number screen, to set the default Gate press and hold the TARE pushbutton for 3 seconds. The Gate number will start to blink. Using the UP/DOWN buttons the Gate number can be changed. **Holding the TARE pushbutton for another 3 seconds will save the new Gate number and weight.**

Auto Dispense

To use the auto dispense mode, set a weight to dispense using the keypad, then press the AUTO DISP button to begin. The system will continue to unload until it almost reaches the selected weight, then the unit will close the door and will open the selected door again for fine tuning until the unload is completed. Pressing the AUTO DISP button again will repeat the auto dispense process. To exit the auto dispense mode at any time, press the AUTO DISP button while it is in progress.

NOTE – when operating the system in auto dispense mode: the door will continue to remain open until the selected amount has been reached even if communication is lost

Enable/Disable Display

Hold both LEFT and RIGHT pushbuttons simultaneously for 10 seconds to enable or disable the display.

Scale Unit Setting

a. Serial Baud rate: 9600

b. Parity: None
c. Data bits: 8
d. Stop bits: 1

CONFIGURATION MENU

To navigate to the configuration menu turn the transmitter and receiver off. Press and hold the POWER button for greater than 10 seconds until the menu (TEACH MODE) is shown. There are the following options under the configuration menu: TEACH MODE, LCD CONTRAST ADJ, SLEEP TIME, RESET TX, CLONE MASTER, CLONE SLAVE, and EXIT. To select an option press the TARE button. To scroll through the options press the SCROLL button. To EXIT the configuration menu and go to the operating screens select EXIT using the TARE button.

TEACH MODE

Select this option to put the transmitter into teach mode and synchronize the receiver and transmitter. See transmitter and receiver synchronization below for more information.

LCD CONTRAST ADJUSTMENT

Select this option to change the contrast of the LCD display. Press the UP and DOWN buttons to change the contrast percent. Press the TARE button to save and exit.

SLEEP TIME

To save battery life, the transmitter will turn off after 15 minutes if the receiver is off. The user must press POWER at this point to restore transmitter operation. To change the sleep time, select this option and use

the UP and DOWN buttons to change the number of minutes the transmitter waits to go to sleep. Press the TARE button to exit and save the sleep time.

The transmitter will NOT go to sleep as long as the receiver has power applied to it.

RESET TX

Warning! If the transmitter is reset, the receiver will have to be re-synchronized to the transmitter for operation! To reset the transmitter select RESET TX then press any button.

CLONE MASTER/SLAVE

Warning! This feature can pose a safety hazard for operators if both transmitters are used simultaneously! Use with caution! Occasionally, it is desirable to have more than one transmitter work with a single receiver. This is accomplished by a process called cloning. See CLONING below for more information.

INDICATOR LEDs

The receiver module can identify problems with the system in the form of an error code. Check the red indicator on the receiver to diagnose system problems. Then, refer to the ERROR CODE CHART in this manual for explanation of the error codes. The green LED indicator will blink on the receiver during normal communication.

TRANSMITTER AND RECEIVER SYNCHRONIZATION

Each radio remote system is designed to operate with a unique radio ID code and RF

channel sequence. Each receiver is programmed to respond *only* to the transmitter with the correct ID code/RF channel sequence for which it is set. This feature allows multiple systems to work in close proximity to one another without interference.

In the event that a transmitter becomes damaged and a new one is needed, the receiver can be reprogrammed to respond to the new transmitter. To teach the ID code to the receiver, use the following procedure. ***Please note that if this procedure is interrupted before it has completed, the system may have intermittent operation:**

1. Turn the receiver off
2. Navigate to the configuration menu on the transmitter and select TEACH MODE
3. The LCD will display TEACH MODE APPLY POWER TO RX
4. Apply power to the receiver. Transmitter will display TEACH COMPLETE
5. Teach complete

CLONING

Warning! This feature can pose a safety hazard for operators if both transmitters are used simultaneously! Use with caution! Occasionally, it is desirable to have more than one transmitter work with a single receiver. This is accomplished by a process called cloning. Cloning allows an addition transmitter (B) to have the same ID code as the original transmitter (A). If this feature is desired, use the following procedure:

1. Make sure the receiver is off
2. On transmitter A, select CLONE MASTER from configuration menu
3. On transmitter B, select CLONE SLAVE from configuration menu
4. Wait for a few seconds until transmitter B displays SLAVE TEACH DONE
5. Turn off both transmitters
6. Synchronize one of the transmitters to the receivers

If cloning feature has been invoked and is no longer desired, the ID code of one of the transmitters needs to be changed. This will unclone the transmitters. If this is desired, use the following procedure:

1. Make sure the receiver is off
2. Select RESET TX from the configuration menu
3. Press any button again to select a new ID
4. Uncloning complete
5. Use transmitter and receiver synchronization procedure above to link the uncloned transmitter to new receivers

LCD DISPLAY

Pressing the POWER button briefly will turn the LCD backlight on. It will stay on until the POWER button is pressed briefly again.

OUTPUTS

Each of the outputs from the receiver module is designed with built-in short circuit and overload protection. The outputs can also detect a no-load or broken wire condition.

These error conditions are evident by the red LED indicator on the receiver module *or* the HISTOGRAM page on the optional Gate.

The ON/OFF outputs will indicate an error under no load or broken wire status if NOT activated, and will detect a short IF activated.

INSTALLATION

Refer to the WIRING CHART in this manual for hookup of the harness.

To install the receiver module, use the two mounting holes provided on the enclosure to attach it in a vertical manner with the connectors facing down. Please take extra caution not to damage internal components while installing. For high vibration applications, use shock absorbing mounts. It is advised to mount the unit as high as possible, keeping clear of metal obstructions around the antenna which might affect RF performance. Antenna extension cables are available from Kar-Tech to aid in this, if needed.

The main power to the receiver should be connected through a switched, fused line capable of a minimum of 20 amps. For best results, connect power (+) to the receiver via an auxiliary terminal of the ignition switch, PTO switch, or ignition relay. Be sure that the ground (-) is connected securely to the chassis or battery with a star washer which digs into the base metal to insure good contact.

All connections must be properly insulated to protect against shorts.

Seal all connections with a non-conductive silicone grease to prevent corrosion.

BEFORE APPLYING POWER!

- Check power and ground for proper polarity.

- Check the wiring harness for possible shorts before connecting to output devices (i.e., valves and relays) by checking each mating pin terminal.

- Verify that the transmitter batteries are fresh. Kar-Tech recommends using only alkaline type.

- Read the rest of this manual.

SYSTEM TROUBLESHOOTING USING OPTIONAL GATE:

The Kar-Tech GATE connects to the receiver/controller thru the RS232 diagnostic port.

Note: To prevent electrical shorts and damage turn Receiver power off. Plug gate to the receiver then turn power on to the receiver.

The GATE creates a Wi-Fi access point which allows you to connect to any device with Wi-Fi and web browser such as smart phones, pads or personal computers. It supports Google Chrome, Internet Explorer, Firefox and IOS Safari and allows user to configure, diagnose and troubleshoot the system.

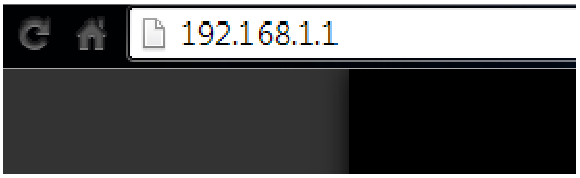
Gate Diagnostic Tool

<u>Accessing the control panel</u>

1. Turn off power to the receiver.
2. Plug in the GATE to the receiver.
3. Turn on the power to the receiver. The power LED on the GATE will turn on at this point
4. Use your device and look for the available WiFi networks. A network under the name of

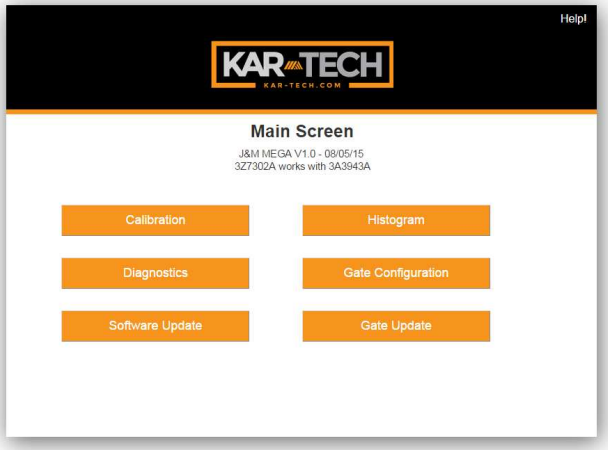
"J&M3A394" should be available at this point. Connect to the network, no password is required.

5. Once the connection is established, open a web browser on your device. Kar-Tech recommends using the Firefox browser.
6. Enter the address http://192.168.1.1 in the address bar



Address Bar

7. The following options are available from the main screen.



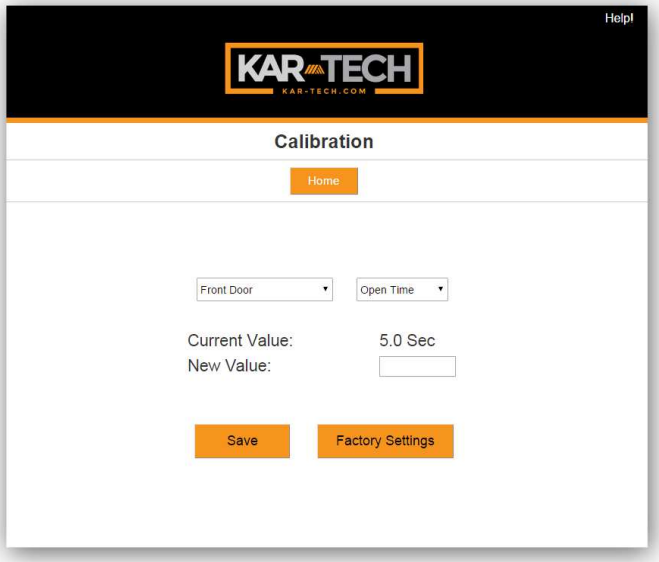
Main Screen

DIAGNOSTICS

Tap the `Diagnostic` button to see the diagnostic screens, which shows the present state of remote communications, and system I/O.

When the round circle next to a label is dark, the corresponding ON/OFF input or output is sensed to be active or ON.

Diagnostics



Calibration

The password to gain access to the calibration screens is 1262.

CALIBRATION

To change the configuration of the unit, tap the `Calibration` icon.

To adjust an output's configuration, use the following procedure:

1. Select the output to change from the first drop-down menu
2. Select the parameter of the output to change from the second drop-down menu

3. Enter the new value on the line above the Factory Setting button by tapping on the line and using the scratch pad to enter a new value
4. Tap the Save button to send the setting to memory

The lines to the right of the parameter indicate the present value.

Tap the Factory Setting button to return all outputs to standard values. Tap Save to send these settings to memory. Tap HOME to quit configuration and return to the main menu.

The following can be adjusted as needed:

1. Open Time – The amount of time that the output stays on
2. Close Time – The amount of time that the output stays on

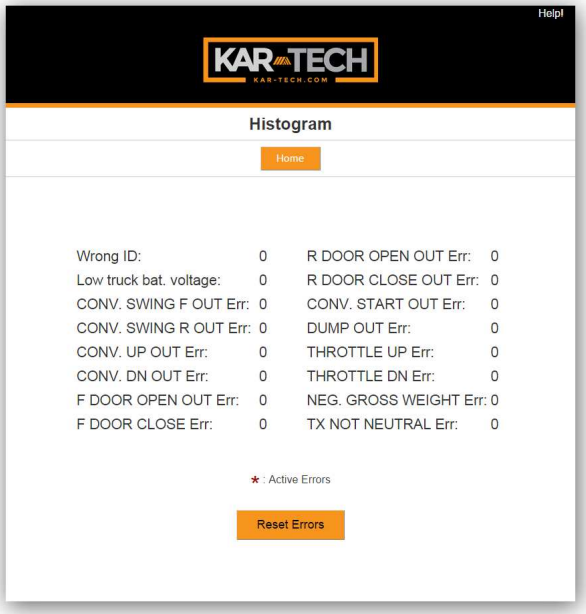
HISTOGRAM

Tap the Histogram icon to see a set of screens that show which error codes are active and how many times the specific error code has been active.

This feature can be used to troubleshoot machine wiring and other problems. Tapping the Reset button resets the error code counts. The password to reset error codes is 1262. Tapping Next and Back allows access to all the histogram pages. Tap the Done button to return to the main menu.

Note: the GATE is not a

precision measurement instrument. There may be delays.



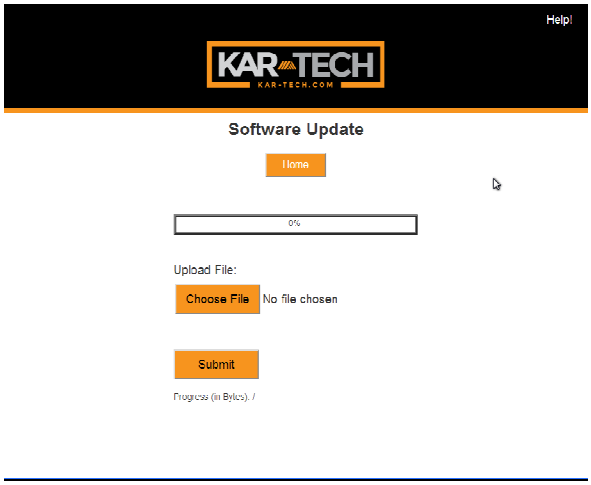
Histogram Page

SOFTWARE UPDATE

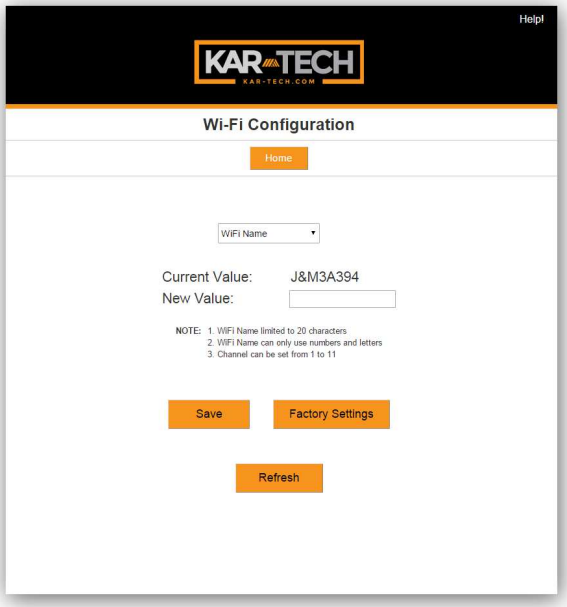
Use the `Choose File` button to select new software on your device with which to program the receiver. Kar-Tech will have provide software in the .kar format. Once the file is selected, press the SUBMIT button to upload the file.

Note: This feature does not work on Apple mobile or tablet products.

Note: Do not turn the receiver or the GATE off during the upload process.



Software Update Page



Gate Configuration Page

Gate Configuration

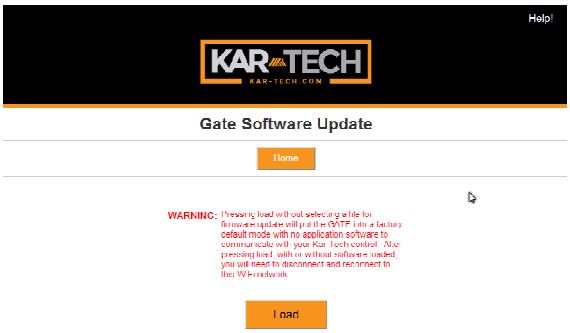
This page allows you to change the name (SSID) of the WiFi network you are connecting to. Factory settings will rename the Wi-Fi to its original name.

Note: After changing the name, the user needs to disconnect and reconnect to the new WiFi network.

Gate Update

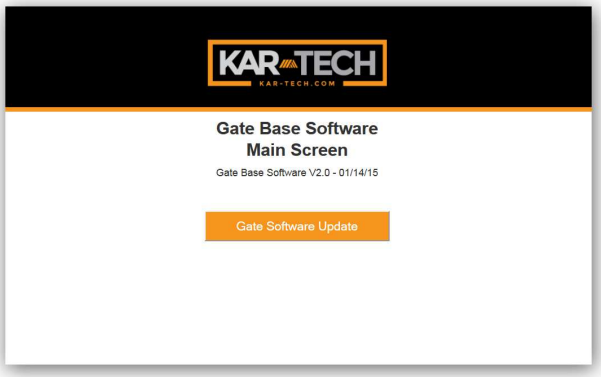
This page was designed to upload software that changes the product that the GATE interface works with.

Once the LOAD button is pressed the application on the GATE will be **deleted**.



Gate Update Page

1. Select LOAD
2. Disconnect then reconnect to "J&M3A394" network
3. Press HOME button
4. Screen below should be shown:



5. Press Gate Software Update
6. Using Browse select

proper .gat file

7. Press Submit
8. File will upload and say Success! When complete
9. Disconnect then reconnect to “J&M3A394” network
10. Press HOME button
11. Update complete

Note: the GATE is not a precision measurement instrument. There may be some delays.

WIRING

HD36-18-14SN-059

PIN	COLOR	DESCRIPTION
A	N/C	N/C
B	N/C	N/C
C	BLUE	CONV SWING FRONT OUTPUT
D	ORANGE	CONV SWING REAR OUTPUT
E	YELLOW	CONV UP OUTPUT
F	BROWN	CONV DOWN OUTPUT
G	ORANGE/BLACK	REAR DOOR OPEN OUTPUT
H	BLUE/BLACK	FRONT DOOR CLOSE OUTPUT
J	RED	POWER (9-30V)
K	RED/BLACK	FRONT DOOR OPEN OUTPUT
L	YELLOW/BLACK	REAR DOOR CLOSE OUTPUT
M	ORANGE/RED	DUMP OUTPUT
N	BROWN/BLACK	CONVEYOR START OUTPUT
P	N/C	N/C

CONNECTOR, DT04-2P

PIN	COLOR	DESCRIPTION
1	BLACK	THROTTLE UP OUTPUT
2	WHITE	THROTTLE DOWN OUTPUT

ROUTINE MAINTENANCE

Clean transmitter regularly with a damp cloth and mild detergent.

Inspect electrical wiring for wear points or other damage. Repair as required.

Inspect all connections for looseness or corrosion. Tighten and/or "seal" as necessary.

MAINTENANCE PRECAUTIONS

When performing any inspection or maintenance work on the remote system, always exercise care to prevent injury to yourself and others or damage to the equipment. The following are general precautions, which should be closely followed in carrying out any maintenance work.

Do not have hydraulic power available to the valves when performing electrical tests.

Never operate or test any function if any person is in an area where they could be hurt by being hit or squeezed by the hydraulic equipment.

Turn power off before connecting or disconnecting valve coils or other electrical loads.

TROUBLESHOOTING

This next section provides basic operator level troubleshooting for the MEGA REMOTE system. If, after following these instructions, the system still does not function, contact your KAR-TECH representative for further instructions or servicing.

TROUBLESHOOTING CHART

PROBLEM	***SOLUTION***
No functions work	1. Verify transmitter power source – battery, CAN cable, external supply, etc 2. Verify that receiver control module power source is present at its input connector 3. Check for proper system ground 4. Check the receiver or control module LED status display for functionality or errors 5. Check the hydraulic system
Certain functions do not work	1. Check the wiring and connections from the receiver control module to the control module to the valve coil for the particular function that does not work 2. Check the receiver control module LED status display for possible fault or error indication 3. Check the hydraulic system 4. Check the electrical system
Functions operate intermittently	1. Check for loose connections at the valve coil 2. Check the receiver control module LED status display for functionality or errors 3. Check the receiver antenna for damage and possible obstructions 4. Check the hydraulic system

ERROR CODES

EC	POSSIBLE CAUSE	EC	POSSIBLE CAUSE
1	RF COMMUNICATION ERR	10	FRONT DOOR DN OUTPUT ERR
2	WRONG RF ID	11	REAR DOOR UP OUTPUT ERR
3	SCALE SERIAL LINK PROB	12	REAR DOOR DN OUTPUT ERR
4	LOW VOLTAGE	13	CONV START OUTPUT ERR
5	CONV FRONT OUTPUT ERR	14	DUMP OUTPUT ERR
6	CONV REAR OUTPUT ERR	15	THROTTLE UP OUTPUT ERR
7	CONV UP OUTPUT ERR	16	THROTTLE DN OUTPUT ERR
8	CONV DOWN OUTPUT ERR	17	NEG GROSS WEIGHT ERR
9	FRONT DOOR UP OUTPUT ERR	18	TX NOT IN NEUTRAL MODE

Error code explanations:

1 Transmitter is off
Transmitter went to sleep mode
Interference in RF communication link

2 Transmitter and receiver are not synchronized

3 The RS-232 communication cable between the scale unit and the receiver is damaged, disconnected, or the scale unit is off

4 System voltage is below 11V (12V system)

5-16 Short or open load/coil on output

17 Gross weight reading from scale is negative

18 Switch on transmitter is not in its rest or off position when turning the transmitter on

PARTS LIST

PART NUMBER	*DESCRIPTION*
3A3942A	RADIO TRANSMITTER
3A3943A	RADIO RECEIVER
3A3949A	OPTIONAL GATE DIAGNOSTIC TOOL

There are no user-serviceable parts inside the transmitter or the receiver. Return the units for service.

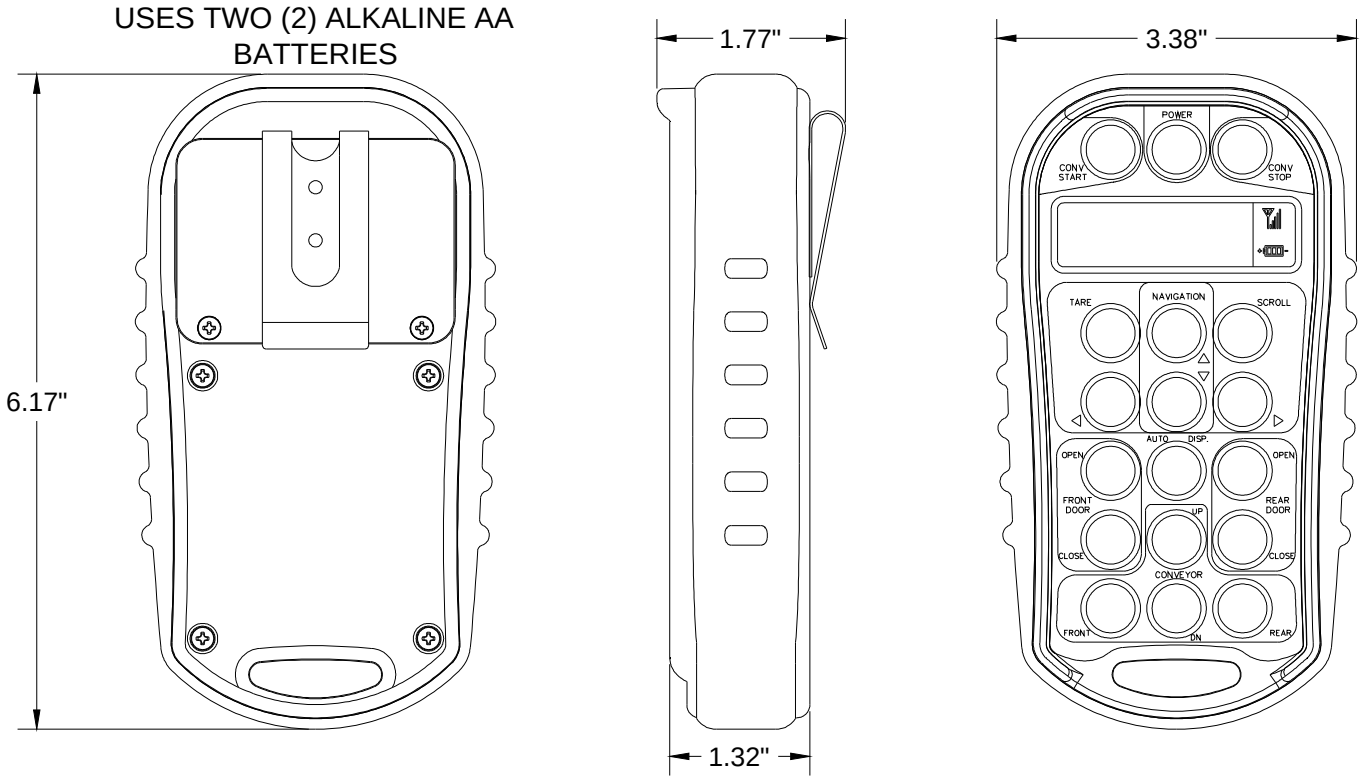
Note: For operation with negative ground systems only.

WARNING:

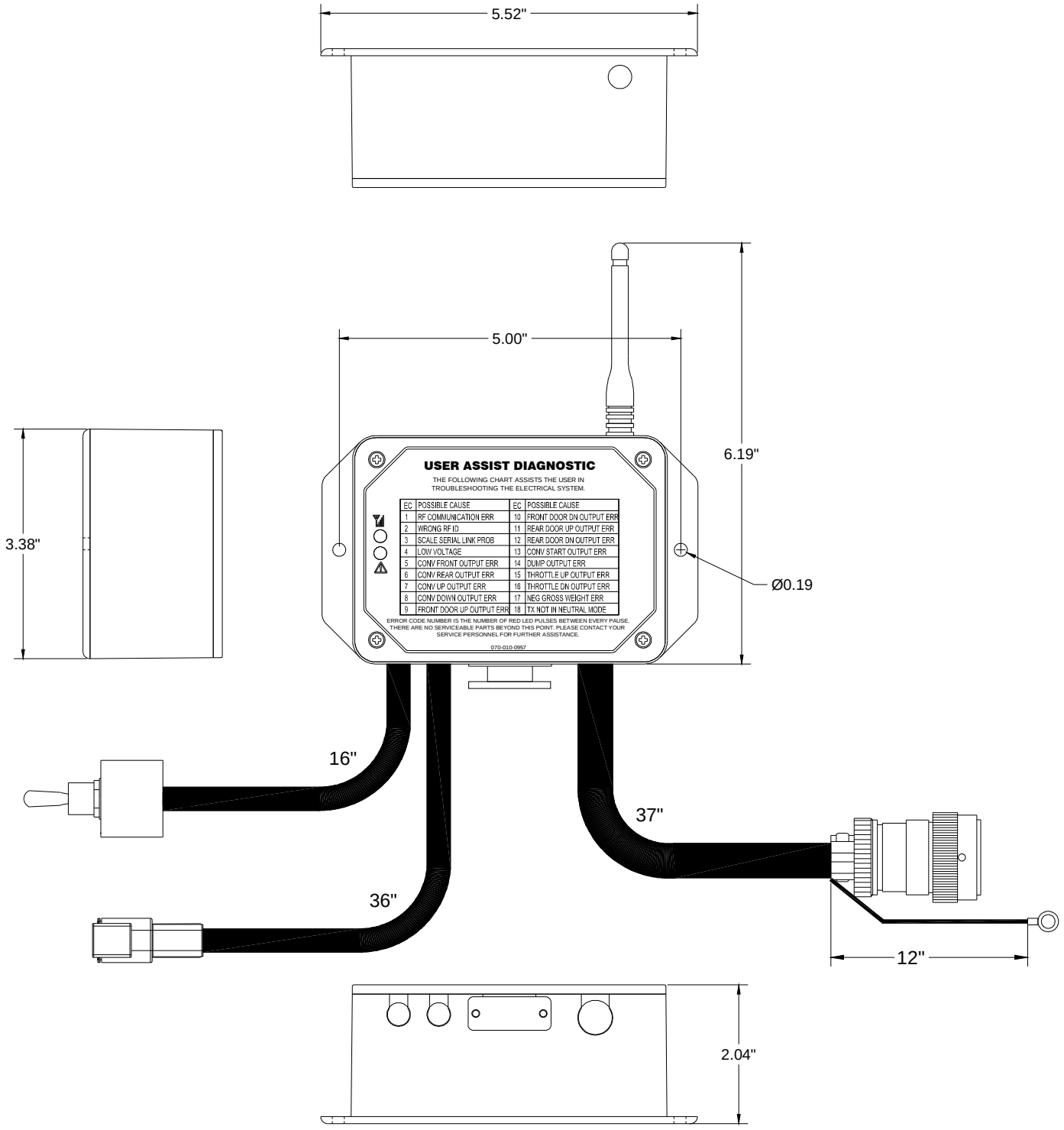
The MEGA REMOTE must be operated in compliance with all applicable safety regulations, rules, and practices. Failure to follow required safety practices may result in death or serious injury.

The information, specifications, and illustrations in this manual are those in effect at the time of printing. We reserve the right to change specifications or design at any time without notice.

TRANSMITTER PICTORIAL



RECEIVER PICTORIAL



SPECIFICATIONS

TRANSMITTER

Equipment Class ..... Part 15 Spread Spectrum Transmitter
FCC ID P4U-VRTS
ICC (Industry Canada Certification) ID 4534A-VRTS
Power supply ..... 2xAA Alkaline Battery
Fast charger temperature range ..... +5˚C to +60˚C
Operating temperature - Radio ..... -40˚C to +85˚C
Storage temperature ..... -40˚C to +100˚C
RF Frequency ..... 902-928 MHz
RF Transmit power (EIRP) ..... 33 mW
LCD display operating range (if equipped) ..... -20˚C to +70˚C
Vibration ..... 3G to 200Hz
Shock 50G
NEMA 12

RECEIVER

Power supply voltage 9-30VDC
Operating temperature ..... -40˚C to +85˚C
Storage temperature ..... -40˚C to +100˚C
Outputs ..... 5.0A max each, sourcing, 20A system max
Digital Inputs (when equipped) ..... supply voltage
Analog Inputs (when equipped) 0-5VDC/4-20mA
RF Frequency ..... 902-928 MHz
Vibration ..... 3G to 200Hz
Shock 100G
NEMA 4X

INSTRUCTION TO THE USER

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

* Reorient or relocate the receiving antenna.

* Increase the separation between the equipment and receiver.

* Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

* Consult the dealer or an experienced radio/TV technician for help.

This equipment has been certified to comply with the limits for a class B computing device, pursuant to FCC Rules. In order to maintain compliance with FCC regulations, shielded cables must be used with this equipment. Operation with non-approved equipment or unshielded cables is likely to result in interference to radio and TV reception. The user is cautioned that changes and modifications made to the equipment without the approval of manufacturer could void the user's authority to operate this equipment.