MEGA

RADIO REMOTE CONTROL SYSTEM

-PRELIMINARY-

INSTALLATION AND OPERATION MANUAL

INDEX

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 safety standards when operating the equipment.

The remote control system consists of the handheld radio transmitter and receiver module. Additional optional equipment such as wiring harnesses and Palm™ interface tools may be available.

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 Palm interface tool.

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 transmitter and receiver off

2. Press and hold the POWER button on the transmitter for more than 10 seconds. LCD display will indicate when you should apply power to the receiver

3. Apply power to the receiver. The Green LED stays on when teaching is in progress and it will blink when teaching is complete

4. Teach is complete

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.

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 Palm Pilot™.

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.

The main power to the receiver should be connected through a switched, fused line capable of 20 amps. For best results, connect the 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.

- Read the rest of this

manual.

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.

Use the buttons on the keypad to operate the desired functions.

To save battery life, the transmitter will turn off when it is idle (no functions are used) for period greater than 15 minutes. The user must press the POWER button at this point to restore transmitter operation.

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

Tare

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

Weight to dispense

In the Weight To Dispense screen, to set the default **Weight To Dispense** press and hold the SCROLL pushbutton for 3 seconds. The first unit to change is the weight, which will start blinking. Using the UP/DOWN buttons the weight can be

changed, to move to the next unit press the SCROLL once which will give the control to change the default door. Holding the SCROLL pushbutton for another 3 seconds will save the new weight.

Auto Reset

After setting a weight to dispense, pressing the CONV START push button will start the automatic dispense mode and 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.

Holding the scroll button on the weight to dispense page for 4 seconds, will get the unit into auto mode again .

Enable/Disable Display

Hold both UP and DOWN 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

USING THE OPTIONAL PALM™ INTERFACE

The Patented Palm Pilot™ interface, US patent No. 6,907,302, software is a very useful tool for troubleshooting the control system.

To use this tool, connect the Palm™ serial cable to the serial connector on the receiver control harness or adaptor, and apply power to the system.
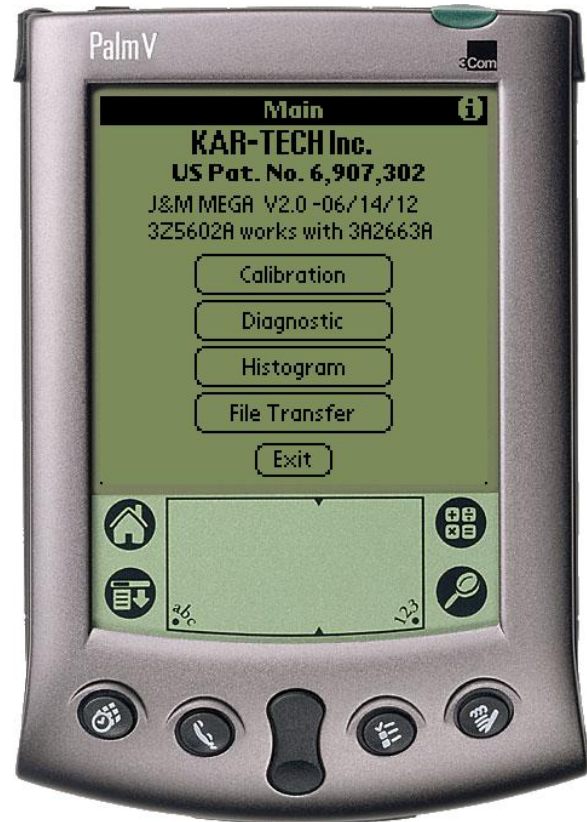
Main Page

Use the Palm's stylus pen and tap the icon `J&M 1.0` to launch the application.

DIAGNOSTIC

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

MEGA REMOTE
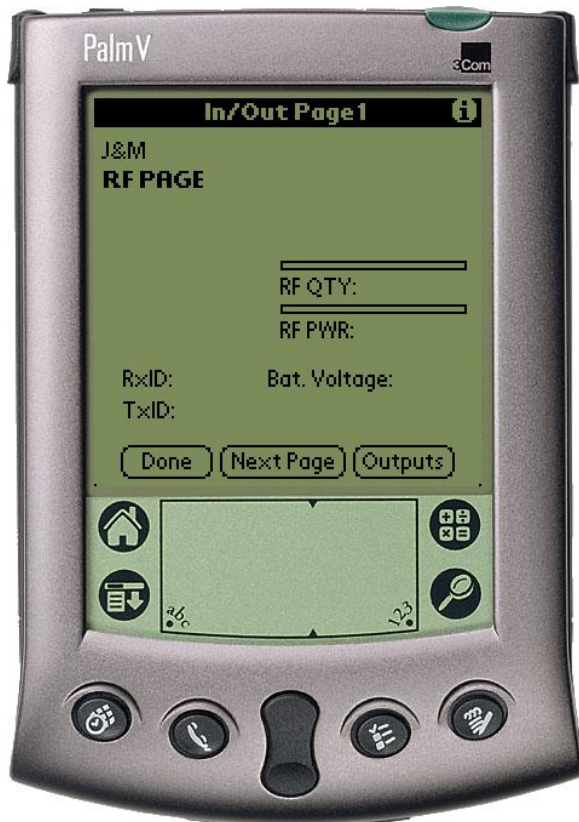
RF Communications Page
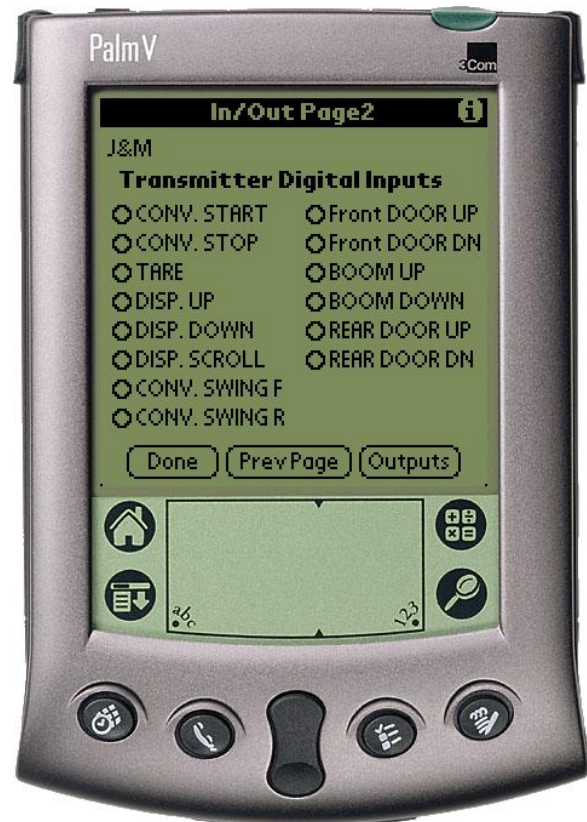
Digital Inputs Pages

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

Tap the `Next Page` button to switch between pages of inputs. Tap the button labeled `Outputs` to view output screens.
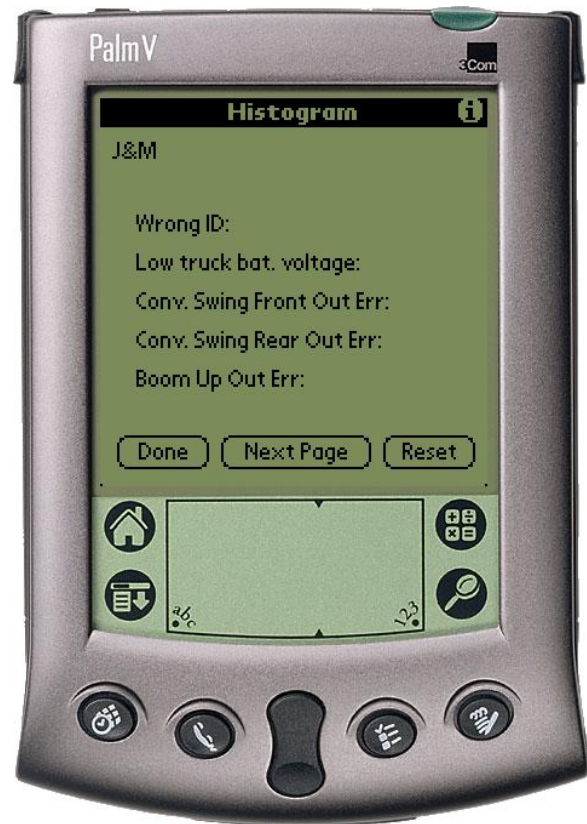
ON/OFF Outputs Page   *Histogram Page*

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.

FILE TRANSFER

Tap the `File Transfer` button to send new program files from the Palm to the receiver. New programs are uploaded to the Palm via the Palm™ desktop as a *.pdb file using HotSync™.

File Transfer Page

This is only used for software updates to the receiver. Tap the 'i' icon for more information on this procedure.

CALIBRATION

To change the configuration of the outputs, tap the `Calibration` icon.
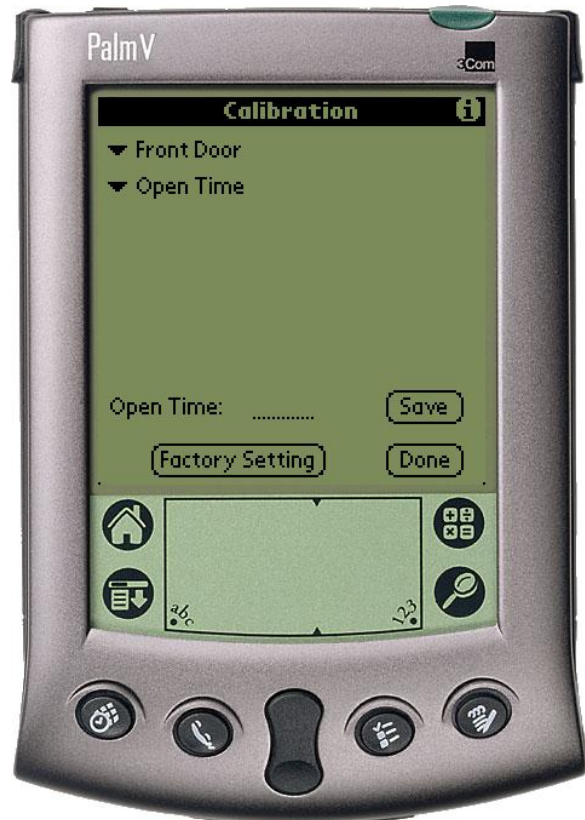
Calibration page

The password to gain access to the calibration screens is 1262. In these screens, configuration for proportional outputs is available.
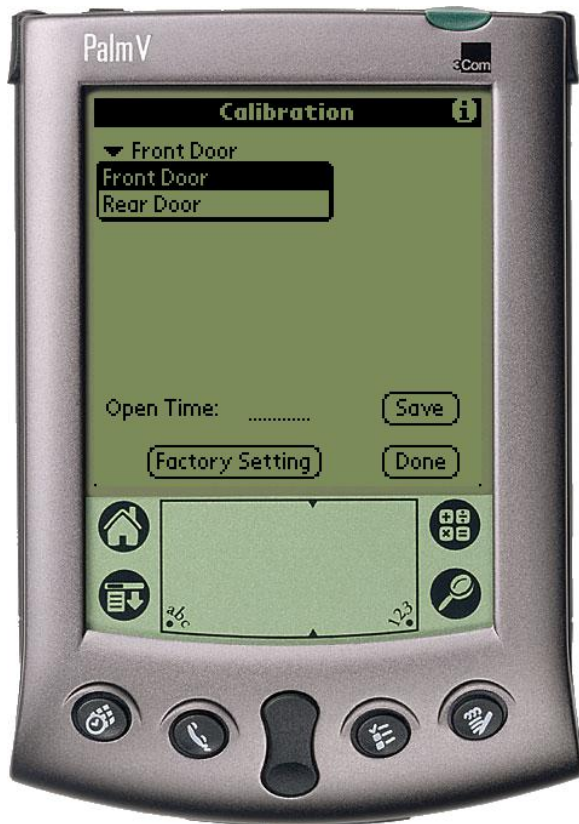
Output selection menu

To adjust a proportional 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 of the output (if active).

12
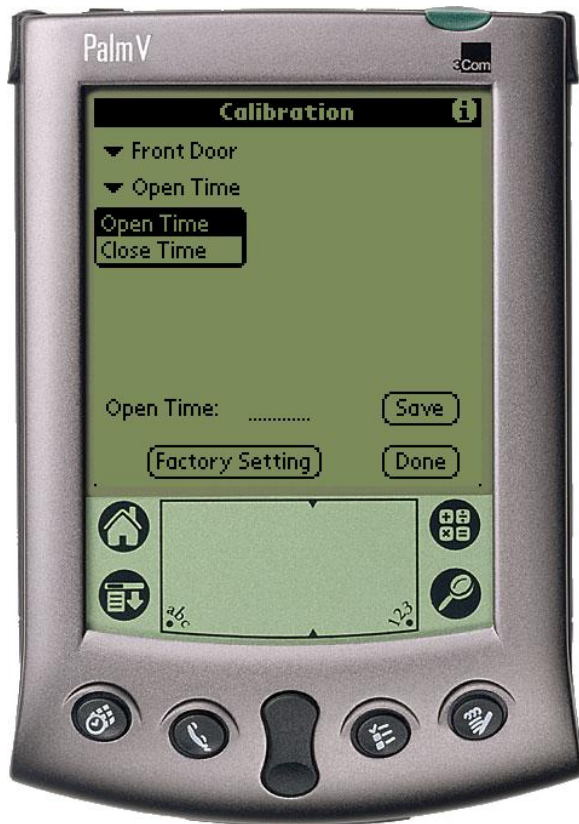
Calibration parameters menu

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

Tap the `Factory Setting` button to return all outputs to standard values. Tap `Save` to send these settings to memory. Tap `Done` and `Exit` 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

WIRING

HD36-18-14SN-059	
PIN	DESCRIPTION
A	N/C
B	N/C
C	CONV SWING FRONT
D	CONV SWING REAR
E	BOOM UP
F	BOOM DOWN
G	REAR DOOR UP
H	FRONT DOOR DOWN
J	RED - POWER
K	FRONT DOOR UP
L	REAR DOOR DOWN
M	DUMP
N	CONVEYOR START
P	N/C

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-

MEGA REMOTE

TECH representative for further instructions or servicing.

TROUBLESHOOTING CHART

PROBLEM	SOLUTION
1. No functions work	1. Check that transmitter power is on 2. Check that receiver power is on 3. Check system wiring for power into the system 4. Check LED status display for system status 5. Check for proper grounding of system's electrical circuit 6. Check system's hydraulic system
2. Certain functions do not work	1. Check the wiring connection from the system to the valve coil for the output function that does not work 2. Check LED status display for possible fault or error indication 3. Check system's hydraulic system 4. Check system's electrical system
3. Functions operate intermittently	1. Loose connector at the valve coil 2. Check LED status display for system status 3. Check receiver antenna for any damage and proper connection 4. Check system's hydraulic system

ERROR CODES

EC	POSSIBLE CAUSE	10	FRONT DOOR DOWN
1	NO COMMUNICATION	11	REAR DOOR UP
2	WRONG RF ID	12	REAR DOOR DOWN
3	SCALE SERIAL LINK PROB	13	CONV START
4	LOW TRUCK BATTERY	14	DUMP
5	CONV SWING FRONT		
6	CONV SWING REAR		
7	BOOM UP		
8	BOOM DOWN		
9	FRONT DOOR UP		

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 10.5V

5-14   Short or open load/coil on output

PARTS LIST

PART NUMBER	DESCRIPTION
3A2662A	RADIO TRANSMITTER
3A2663A	RADIO RECEIVER

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.

MEGA REMOTE

TRANSMITTER PICTORIAL

1.44

6.17

1.32

3.15

POWER

CONV START

CONV STOP

TARE

SCROLL

DN

UP

FRONT CONV SWING

REAR

BOOM

UP

UP

FRONT DOOR

DN

UP

REAR DOOR

DOWN

DOWN
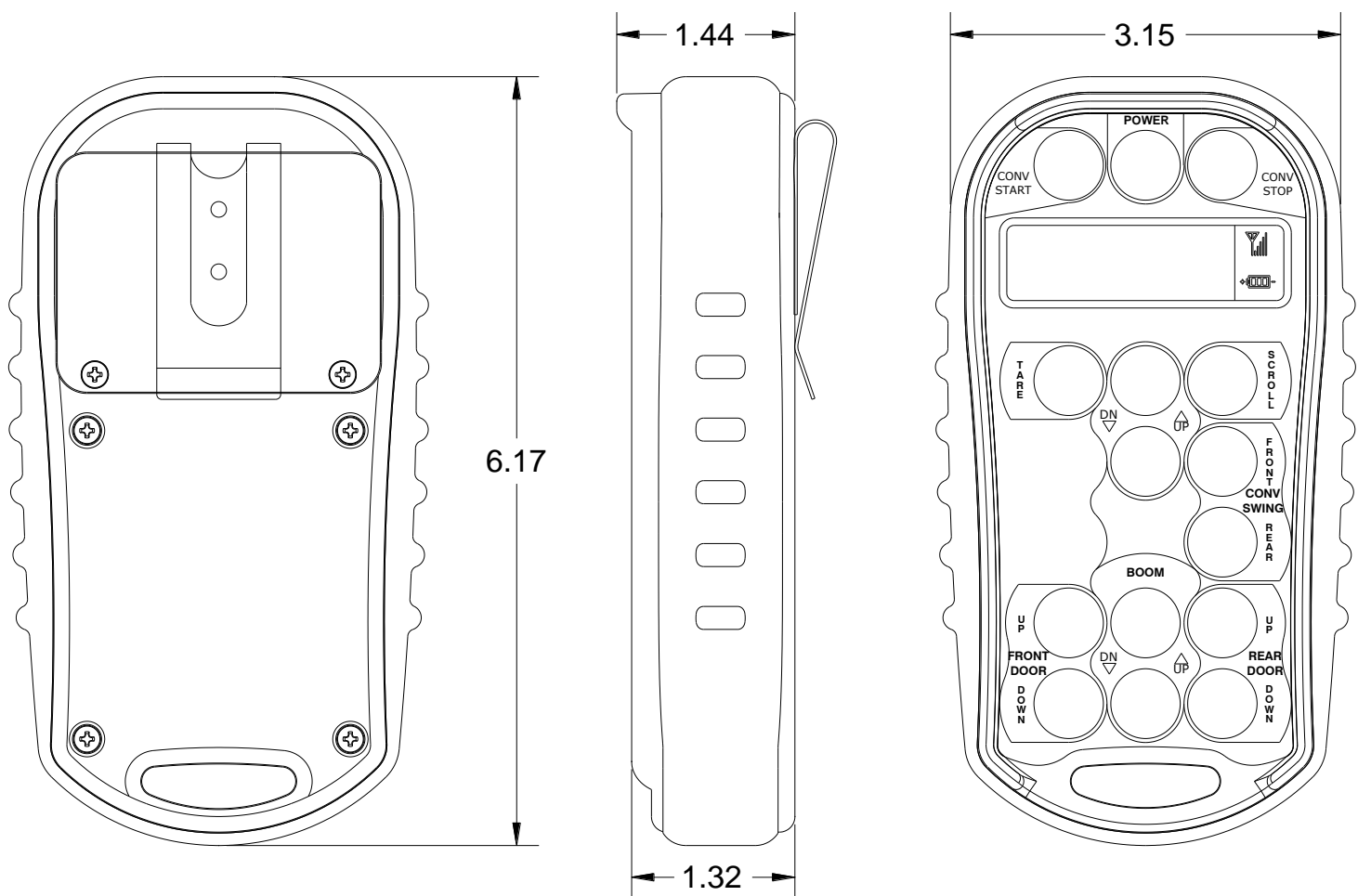
MEGA REMOTE

RECEIVER PICTORIAL

1.357

5.500

5.000

6.012

Ø0.190

USER ASSIST DIAGNOSTIC

THE FOLLOWING CHART ASSISTS THE USER IN
TROUBLESHOOTING THE ELECTRICAL SYSTEM.

EC	POSSIBLE CAUSE	EC	POSSIBLE CAUSE
1	NO COMMUNICATION	10	FRONT DOOR DOWN
2	WRONG RF ID	11	REAR DOOR UP
3	SCALE SERIAL LINK PROB	12	REAR DOOR DOWN
4	LOW TRUCK BATTERY	13	CONV START
5	CONV SWING FRONT	14	DUMP
6	CONV SWING REAR		
7	BOOM UP		
8	BOOM DOWN		
9	FRONT DOOR UP		

ERROR CODE NUMBER IS THE NUMBER OF RED LED PULSES BETWEEN EVERY PAUSE.
THERE ARE NO SERVICEABLE PARTS BEYOND THIS POINT. PLEASE CONTACT YOUR
SERVICE PERSONNEL FOR FURTHER ASSISTANCE.

TO
EXTERNAL
POWER
SWITCH

16"

18"

BLACK - GROUND

RS-232 DIAGNOSTIC PORT

21

SPECIFICATIONS

FCC ID: P4U-VRTS
      Industry Canada Certification Number: 4534A-VRTS
      EQUIPMENT CLASS: PART 15 SPREAD SPECTRUM TRANSMITTER

TRANSMITTER

Power .... 2 x AA alkaline batteries

Operating temperature - Radio .... -20°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

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.