# GUIDER

RADIO/CAN REMOTE CONTROL SYSTEM

**INSTALLATION AND OPERATION MANUAL**

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# DESCRIPTION

The GUIDER 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 two modules: the radio transmitter, receiver module, and associated optional equipment such as wiring harnesses.

The transmitter is equipped with a trigger, a pushbutton, and toggle switches for the various functions. It includes a port for wired control via the built-in Controller Area Network (CAN) system. This unit runs on a 3.7V rechargeable battery when in wireless mode. When in wired mode, the transmitter runs with power supplied by the CAN cable. This is useful if the battery power gets too low to operate the transmitter but continued operation is needed. The port is also used to charge the internal battery.

The system's radio receiver has both current-regulated proportional outputs and ON/OFF outputs to accommodate the functions available on the transmitter. All outputs are current-sourcing. It also includes a port for wired (CAN) communication for tethered control.

# OPERATION

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

Releasing the E-STOP until the red and green LEDs appear will turn on the transmitter. Pressing the E-STOP button will turn off the transmitter. Pressing the E-STOP will turn off all outputs as a safety feature. If the transmitter goes out of range for more than 2 seconds, all outputs will turn off as a safety feature.

To operate a proportional output, toggle the switch of the desired function and pull the trigger to the level desired. ***Please note that if the trigger is pulled before the function is selected, the proportional output will not work as a safety feature.** Release the trigger and begin again in the proper sequence.

To save battery life, the transmitter will turn off after 15 minutes if the receiver is off. The user must press and release the E-STOP at this point to restore transmitter operation. To change the sleep time, use the following procedure:

1. With the transmitter and receiver off, press and hold POWER and switches BOOM UP, WINCH UP, ROTATE CCW, and EXTEND OUT
2. Release the E-STOP button. Keep holding the switches until the green and red LEDs start blinking together slowly. Release switches
3. Press one of the following switches for desired sleep time:
    a. BOOM DOWN - 15

minutes

b. WINCH DOWN - 30 minutes
c. ROTATE CW - 60 minutes
d. EXTEND IN- 120 minutes
e. HORN – sleep time disabled

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

## INDICATOR LEDs

The transmitter has two indicators, the red BATTERY indicator and the green TRANSMIT indicator. The green TRANSMIT indicator blinks rapidly (2x/second in RADIO mode, 5x/second in CAN mode) whenever there is communication between the transmitter and the receiver. It will double-blink when no functions are used.

The red BATTERY indicator starts blinking once every second when the battery voltage is low and requires charging. Plug in the transmitter as soon as possible after seeing the low battery indicator. See BATTERY CHARGING below.

If the **ATB Input** is off (ATB error is present), the red and green LEDs on the transmitter will *toggle* while using a switch.

If the **PRESSURE Input** is over the set pressure (overload error is present), the red and green LEDs on the transmitter will *blink together* while using a switch.

The receiver module can identify problems with the system in the

form of an error code. Check the display window 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 active operation.

## 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:**

### TEACH BY CAN CABLE

1. Plug the CAN cable into the CAN port on both the receiver and transmitter and operate a function on the transmitter until the LEDs on the front panel go from steady to flashing for at least 5 seconds. The units will be synchronized at this point

### TEACH BY RF

1. Turn the transmitter and receiver off

2. Press and hold EXTEND IN and BOOM UP then release the E-STOP
3. Hold for a few seconds then release the switches. LEDs should blink at this point
4. Apply power to the receiver. Only green LED should start to blink on transmitter
5. Teach complete

## CLONING

**Warning! Only one transmitter can be on at a time, they cannot be 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 additional 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 transmitters and receivers are off
6. On transmitter A, press and hold EXTEND IN and BOOM UP then release the E-STOP. Hold for a few seconds then release the switches. LEDs should blink at this point
2. On transmitter B, press and hold EXTEND IN, ROTATE CCW, and WINCH UP then release the E-STOP. Hold for a few seconds then release the switches. LEDs should blink at this point
3. Wait for a few seconds until the green LED only starts to blink on transmitter A and transmitter B.
4. Turn off both transmitters

5. 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 and transmitters are OFF
2. Press and hold switches BOOM DOWN, WINCH DOWN, ROATE CW, and EXTEND IN the release the E-STOP. Keep holding until the LEDs start to toggle. Release switches
3. Press any switch 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

## BATTERY CHARGING

The transmitter is designed with a smart battery charger. The battery can be charged by connecting the CAN cable from the receiver module (powered on) to the port on the transmitter, or by plugging the AC wall into the port. Red and green LED indicators near the charging port or on the underside of the transmitter indicate the status of the charger: A red LED indicates that the battery is charging and a green LED indicates that the battery is fully charged.

*IMPORTANT BATTERY INFO*

When the battery is new, the run-time of the transmitter will be shorter until it has gone

through the drain/charge cycle several times. After this point, the unit's current drain should allow at least 20 hours of run-time before a recharge is needed.

The temperature that the transmitter battery is exposed to affects performance and useful life. It is strongly recommended you keep within the following limits:

A. Charging: -4 to +86°F
B. Operating: -20 to +122°F
C. Storing: -4 to +86°F (lower is better)

## 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 alphanumeric display on the receiver module *or* the HISTOGRAM page on the on board 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. The proportional outputs will detect a no-load or short condition WHEN activated.

## INPUTS

The receiver module is designed with 4 digital inputs: CW switch, CCW switch, ATB switch, and Boom up switch and one analog input for boom Pressure. When CW or CCW input are High (12 volts) the swing CW and CCW outputs are enabled respectively. These inputs are used for cranes with swing rotation switches. If swing has

mechanical stops, hardwire both inputs to power.

The ATB switch inputs must be high for boom down, winch up and extend out to work with factory settings applied. Boom up switch is used to limit boom up travel so boom up does not bottom up and create a false overload which limits boom down. If the ATB input is a sinking input (ground will be applied to this input), use a 1K resistor from the signal power to this input. Note: this is already installed in 3B2889A and 3B288CA harnesses. Remove this resistor if the input is sourcing (signal power is applied to this input).

The pressure input is a voltage input (factory set to 0 to 5 volts). If a 4 to 20 mA pressure transducer is on the crane, use a 220 ohm ½ watt resistor from signal to ground to convert current to voltage. Note: this is already installed in 3B2889A and 3B288CA harnesses. If using the input as a pressure switch (P-S) or 0-5V input, then remove this resistor. Overload pressure and maximum pressure can be calibrated using Gate.

## RECEIVER DISPLAY

The receiver's 4-character alphanumeric LED display is used to report the status of outputs, radio communication, boom status, and machine hours to the operator. For additional information on error codes refer ERROR CODES section of this manual.

The hour meter display works as follows:

1. When no functions are

operated, the display will show system hours

2. When the proportional output is operated, the display will show crane hours

3. When the compressor is operated, the system will show compressor hours. However, crane hours will have a higher priority.

## 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 battery is fully charged.

- Read the rest of this manual.

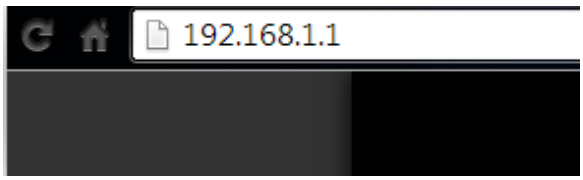
## SYSTEM TROUBLESHOOTING ON BOARD GATE:

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. The receiver's 4-character alphanumeric LED display will show "WiFi" when Gate is connected and in use.

ACCESSING THE CONTROL PANEL

1. Turn on the power to the receiver.
2. Use your device and look for the available Wi-Fi networks. A network under the name of "KARTECH3B288" should be available at this point. Connect to the network, the password is 3B2883A1.

   **Please note: If Gate is not used for 5 minutes after power up it will automatically turn off. Recycle power to the receiver to turn it back on.**
3. Once the connection is established, open a web browser on your device. Kar-Tech recommends using Chrome browser.
4. Enter the address http://192.168.1.1 in the address bar




*Address Bar*

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


*Main Page*

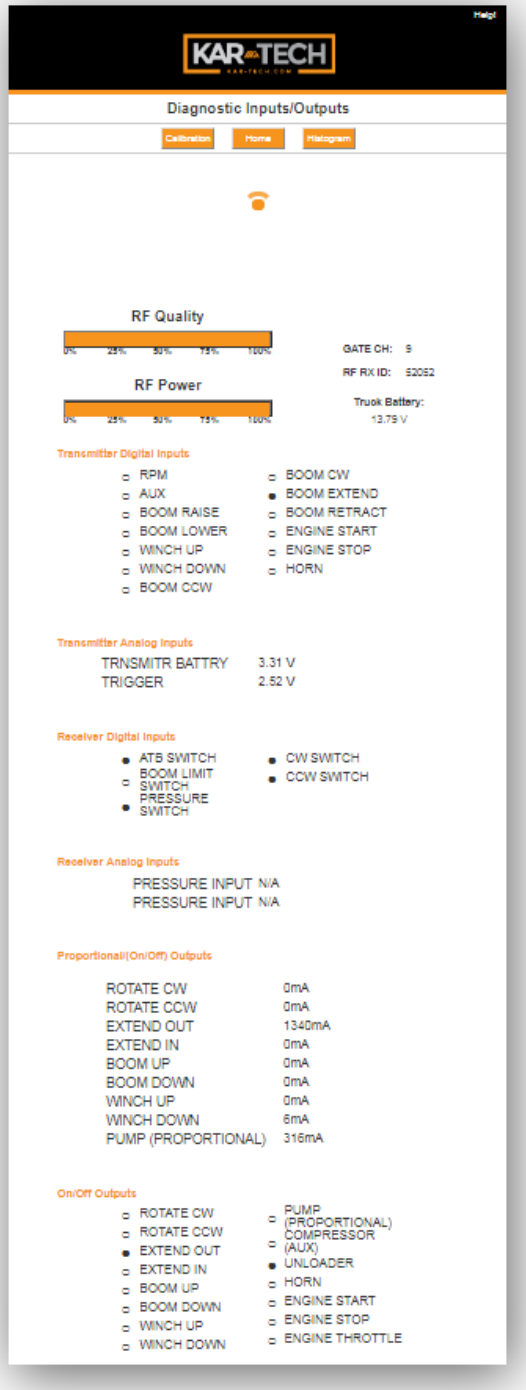
It shows the info of the proportional output, the transmitter battery level, the receiver operating voltage and the value of the pressure in PSI when operated.

It also shows the information of the current transmitter and receiver ID they both are currently communicating.

## DIAGNOSTICS

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

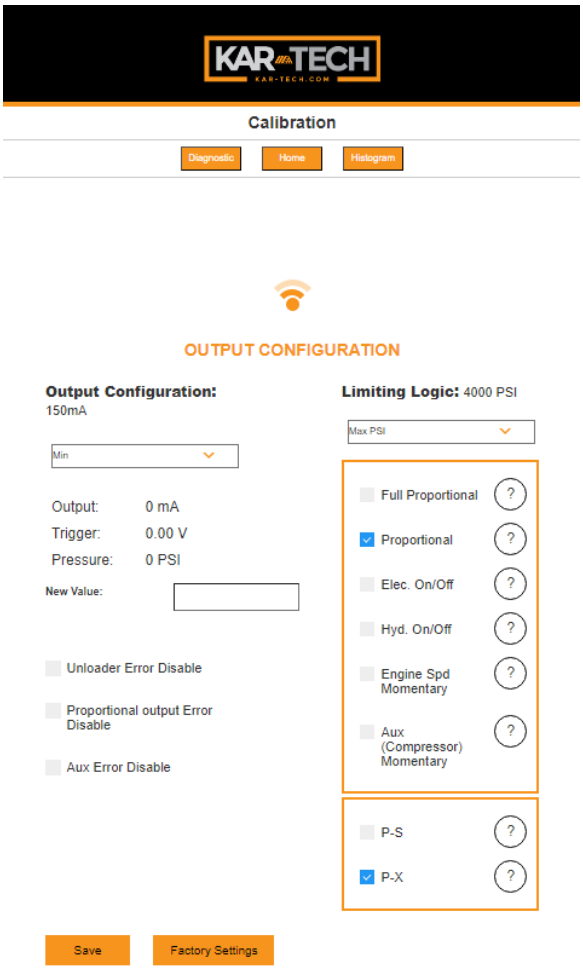
When the round circle next to a label is dark, the corresponding ON/OFF input or output is sensed to be active or ON.




*Diagnostics Page*

## CALIBRATION

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

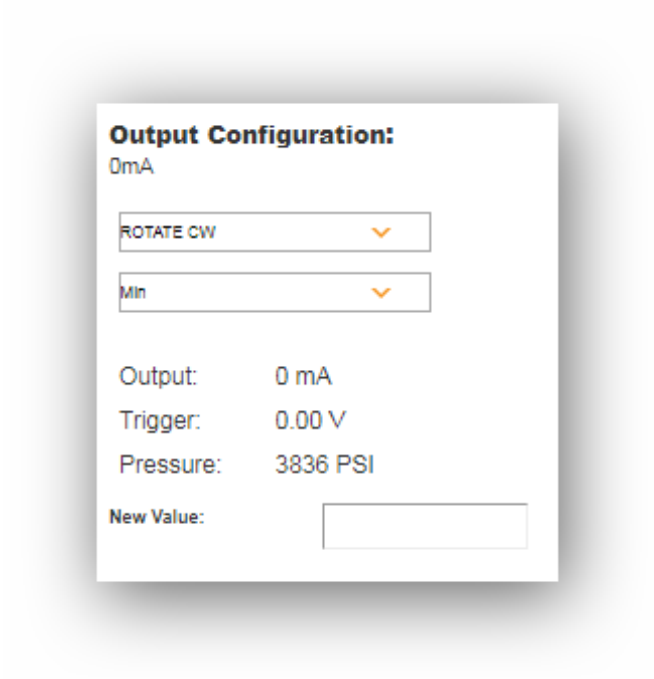



*Calibration Page*

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

This page provides the user

with the ability to adjust key system parameters, including pump output settings and safety limits. The lines `Output, Trigger, and Pressure` in the middle of the screen will show the present value of the current on the proportional output, the input trigger voltage, and pressure on the transducer (if selected).




*Output selection menu and first parameters menu*

To change the functionality of the proportional outputs, use the following procedure:

1. `Proportional` – the selected output (Proportional - Pump) will have current regulated proportional functionality based on the position of the trigger.
2. `Full Proportional` – if checked then `WINCH UP, WINCH DN, BOOM UP, BOOM DOWN, ROTATE CW, ROTATE CCW, EXTEND OUT, and EXTEND IN` outputs are all current regulated outputs. To operate a function toggle the desired function then pull the trigger. The `proportional` output will act as a pump output and turn on

with each crane function.

3. Elec. On/Off – proportional output will act as a pump output. Pump output will be deactivated when WINCH is operated
4. Hyd. On/Off – proportional output will act as a pump output. Pump output will be activated when WINCH is operated

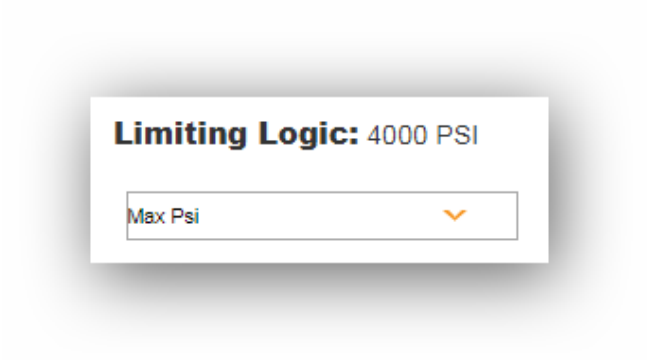
To adjust a proportional output's configuration, use the following procedure.

1. Select the output to change from the first drop-down menu: WINCH UP, WINCH DN, BOOM UP, BOOM DOWN, ROTATE CW, ROTATE CCW, EXTEND OUT, OR EXTEND IN if Full Proportional is checked. Just select a parameter if just proportional is checked.

5. Select the parameter of the output to change from the second drop-down menu. Proportional must be selected for these to be used.
    a. Min – Minimum amount of current to valve in mA
    b. Max – Maximum amount of current to valve in mA
    c. Ramp Up – Time in seconds to go from Min current to Max current
    d. Ramp Down – Time in seconds to go from Max current to no current
    e. Frequency –

Dither frequency to valves in Hz (Change affects all outputs)

6. 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
7. Tap the `Save` button to send the setting to memory

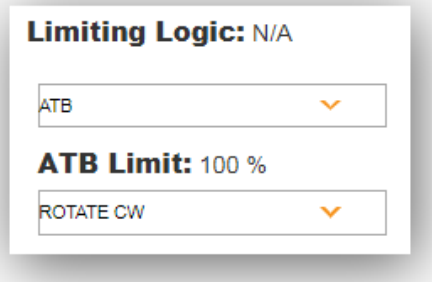



*Second parameters menu*

To set key parameters and safety limits for the system, use the third drop-down menu as shown:

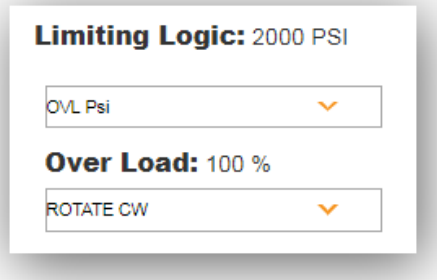
a. `Max Psi`– set this to match the maximum pressure for your sensor.

b. `ATB`– when this is selected, the `ATB LIMIT` menu appears for you to select outputs that respond to this condition by reducing or eliminating the output chosen. Enter a percentage of reduction (or 0% to shut off the output) for each output desired when this condition exists.




*ATB limit Menu*

c. `OVL Psi` – when this is selected, the `Over Load` menu appears for you to select outputs that respond to this condition by reducing or eliminating the output chosen. Enter a percentage of reduction (or 0% to shut off the output) for each output desired when this condition exists.




*Over load Menu*

8. 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
9. Tap the `Save` button to send the setting to memory

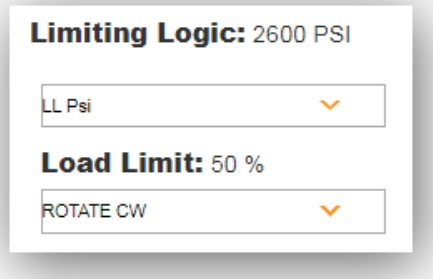
## ADDITIONAL SETTINGS

In the middle of the page there are additional settings:

1. `Eng Spd Momentary` – if this check box is selected

the ENGINE SPEED output will be momentary instead of maintained.

2. Aux (Compressor) Momentary – if this check box is selected, the behavior of the AUX output will be momentary instead of maintained.
3. P-S (Pressure Switch) – Checking this box allows the OVERLOAD safety to be functional with a digital input (battery voltage). When the system senses the OVERLOAD input is off, the BOOM DOWN, WINCH UP, and EXTEND OUT functions are disabled under factory settings (input should be *ON* under normal conditions). Selecting this option will automatically de-select the pressure transducer option (P-X). The monitor line for Pressure next to the large box will disappear.

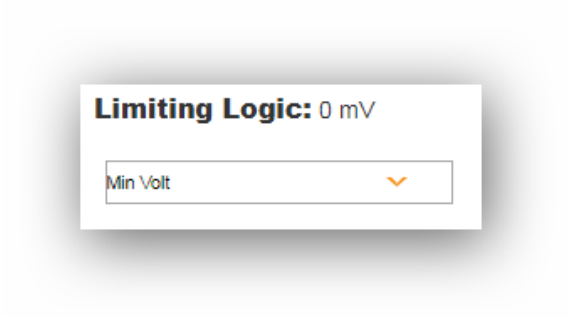



*Second parameters menu when P-X checked*

4. P-X (Pressure Sensor) – Checking this box allows the OVERLOAD safety to be functional with an analog input (0-5VDC). When the system senses the OVERLOAD input is beyond the set value, the BOOM DOWN, WINCH UP, and EXTEND OUT functions are disabled

under factory settings. Selecting this option will automatically de-select the pressure switch option (`P-S`). The monitor line for `Pressure` next to the large box will appear. When this checkbox is selected, it will invoke a drop-down list with the following sensor calibration parameters:

a. `LL Psi` – set the maximum load to which you desire a system limit to be. When this is selected, the `Load Limit` menu appears for you to select outputs that respond to this condition by reducing or eliminating the output chosen. Enter a percentage of reduction (or 0% to shut off the output) for each output desired when this condition exits.




*Load limit Menu*

b. `Min Volt` –The minimum voltage the receiver will see from the sensor when pressure is at 0 PSI.

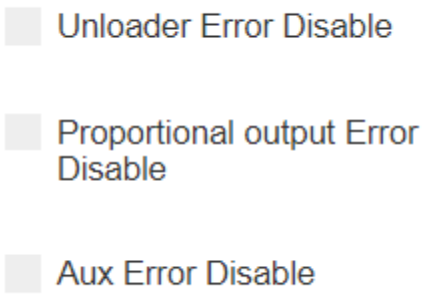
c. `Max Volt` – The minimum voltage the receiver will see from the sensor when pressure is at

0 PSI.

For example: for a 5000 PSI 0 to 5 volt sensor, the Min out is 0 and Max Out is 5000 mV. For a 4-20mA sensor with 220 ohm resistor in harness (see wiring diagrams), Min out is 880. And Max Out is 4400.

5. 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
6. Tap the `Save` button to send the setting to memory

The user can also disable the error codes for the unloader, proportional, and aux output if wanted. Check both or one of the boxes below then press save to disable both or one of the error codes.




*Error Code Disable Check boxes*

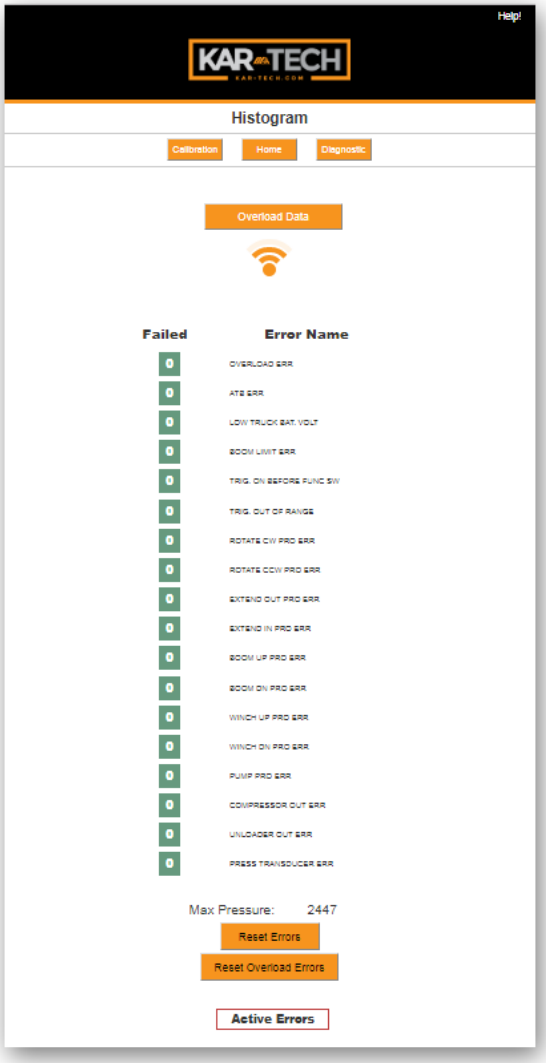
Tap the `Factory Setting` button to return all outputs to standard values. Tap `Save` to send these settings to memory. Tap `Done` to quit configuration and return to the main menu.

## 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. Tap the `Home` button to return to the main menu.

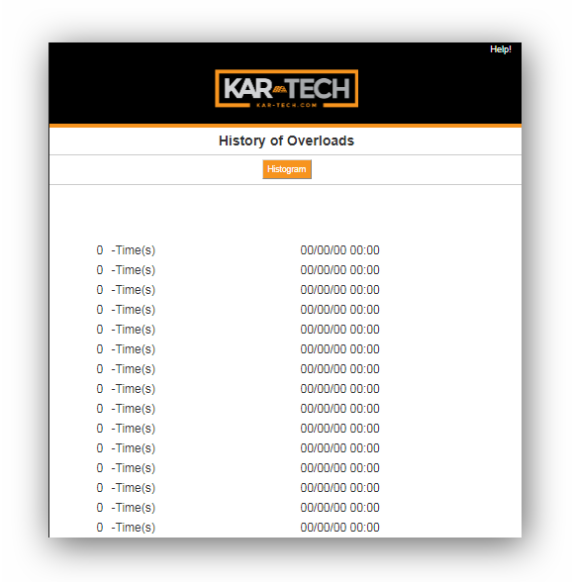
Note: the GATE is not a precision measurement instrument. There may be delays.




*Histogram Page*


Press the question mark (?) to the right of an error that has occurred to see the exact time and date of when it occurred.

Tapping Overloads Data will bring you to another page that includes a page for History of Overloads. It will show the dates and times of all overloads on the system, based on the setting of the OVL Psi on the Calibration page. Press Reset Overload Errors on Histogram page to reset these.




*Overload Data Page*

Tap the Histogram button to return to the Histogram page.

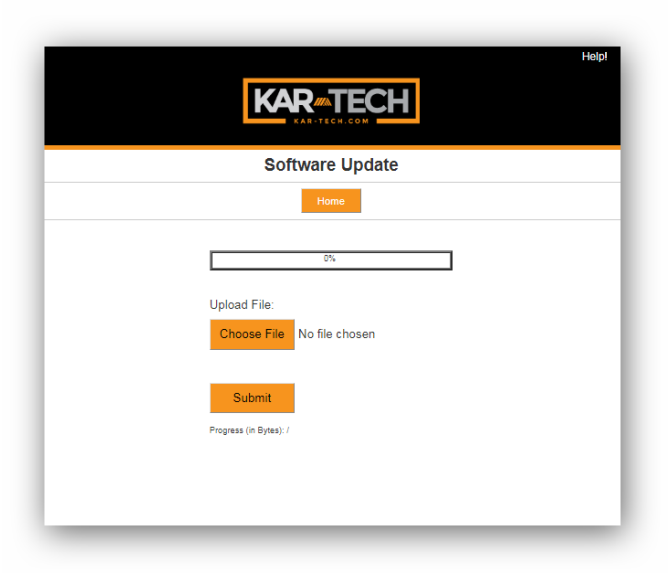
## SOFTWARE UPDATE

The password to gain access to the software update page is 1262.

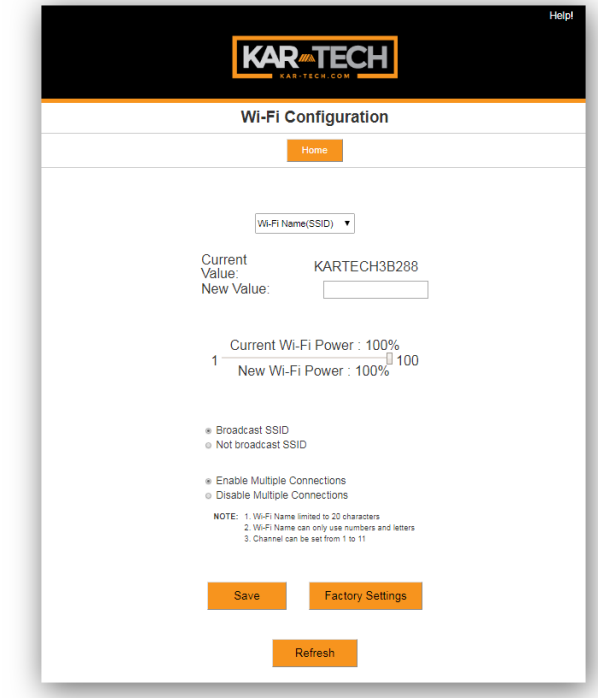
Use the `Choose File` button to select new software on your device with which to program the receiver. Kar-Tech will have provided software in the .kar format. Once the file is selected, press the SUBMIT button to upload the file.

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

The password to gain access to the gate configuration page is 1262.

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

If Broadcast SSID option is selected, the Wi-Fi name (SSID) is public and it will be visible to any other Wi-Fi devices. Otherwise, the Wi-Fi name (SSID) is hidden and it would require manual connection to the network.

If Enable Multiple Connections is selected, multiple connections up to 4 devices could be connected to the

GATE. However, only one of the connected devices can use the GATE. If Single connection is enabled, only one device can be connected to the GATE.

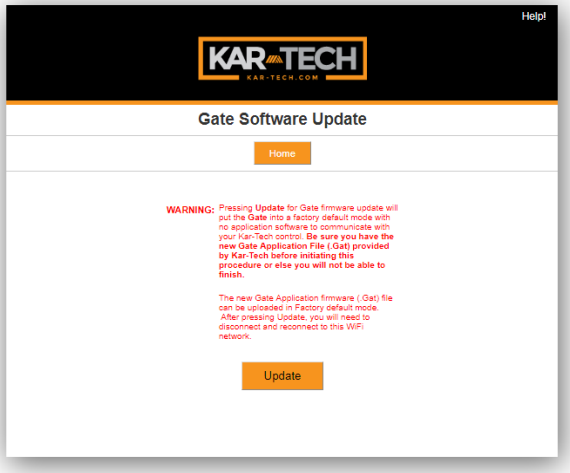
NOTE: A reconnect to the new Wi-Fi connection is needed after each change. It is advised to keep a note of the Wi-Fi name in case if Not Broadcast SSID option is selected. Forgetting the Wi-Fi name after selecting this option will require the GATE to be sent to KAR-TECH for factory reprogramming.

## GATE UPDATE

The password to gain access to the gate update page is 1262.

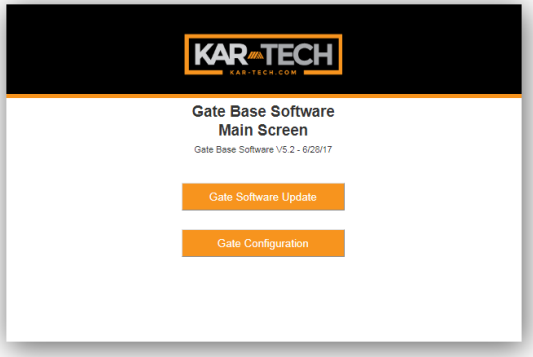
This page was designed to upload software that changes the product that the GATE interface works with.

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 "KARTECH3B288" 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 "KARTECH3B288" network
10. Press HOME button
11. Update complete

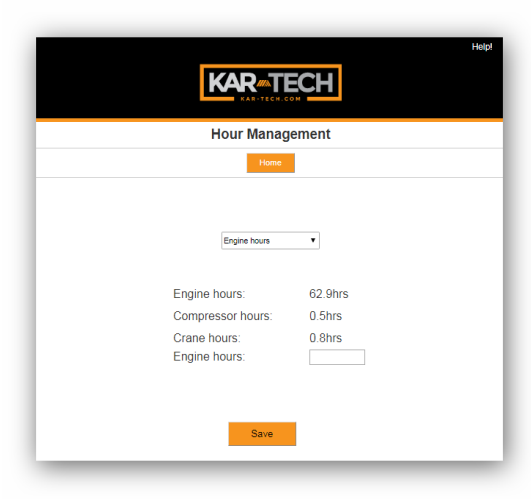
Note: the GATE is not a precision measurement instrument. There may be some delays.

## HOUR MANAGEMENT WITH GATE

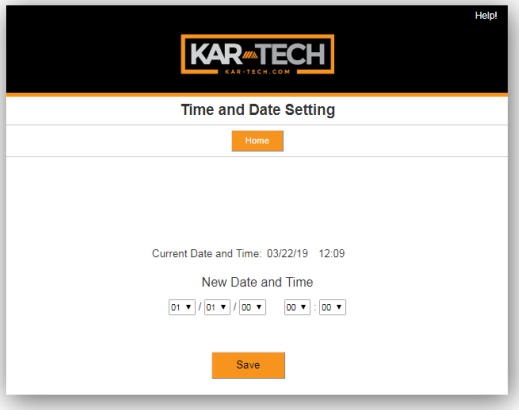
The password to gain access to the hour management page is 1262.

The receiver includes a real-time clock to provide for time tracking of certain functions of the system in hours of use. These measurements include engine hours, compressor hours, and crane use hours. The hour meters can be adjusted using the Gate.

Tapping `Hour Management` button will allow you to update, change, or clear the different hour meters available. Use the drop-down menu `Engine hours` and choose the meter to update. Tap `Save` to set the value you enter in the box. Tap `Home` to return to the main menu.




*Hour Meters Management Page*




*Time and Date Setting Page*

## TIME AND DATE SETTING

The password to gain access to the time and date setting page is 1262.

Tapping Time & Date Setting will bring up a splash screen for you to enter the current time and date for the real-time clock that runs the hour meter and logs overload conditions to the histogram.

# WIRING

## 3B2883B

P1 - DEUTSCH DTM13-12PA, GRAY

| PIN | DESCRIPTION |
|---|---|
| 1 | GROUND |
| 2 | CANH |
| 3 | CANL |
| 4 | ENGINE THROTTLE OUTPUT |
| 5 | UNLOADER OUTPUT |
| 6 | PRESSURE SENSOR/SWITCH INPUT |
| 7 | ATB SWITCH INPUT |
| 8 | WINCH UP CR OUTPUT |
| 9 | WINCH DOWN CR OUTPUT |
| 10 | PROPORTIONAL (PUMP) CR OUTPUT |
| 11 | COMPRESSOR (AUX) OUTPUT |
| 12 | POWER (9-30V) |

P2 - DEUTSCH DTM13-12PB, BLACK

| PIN | DESCRIPTION |
|---|---|
| 1 | ROTATION CW CR OUTPUT |
| 2 | ROTATION CCW CR OUTPUT |
| 3 | EXTEND OUT CR OUTPUT |
| 4 | EXTEND IN CR OUTPUT |
| 5 | BOOM UP CR OUTPUT |
| 6 | BOOM DOWN CR OUTPUT |
| 7 | CW SW INPUT |
| 8 | CCW SW INPUT |
| 9 | BOOM UP LIMIT SWITCH |
| 10 | HORN OUTPUT |
| 11 | ENGINE START OUTPUT |
| 12 | ENGINE STOP OUTPUT |

## GUIDER REMOTE

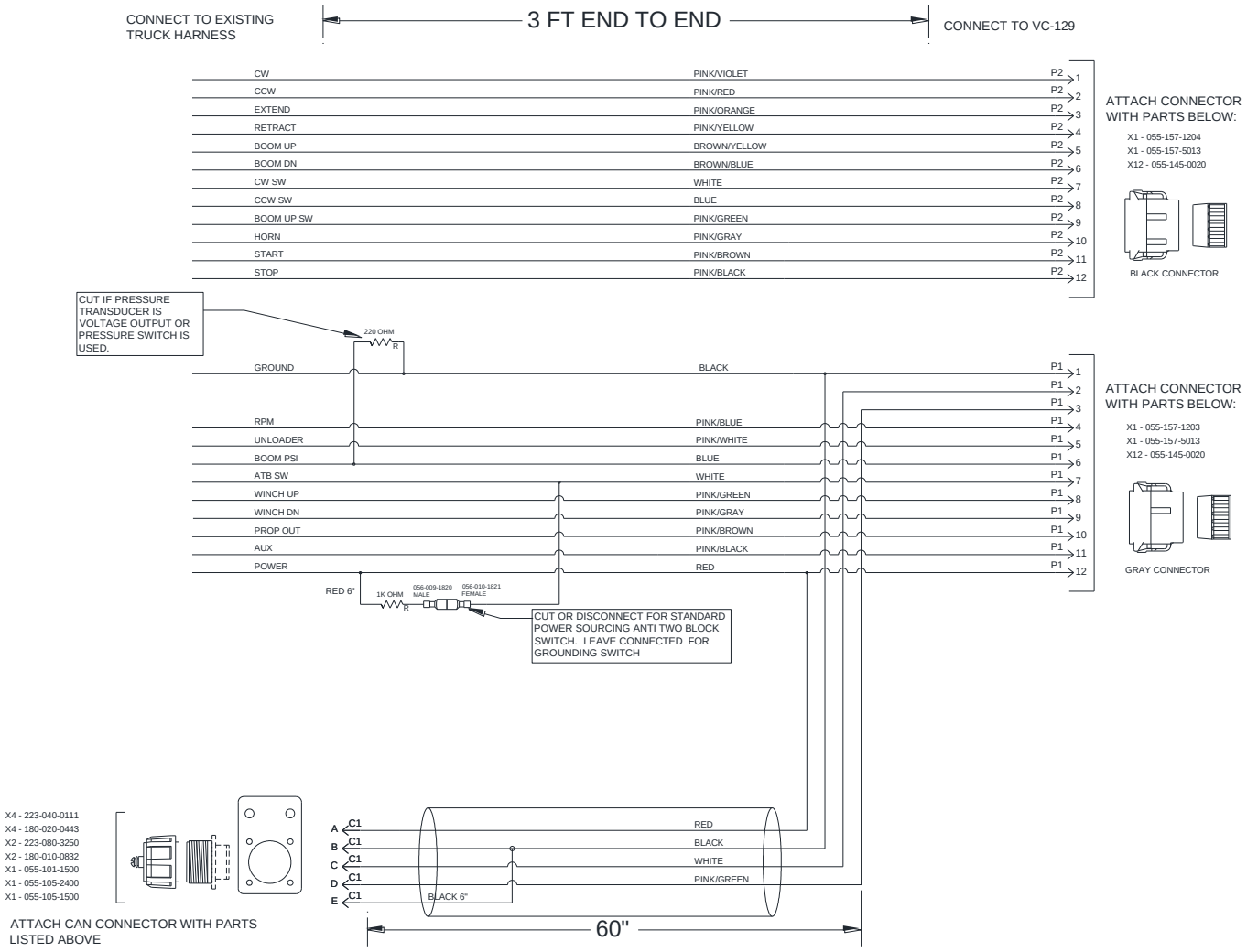
| KAR-TECH RECEIVER | AUTOCRANE NEXSTAR CONNECTION | | DESCRIPTION |
|---|---|---|---|
| P1 - DEUTSCH DTM13-12PA, GRAY | P1 - CINCH 18 PIN CONNECTOR AND P2 - CINCH 30 PIN CONNECTOR | | |
| PIN | PIN | COLOR | |
| 1 | P1 - 2D | BLACK | GROUND |
| | P2 - 3A | N/A | GROUND FOR BOOM UP AND DOWN CR OUTPUTS |
| | P2 - 3B | N/A | GROUND FOR ROTATION CR OUTPUTS |
| | P2 - 3C | N/A | GROUND FOR EXTEND CR OUTPUTS |
| | P2 - 3D | N/A | GROUND FOR WINCH CR OUTPUTS |
| 2 | P1 - 1A | YELLOW | CANH |
| 3 | P1 - 3B | GREEN | CANL |
| 4 | P2 - 2F | YELLOW | ENGINE THROTTLE OUTPUT (LATCHED) |
| 5 | P2 - 1G | BLUE | UNLOADER OUTPUT |
| 6 | P1 - 1E | BLUE | PRESSURE SENSOR/SWITCH INPUT |
| 7 | P2 - 3F | BLUE | ANTI TWO BLOCK SWITCH INPUT |
| 8 | P2 - 1D | BLUE | WINCH UP CR OUTPUT |
| 9 | P2 - 2D | BLUE | WINCH DOWN CR OUTPUT |
| 10 | NOT USED | | PROPORTIONAL OUTPUT |
| 11 | P2 - 1F | GREEN | COMPRESSOR (AUX) OUTPUT (LATCHED) |
| 12 | P2 - 1K, P2 - 2K, P2 - 3K, P1 - 3D | RED | POWER (9-30V) |
| P2 - DEUTSCH DTM13-12PB, BLACK | PIN | COLOR | DESCRIPTION |
| PIN | | | DESCRIPTION |
| 1 | P2 - 2B | BLUE | ROTATION CW CR OUTPUT |
| 2 | P2 - 1B | BLUE | ROTATION CCW CR OUTPUT |
| 3 | P2 - 1C | BLUE | EXTEND OUT CR OUTPUT |
| 4 | P2 - 2C | BLUE | EXTEND IN CR OUTPUT |
| 5 | P2 - 1A | BLUE | BOOM UP CR OUTPUT |
| 6 | P2 - 2A | BLUE | BOOM DOWN CR OUTPUT |
| 7 | P2 - 3G | BLUE | SWING CW SWITCH INPUT |
| 8 | P2 - 3H | BLUE | SWING CCW SWITCH INPUT |
| 9 | NOT USED | | BOOM UP LIMIT SWITCH INPUT |
| 10 | NOT USED | | HORN OUTPUT |
| 11 | P2 - 2G | ORANGE | ENGINE START OUTPUT (MOMENTARY) |
| 12 | P2 - 2H | BLUE | ENGINE STOP OUTPUT (MOMENTARY) |

## GUIDER REMOTE

| KAR-TECH RECEIVER | MAINTAINER | | DESCRIPTION |
|---|---|---|---|
| P1 - DEUTSCH DTM13-12PA, GRAY | J1 - CONN 1 AND J2 - CONN 2 CONNECTOR | | |
| PIN | PIN | COLOR | |
| 1 | J1 - 1D2 | BLACK | GROUND |
| | J2 - 2A3 | N/A | GROUND FOR BOOM UP AND DOWN CR OUTPUTS |
| | J2 - 2B3 | N/A | GROUND FOR ROTATE CR OUTPUTS |
| | J2 - 2C3 | N/A | GROUND FOR WINCH CR OUTPUTS |
| | J2 - 2D3 | N/A | GROUND FOR EXTEND CR OUTPUTS |
| 2 | J1 - 1A1 | YELLOW | CANH |
| 3 | J1 - 1B3 | GREEN | CANL |
| 4 | J2 - 2G2 | BROWN | ENGINE THROTTLE OUTPUT (LATCHED) |
| 5 | J2 - 2E2 | N/A | UNLOADER OUTPUT |
| 6 | J1 - 1E1 | BLUE | PRESSURE SENSOR/SWITCH INPUT |
| 7 | J1 - 1E2 | BLUE | ANTI TWO BLOCK SWITCH INPUT |
| 8 | J2 - 2C1 | N/A | WINCH UP CR OUTPUT |
| 9 | J2 - 2C2 | N/A | WINCH DOWN CR OUTPUT |
| 10 | NOT USED | | PROPORTIONAL OUTPUT |
| 11 | J2 - 2G1 | BLUE | COMPRESSOR (AUX) OUTPUT (LATCHED) |
| 12 | J2 - 2K1, J2 - 2K2, J2 - 2K3 | RED | POWER (9-30V) |
| P2 - DEUTSCH DTM13-12PB, BLACK | PIN | COLOR | DESCRIPTION |
| PIN | | | DESCRIPTION |
| 1 | J2 - 2B1 | N/A | ROTATION CW CR OUTPUT |
| 2 | J2 - 2B2 | N/A | ROTATION CCW CR OUTPUT |
| 3 | J2 - 2D1 | N/A | EXTEND OUT CR OUTPUT |
| 4 | J2 - 2D2 | N/A | EXTEND IN CR OUTPUT |
| 5 | J2 - 2A1 | N/A | BOOM UP CR OUTPUT |
| 6 | J2 - 2A2 | N/A | BOOM DOWN CR OUTPUT |
| 7 | NOT USED | N/A | SWING CW SWITCH INPUT |
| 8 | NOT USED | N/A | SWING CCW SWITCH INPUT |
| 9 | NOT USED | | BOOM UP LIMIT SWITCH INPUT |
| 10 | J2 - 2E1 | N/A | HORN OUTPUT |
| 11 | J2 - 2F2 | YELLOW | ENGINE START OUTPUT (MOMENTARY) |
| 12 | J2 - 2F1 | GREEN | ENGINE STOP OUTPUT (MOMENTARY) |

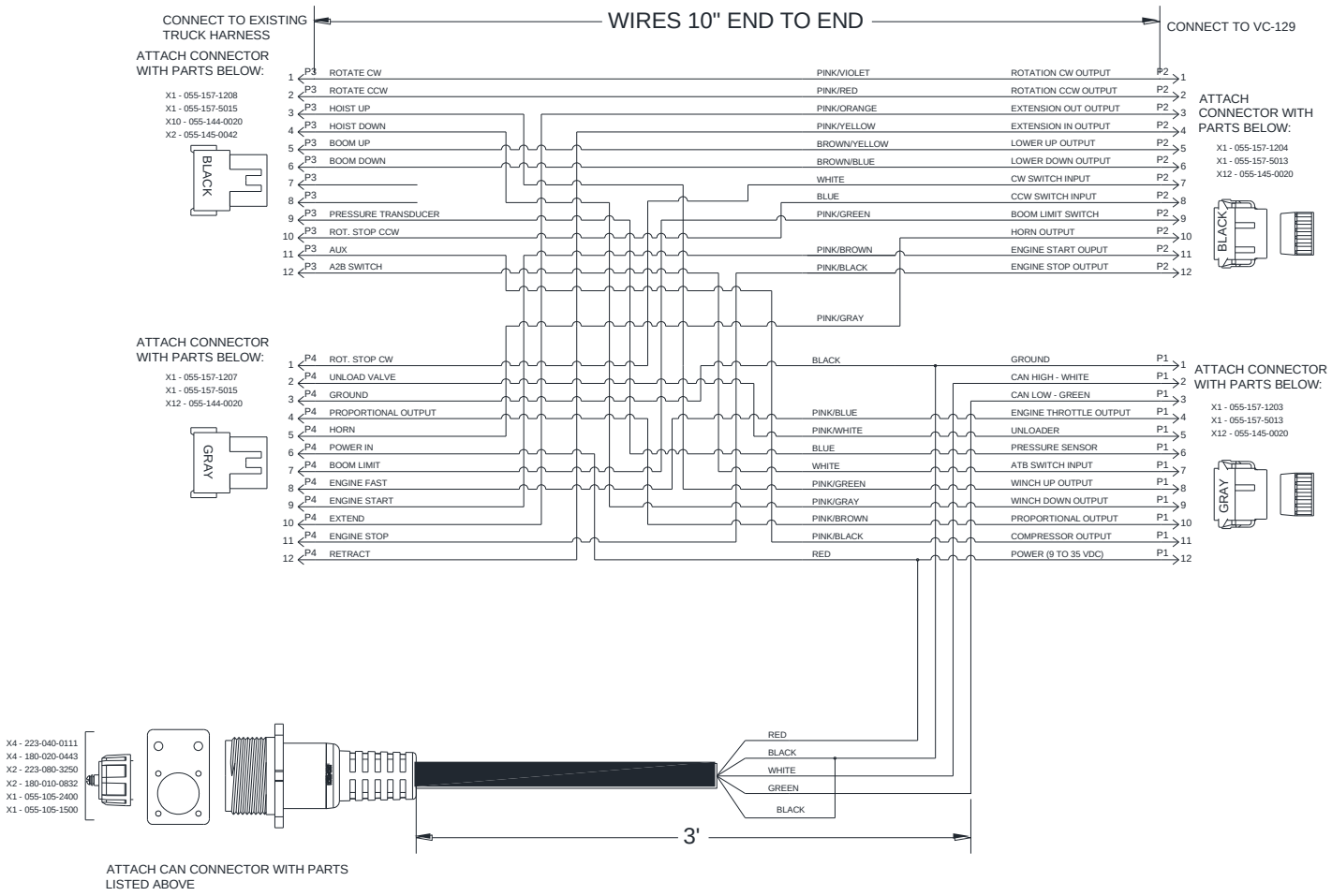
## GUIDER REMOTE

# GENERIC HARNESS 3B288CB




**All wires are labeled. Color code may change with revision.**

# AUTOCRANE OMNEX CONVERSION HARNESS 3B2884B

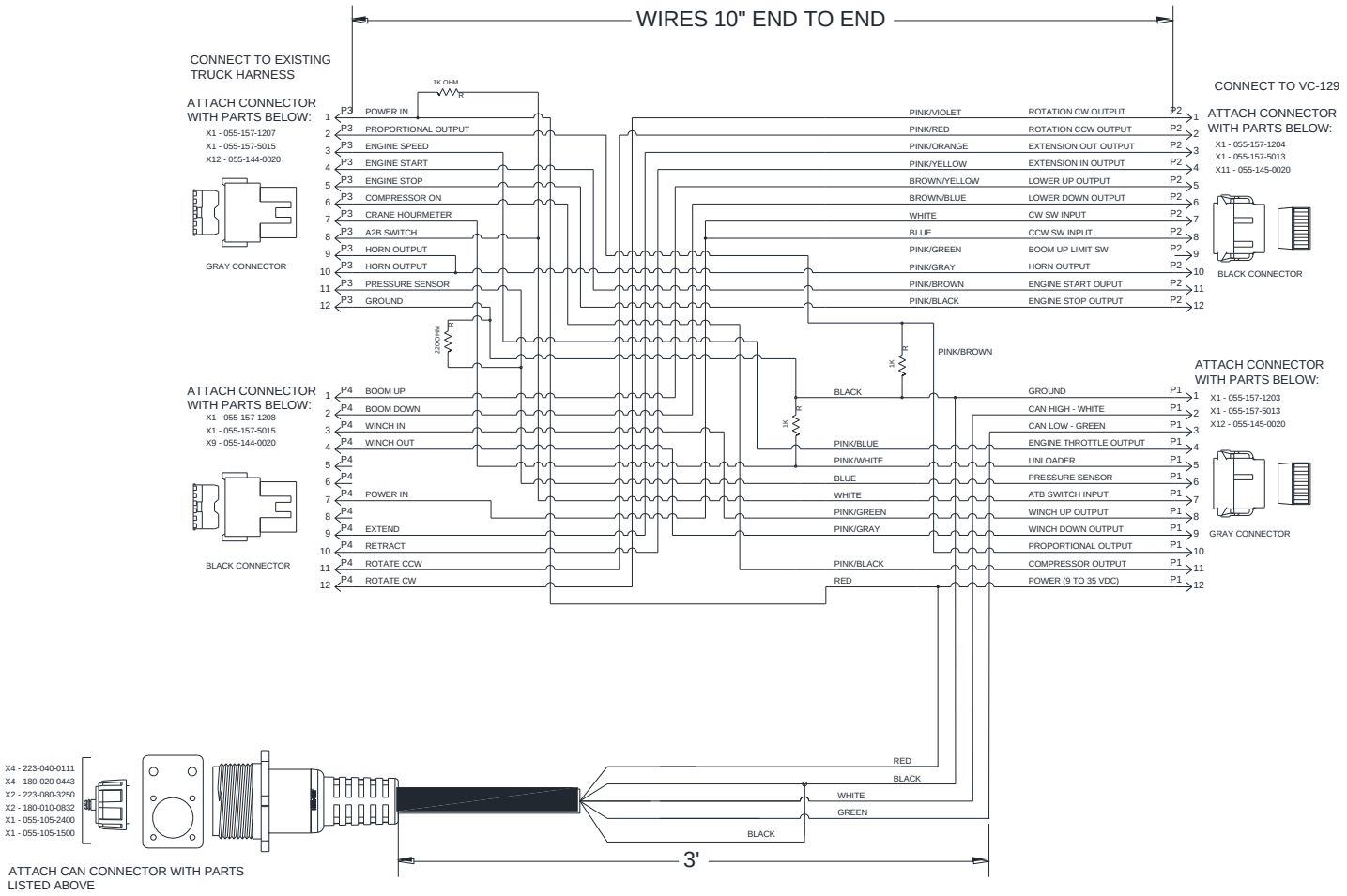



**Note:**

- **NOTE:**
  - **For cranes with mechanical stop (without swing rotation switch), connect P3-10 (ROT. STOP CCW) and P4-1 (ROT. STOP CW) to POWER IN. If using the HORN output, make sure to connect the output to a relay coil not directly to the load.**
  - **All wires are labeled. Color code may change with revision.**

# IMT 7,500-10,000 OMNEX CONVERSION HARNESS 3B2889B

## For the crane models: 7500, 8600, 9500, 10000, 12000 and 14000. Mates with 77111481, 77441537-1 crane harnesses



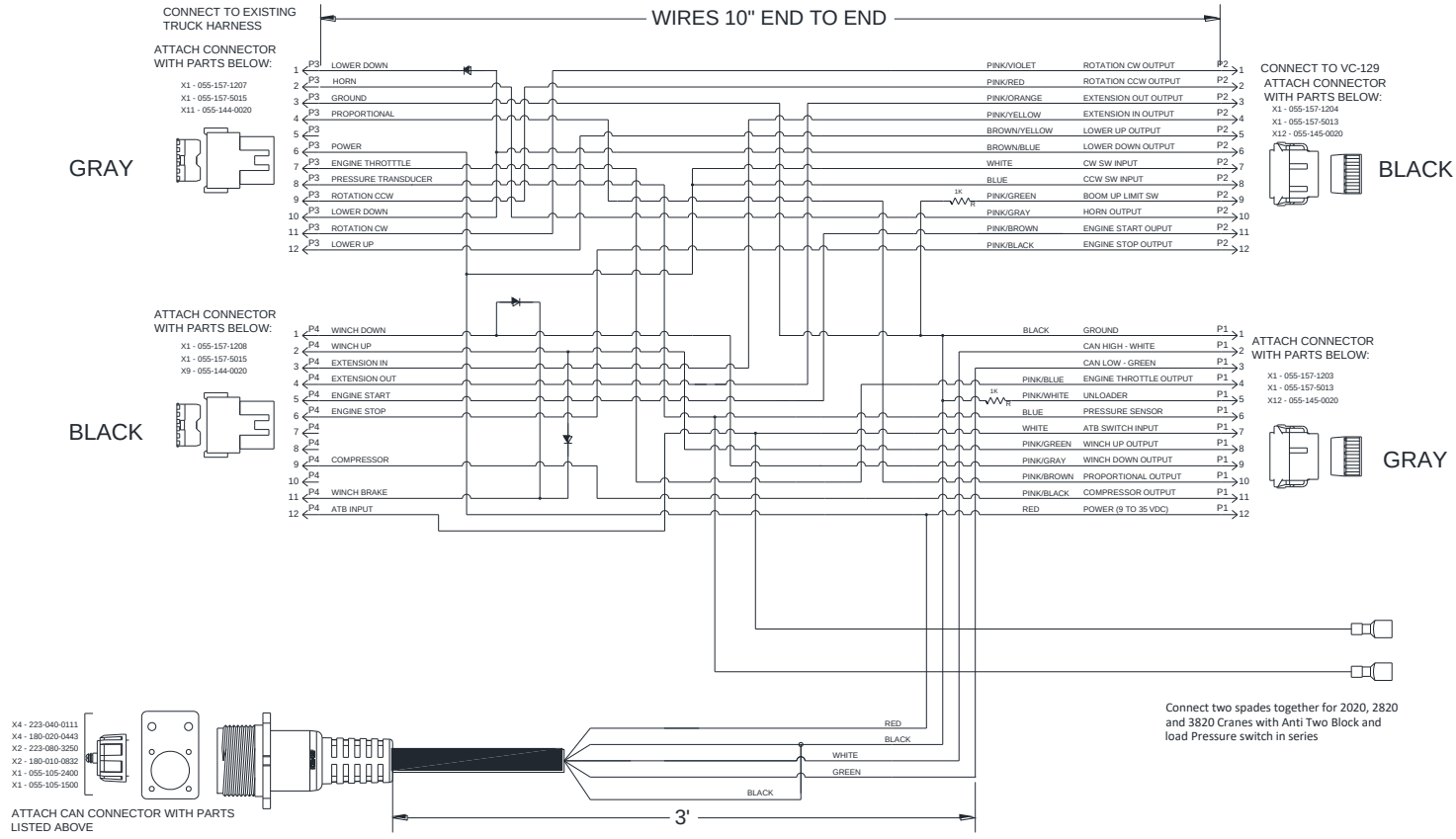

**Note:**

1. Anti-Two Block switch on these series of IMT cranes are pulled to ground when switch is closed,
2. Pressure sensor: 4-20 mA 5000 PSI
3. All wires are labeled. Color code may change with revisions.

# IMT OMNEX2020 - 6625 CONVERSION HARNESS 3B288DB

## For the crane models: 2020, 2820,3820, 5525, 6025, and 6625. Mates with 77441101 or 77441131 crane harnesses

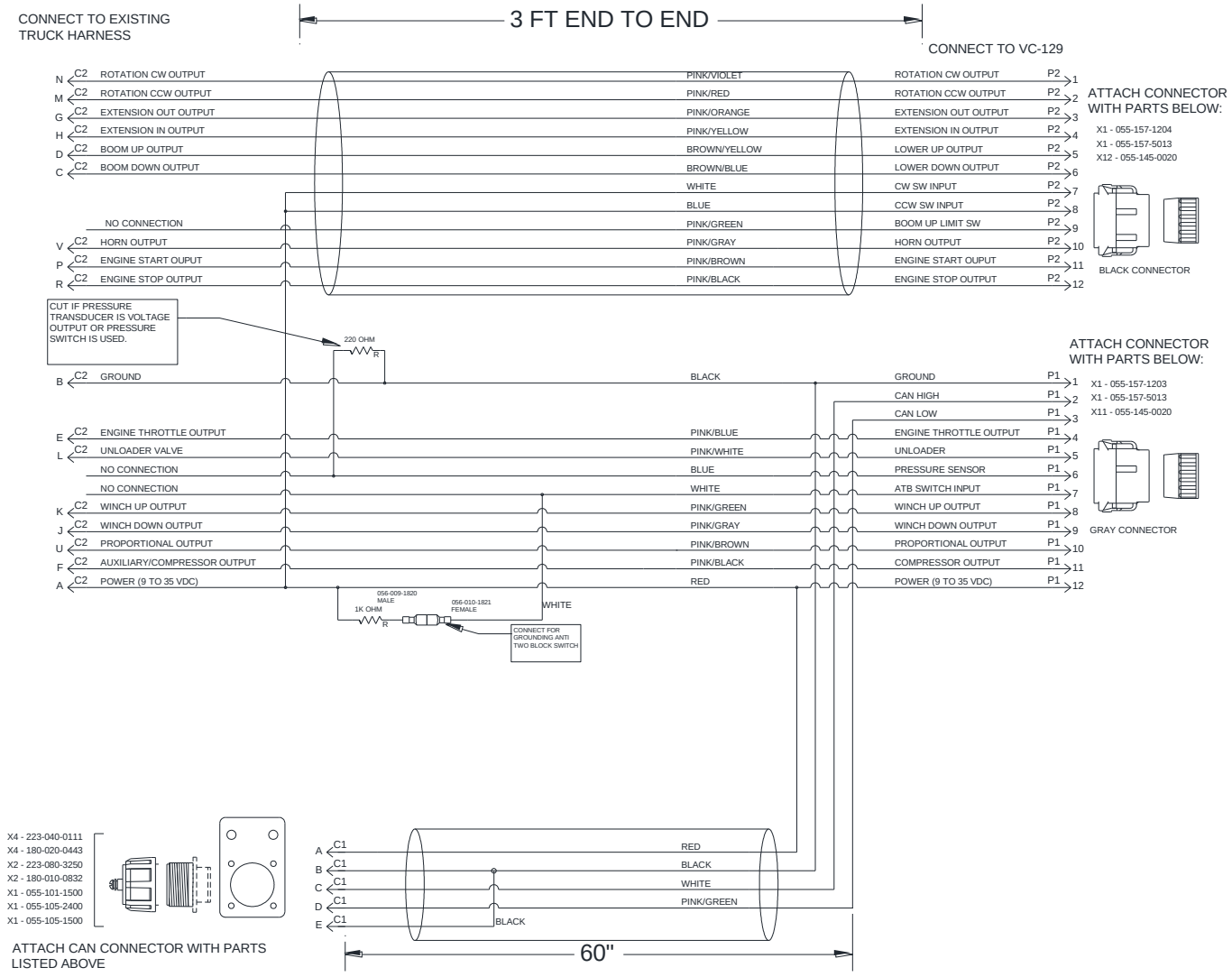
Mates with IMT Harness 77441101, 77441131 for
crane models: 2020, 2820, 3820, 5525, 6025, 6625




**All wires are labeled. Color code may change with revision.**

## GUIDER REMOTE

# MAINTAINER CONVERSION HARNESS 3B288FB




**All wires are labeled. Color code may change with revision.**

## 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.

Guider pendants that include a trigger control should be cleaned periodically by blowing air around the trigger area to remove any debris that would prevent proper operation. Apply a light machine oil to the point of rotation when clean.

## 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 GUIDER 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<br><br>2. Verify that receiver control module power source is present at its input connector<br><br>3. Check for proper system ground<br><br>4. Check the receiver control module LED status display for functionality or errors<br><br>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<br><br>2. Check the receiver control module LED status display for possible fault or error indication<br><br>3. Check the hydraulic system<br><br>4. Check the electrical system |
| Functions operate intermittently | 1. Check for loose connections at the valve coil<br><br>2. Check the receiver control module LED status display for functionality or errors<br><br>3. Check the receiver antenna for damage and possible obstructions<br><br>4. Check the hydraulic system |

# ERROR CODES

| ERROR | PROBABLE CAUSE |
|---|---|
| ESTP | E-STOP |
| OVR | OVERLOAD ERROR |
| ATB | ANTI-2 BLOCK ERROR |
| LBV | LOW TRUCK BATTERY VOLTAGE |
| EC04 | BOOM LIMIT ERROR |
| EC05 | TRIGGER PULLED BEFORE SWITCH |
| EC06 | TRIGGER ERROR |
| EC07 | ROTATE CW OUTPUT ERROR |
| EC08 | ROTATE CCW OUTPUT ERROR |
| EC09 | EXTEND OUT OUTPUT ERROR |
| EC10 | EXTEND IN OUTPUT ERROR |
| EC11 | BOOM UP OUTPUT ERROR |
| EC12 | BOOM DOWN OUTPUT ERROR |
| EC13 | WINCH UP OUTPUT ERROR |
| EC14 | WINCH DOWN OUTPUT ERROR |
| EC15 | PROPORTIONAL (PUMP) OUTPUT ERROR |
| EC16 | COMPRESSOR (AUX) OUTPUT ERROR |
| EC17 | UNLOADER OUTPUT ERROR |
| EC18 | PRESSURE TRANSDUCER ERROR |

**Error code explanations:**

**ESTP** E-STOP mode

**OVERLOAD** System pressure exceeded limits

**ATB** Anti-2 Block condition present

**LBV** Battery level is below 11V (12V system)

**EC04** Boom limit reached

**EC05** Trigger has been operated before a function is pressed

**EC06** Trigger level is out of range or not present

**EC07-17** Short or open load/coil on output

**EC18** Input level out of range or not present

# PARTS LIST

| *PART NUMBER* | *DESCRIPTION* |
|---|---|
| **3B2882A** | RADIO TRANSMITTER |
| **3B2883B** | RADIO RECEIVER |
| **020-506-0250** | CAN ADAPTOR CABLE 25’ |
| **B20032B** | FAST CHARGER SUPPLY, 12 VDC CAR |
| **B20072A** | FAST CHARGER SUPPLY, 110VAC WALL |
| **3B2884B** | EXTERNAL WIRING HARNESS, AUTOCRANE OMNEX CONVERSION HARNESS |
| **3B2889B** | EXTERNAL WIRING HARNESS, IMT 7500-10000 OMNEX CONVERSION HARNESS |
| **3B288CB** | EXTERNAL WIRING HARNESS, GENERIC |
| **3B288DB** | EXTERNAL WIRING HARNESS, IMT 2020, 2820,3820, 5525, 6025, and 6625 OMNEX CONVERSION HARNESS |

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

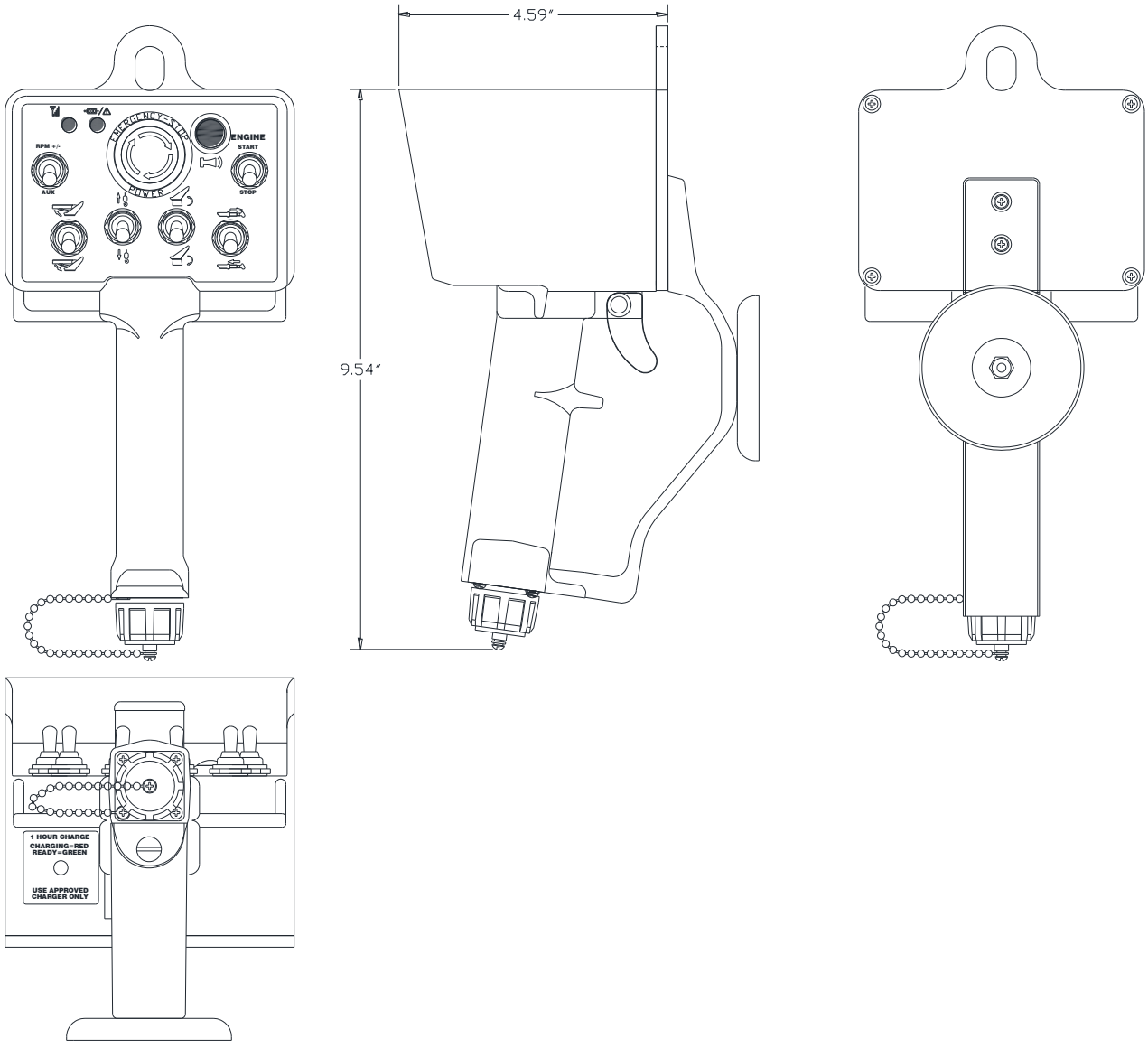
Note: For operation with negative ground systems only.

## WARNING:

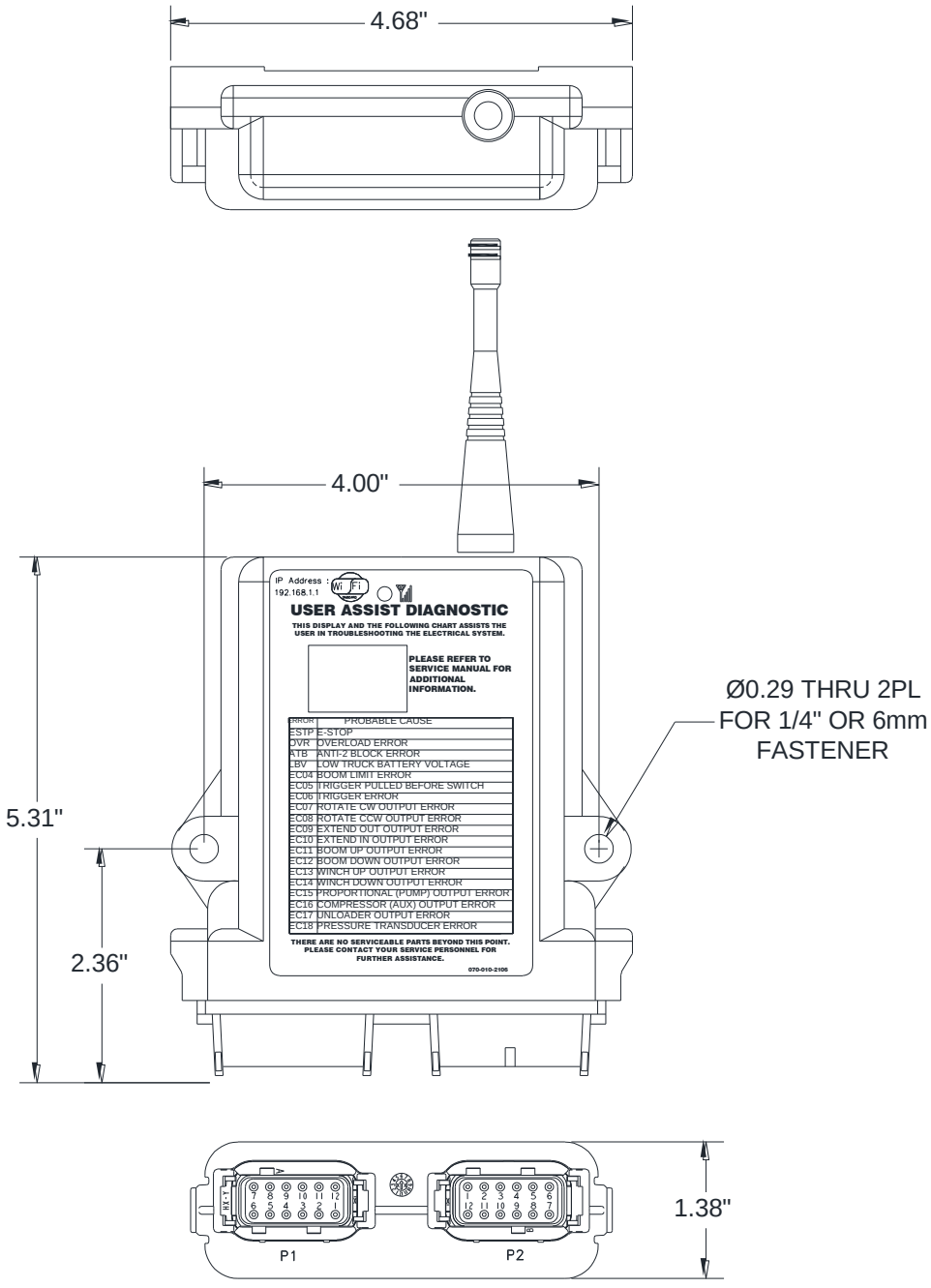
The GUIDER REMOTE must be operated in compliance with all applicable safety regulations, rules, and practices. Failure to follow required safety practices may result in death or serious injury.

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

***FCC ID:*** P4U-MOD164
Industry Canada Certification Number: 4534A-MOD164
EQUIPMENT CLASS: PART 15 SPREAD SPECTRUM TRANSMITTER

## *TRANSMITTER*

Power supply ..... 3.7V Li-Ion Rechargeable 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) ..... 100 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.