

SAFETY SECTION

USAutomatic gate operators are certified to UL325 Vehicular Class I, II, III and IV swing gate standards.

UL325 identifies four different classes of gate operators these classes are listed below:

- Class I: Residential vehicular gate operator- vehicular gate operator (or system) intended for use in a home of one to four single family dwellings or a garage or parking area associated therewith.
- Class II: Commercial/General access vehicular gate operator- vehicular gate operator (or system) intended for use in a commercial location or building such as multi-family housing unit (five or more single family units), hotel garages, retail, or other buildings servicing the general public.
- Class III: Industrial/Limited access vehicular gate operator- vehicular gate operator (or system) intended for use in an industrial location or building such as a factory or loading dock area or other locations not intended to serve the general public.
- Class IV: Restricted Access vehicular gate operator- vehicular gate operator (or system) intended for use in a guarded industrial location or building such as an airport security area or other restricted access locations not servicing the general public, in which unauthorized access is prevented via supervision by security personnel.

INSTALLATION

- Install the gate operator when:
- Operator is appropriate for the construction of the gate and usage class is correct for the installation.
- All exposed pinch points are eliminated or guarded.
- Only install on vehicle gates, pedestrians must be supplied with a separate access opening.
- The gate is installed in a location where enough space is supplied between adjacent structures and the gate that when opening or closing the chance of entrapment is reduced.
- Swing gates shall not open into public access areas.
- The gate is properly installed and swings freely in both directions. Do not over adjust the sensitivity adjustment to compensate for an improper gate installation.
- Locate all controls at least six feet away from the gate to eliminate the chance of the person operating the gate from coming in contact with the moving gate. Do not install external buttons, which can be used to operate the gate within the reach of children.
- All placards must be installed one on each side of the gate visible in the gate area.
- Contact sensors used for secondary entrapment safety devices and their wiring must be installed in a manner which protects them from mechanical damage.
- Non-Contact sensors used for secondary entrapment safety devices must be located so that the signal from the transmitter to the receiver is not interfered with by adjacent structures. All exposed wiring must also be protected from mechanical damage.

SECONDARY ENTRAPMENT DEVICES

USAutomatic designs all control boards with secondary entrapment inputs and secondary safety devices must be installed with all installations. USAutomatic recommends the use of UL325 listed safety devices.

NOTE: USAutomatic recommends that these devices be connected after proper gate installation and operation has been verified. Then connect one device and verify proper operation before installing the next device. Ensure that power is disconnected from the control board prior to wiring any accessory.

WARNING: TO REDUCE THE RISK OF INJURY OR DEATH

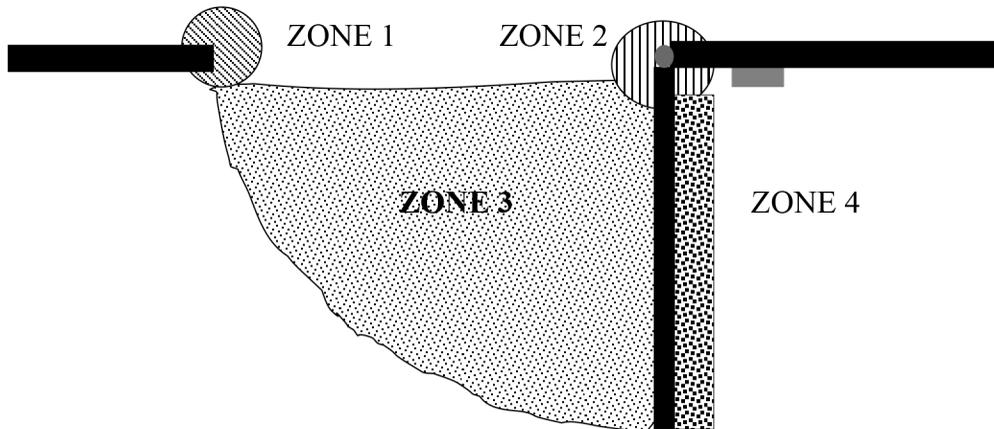
1. READ AND FOLLOW ALL INSTRUCTIONS
2. Never let children operate or play with gate controls. Keep remote control away from children.
3. Always keep people and objects away from the gate.
4. NO ONE SHOULD CROSS THE PATH OF A MOVING GATE.
5. Test gate operator monthly. The gate must stop and reverse directions upon contacting a rigid object or when the secondary entrapment device is activated.
6. After all adjustments have been made to the sensitivity (current sense) circuit, secondary entrapment devices and all other external devices installed the safety devices must be checked again. Failure to adjust and retest the gate operator can increase the risk of injury or death.
7. Verify that the emergency release (manual release) pin can be easily removed.
8. KEEP GATES PROPERLY MAINTAINED. Tighten all bolts and grease hinges and pivot points.
9. THE ENTRANCE IS TO BE USED BY VEHICLES ONLY. Pedestrians must use a separate entrance.
10. SAVE THESE INSTRUCTIONS

All safety features required by UL 325 are incorporated in the capabilities of all USAutomatic Control boards and should be utilized, including but not limited to, safety edges, photo electric eyes, reverse sensing.

Cautions - Very Important

- Do not attempt to enter the gate area while the gate is moving. Wait until the gate comes to a complete stop.
- Operate the gate only when it is fully visible, free of persons or obstructions, and properly adjusted.
- Do not allow children to play in the area of the gate. Do not allow anyone to ride on the gate.
- Do not allow children to play with the remote control or any other activation device. Do not attempt to "beat the gate" while the gate is opening or closing. This is extremely dangerous.
- Test the current sense feature and all safety devices regularly to insure correct operation.

Study this entire Safety Section paying particularly close attention to the entrapment zones shown below and be aware of these areas not only during use but also during any adjustments to the unit.



ENTRAPMENT ZONES

- Zone 1 The leading edge of the gate & catch post.
- Zone 2 Area between the gate and hinge post.
- Zone 3 The arc of the gate or gate path.
- Zone 4 The space between the gate when open and any obstruction such as fence, wall, landscaping, etc.
- Zone 5 The point where two bi-parting gates come together when closing. (Not shown above)

Every installation is unique and it is the installer's responsibility to recognize and remedy all safety concerns. Please consult a qualified dealer or the factory for a complete explanation of the remedies and additional tips pertaining to your installation.

Periodic Service

All gate operators require periodic checking and adjustments of the control mechanism for force (load), speed and sensitivity. All accessories and secondary safety devices must be checked. Secondary safety devices need to be checked at least once a month for proper operation.

Periodic checking is also advised for the following:

1. Battery terminals for corrosion, clean with baking soda solution.
2. Hinges and pivot points need to be greased.
3. Mounting bolts if used for correct tightness.
4. Inspect weld points for cracks or other defects.
5. Inspect wiring for cuts, nicks or other defects.
6. Inspect hinge post to ensure it is not moving or twisting.
7. Charge device verify proper operation, refer to charge controller operation check.
8. Verify monthly that the inside of the control cabinet remains clean and free of insects. Do not spray control board with bug spray or oil based products.

Troubleshooting Guide Outline

NOTE: Gate 2 is defined as the gate on the other side of the drive from the control box.

1. Gate 1 or Gate 2 will not operate. Single gate installation.
2. Gate 1 or Gate 2 will not operate. Dual gate installation.
3. Gate 1 and Gate 2 will not operate. Dual gate installation.
4. Single or Dual gate installation opens or closes very slow.
5. Single or Dual gate installation will not automatically close.
6. Single or Dual gate installation automatically opens instead of automatically closing.
7. Gate begins to open or close, but stops and reverses after a couple of seconds.
8. Transmitter (Remote control) will not operate the gate.
9. Photo eye or other safety accessory will not reverse the gate when closing.
10. Pressing the “RESET” button only, causes the gate to operate (open, close or stop) like a transmitter.
11. Transmitter operating range seems short.

Terms and Definitions

Control board -

See page 15, figure 23.

Receiver -

See page 18, figure 32

Transmitter -

Hand held unit with 2 buttons, used to operate the gate, sends signal to receiver when button is pressed see page 18 figure 32.

Linear Actuator -

Connected to gate and hinge post, contains the motor, gearbox.

Connector -

Control board has Six, two white 8-pin connectors (X1 and X2) are used to connect linear actuator to control board and one 13-pin connector (J2) (located bottom center of control board) for accessory wiring, two 2 pin header (J3, J4) for entrapment siren & external “Reset” and one four pin header (J1) for receiver.

Push Button -

Three are located on the control board. “Open/Close command” used to operate the gate, “Reset” used to reset the control board after current sensing twice before a limit is reached see page 14 figure 21 and the “LED Indicator” must be pressed and held to activate troubleshooting lights.

Control Switches -

Used to turn “ON” or “OFF” specific control board functions see page 15 figure 24.

Sensitivity adjustments-

Located on the control board see page 14 figure 20. These adjustments are the primary safety feature. If the gate comes in contact with an object it will stop and reverse. These adjustments control the amount of pressure applied to an object before reversing the gate.

Charge Controller -

Located inside the control box see page 11 figure 15. This is the battery charger. The input power for this device can be either from a transformer (supplied) or from a solar panel.

Transformer -

This device connects to a 110 VAC electrical outlet and converts it to a low AC voltage that can be connected to the charge controller to provide continuous charging of the battery.

Open and Close Limit -

Refers to fully open or closed gate position. Adjustments are on the control board see page 14, figure 22.

Entrapment Siren -

If the control board sensitivity circuit senses an obstruction it will reverse the gate and if a second obstruction is detected before the gate reaches a fully open or close limit the control board will shut down the opener and sound the entrapment alarm for five minutes or until the “Reset” button is pressed.

1. My single gate will not operate: (connected to Gate I or Gate II)

STEP 1 Open control box cover and locate the “Open/Close Command” push button and press it to operate the gate.

STEP 2 Press the “Reset” push button located above the open close command, then push the “open/close command” push button to operate the gate.

STEP 3 When pressing the “open/close command” push button, listen for a clicking sound, if click is heard then verify:

A. Verify the correct control switch is “ON” corresponding to the Gate 1 or Gate 2 connector the linear actuator is connected to.

B. If step A above check good, then press the “Open/Close Command” push button on the control board. If a clicking sound is heard coming from the control board then the problem is most likely low power.

C. Low power can be caused by two things – Low battery voltage or a bad connection at the battery. Battery will need to be load tested to verify it is good. Replace battery or correct connection problem at battery.

STEP 4 Remove the receiver connector that is plugged into the J1 connector. Press the “Open/Close Command” button and verify gate operates.

STEP 5 Disconnect linear actuator connector from the control board and connect it to the other (Gate 1 or Gate 2) connector on the control board. Then set the corresponding control switch to the “ON” position. Press the “Open/Close Command” button and verify gate operates. If gate operates on the other connector that is acceptable.

STEP 6 If gate still does not operate please call USAutomatic for more information.

2. Gate 1 or Gate 2 will not operate. Dual gate Installation

STEP 1 These instructions are for the failure of one gate to operate in a dual gate installation.

STEP 2 Identify the gate that will not work and check the control switch for that gate and verify that it is turned “ON”.

STEP 3 Swap the Gate 1 and Gate 2 linear actuator connectors on the control board. If problem moves to other gate then the control board is bad.

STEP 4 If problem remains in the same gate then the problem is either a wire problem or linear actuator problem. Since it is a possible wire problem we need to check the following:

A. Wire harness for cuts, nicks or bad splices if splice exist.

B. If gate with problem is the gate located on the other side of drive from control box (Gate 2) the cable under the drive needs to be verified good. This is done by using a voltmeter and going to the junction box located below the Gate 2 linear actuator. Locate the red wire with white stripe and the black wire with white stripe and then operate the gate and check voltage on these two wires (expect 12 VDC).

C. If voltage is present when gate should be operating then the problem is most likely the linear actuator.

D. If voltage is not present when gate should be operating then move back to the control box side and check voltage on same two wires located in the wire compartment.

E. If voltage is present on the control box side of drive then the cable in the ground must be damaged.

F. If voltage is not present in the control box then we have missed something in steps 2 or 3, recheck.

3. Gate 1 and Gate 2 will not operate. Dual gate installation

STEP 1 These instructions are for the failure of both gates to operate in a dual gate installation.

STEP 2 Verify that control switches 3 and 4 are turned “ON”.

STEP 3 Verify the red and black wires on the Quick Connect harness are connected to the battery correctly. Red connects to positive and black connects to negative post on the battery.

STEP 4 Verify that the battery is charged, press the “Open/Close Command” push button, if a clicking sound is heard from the control board then most likely the battery is dead. Have the battery load tested to verify it is bad.

STEP 5 If battery checks good (passed the load test) then the control board is most likely the problem. To think that 2 motors have gone bad would not make sense but is also a possibility.

4. Gate 1 or Gate 2 (Gate 1 and Gate 2 if dual gate) operating speed has slowed down

NOTE: When the gate is running slow the reason is low power, two things need to be considered. Battery condition (replace or charge) and the ¼” ring terminals located on the Quick Connect harness which are connected to the battery. The ring terminals can become corroded and need replacing over time.

STEP 1 Determine which situation your operator falls into below:

13. Charge Controller Operation Check

Once the charge device is plugged into the charge controller identify your installation below. Verify proper operation by observing lights on charge controller.

NOTE: Most batteries will not be completely charged when first connected and the charge light should come on when charge controller is first connected. The fully charged light will come on once battery is fully charged.

For solar installations the charge controller is designed to only charge the battery when there is enough sun to do so. If there is no sun then the lights on the charge controller should be “OFF”. This feature reduces the drain on the battery in solar installations.

For AC installations the external power light and charge indication lights are always active.

NOTE: If the ‘Detect’ light is on and stays on the battery is not connected to the charge. Verify harness is plugged into the charger.



1. L.E.D. DISPLAY

First 3 seconds upon Charger/Controller powered from Battery or Supplied Power Supply, the Battery Status Light Emitting Diode (L.E.D.) Flashes.

1.1. L.E.D. Description

- EXTERNAL POWER ADAPTOR Illuminates continuously while power from A.C. Power Supply Adaptor is sensed.
- SOLAR PANEL Illuminates continuously while power from Solar Panel is sensed.
- DETECTION If illuminated for longer than 2 seconds check connection on battery.
- CHARGING Continuous or flashing indicates charging – refer to Charge Algorithm Section, for further details.
- CHARGED On continuously when AC present and battery fully charged. Flashes when battery capacity is low.
- SYSTEM ERROR If flashing, the charger has entered Failure Mode. Disconnecting power will reset charger, but if source of failure is not corrected, Failure Mode will occur again.- refer to the following Table to **Decode the Error Type**:

	L.E.D.s (First 4 L.E.D.s from Left)			
	1 st	2 nd	3 rd	4 th
Wrong Battery Voltage	Off	Off	Off	Flash
Reverse Battery Connection	Off	Off	Flash	Off
Thermal Runaway Condition	Off	Flash	Off	Off
Charge Time Monitor - 1	Off	Flash	Flash	Off
Charge Time Monitor - 2	Off	Flash	Flash	Flash
Excessive Battery Drain	Flash	Off	Off	Off
Failed Pre-Qualification Test -1	Flash	Off	Off	Flash
Failed Pre-Qualification Test -2	Flash	Off	Flash	Off

2. POSSIBLE REMEDIES TO FIX ‘FAILURES’

WRONG BATTERY VOLTAGE

Example: Charger connected to a 24v battery. Reconnect to a battery rated at 12Vdc.

REVERSE BATTERY CONNECTION

Check and correct any reverse battery.

THERMAL RUNAWAY CONDITION

Old Battery - cells, inside battery, age differently. During charging, and over the course of many years of operation, OR, many battery discharges to levels beyond 100% discharged, this error may occur and the battery(s) may have to be replaced.

CHARGE TIME MONITOR – 1 and 2

Battery pack took too long to complete its charge. Possible causes include a load (gate cycling repeatedly for a long period of time) during charging or the battery pack is too large (Many batteries connected in a parallel circuit). Apply the following formula to determine if the Timer may run out due to a large battery:

$$\text{Charge Time} = \frac{\text{Battery Capacity (AH)}}{2} \times 1.25$$

Calculated Charge Time must be less than approximately 108hrs.

Output Amps and Battery Capacity (AH - Ampere-hour) are listed on your battery or contact your battery purchasing source.

Example: Charge time to for a fully discharged 36 AH battery: 36AH / 2 Amps x 1.25 = 22.5 Hrs - ok to use.

EXCESSIVE BATTERY DRAIN

Excessively high number of cycles discharging the battery beyond point of no return. Stop gate, and allow battery time to recharge.

PRE-QUALIFICATION TEST - 1 and 2

During Battery testing, if a battery was previously allowed to discharge to a very low voltage, such as 1 or 2Vdc, the charger puts a low current through the battery to try to get the battery to come back to life. The battery may be taking too long to come back.

OTHER POSSIBLE PROBLEMS

No Power on Charger – Check the transformer Supply Adaptor Plug-in, or the Solar Panel for proper connection.

3. CHARGE ALGORITHM

3.1. PRE-QUALIFICATION TEST STAGE ONE

Charging L.E.D. flashes and applies three battery tests. Further charging is prohibited if a fault is discovered. If a faulty battery is suspect, test with a Load Tester (not supplied). Duration of this stage is dependent on the condition and state of charge of battery and is approximately 45 seconds to 8hrs.

3.2. CONSTANT CURRENT CHARGE STAGE TWO

Charging L.E.D. illuminates constantly indicating that the charger is charging the battery at its full rated output.

3.3. CONSTANT VOLTAGE CHARGE STAGE THREE

Charging L.E.D. illuminates constantly indicating that the charger is charging the battery at a regulated voltage level to top off battery.

3.4. FLOAT CHARGE STAGE FOUR

Charged L.E.D. illuminates constantly. Charger will maintain battery until AC Power is disconnected and can be left connected indefinitely.

3.5. RECYCLE CHARGE STAGE FIVE

While left connected to AC Power and Battery, a new charge cycle is automatically initiated, every 84th day.

4. MAINTENANCE

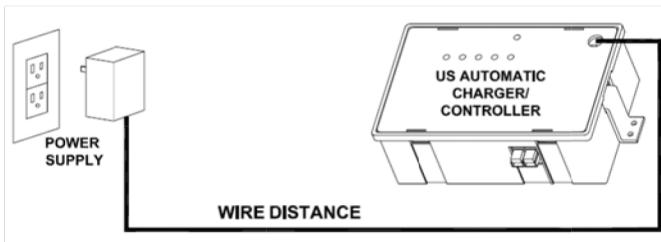
Your new charger requires only a little maintenance. Store in a clean, dry place and occasionally clean the case and cords (while the charger is unplugged) with a slightly damp cloth.

10. SOLAR PANEL INPUT

10.1 The Solar Panel produces a lower powered output than the AC Power Supply Adaptor, which causes the Solar Panel L.E.D. to illuminate when it is connected.

10.2 The Solar Panel needs to be mounted so that it receives full sunlight. Even a small amount of shade or blockage will cause the Solar Panel to Cease charging. Something as tiny as a fingertip shadow will affect the Solar Panel.

11. RECOMMENDED WIRE GAUGE OVER LONG DISTANCE BETWEEN CHARGE DEVICE AND CHARGE CONTROLLER



WIRE DISTANCE AND GAUGE TABLE

See page 16

The wire used must be rated for Direct Burial use, unless in conduit. Wire ran in conduit must be rated for outdoor use. The above Table lists the recommended wire gauge per application length. Using a smaller gauge may impede performance or cause system to malfunction.

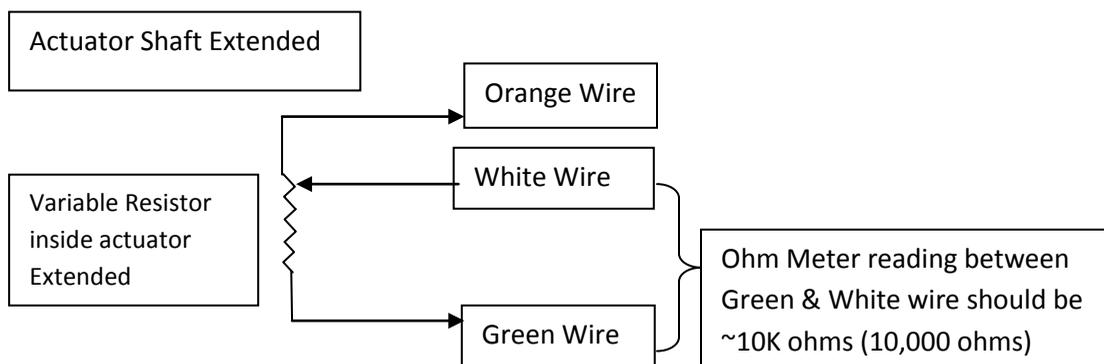
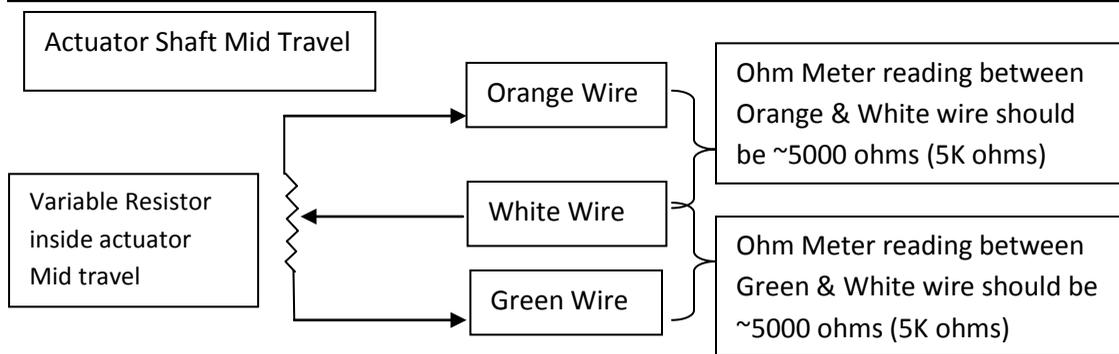
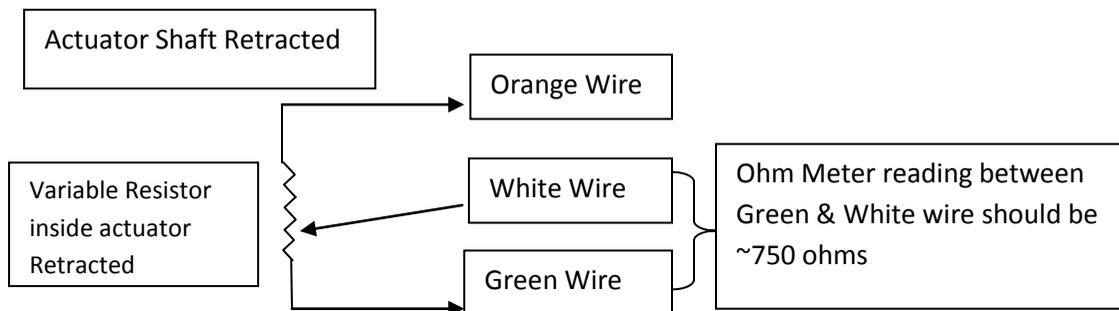
TROUBLESHOOTING PRO 80 ACTUATOR (not repairable)

The Pro 80 actuator contains a variable resistor which changes value as the extension screw extends and retracts. The proper operation can be checked using the tables below. Set the meter to the ohms or continuity setting (in this setting the meter should read 0 when the meter leads are shorted together).

The white wire sweeps across the variable potentiometer as the extension screw moves, causing the white wire to produce a different reading on the meter. The control board translates that information into stop points based on where the open or close adjustments are set to.

NOTE: The reading between the Orange and Green wire should be about 10,000 ohms (10K ohms) always. No matter the location of the extension screw.

The reading between the orange and white added to the reading between the green and white should equal the 10K reading from above.



Technical Tip



Subject: Programming In car transmitter to Receiver

November 25, 2013

In car transmitters (homelink, LearCar2U) are advertised to be able to open garage doors and automatic gates. This is correct only if the in car systems are compatible with the frequency of the receiver installed in the garage or gate operator. The in car systems are not all the same so there is no way for USA Automatic to know for certain if your vehicle is equipped with a compatible system.

The USA Automatic LCR receiver operates at 433.92 mhz other brands of receivers possibly operate at different frequencies and that frequency will need to be identified from the specific manufacturer of the product.

The programming instructions in the automobile system will typically have two methods of programming. The programming method that must be used with the USA Automatic LCR receiver is where the car is placed into the learn mode and then the USA Automatic remote button (used to operate the gate) is pressed so that the in car system can learn the frequency.

The in car instructions will tell you to hold the remote close to a specific position in the car it has been our experience that this might or might not work. Try moving the remote around inside the vehicle slowly to different locations and farther away from the specific spot recommended.

The LearCar2U product in the past has offered customers a replacement receiver for the garage or gate operator to make the frequency compatible. This offer does not take into consideration the affect the new receiver will have on your solar charged gate operator. The receiver they will possibly supply is a high current consumption part and might or might not be proper for the installation. This must be considered when accepting the new receiver offer. If you gate battery is AC charged then this concern is not valid the AC charger will have no problem keeping your battery charged.

The information above is based on our experiences with the in car systems and might or might not be correct to your specific vehicle.

USA Automatic does not guarantee any receiver replacement will be offered as mentioned above but it has been done in the past and we are only informing you of that.

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Wiring AAS keypad model DKLP to all control boards

Red wire – 12 vdc

Black wire – power ground

Brown wire – Relay Common

Orange wire – Relay N/O

First question you must ask is the keypad for gate OPEN only or for OPEN/CLOSE?

If for open only then (Brown wire) connects to the control board open input

700 series Patriot J2 pin 9

500 series Ranger J2 pin 9

300 series Sentry J2 pin 3

If for open/close then (Brown wire) connects to the control board Push Button input

700 series Patriot J2 pin 3

500 series Ranger J2 pin 3

300 series Sentry J1 green wire – for this will have to splice into green wire

Red wire connects to J2 pin 1 on all control boards

Black wire and Brown wire connect to J2 pin 2 on all control boards

*700 series Patriot can also wire to J2 pin 7 this is ground