



### Included in this Kit:

- (1) T-SC-12V Receiver
- (1) 5-Button RF Transmitter with 2-digit display

### Available accessories:

- Additional Transmitter T-SC-12V-WPT
- 6-Pack of Replacement A-23 12V Batteries A23-6
- Long Range Antenna LRA340 \*\*SEE PAGE 3 FOR SETUP\*\*

Model T-SC-12V is a 12VDC Polarity Reversing Remote Control with speed control and is designed to provide variable speed bi-directional control of DC motors. Output relays rated at 30A @12VDC. The outputs can be programmed for either momentary or latching operation. In the momentary mode, the outputs are active only when either the up or down arrow button on the transmitter is depressed. In the latching mode, pressing the up or down arrow button starts the motor and it will continue to run until the stop button is pressed. This control incorporates a waterproof transmitter. By utilizing pulse width modulation, the output voltage and thus the speed of the DC motor can be varied from 1% to 100% power in 1% increments. The receiver is housed in a metal enclosure and the electronics are encapsulated for waterproofing. The control is suitable for use in harsh environments. Operating temperature range - 0°F to 160°F. Up to 30 transmitters can be used with each receiver. The control uses code learning to program transmitters. Transmit range is greater than 300 feet under normal operating conditions. Additionally, there are three lead wires that can be connected to an external switch which allows the receiver to be operated without using the remote transmitter. The black switch lead wire is common. With the auxiliary switch leads, the motor will operate at the last speed selected on the transmitter.

**Maximum Ratings:** Power for the receiver can be in the range of 10 to 15VDC. The receiver is reverse polarity protected. The relay contacts are rated at 30 Amps @ 13.8Vdc.

**Power consumption:** 10mA when the relays are de-energized, 45mA when the relay is energized.

**Input Power Connection:** 12Vdc power connects to the 12V and Ground terminals. Transmitter uses an A23 battery.

**Output Connection:** The output of the receiver is connected to the motor + & - terminals.

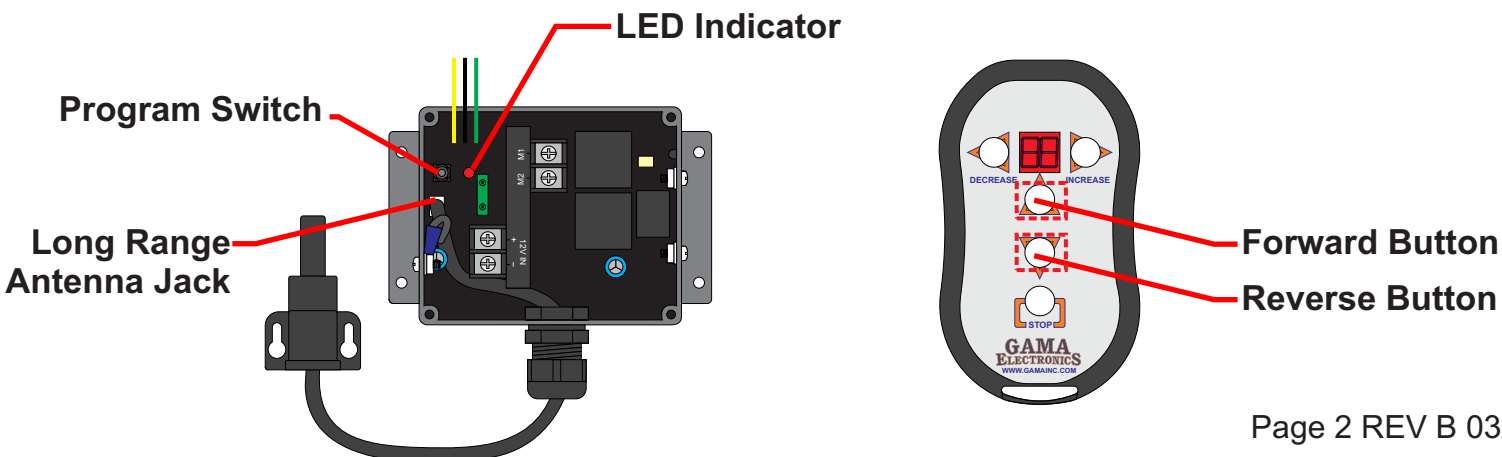
**Momentary or Latching Output:** The transmitter and receiver can be configured for momentary or latching operation. In the momentary mode, the outputs are active only when either the up or down arrow button on the transmitter is depressed. In the latching mode, pressing the up or down arrow button starts the motor and it will continue to run until the stop button is pressed.

**Transmitter Operation:** The two arrows next to the display adjust the speed of the motor. Select the desired speed and then press either the up or down arrow button to start the motor. In the momentary mode, the outputs are active only when either of these buttons on the transmitter is depressed. In the latching mode, pressing the up or down arrow button starts the motor and it will continue to run until the stop button is pressed. In the latching mode the output speed of the motor can be adjusted by changing the arrow switches next to the display, without stopping the motor.

## Programming Instructions

Each transmitter has its own unique internal address along with the data as to which button is pressed and transmitted. The receiver needs to be programmed to respond only to the specific transmitter it is intended to operate with. The following steps configure the receiver to operate with a particular transmitter. Up to 30 transmitters can be programmed to one receiver. Please read the entire programming procedure before starting. When the receiver enters program mode, all previous transmitter addresses that were programmed will be erased from the receiver's memory.

1. Locate the pushbutton labeled "PROGRAM" on the receiver. Press and hold this button until the red LED next to the program button illuminates (approximately 3 seconds). The receiver is now in the transmitter program mode. Release the button. At this point all previously programmed transmitter addresses are erased from the receiver's memory.
2. To configure the receiver for a latching output, go to Step 4.
3. To configure the receiver for momentary output, press and release either the reverse button or the forward button on the transmitter once and verify that the red program LED extinguishes and then illuminates (blinks once). Proceed to Step 5.
4. To configure the receiver for latching output, press and release either the reverse button or the forward button on the transmitter twice and verify that the red program LED extinguishes and illuminates (blinks twice).
5. Repeat previous step for additional transmitters that will operate with this particular receiver. The red LED on the receiver will extinguish and illuminate (blink) once for the first transmitter being programmed, twice for the second, three times for the third, etc. The receiver will not respond to transmitters that have already been programmed. The first transmitter that is programmed determines the receiver's relay operating mode.
6. The receiver will return to normal mode if no transmitter buttons are pressed for 5-seconds. The red LED on the receiver will blink rapidly, then extinguish. The receiver is now in the normal mode of operation. This completes the programming instructions. The receiver will retain all of its programming even when power is removed.



## To Add Long Range Functionality

The remote control system is equipped with an internal antenna. The expected range in normal conditions is approximately 100 feet. When additional range is needed, or if the control is placed locations adverse to RF signal reception, a long range antenna can be added to the system. GAMA Electronics long range antenna, part number LRA-340, replaces the internal antenna on the system. In normal operating conditions expected range is greater than 500 feet. If the long range option is purchased with the system, this modification will be made prior to shipment.

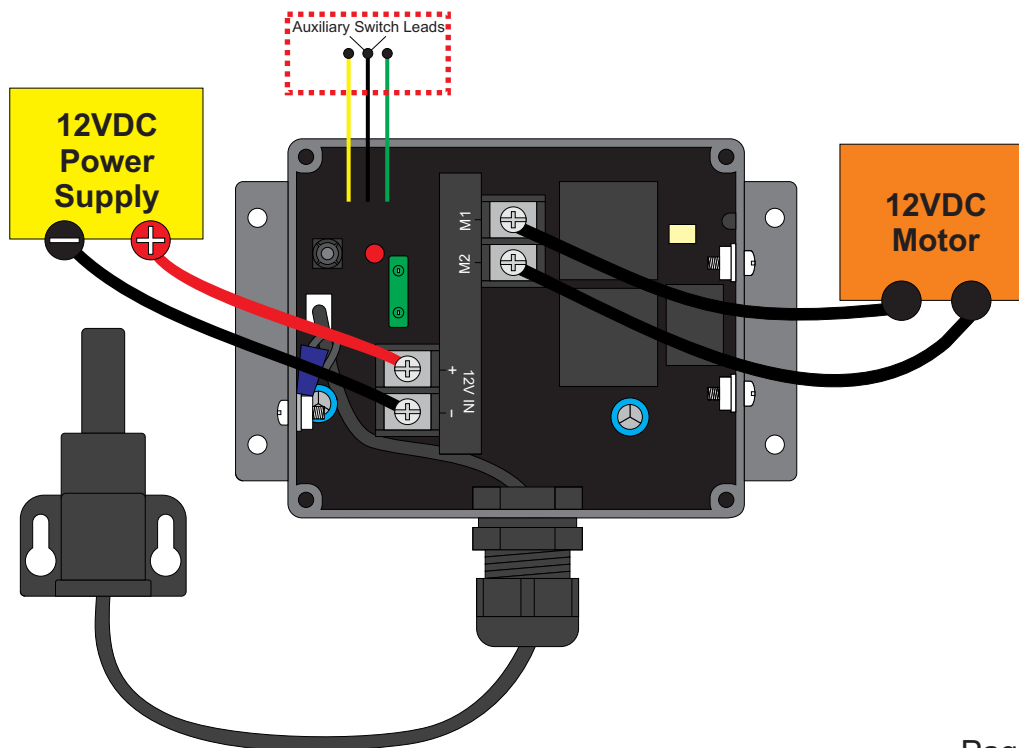
**NOTE: ONCE THE LONG RANGE MODIFICATIONS HAVE BEEN MADE TO THE SYSTEM THEY CANNOT BE REVERSED.**

### To add long range functionality:

1. Plug long range antenna (Part number LRA-340) into the long range antenna jack.
2. Clip the Long Range Antenna Bypass Wire (This will deactivate the internal antenna)

NOTE: It is recommended that you cover the exposed wires with RTV silicone sealant.

## Wiring Diagram



## **Troubleshooting**

All remote-control systems shipped by GAMA Electronics are 100% functionally tested just prior to shipment.

If your RF remote control system does not work out of the box, stops working or functions intermittently please take the following steps to resolve common issues. Please note that you must be 2-3 feet away from the receiver when operating the remote control. Operating within 2-3 feet may result in no operation or intermittent operation.

### **1. Replace the A23 12V Battery in the transmitter**

- The remote control can activate during shipping and drain the battery that is installed in the control. We send a replacement battery with the system if this occurs.

### **2. Check the voltage supply at the receiver**

- The receiver is designed to function at 10-15VDC. Voltage on the (+) and (-) terminals on the control should be within this range.

### **3. Reprogram the remote control**

- If the system is non-functional try to reprogram the remote control. The program may not have taken during the programming process or the program button may have been pressed. If the program button is pressed the memory of the remote controls programmed to the receiver are erased.

### **4. Listen and look for functionality on the receiver.**

- The LED that is used for programming the system will illuminate when the receiver is activated. You will also hear a “click” when the internal relays engage. If you can see the LED illuminate and you hear the relay “click” the issue is most likely in the wiring or device being controlled.

### **5. Add a long-range antenna**

- If the receiver is in an area that is averse to the reception of an RF signal, such as near a motor or in a metal casing, a long-range antenna may solve the issue. Connect the antenna per the instructions on page 3 and mount the antenna in an exposed area away from any motor.