

HOT SHOT

IRRIGATION

810-R

RECEIVER GUIDE

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HOT SHOT OVERVIEW

ATTENTION: Depending upon the style of system that you are going to control with the Hot Shot Wireless Controller you may need to supply additional parts. Such as relays, step-down transformers, Murphy switches etc. These items are suggested in the wiring guides that follow in this manual.

HOW IT WORKS

Think of the HOT SHOT system as a control wire going from the transmitter site to the receiver site. When the Hot Shot Transmitter's SENSOR ON-OFF Input is connected to COM, a 10 second delay timer is started. After the delay timer has expired, the transmitter will send the (Relay ON) command to the receiver. This will close the relay contacts between N.O. and COM. When the SENSOR ON-OFF input at the transmitter is opened it will send the (Relay OFF) command to the receiver switching the relay back to N.C. connected to COM. Battery backup in the transmitter will still allow the HOT SHOT to work in case of power outage. Each system is coded with its own four digit code so it will not interfere with other systems in the same area. The following manual has been prepared to provide details for Transmitter installation and Receiver installation on electric and engine driven wells.

MOUNTING

Cabinets are a weatherproof UV protected NEMA 4X cabinet with mounting ears on top and bottom. The Hot Shot cabinet can be mounted on the side of a control panel, pole or any other surface as long as the antenna does not have metal running within 12" of the antenna whip. If longer range is needed, an external long range antenna can be used. Do not mount the HOT SHOT receiver to the well engine or cover because the strong vibrations can be harmful to the unit.

CODE SWITCH SETTINGS

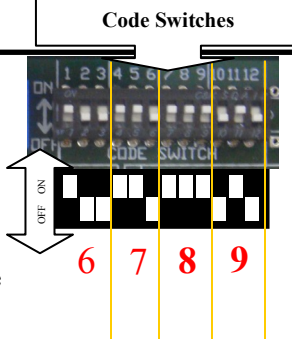
All transmitters and receivers will be shipped from the factory with preprogrammed field codes. This ensures that your neighbor will not duplicate the same field code as your unit. Your field codes already match, so you do not need to program any codes. If you ever need to replace a unit due to servicing, the field code can be programmed to match the existing or new add on units. FOLLOW THE EXAMPLE BELOW...

FOR CODE QUESTIONS? CALL 785-623-1500

EXAMPLE: CODE 6789

<p>KEY</p> <table border="0" style="width: 100%;"><tr><td style="text-align: center;">3</td><td style="text-align: center;">4</td><td style="text-align: center;">5</td><td style="text-align: center;">6</td></tr><tr><td style="text-align: center;">[switch diagram]</td><td style="text-align: center;">[switch diagram]</td><td style="text-align: center;">[switch diagram]</td><td style="text-align: center;">[switch diagram]</td></tr><tr><td style="text-align: center;">7</td><td style="text-align: center;">8</td><td style="text-align: center;">9</td><td style="text-align: center;">0</td></tr><tr><td style="text-align: center;">[switch diagram]</td><td style="text-align: center;">[switch diagram]</td><td style="text-align: center;">[switch diagram]</td><td style="text-align: center;">[switch diagram]</td></tr></table>	3	4	5	6	[switch diagram]	[switch diagram]	[switch diagram]	[switch diagram]	7	8	9	0	[switch diagram]	[switch diagram]	[switch diagram]	[switch diagram]	<p>Use the # KEY to the left to make each digit of the code. It takes three of the switches to make one number of the code.</p>	<p>Use switches 1,2,3 for the first # in the code. Switches 4,5,6 for the second #. Switches 7,8,9 for the third #. Switches 10,11,12 for the fourth #.</p>
3	4	5	6															
[switch diagram]	[switch diagram]	[switch diagram]	[switch diagram]															
7	8	9	0															
[switch diagram]	[switch diagram]	[switch diagram]	[switch diagram]															

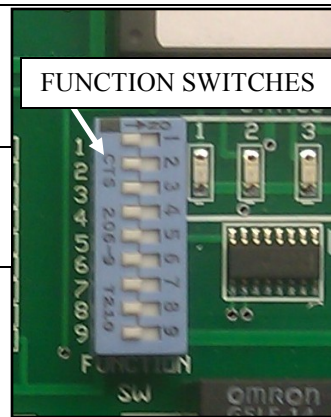
Code Switches



RECEIVER UNIT 810-R

SWITCH#	FUNCTION SWITCH SETTINGS
1	ON WILL ACTIVATE MOMENTARY FOR 10 SEC.
2	ON INVERTED RELAY OUTPUT CONTROL
3	ON ACTIVATION OF RELAY DELAYED BY 10 SEC. <i>(See Load Sharing below)</i>
4	ON ACTIVATION OF RELAY DELAYED BY 5 SEC. <i>(See Load Sharing below)</i>
5	ON ACTIVATES THE OFF DELAY <i>(50sec delay on the off command)</i>
6	ON ACTIVATES ENIGNE STARTUP MODE - WITH 15MIN BY-PASS TIMER <i>(See below)</i>
7	ON ACTIVATES FAIL-SAFE MODE - SCENERIO 1 <i>(See FAIL-SAFE OPERTAION below)</i>
8	ON ACTIVATES THE SUPERVISION MODE - LED ONLY.
9	ON ACTIVATES FAIL-SAFE MODE - SCENERIO 2 <i>(See FAIL-SAFE OPERTAION below)</i>

To activate a function slide the dipswitch to the ON side.



OFF DELAY

Turning function switch 5 ON will put the receiver in OFF DELAY mode. This mode is most often used with a Roto-Phase converter or generators. When the receiver gets the off command the deactivation of the relay will be delayed by 50 seconds allowing the Roto-Phase convertor or the generator the extra time needed to allow everything to shutdown.

ENGINE STARTUP MODE

Turn function switch 6 ON and then turn on the power to the receiver to enable the Engine Startup Mode. The Supervision LED will light up and the relay will come on to bypass the Murphy switch and allow the engine to start and stay running until the transmitter has sent its relay ON command to the receiver thus ending the bypass timer and taking control and turning off the Supervision LED. If the transmitter does not send the relay ON command within 15 min the receiver will kill the engine and you will have to turn the receiver off and then back on again to get it into Engine Startup Mode again.

SUPERVISION FEATURE

The Supervision Feature is a great way for checking at a glance the integrity of the receiver. The Supervision LED will start to blink if the receiver has not heard it's correct code from a transmitter within the past three hours. The Supervision LED will continue to blink until the receiver hears it's correct code again thus turning off the LED and resetting the 3 hour Supervision timer.

FAIL-SAFE OPERATION

This feature works with the Supervision feature as described above but lets us take safety a step further. Fail-Safe Operation allows the receiver to control it's relay by activating or deactivating itself if the transmitter is not working properly.

SCENARIO 1

Turning on Function switch 7 will make the receiver's relay energize if there is a system failure (closing N.O. to COM.).

SCENARIO 2

Turning on Function Switch 9 will make the receiver's relay de-energize if there is a system failure (closing N.C. to COM.).

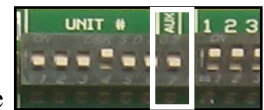
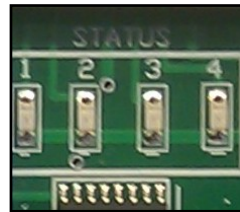
LOAD SHARING

Different delay times on the receivers can help with large electrical current pulls in the same field on start up.

RECEIVER UNIT 810-R

INDICATOR LIGHTS

POWER	Signals that the Receiver has power and is ready to receive.
STROBE	Used for troubleshooting, this LED flashes once for each of the four correct digits of the code received. The LED will stay on steady for one second if an incorrect digit of the code is received. <i>Example: If the LED flashes two times and then goes on steady it is indicating that the third digit doesn't match. If the LED flashes one time and goes on steady it is indicating that the second digit doesn't match. If the LED comes on steady right away it is indicating that the first digit doesn't match.</i>
STATUS 1 2 3 4	When these LED's are on it indicates that its corresponding transmitter has activated the relay and the receiver is in Last Transmitter Standing Mode (<i>Unit# switch and (Aux 7)</i>) See description below.
SUPERVISION	When this LED is flashing it indicates that it has not received its correct code from the transmitter in the past 3hrs. Sliding function switch #8 to its OFF position will turn off this indicator light.



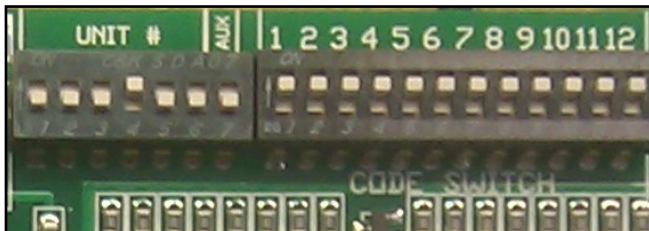
Last Transmitter Standing Mode (*Unit# switch and (Aux 7)*)

This mode is used when 2 or more (up to 4) different transmitters are sharing the same receiver and requiring the receiver's output relay stay latched until all the transmitters are done with the receiver and have transmitted the relay OFF command. Each STATUS LED on the receiver will light up when its transmitter has sent the relay ON command. When a transmitter sends its relay OFF command its corresponding LED on the receiver will turn off. For the receiver to include the transmitter in the control sequence the corresponding UNIT# switch on the receiver must be turned on for each transmitter that is controlling it. See UNIT# switches below.

NOTE - all transmitters must transmit the relay unlatch command or the receiver's relay will never unlatch possibly causing system damage.

UNIT# SWITCHES(1,2,3,4,6,) AND (AUX #7)

When a Hot Shot Receiver (only 810-R) is going to be used with A Hot Shot 810-T transmitter using its #1,2,3,4,5 and 6 SENSOR control, the receivers going to be used will need to be assigned to the sensor on the transmitter that will control it. All receivers come factory set in the default mode as a #1 receiver. Meaning they are only controlled by the SENSOR INPUT #1 of the transmitter. When using the SENSOR INPUT #2 or higher on the transmitter you will need to use the **UNIT# DIP SWITCHES** located to the left of the 12-digit



code bar on the receiver to program the receiver so it can be controlled by its designated sensor ON-OFF Input on the transmitter. You can make it a #2 receiver (*which is controlled by the #2 sensor on the transmitter*) by only turning on the #2 dipswitch. You can make it a #3 receiver (*which is controlled by the #3 sensor on the transmitter*) by only turning on the #3 dipswitch. This makes it capable for the

pivot to control and share multiple wells. Also see Multi Pivot Operation in the transmitter section.

TYPICAL HOT SHOT RECEIVER HOOKUP TO SHUTDOWN A ENGINE DRIVEN WELL

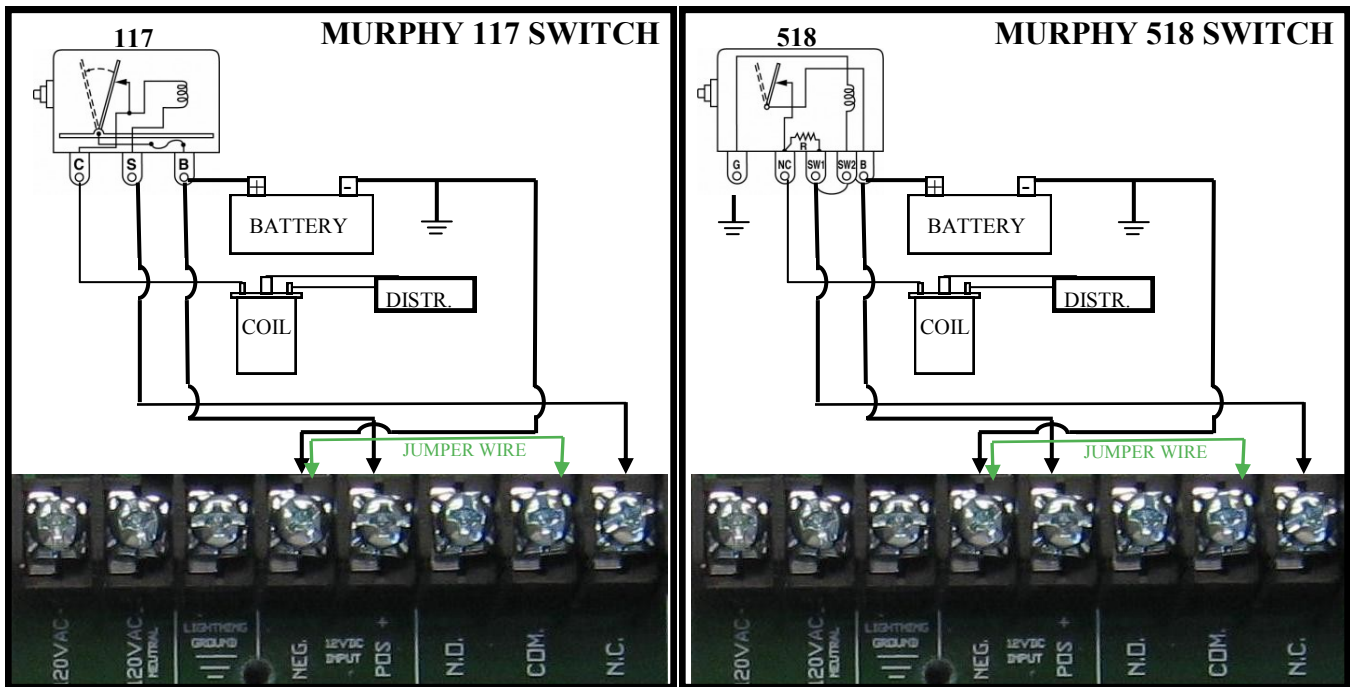
HOT SHOT RECEIVERS NEED TO BE TURNED ON BEFORE THE HOT SHOT TRANSMITTERS ARE TURNED ON. HOT SHOT TRANSMITTER ONLY TRANSMIT FOR 1 MINUTE. IF THE RECEIVER IS TURNED ON AFTER THE TRANSMITTER IT WILL NOT OPERATE CORRECTLY UNTIL THE TRANSMITTER IS SET TO TRANSMIT AGAIN.

AT THE ENGINE

DO NOT mount the HOT SHOT Receiver unit to the well engine or engine cover because strong vibrations can be harmful to the unit.

The diagrams below show a simple way to control an engine driven well using a simple 117 or 518 Murphy kill switch. Supply power to the receiver by hooking up the 12v positive input on the receiver to the 12v positive terminal on the battery. Run a wire from the Negative input on the receiver to the negative terminal on the battery or to a good ground connection. Install a jumper wire connecting the negative terminal to the COM terminal on the receiver. Connect a wire from the N.C. terminal on the Hot Shot receiver to the S or the SW1 terminal on the Murphy kill switch. Turn on function switch 6 and turn on the power to the receiver to enable the Engine Startup Mode (*for details see pg 3*). When activated the Supervision LED will come on and bypass the Murphy switch to allow the engine to start and stay running until the transmitter has sent its relay ON command to the receiver thus ending the bypass timer and taking control of the receiver and turning off the Supervision LED. If the transmitter has not sent the relay ON command within 15 min the receiver will kill the engine and you will have to turn the receiver off and then back on again to get it into Engine Startup Mode again. Now when the pivot is finished or the safety is tripped the receiver will be sent a stop water signal, the receiver's relay will close COM to NC. This shorts the S terminal to ground and kills the engine. Other variations and Murphy Kill switches will work as well.

Engine Driven Well Hookup Diagrams



RECEIVER UNIT 810-R

CAUTION: Never switch any voltage greater than 120v with the Hot Shot Receivers internal relays. This will ruin the relay and void all manufacturer warranties. Use an externally mounted 120v coil relay to switch all voltages greater than 120v. See diagram on next page.

HOT SHOT RECEIVERS NEED TO BE TURNED ON BEFORE THE HOT SHOT TRANSMITTERS ARE TURNED ON. HOT SHOT TRANSMITTERS ONLY TRANSMIT FOR 1 MINUTE. IF THE RECEIVER IS TURNED ON AFTER THE TRANSMITTER IT WILL NOT OPERATE CORRECTLY UNTIL THE TRANSMITTER IS SET TO TRANSMIT AGAIN.

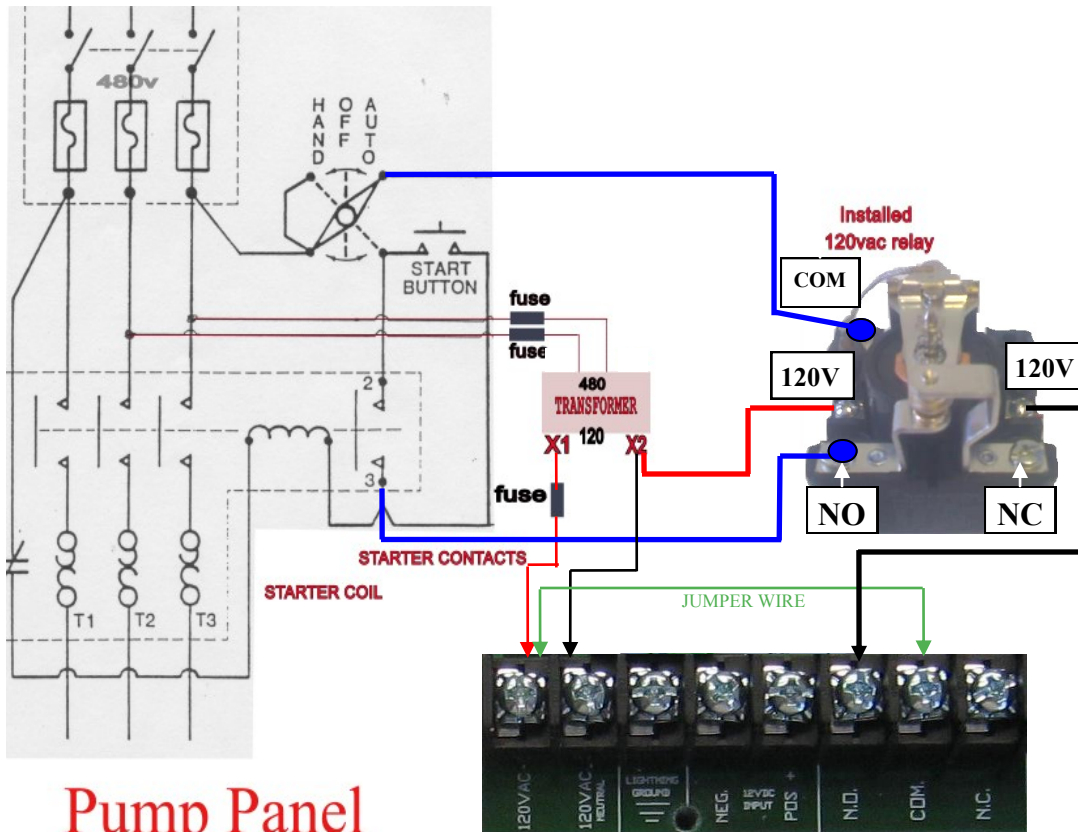
ELECTRIC WELL HOOKUP

- Mount a 480v-120v step-down transformer to supply 120v to the receiver. The Hot Shot Receiver only requires 1 watt of power to operate. *Hot Shot Systems suggest using a minimum of a single phase 60 hertz 0.050kVA transformer. They are available for purchase through Hot Shot Systems, just request when ordering.*
- Mount a 3 terminal fuse block and a 120vac relay. *Hot Shot Systems suggest using a 115V AC coil relay. They are available for purchase through Hot Shot Systems, just request when ordering.*
- Wire two, 480v conductors through the first two fuses (1/2 or 1 amp each) to the primary side of the step-down transformer. **Terminals may be different according to the transformer installed.**
- Wire the 120v **X1** terminal of the step-down transformer through the remaining fuse (1 amp) which then goes to the first 120vac input of the Hot Shot Receiver (120 volt polarity does not matter).
- Wire the 120v **X2** terminal of the step-down transformer to the neutral 120vac input of the Hot Shot Receiver (see diagram on the next page).
- Add a jumper from the first 120vac terminal to the Hot Shot Receivers relay **COM.** terminal (see diagram on the next page).
- Wire the **NO.** terminal on the Hot Shot Receiver to one side of the 120v relay coil.
- Connect the other side of the relay coil to the **X2** terminal of the step-down transformer.
- Connect a wire from the **Lighting Ground** terminal of the Hot Shot Receiver to the ground lug of the pump panel.

RECEIVER UNIT 810-R

ELECTRIC WELL HOOKUP DIAGRAM

OBJECT: WHEN THE HOT SHOT TRANSMITTER'S ON-OFF INPUT TO COMMON IS CLOSED IT SENDS OUT THE RELAY ON COMMAND TO THE RECEIVER. WHEN THE HOT SHOT RECEIVER GETS THE ON SIGNAL IT WILL CLOSE ITS N.O. TO COM CONTACTS. THIS WILL ENERGIZE THE 120VAC RELAY TO CLOSE THE 480V CONTACTOR.



Pump Panel

RECEIVER UNIT 810-R

NOTE: 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, uses and can radiate 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.

15.21 INFORMATION to USER:

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.