SAFE LIVING
Technologies Inc.

Remote Cutoff Switch RCS4
"4 Zone Controller"

Installation Guide

Please read this entire guide before beginning the installation!

Supplied Parts

Transmitters
(2) 433 MHz

Remote Cutoff Switch - RCS4
(1) 4 Zone Controller

I/O Cable (1)
4 Wire + Ground

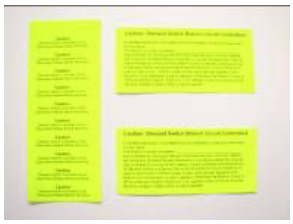
Installation
Guide (1)

Antenna
(1) 9 Foot

DIN Mounting Rail
(1) 6 Inch

4 Circuit Contactor (1)
24 Amp AC x 4 Circuits
12 VDC Trigger

Power Supply
(1) 12 VDC



Warning Stickers
(2) for Enclosures
(10) for Breakers

Additional Parts - Supplied by your installer

- 12”x12” electrical enclosure (Indoor / Outdoor)
- Conduit to main electrical panel
- 120 VAC outlet and housing
- Mounting hardware

Optional Accessories - Supplied by Safe Living Technologies

- **Additional 24 Amp, 4 Circuit Contactor**
  - Allows for 4 more (15 Amp or 20 Amp) branch circuit to be controlled (24 Amp x 4 circuits) State:(normally closed)
  - Allows for the use of an additional zone (A and B, C or D)
  Note: Each zone in use requires a contactor
- **Additional Hand Held Transmitter** – Control Cutoff Switches from multiple locations with an additional transmitter
- **Extended Antenna** with 49 foot Cable
- **Optional 40 Amp 4 Circuit Contactor** - 40 Amp x 4 circuits DC Trigger. State:(normally open) (contact us for more information)

Typical Installation:
Assembled View

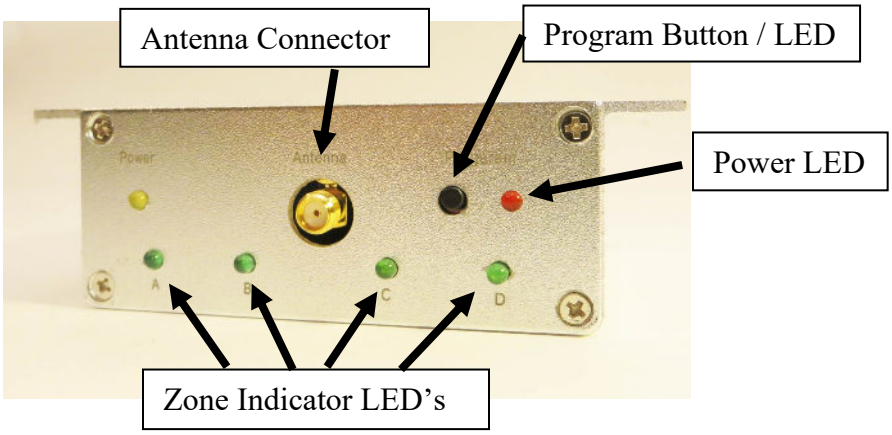
Theory of Operation:

AC Electric Fields are produced by the presence of AC electricity. Their strength is determined by voltage; the higher the voltage, the stronger the field. AC Electric Fields are radiated from live electrical wires and generally travel 6-8 feet from the source, but in some cases further. An electric field will exist even when a device is not in use (turned off). These sources produce a continual emission. AC Electric Fields have a natural attraction to ground and are considered low frequency electromagnetic radiation. (5Hz-400,000 Hz).

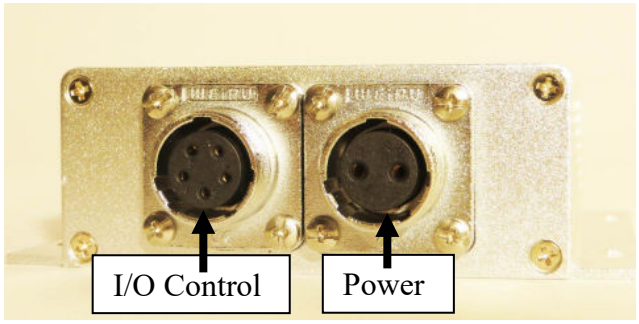
The purpose of the Remote Cutoff Switch is to de-energize branch circuits at the main electrical panel (MEP). The Remote Cutoff Switch is not load or current dependent. To initiate the Remote Cutoff Switch, one physically needs to press a push-button on a hand-held remote control transmitter. When a button on the transmitter is pressed, a momentary radio frequency control signal is transmitted at a frequency of 433 MHz to the Remote Cutoff Switch. The transmitter has 4 buttons and can control 4 zones A, B, C and D. For example, one could control 4 sleeping areas and they could each shut off as occupants go to bed at different times. Pressing a button will energize or de-energize a coil in the Remote Cutoff Switch. When initiated, it will output a 12VDC signal on one of its 4 output lines, A,B,C or D depending on the button pressed. The Remote Cutoff switch works in conjunction with a 4 circuit/pole contactor. The multi-pole contactor is triggered by the 12VDC output control signal of the Remote Cutoff Switch, switching it open or closed. Each contactor can control 4 separate branch circuits switching on and off the 120VAC to the circuits simultaneously. Each output line controls an individual zone and contactor. Up to 4 zones can be controlled by each Remote Cutoff Switch and multiple contactors can be used on the same zone. An illuminated green channel light indicates that all circuits controlled by that channel or 24 amp contactor are cut off. This means the branch circuits have no AC voltage on them. If the corresponding green channel light is off, the controlled branch circuits are live.

The 4 circuit contactors we supply with the unit are rated for 24 Amps AC x 4 circuits and are compatible with standard, arc fault and GFI circuit breakers. Each contactor can control up to four (15 or 20 Amp AC) branch circuits.

Remote Cutoff Switch – Front Panel



Remote Cutoff Switch – Back Panel



Typical Installation Procedure (Cutoff Switch Inside of Electrical Enclosure)

Warning: To be installed by a licensed electrician and must conform to local electrical code!

1] Attach electrical enclosure to the breaker panel with conduit

2] Mount electrical enclosure onto the wall / backing board

3] Install a standard 120 VAC receptacle inside of enclosure

4] Connect power supply to Remote Cutoff Switch

5] Plugin power supply to upper plug

6] Mount Remote Cutoff Switch

7] Install / connect I/O cable

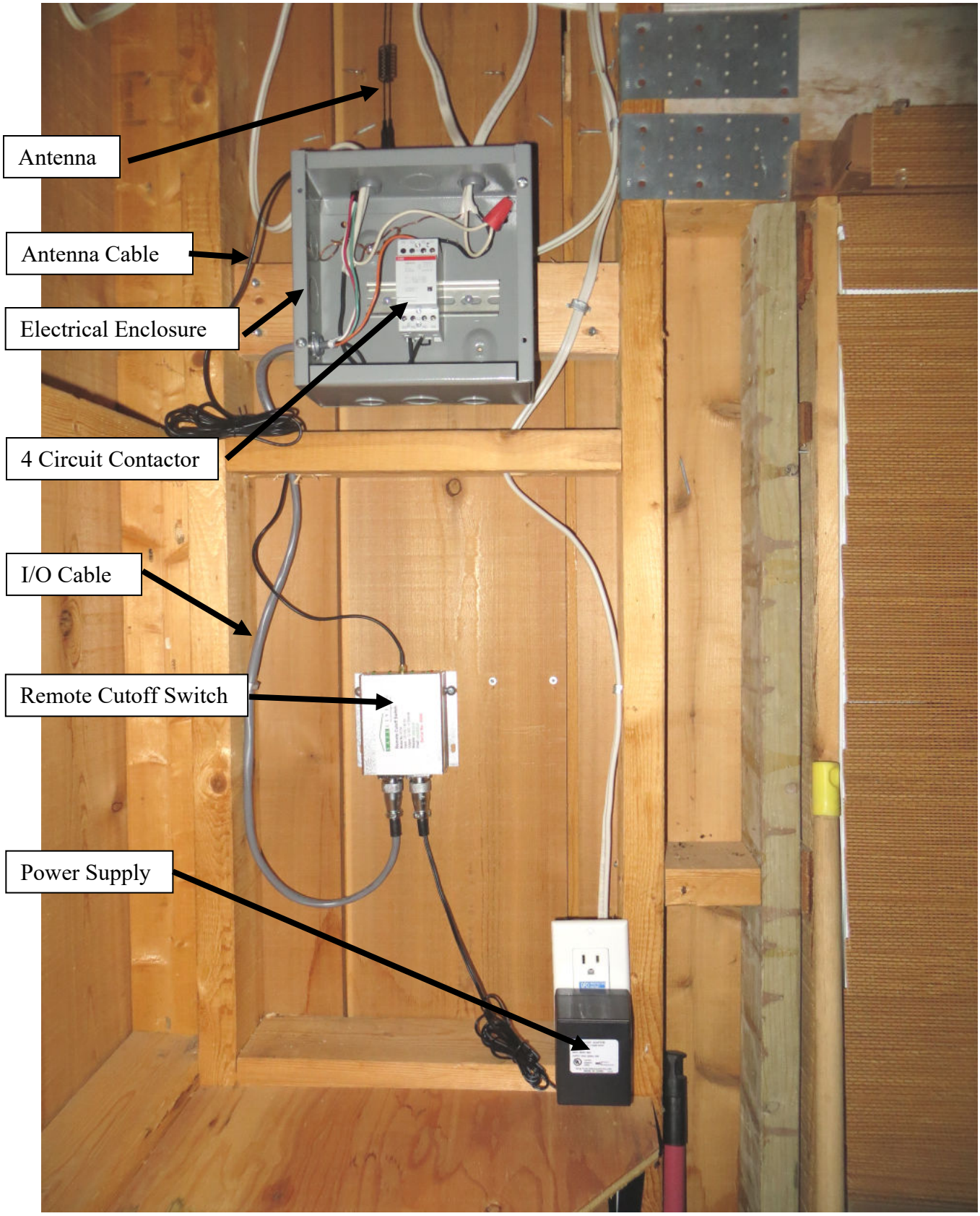
8] Mount din rail and contactor

9] Connect and mount antenna

10] Ensure enclosure is properly grounded

11] To remove the contactor for maintenance purposes, a slot screw driver is required. Insert the screw driver into the spring loaded tab on the bottom of the contactor and apply a **gentle** pressure with the screw driver forcing the spring latch to open. This will unlock the contactor from the rail for removal.

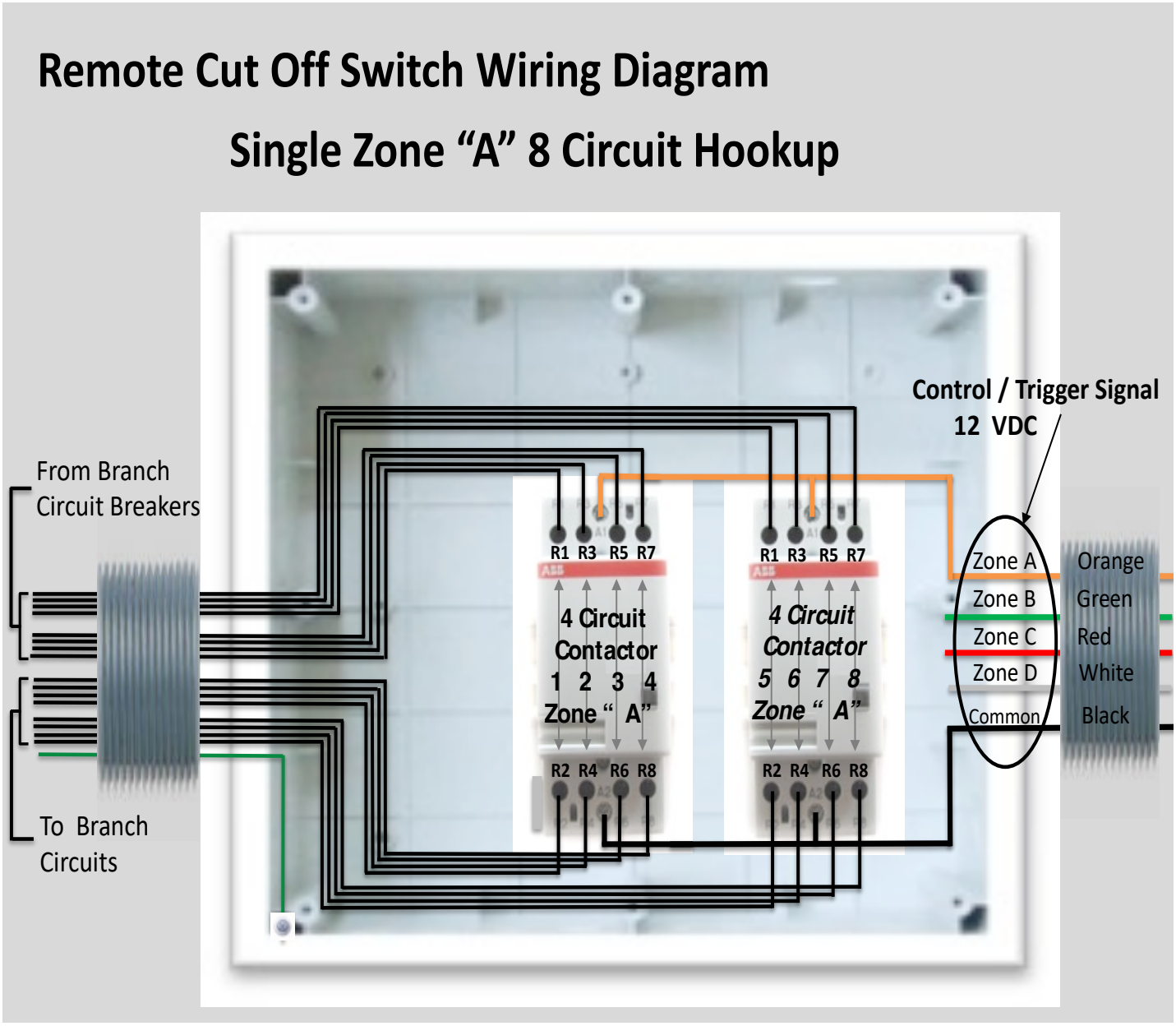
Optional Installation Procedure (Cutoff Switch Outside of Electrical Enclosure)



Remote Cut Off Switch Wiring Diagram
Single Zone “A” 8 Circuit Hookup

Control Signals:

A - Orange
B - Green
C - Red
D - White
Common – Black



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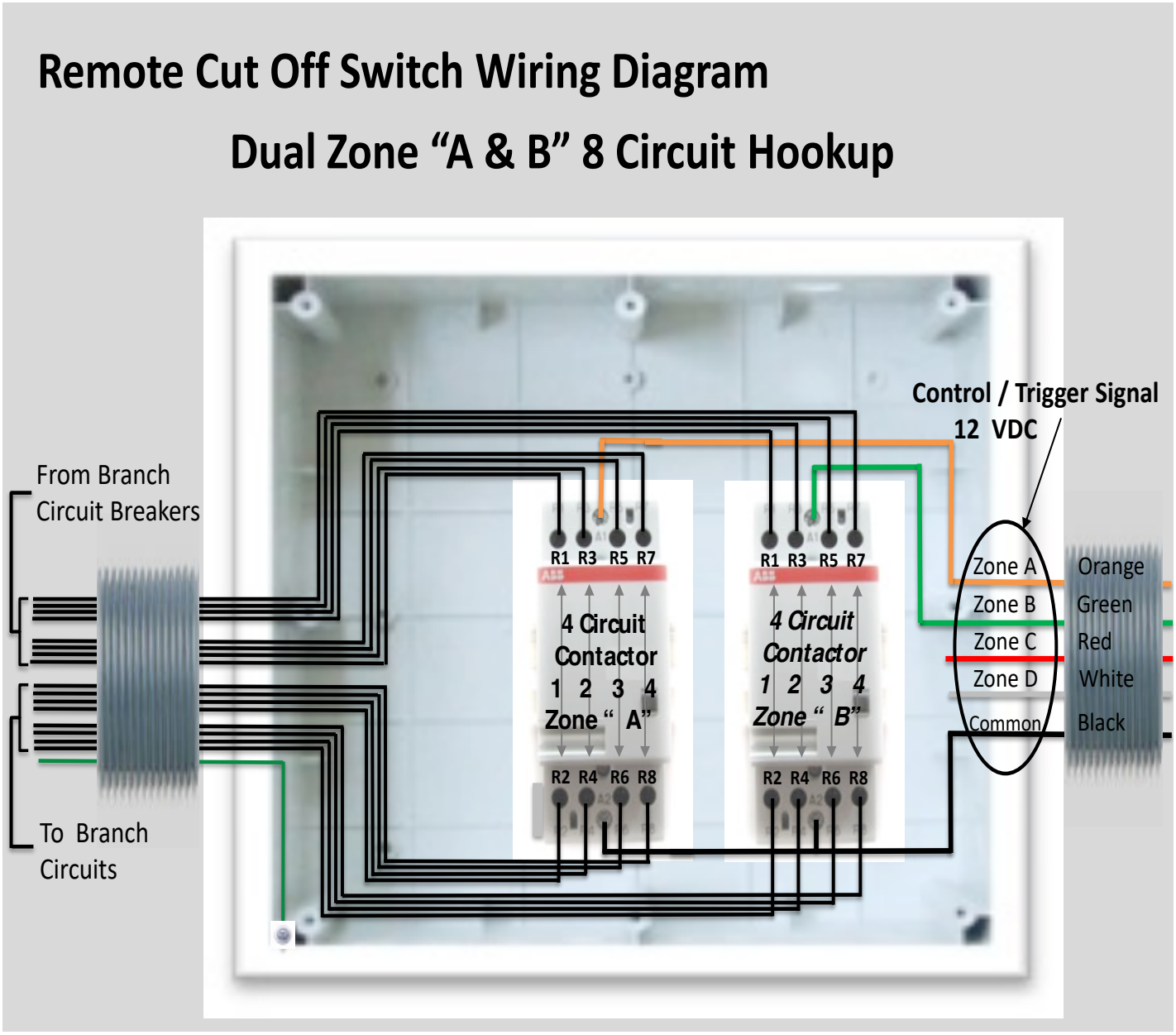
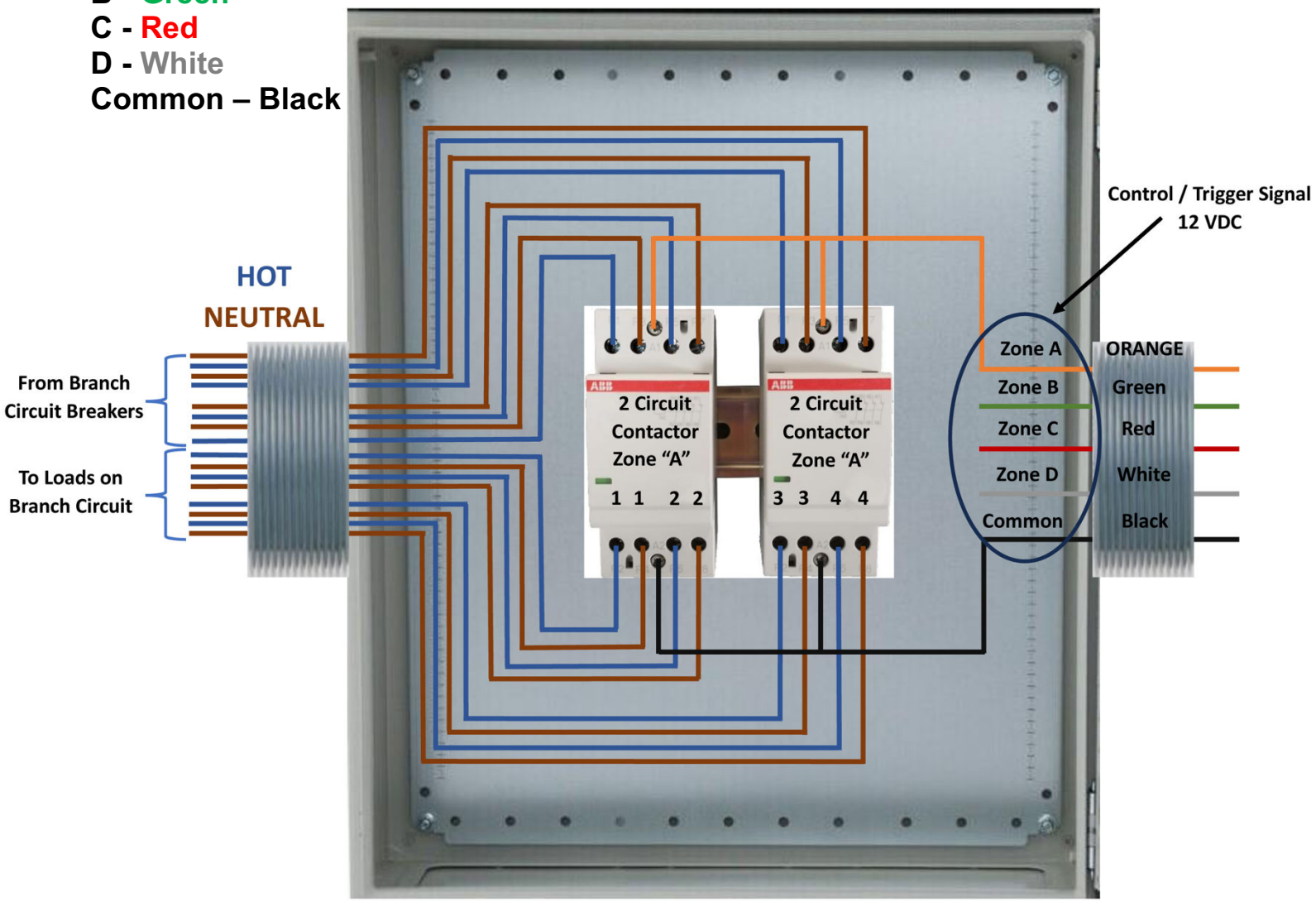


Optional Setup – Disconnecting Hot and Neutral
Allows 2 Circuits per Contactor
Single Zone "A" - 4 Circuit Hookup

Control Signals:

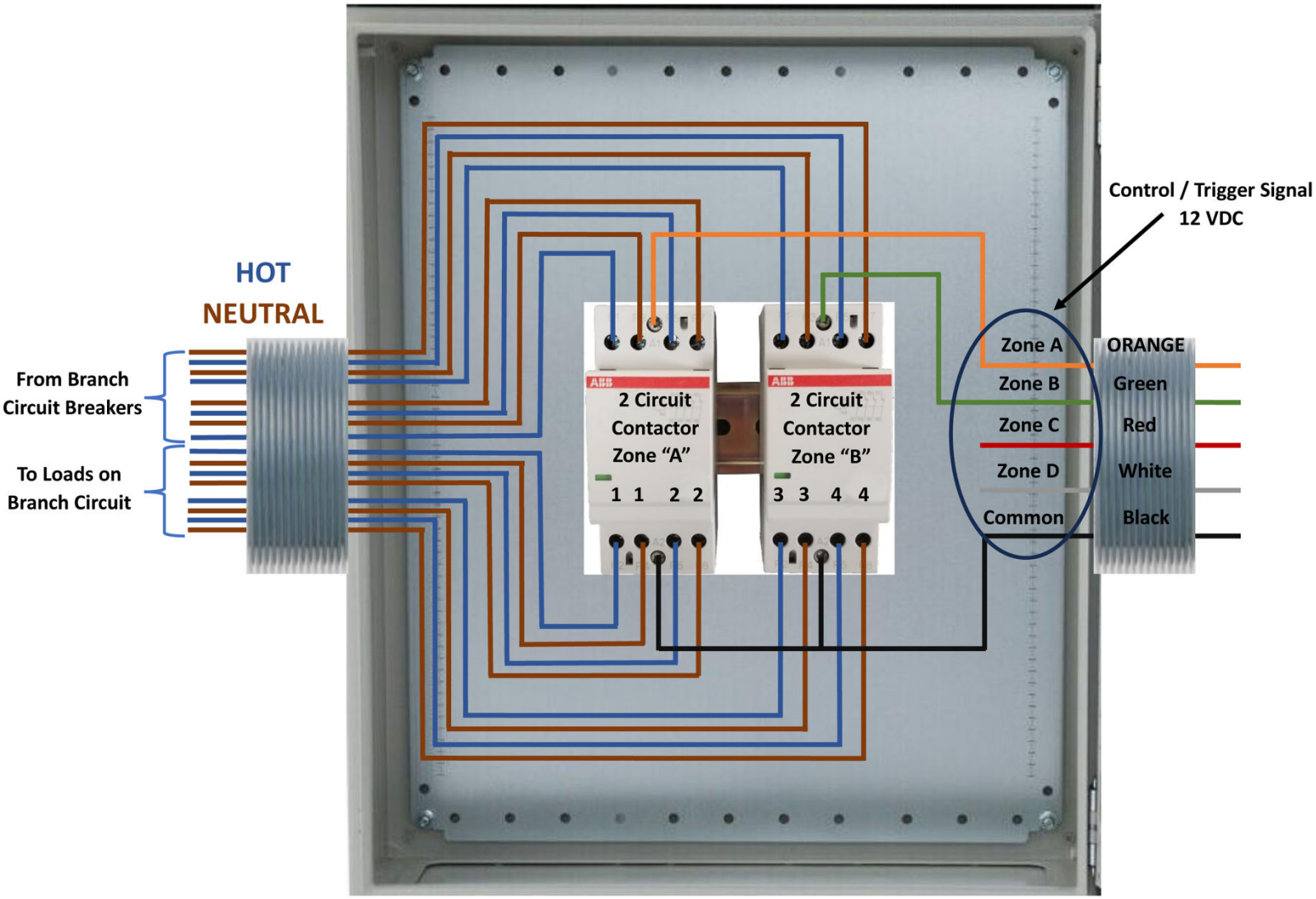
A - Orange
B - Green
C - Red
D - White
Common – Black



Optional Setup – Disconnecting Hot and Neutral
Allows 2 Circuits per Contactor
Dual Zone “A” and “B” - 4 Circuit Hookup

Control Signals:

A - Orange
B - Green
C - Red
D - White
Common – Black



Initial Start-up Procedure

- Attach the enclosed warning stickers to electrical enclosure. Clearly label the controlled circuits (2 stickers included)
- Mark the circuit breakers with warning stickers (10 stickers included)
- Ensure installation and wiring is correct
- Supply power by plugging in the power supply
- Each Transmitter is paired to the Cutoff Switch before it is shipped. However, if this is not the case, pairing of transmitters to the remote cutoff switch is are required. To do this, gently press and hold the program button on the remote cutoff switch for 3 seconds. The program LED will flash. While the program LED is flashing, press and release a button on the transmitter. Wait for the program LED to stop flashing. Pairing is now complete. Pair other transmitters if required in the same manner. Test the operation of the transmitter beside the Cutoff Switch and ensure the corresponding zone LED toggles on and off as the respective button is pressed and released
- Test the operation of the transmitter in various locations and monitor for functionality
- Note the transmitter has an extendable antenna to increase its range. Extend if required
- To comply with local electrical code, call for an electrical inspection from your local safety authority

Troubleshooting the Remote Cutoff Switch RCS4:

1] If the Remote Cutoff Switch does not respond to the hand held transmitter, try pairing the transmitter to the Remote Cutoff Switch. (See Initial start-up procedure in the previous section). When a zone button is pushed, a small flashing light will illuminate on the top of the hand held transmitter. This light indicates the hand held transmitter is trying to communicate with the Cutoff Switch. If the light does not illuminate when the button is pushed the battery may be low or the remote control unit may be defective. The battery model is an A23, 12 V Alkaline battery. A new battery usually measures 12.1 volts and a used battery can start causing problems if its voltage falls below 12 volts.

2] If the battery tests okay and the Remote Control hand held device appears to be transmitting but the switch is still not responding, try removing power from the Cutoff Switch. This will in turn reset the Cutoff Switch.This can be done by unplugging the power supply. Allow the power to be turned off for at least one minute.

3] If your Remote Cutoff Switch is not working very well from far away, you may be experiencing interference from objects near your receiver's antenna or the floor above or walls surrounding it may be blocking the signal. To improve you remote controls range, try the following:

- The hand held transmitter has an extendable antenna. Extend it fully for better range
- Mount the antenna in various locations around the area of installation and test
- Try changing the direction the antenna is mounted from vertical or horizontal or vice versa
- Mount the receiving antenna in a room adjacent to (above, below or bedside) the location it is currently installed. An optional 50 foot antenna is available which will allow for strategic placement of the antenna, closer to the area of activation.

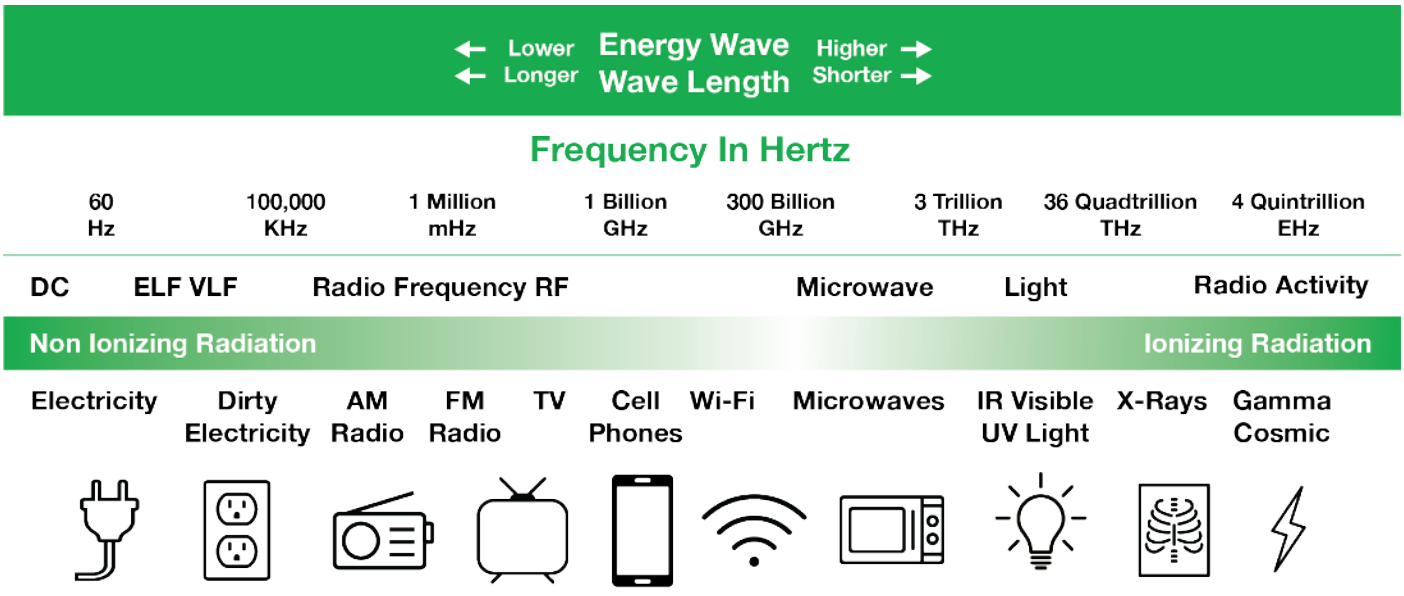
Electromagnetic Spectrum

The electromagnetic spectrum (aka the EM spectrum) is the range of all known frequencies and wavelengths of electromagnetic radiation. It is divided into seven distinct regions, in order of decreasing wavelength and increasing energy and frequency. These sections include: radio waves, microwaves, infrared, visible light, ultraviolet, X-rays and gamma rays; with extremely low frequency (ELF) radiation (i.e. what is emitted by power lines and electrical sources) at the lowest end of the spectrum. The spectrum also distinguishes between ionizing radiation (the high-energy frequencies in the spectrum above visible light) and non-ionizing radiation (the lower-energy frequencies below visible light).

A wavelength can range from thousands of miles down to a fraction of the size of an atom. The frequency of electromagnetic radiation is inversely proportional to the size its wave, so as you can see from the graphic below, the lower the frequency, the larger wavelength. The higher the frequency, the more energy it has, so the more work it can do.

It is important to understand the behavior of the EM spectrum, because different frequencies of EM radiation are used in different practical applications integrated into our daily lives. EMF sources can be both natural and man-made. Peer-reviewed research has shown that biological effects can occur as a result of exposure to EMFs across the entire EM spectrum (not just the ionizing/thermal section).

Safe Living Technologies offers specific EMF inspections, mitigation techniques, and solutions depending on the type and source of EMF exposure.



References:

Blank, M. Overpowered: What Science Tells Us About The Dangers of Cell Phones and Other WiFi-Age Devices. Seven Stories Press, 2014.

LiveScience. “What is Electromagnetic Radiation?” 2015. https://www.livescience.com/38169-electromagnetism.html

International EMF Exposure Limits for AC Electric and AC Magnetic Fields 50/60z (High Voltage Power Lines, Home Electrical Wiring, Power Cords, Appliances)

Location	Reference	Limit Based On	AC Magnetic Fields mG	AC Electric Field V/m
Canada	ICNIRP 1998	Nerve and Muscle Stimulation	833	5,000
USA	ACGHI 1998	Nerve and Muscle Stimulation	1,000	25,000
Germany	DIN/VDE	Nerve and Muscle Stimulation	50,000	20,000
Sweden	MRP	Biological / Precautionary	3	25
Sweden	TCO	Biological / Precautionary	2	10
Switzerland		Biological / Precautionary	10	
WHO "possibly carcinogenic"		Biological / Precautionary	3-4	
Bio-Initiative Report recommendation	Bio-Initiative Report 2007	Biological / Precautionary	1	
US Congress	Recommendation 1996	Biological / Precautionary	2	10
Building Biology Guidelines Germany (Sleeping Areas)	SBM2008 - Level of No Biological Concern	Biological / Precautionary	0.2	0.3
Natural Radiation	MAES 2008	Natural Exposure	0.0002	0.0001
Average Indoor Urban Exposure Toronto, Canada	Safe Living Technologies Inc. 2011		0.4 to 2.0	5 to 25

Notes:

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