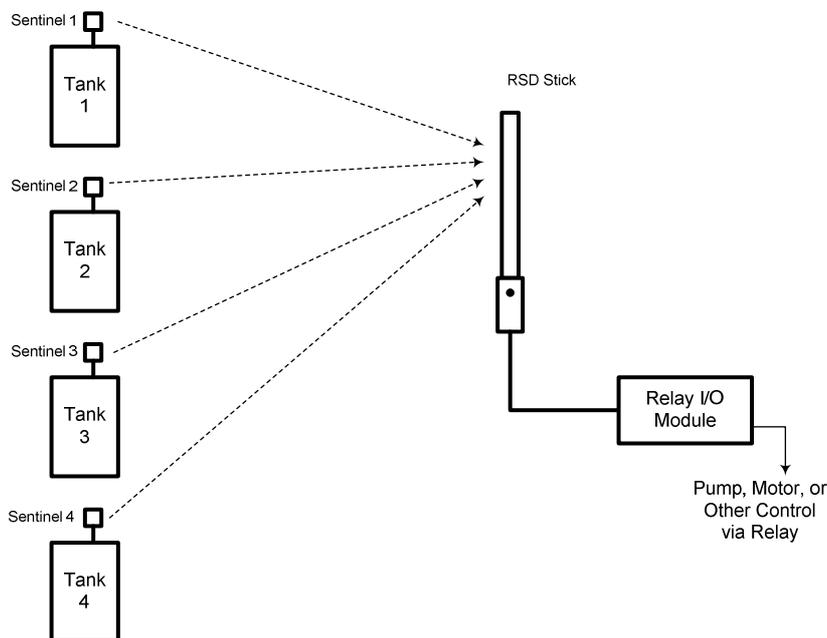


# Remote Switch Feature for the SignalFire RSD Stick

## Overview

The SignalFire RSD Stick can be used as a “receiver” for multiple remote nodes and it can use the data from those remote nodes to set its relay outputs. The RSD stick is a standard Modbus Stick connected to a RSD module and configured for RSD Remote Switch operation. This topology is shown in the following figure:



In the above example, the customer is controlling a pump with the RSD Stick’s Relay Module output and a real-world example would be to shut the pump down if any one of the tanks becomes full.

Note that this system is stand-alone. There is no gateway so there is no means of extracting data from the system. SignalFire offers a system which includes a gateway if data is desired, but this system is the simplest means of performing shutdown functionality.

In order to implement this system, the remote nodes (Sentinels) must be configured in the standard manor. The RSD Stick needs to have the control logic set up in it so that the relay module performs the proper switching function.

**Relay State Details**

The relays used on the Output Module are SPDT (NO/NC) relays. They have the following ratings:

- 30 VDC      2 A
- 125 VAC      0.5 A
- 10<sup>8</sup>          Operations (life)

The relays are have Normally Open (NO) and Normally Closed (NC) contacts.

**The “Normal” state of the relay is the un-energized state and this state should be used to have the controlled system (pump, motor,...) in the “safe” or “off” state.**

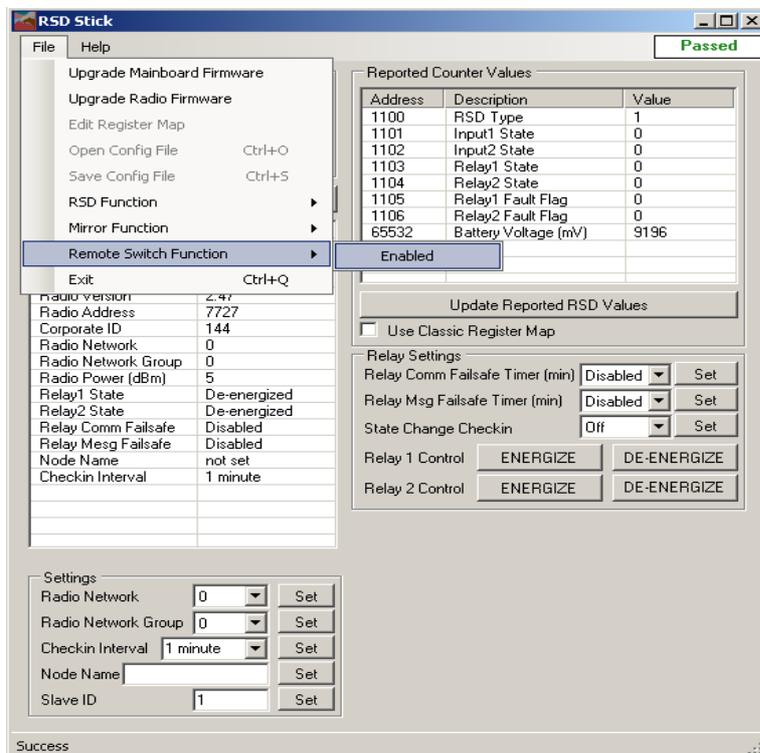
The logic that you will set in the RSD Stick relies on this.

**Configuring the RSD Stick for Remote Switch Functionality**

The RSD Stick must have firmware version 0.53 or later installed on it to allow the Remote Switch Functionality. The firmware supports both the standard RSD Stick operation as well as the new Remote Switch functionality. You can change the RSD Stick from one type to the other using the SignalFire ToolKit version 0.59 or later.

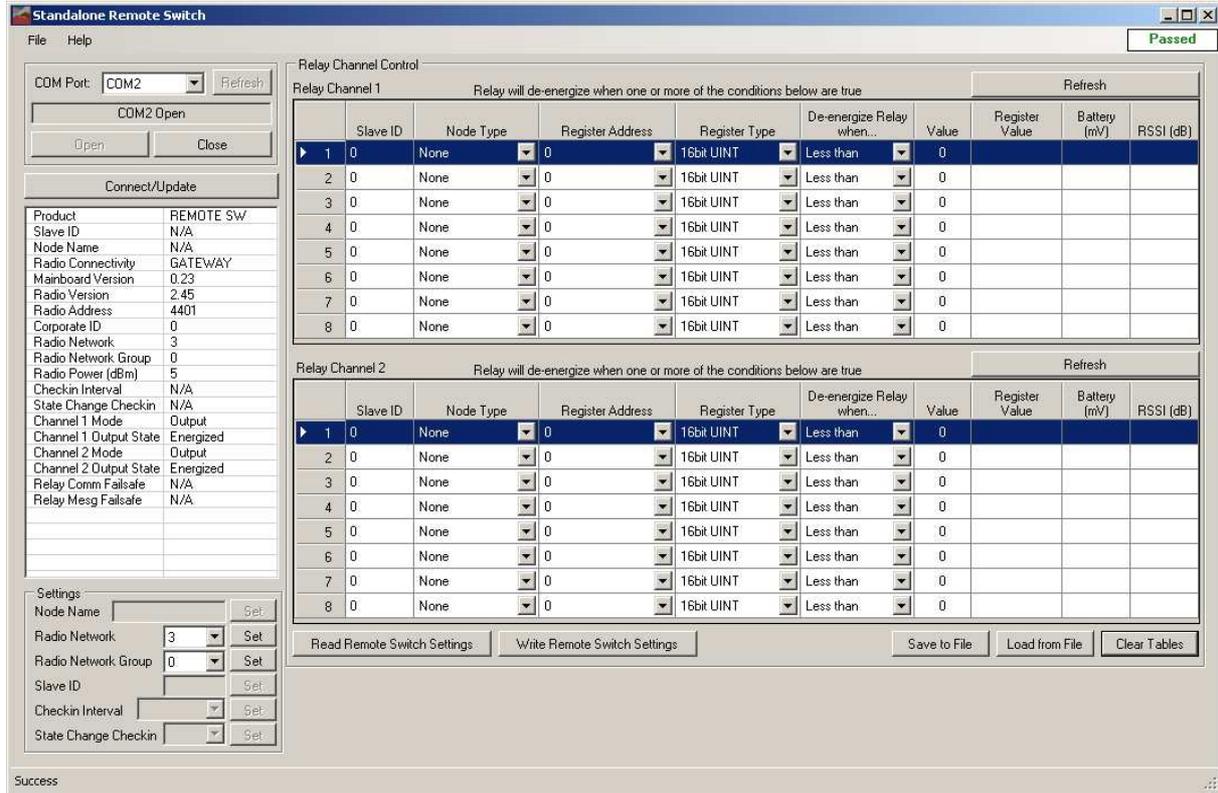


To switch from the standard RSD (or Modbus) Stick to the Remote Switch Stick functionality, use the ToolKit File pulldown menu at the top and enable or disable the functionality.



Bring up the RSD Switch Stick window by selecting the correct COM port and pressing the Auto-Detect button on the main ToolKit screen. Alternatively, you can select from the drop-down Select Device button.

You will see the “Standalone Remote Switch” configuration screen.



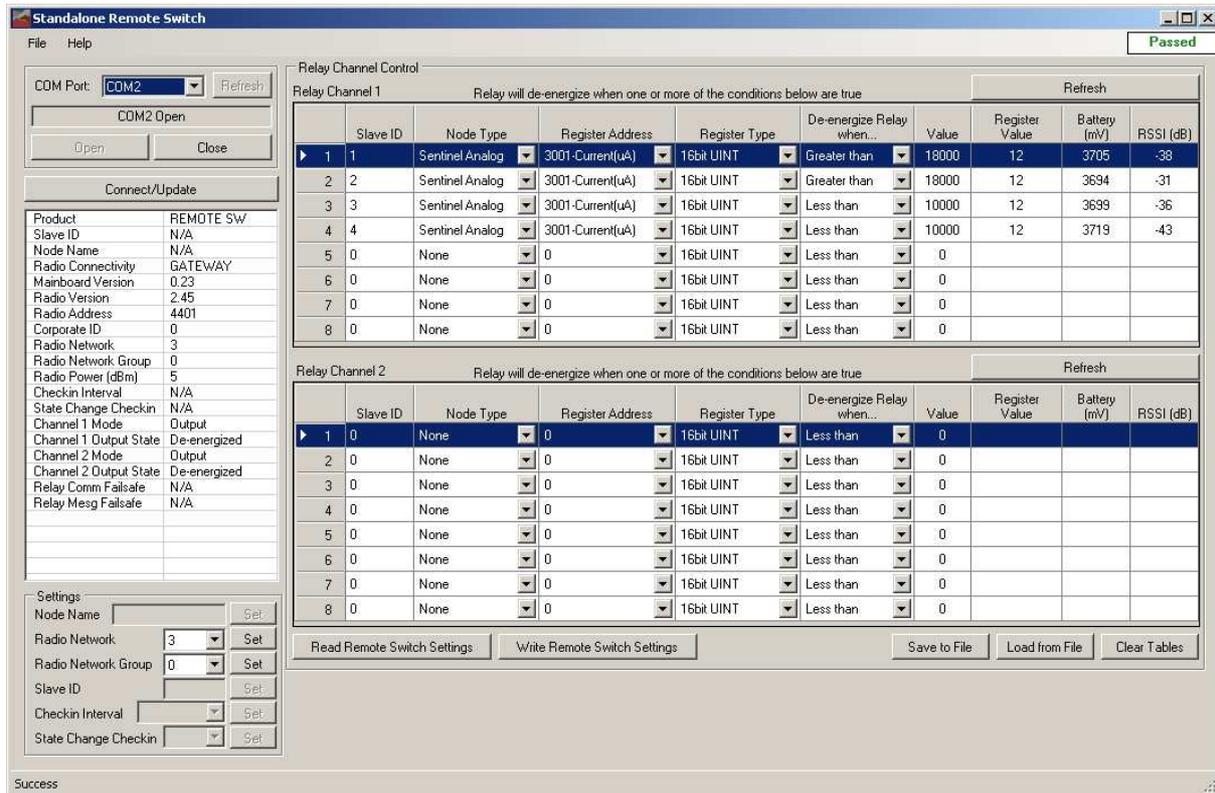
The only system configuration items that you will need to set are:

- Radio Network
- Radio Network Group

These must be set to be the same as the remote nodes in the network. Only units with matching network and group settings will communicate with one another.

### Setting up the Relay Control Logic

Now, you need to set up the logic in the Relay Tables. There is an 8 line table for Relay 1 and another 8 line table for Relay 2. Here is a screen shot of the table filled out for a four-node system controlling Relay 1:



Each line in the table represents a data element (register) in one remote node. In this example, there are four Sentinel Analog nodes controlling Relay 1. The relay will de-energize (go to the safe or “alarm” state) when any single line is true. So, in this case, the relay will de-energize if:

- Sentinel (Slave ID 1) has a 4-20 mA reading above 18 mA **OR**
- Sentinel (Slave ID 2) has a 4-20 mA reading above 18 mA **OR**
- Sentinel (Slave ID 3) has a 4-20 mA reading below 10 mA **OR**
- Sentinel (Slave ID 4) has a 4-20 mA reading below 10 mA

The other way to look at it is the relay will only be energized (operating state for the equipment) is if all four lines are not true or not in the “alarmed” state (no line is “alarmed”).

Each line should represent an “alarmed” condition. For example, for line 1 and 2, you might have a pressure sensor that has a higher reading as the tank becomes fuller. Above 18 mA (18,000 uA is the actual register value), we want to shut down a pump.

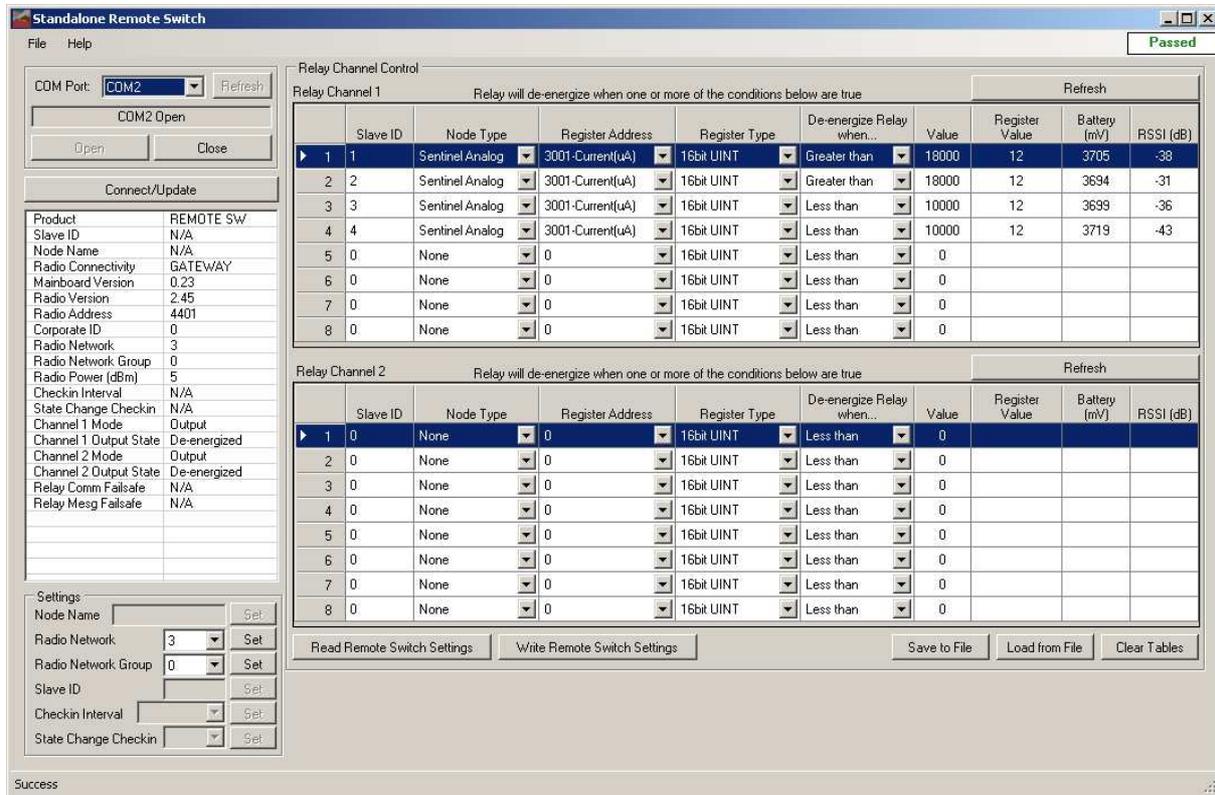
Lines 3 and 4 might represent a level switch with 12 mA output when the level is below the switch and 8 mA when the level is at the switch or above. In this case, you want to shut down when the reading goes to 8 mA (below 10 mA in the example) and the pump can be on when above 10 mA.

The user interface helps you by only allowing selections that make sense for the remote node type you select.

### Node Presence

If any node times out (stops communicating with the Remote Switch Stick), it will cause the system to set the relay to the safe state. Consequently, all nodes must be on and actively communicating to the Stick in order for the relay to be energized (assuming all data supports an energized relay).

**Buttons in the Setup Screen**



Radio Network and Group – Enter the settings in the windows and press the “Set” button to write the setting to the node. You will see the updated values in the settings window above.

Read Remote Switch Settings – Pressing this will read the configured threshold settings from the node into the tables.

Write Remote Switch Settings – Pressing this will write the contents of the threshold settings from the two tables into the node.

Clear Table – Pressing this will clear the tables so you can start fresh.

Save/Load From File – This will save the contents of the threshold tables to a file so you can later recall it if you are configuring multiple Remote Switch Nodes to the same threshold values.

Refresh – This will update the actual remote node Register Values, Battery Values, and RSSI (right side of table) in the tables.