MARINE RESCUE TECHNOLOGIES LTD. - FCC ID: 2AB4VSMRTV100 - JOB #: 197AUT15/197BUT15

CIRCUIT DESCRIPTION:

Turning ON the READY switch (SW4) will turn on the water sense circuit, which applies 1.8V to RSNS_HI via R45 (1M5 pull-up).

When the unit is placed in salt water, current will conduct through the water to GND (at the VHF antenna connector) and the voltage level of RSNS_HI will be pulled low. If the water resistance is sufficiently low, RSNS_HI will be pulled below the negative-going threshold of the Schmitt trigger, causing it to output high. This switches on Q9 which, in turn, switches on Q6, applying power to the rest of the board.

The microcontroller asserts POWER ON to hold ON Q6. This is independent of water being present or not.

The RC circuit created by R45 and C38 also creates the intended feature that, when the user first switches the device into READY, the device will power on transiently (until R45 can pull RSNS_HI) allowing a POST to be performed. By the time POST is finished, RSNS_HI will have reached 1V8 (unless water is present), which the MCU can observe and, accordingly, de-assert the POWER_ON line (or activate, if water is present).

The same RC circuit will filter any rapid changes to the resistance between RSNS HI and GND (the water). This, in tandem with the hysteresis of the Schmitt inverter, makes the water sense circuit very robust against spray and splash.