

TRIGGERING ACTIONS BASED ON RAD7 MEASUREMENTS

Utilizing the DurrIDGE Relay Box, Capture, and the 3-Way Serial Adaptor Cable

The RAD7 can trigger actions in response to a variety of events, such as reaching a certain radon or thoron level, connection status, temperature, and others. The actions that the RAD7 can take include sending emails, activating warning lights or alarms, issuing RAD7 commands and several more. Read on to learn how the RAD7 plus the DurrIDGE Relay Box can be configured to set or reset relays as well as how, using Capture Software, additional advanced relay functions can be set up.

The DURRIDGE Relay Box



With the optional Relay Box accessory, the DurrIDGE RAD7 can be configured to activate warning lights, alarms, ventilation controls, and other external devices. This typically occurs when the radon concentration meets or exceeds a specified level.

The Relay Box offers two relays which may be set or reset according to a pair of individually specified thresholds and the measured radon concentration. The RAD7's Special Menu facilitates this with a selection of Relays commands: 'Level1', 'Level2', 'Enable', and 'Disable'. Use the arrow keys to scroll between these commands. Level1 permits the user to set a level, at which the RAD7 will turn on Relay 1, and below which it will turn Relay 1 off. Level2 does the same for the second relay. 'Enable' causes the function to go into effect. 'Disable' stops the RAD7 from sending any commands to the relays. (See Section 2.5.16 of the RAD7 manual for details.)



The relay trigger conditions are checked after each test cycle ends and the end-of-cycle results have been printed, but before the graph is printed. A relay is actuated if the radon concentration meets or exceeds the corresponding user-specified level, and the relay is deactivated when it falls below that threshold.

Relays functionality requires that the RAD7 be in either Sniff or Normal mode, and not Grab mode. The Level1 and Level2 relay values use whichever concentration unit has been specified in the Setup menu. The relay settings typically respond to radon concentrations, but thoron concentrations and other parameters can trigger relays using an advanced configuration, which is explained on the following page.

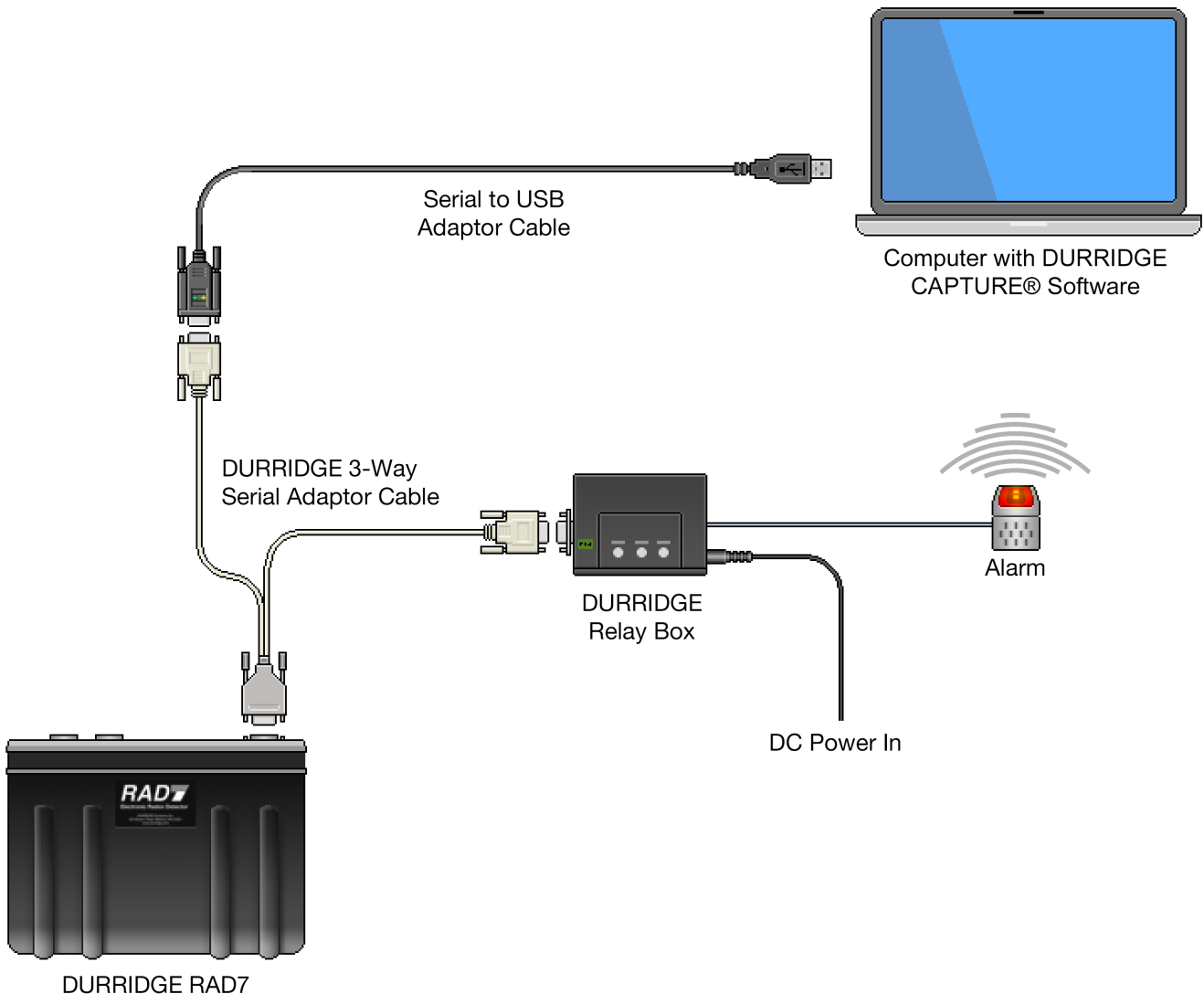
Advanced Relays Functionality

Normally the Relay Box is connected to the RAD7 using a basic null modem cable, and this will allow the RAD7 to set relays whenever the radon concentration reaches the specified thresholds.

But what if you want an alarm or other external device to respond to something other than the radon concentration? Durridge's Capture software makes it possible for the RAD7 to trigger external devices in response to ten additional attributes: RAD7 battery voltage, Connection status, Counts per minute, Cycle number, Data Free value, Pump current, Relative humidity, Run number, Temperature, and Thoron concentration.

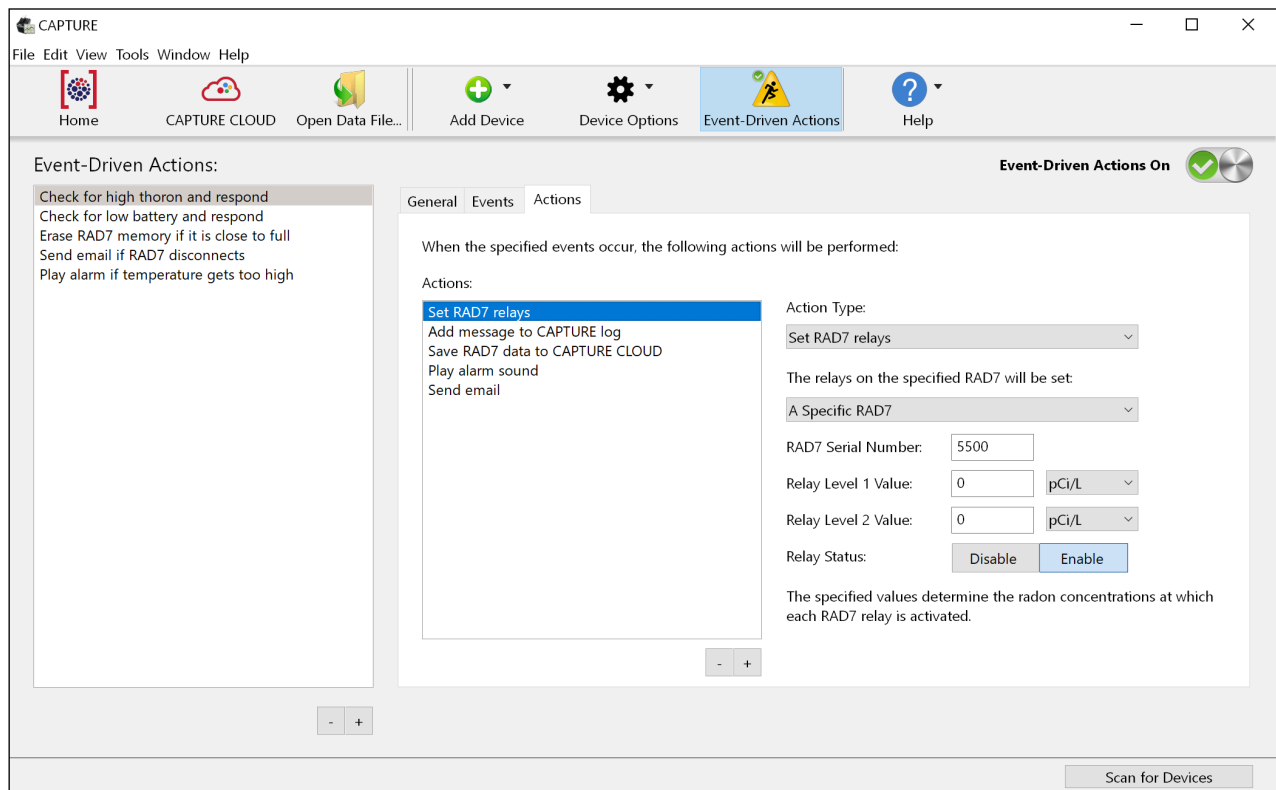
To achieve this, first connect the Relay Box to the RAD7 and a computer using the Durridge 3-Way Serial Adaptor Cable, as pictured below. Next, launch Capture and wait for the software to detect the RAD7.

See the following page for additional instructions.



Hardware configuration with Durridge RAD7, Relay Box, and 3-Way Serial Adaptor Cable

Controlling Relays with Event-Driven Actions in CAPTURE



Event-Driven Actions configuration panel in Durridge Capture software

Next use Capture's Event-Driven Actions panel (which is shown above) to create a new Event defining a particular set of criteria needed to trigger the alarm—for example a Temperature greater than 45° Celsius or a RAD7 battery voltage lower than 6.5 volts.

Then configure an associated Action; the Action Type should be set to “Set RAD7 Relays”, and it should cause the RAD7's Relay Level 1 value to be set to 0. (This low action threshold of 0 will guarantee that the Relay will be activated when the aforementioned conditions are satisfied, regardless of the radon concentration.) Be sure to set the Relay Status to Enable.

Finally, define another Event-Driven Action specifying the conditions under which Relay Level 1 should be reset (i.e deactivated). The accompanying “Set RAD7 Relays” Action should have its Relay Level 1 value set to the maximum permitted value of 65535. Since this very high threshold will never actually be met, the relay will inevitably be reset when the specified conditions are met.

Additional behaviors may be set up as desired, using the Event-Driven Actions Window. Capture makes it possible to not only configure the relays on the Durridge Relay Box, but also send an email, add a message to the program log, advance the RAD7 to the next run, erase the RAD7, issue a specified RAD7 command, play an audible alarm sound, save RAD7 data to disk or to Capture Cloud, start and stop the RAD7, and start and stop a Drystik accessory. Each of these actions can be performed in response to changes in one of the numerous RAD7 properties listed on the previous page.

For more information on configuring Event-Driven Actions in Capture, see the Capture user's manual at https://durridge.com/documentation/capture_help/.

Note that Event-Driven Action functionality is a premium Capture feature which is available to Capture Cloud subscribers. For information on Capture Cloud, please see <https://durridge.com/software/capture-cloud/>.