

## Why Back Up Your Thermostats?

A thermostat is a mechanical device, and like any mechanical device they can and will fail. They can fail both in the "on" and "off" positions (although now-a-days they are better at failing to "off," but failing to "on" still does happen). Now, if your thermostat fails to "off" it's no problem. You'll notice your tubs are cool, get a new thermostat and be on your way.

But what if it fails in the "On" position and begins running your heat tape, heat cable, or heat pads at full throttle? In this case it depends on the wattage of your heating devices. The various wattages of heat tape reach different temperatures when running at full power. For example, 3" heat tape comes in 10 watt and 6 watt varieties. I have heard people refer to the 10 watt, 3" heat tape as "killer" heat tape because it gets hot enough to melt plastic and kill an animal when running at full power. I have 6 racks with this type of heat tape, and I would never consider running them without a backup. Some companies also offer 4" heat tape that runs at 8 watts, and note:  $3" / 6 \text{ watts} = 4" / 8 \text{ watts}$ , so both the 3"/6 watt tape and 4"/8 watt tape will run pretty close to the same surface temperature given the same amount of power.

You need to back up your thermostats because you have an insurmountable amount of time, love, and energy put into your ball pythons. For me, having them killed in their tub due to a thermostat failure would be devastating. Not to mention, it could start a fire. The extra \$100 or so is worth every penny for peace of mind. I cannot tell you how many people I have met contemplating multi-thousand dollar animal purchases before solidifying their equipment.

## How?

There are two methods: rheostat and On/Off backup. I use On/Off, but others use the rheostat method. Here's how they work:

### On/Off Method

You plug your On/Off thermostat into the wall or surge protector. (I use both Ranco and Johnson On/Off thermostats). You set it for a few degrees higher than your target temperature. You place the probe on the heat tape, or taped to the heat cable. (Side note, I \*always\* have my probes taped securely to the heat tape, not in the tub. I don't want to risk it getting bumped off the heat spot). So you have your On/Off probe now in place. Then, you plug your proportional into the On/Off thermostat and place the probe on the heat tape. (I have Helix, Herpstat, and Reptile Basics VE proportional thermostats. I highly recommend the Reptile Basics and Herpstat). Then you plug your heating device into the proportional. So it goes:

**Wall Outlet    ]]-----On/Off    ]]-----Proportional    ]]-----Heat Tape**

Then if the proportional fails to ON, the On/Off will shut the proportional down.

**Rheostat Method:**

A rheostat is a "slider" for electricity (e.g., a dimmer for a lamp). Here's how you use a rheostat as a backup. First, you have to find your rheostat setting. Put it on low, plug it in, plug your heat tape into it. While continuously monitoring the temperature of the heat tape, keep turning it higher until your heat tape is just above your target temperature (say 3 degrees). Now, keep it fixed at that setting. You use it as a backup as follows:

**Wall Outlet ] ]-----Proportional ] ]-----Rheostat ] ]-----Heat Tape**

Note that now the proportional plugs directly into the wall. This is because you can't throttle the electricity going to the proportional or it won't function. But now, should the proportional fail to ON, the setting on the rheostat keeps the heat tape from running too hot. I prefer On/Off method so I don't have to tinker with a rheostat, but if I'm short a thermostat I will use that method.

In closing, know the capabilities of your heating devices and back them up to prevent a devastating loss of animals and property.