



DIGITAL BASIC SYSTEM DBS-1000

UNPACKING AND TESTING:

Unpack the Temperature Control System and report any obvious damage to the carrier. If damaged, keep the box it was shipped in for evidence of mishandling. The Digital Basic System consists of a System Module with a 4' temperature probe, an 8' power input cord and 4' power output cord with three outlets.

Plug your heaters into the DBS-1000 power output cord before plugging the power cord into any 110V, 60hz wall outlet. The display will show "HC" and the numbers indicating the month and year the software was last revised and the temperature range (on units produced after March 23, 04, example; 65LO, 110HI.). You should provide this information in the event you call Helix Controls with a question. After a few seconds the current probe temperature will be displayed.

If the temperature is less than 85 F. the left-hand green lamp will light indicating that power is being supplied to the heater outlets, even if no heaters are plugged in. Pressing the button for two seconds will display the temperature set point, set at 85 F during factory testing. The temperature will flash twice, the first time indicating the value stored in memory and the second the value read by the processor, the two numbers will be the same. The right hand red check system light comes on if an error is detected by the built in self-checking system and will remain on until you press the button for two seconds. The display will flash EE indicating that the number that follows is an error code not a temperature. A list of eight self-checking error codes will be found under "problem solving".

****OPERATIONAL TEST:**

Perform this test after replacing the fuse, or anytime to verify the system is working properly. Test by first, plugging an incandescent lamp into one of the DBS-1000's power output sockets. Plug the DBS-1000 into an 110V AC wall socket. Test the unit by warming up the probe (temperature sensor) with your hand. As the probe temperature rises to the programmed temperature set point, the left-hand (green) power indicator lamp, and the incandescent lamp, plugged into the controller's output, will dim in steps and go completely out. Allow the probe temperature to cool below the controllers temperature setting, the LH green light and test light in the unit's output will brighten together. Test is done and the system is again ready for use. If the test lamp stays on while the green power output goes out, the system was overloaded to a point where the fuse could not protect the interior components and repair at Helix Controls, Inc is required. Please call prior to shipping to us.

INSTALLATION:

Locate the temperature probe in the basking area of the environment to be controlled, or the hottest end of the enclosure, at a level where it will sense heat from the highest wattage heat source. When radiant heaters and sub-floor heaters are used in a short enclosure, the sensor should be on the floor under the heater, or to the side of the heater.

Locate the probe where it will be directly influenced by the heater.

With chelonians and other ground dwelling reptiles it is best to suspend the sensor with the tip just above the animal, so that the animal cannot sit on the probe. If the probe is touching a surface, it will influence the probes reading, so the probe's sensor end should be in the air, and well influenced by the heat source. In all cases, it is important to make sure that the probe is secured in place, or if suspended, so it will swing or spring back to roughly the same position when the animal moves away. If it is possible for the animal to push the probe into a cold corner of the cage the Control System may raise the cage temperature to an uncomfortable level.



Always monitor the new installation and experiment with the probe location until you arrive at the best set-up for your cage/animal combo. Rack Systems where the heat tape touches the bottom of the tub, the probe can be affixed directly to the heated surface between the boxes for a constant surface temperature. If the ambient room temperature changes a lot secure probe placement in a "dedicated dummy box" directly in contact with the hot-test spot may be best. See day temperature setting for more information on locations.

The system is designed to work with any type of non-ballasted 110 volt AC resistive heaters, such as heat pads, panels, lamps, tapes, heat cords, hot rocks, Flex Watt, etc. Heaters with built-in fans will not work, due to varying voltages. Any combination of resistive heaters can be connected to the system up to a total of 500 watt's. Always place the probe near the highest wattage and most reliable heater. Do not exceed the 500 Watt limit. If you need additional power to handle over 500 watts, you can purchase an additional 500 watt Power Module/s from Helix Controls. The DBS-1000 should be mounted to a vertical surface using the adhesive tape on the back of the unit. Pre-clean the mounting surface with rubbing alcohol and let dry for the best adhesion. Always protect the system from rain or excessive moisture if used outdoors.

Connect the heaters. If more than three outlets are needed, an adapter block, or standard power strip with a ground adapter can be plugged into one of the Controller's outlets. **Avoid using plug strip's with built-in surge protectors as these may produce a short circuit if a surge occurs and may cause an internal fuse to blow or they can cause errors to pop up.** Each System has built-in surge protection ability and there is a customer replaceable 6 amp "fast-acting fuse" in the system to protect it against heater/wiring failures or short circuits to the controller's output. The fuse will "blow" if more than 500 watts of heaters/lights are plugged in or if there is faulty electrical wiring on the heaters.

*****Note: Always perform the operational test on page 1, after a blown-fuse replacement or before placing a second-hand system in use.**

DAY TEMPERATURE SETTING:

Allow time for the environment to warm up. This will vary with size, type and position of heaters and probe placement. Light bulbs will heat quickly and under floor devices tend to be slower. The DBS-1000 has software that senses for "small heater and large cage" and if the system setup takes a long time to achieve the desired temperature, the DBS-1000 will compensate by building a short time delay to ensure the cage reaches the desired temperature. Pressing the button to check the set point will clear the time constant. This feature adds to the accuracy of the controller and is present in day and night modes. The probe's location or wattage of the heater needs to be reconsidered as well as the ambient room's sudden temperature swings if a noticeable variation of controlled temperature is noticed.

The factory setting is set to 85 F. and the temperature (at the probe) should stabilize at approx. this value. The probe's location has everything to do with the temperature, a few more inches from the heater can mean a few degrees hotter temperature at the hot spot. If your heat source is near a glass panel, the glass will absorb the heat and act as an additional radiant heat source. If the glass feels warm after the set up is stabilized (24-48 hours), the probe should be located between the heater and glass panel instead of between the heater and back of the cage. You can adjust the temperature setting by pressing and holding the button. If a lower temperature is desired, hold the button down until 110 is reached, then, the reading will drop to 65 and start climbing again. Power to the heaters is turned off while the button is pressed.



NIGHT TEMPERATURE SETTING:

To activate the night drop temperature feature, one of the two DBS-1000 night drop trigger devices must be connected to the phone socket on the controller. They are The Appliance Timer Adapter Cord or The Photo Electric Module. The DBS-1000 night-drop trigger devices are not interchangeable with the Regular Basic System night drop trigger devices. If you have purchased one of the DBS-1000 night drop trigger devices, please refer to the instructions included with them. The factory night drop temperature setting is 75 F and cannot be checked or changed without a night drop trigger device installed and activated. * A temporary shunt device is available to reset an E-3 error. Contact Helix Controls in the event that no auto-trigger feature is desired.

A NOTE ON SAFETY:

While the temperature sensor is completely isolated from the 110v AC supply, the heaters are connected directly to the 110v supply and appropriate precautions should be taken. Most heaters should be located outside the environment to eliminate the risk of shock or thermal burns. **If you plan to control the temperature in more than one environment/cage using one controller, it will be very important to place the probe in the tank with a very reliable heat source.**

HEAT GENERATED IN THE POWER MODULE:

About 1% of the total power being generated is in the Controller's regulating device. This heat must be dissipated. (For total heater loads of 250 watts or less no special precautions are necessary. **At higher power levels it is desirable that the Controller is mounted on a vertical surface and air is allowed to circulate freely around the back of the Controller.** Do not locate the Controller inside the heated cage. Use an extension cord to connect the heaters if necessary. The Controller will become warm to the touch under normal conditions. If it becomes excessively hot the unit may be overloaded and an additional Power Module should be added to control some of the heaters.

PROBLEM SOLVING AND TECHNICAL INFORMATION:

Up to eight error codes can be displayed by the System, though it is unlikely that you will ever see most of them. The DBS-1000 self-checking system incorporates a timer, (watch dog timer) that checks continuously that the routine operations carried out by the processor are completed on time. If one is late for any reason the timer automatically resets the processor, (the equivalent of rebooting a P.C.), this safe guards the temperature set point information and eliminates hang-ups. A reset will also occur if the AC voltage falls below 90 volts. On "98-01 software, an E1 message simply tells you that a reset has occurred, it will not affect the system or performance, (E-1 red light is absent in units produced after 03-23-04, reset operation is unchanged). Power to the heaters is turned on twice every cycle of the AC power. If the system cannot detect the A/C voltage properly, it may impair its ability to regulate well and an E8 message will result. Neither condition should affect the performance though you may want to try a power outlet on a different circuit breaker, or talk to your power company, or ask the neighbor about his arc welder etc. E2 and E3 denote invalid day and night temperatures respectively. Both temperatures can only be between 65 F and 110 F. If a memory setting becomes corrupted, the controller will detect it and reset itself, or safely default to 85 F, and the red trouble light will stay on until the appropriate setting has been reset. E4 and E5 report that the system is having trouble communicating with the temperature probe. Any of these two codes will shut off power to the heaters and display EE instead of the temperature. If EE is displayed be prepared to write down all the error codes displayed when the button is pressed as they will help Helix engineers determine the problem; usually the probe damage is caused reptiles or hungry feeder rodents. A replacement probe can be ordered from Helix Controls and installed by the user without loss of calibration. E6 and E7 denote that the probe temperature has exceeded its working range of 32 to 130F.



*** Note: When below 32F "CC" is displayed and above 130F "HH" is displayed. The probe is not damaged by these extremes. The system is simply letting you know that a temperature was reached beyond its designed measuring capability. The display will flash "HC 98-01" or "HC 01-04, 65LO, 110HI," over and over or read "EE", if the probe is damaged or a connection with in the probes plug has detached from the circuit board inside the unit. Call Helix if you have questions or a damaged probe.

EXPANDING THE SYSTEM:

ADDITIONAL POWER MODULE/S:

The DBS-1000 can control additional 500 watt Power Modules. Up to 10 additional Power Modules can be added to the System. However, the typical house wiring will only support a total of 3 Power Modules (1500 watts) per circuit. More than 3 Power Modules will probably require using a second circuit to avoid tripping the circuit breaker. The controller and power module's out puts cannot be joined, 500 watts each only.

LARGER SYSTEM FOR LARGER HEATERS:

Helix Controls has a special, (stand alone) "1500 watt proportional system" available. Originally this system was designed for a walk-in incubator that uses a 1500 watt oil-filled radiant style heater. It has a 12' probe (standard) and is a pulse proportional type system, also suitable for single and multiple heat sources higher than 500 watts.

WARRANTY

Helix Controls, Inc. warrants all Internal Components of the DBS-1000 Proportional Temperature Control System for a period of Seven years. Helix Controls makes no warranty express or implied, other than that stated herein. Helix Controls warrant of merchantability or any other warranty, including this limited warranty, shall be limited solely and exclusively to the repair or replacement of a defective product. In no event shall Helix Controls be liable for any other damages including special, incidental, consequential, or exemplary. This warranty does not include a failure caused by accident, misuse, damage from animals, moisture, solvents or connection to faulty or inappropriate electrical sources. This warranty shall be voided in the event the Purchaser alters or tampers with the product in any way or uses the product for any purpose other than that for which it is intended.