DESCRIPTION

The Temperature Sensor Junction Box is provided to allow easy installation and removal of the Temperature Sensor during initial installation or maintenance and eliminate unnecessary splicing 15-25' from the sensor. The assembly includes a temperature sensor, enclosure, cable fittings, a terminal block, wiring label, and a sensor ID label for marking the number and type of sensor.

If these specifications are followed, the likelihood of invalid readings by the controller or damage to the sensors or the controller is decreased. The long lengths of cable are capable of acting as a large antenna. Therefore, if care is not taken, they can become the weak link of your environmental control system.

When the kit is received, check for shipping damage or missing parts.

Place Temperature Sensors

(1) Determine the approximate location for each temperature sensor. Normally, the sensors are equally spaced although they may be adjusted to accommodate zone heating in some applications.

(2) Do not place sensors in close proximity to radiant brooders or in the path of a direct-fired heater. This will cause the sensor to read values that are much higher than the actual average of the area.

(3) Place sensors as close to the animal’s environment as possible without being in reach of the animals. If it is in reach of the animals, the animals will eventually destroy the sensor.

(4) If you are using an outside temperature sensor, care must be taken to achieve an accurate reading. Here are some suggestions:
   - If the temperature sensor is placed in direct sunlight, place the sensor inside a PVC tube or the equivalent to avoid the UV heating effect.
   - Do not hang directly under non-insulated eave. This will cause unexpected radiant heat that will skew the result during the daylight hours.

Extending Cable Thru Building

(5) Conditions to avoid:
   - Do not extend sensor cable in close proximity to AC voltage lines. (Allow at least 6 inches).
   - Do not extend sensor cable through or in close proximity to metallic pipes such as conduit or gas lines. If the cable is in close proximity to metallic pipes, it will increase your chances of lightning damage.

Junction Box Installation

(6) Always install the Junction Box with the temperature sensor pointing downward. In most installations, the junction box will be suspended from the ceiling by the sensor cable as shown in Figure 2.
In-Line Cable Splicing
When necessary to splice cable between the temperature sensor and controller, do not install splice between the temperature sensor and the ceiling. Refer to Figure 2.
(7) Install two water-tight cable connectors into “knock-out” openings of a utility box.
(8) Remove cover plate from utility box and mount utility box at desired location.
(9) Install ends of cable and sensor into utility box through the water-tight connectors.
(10) Splice cable to the sensor.
(11) Replace cover plate to seal spliced cable/sensor union inside the water-tight utility box.
(12) For maximum noise immunity, be sure to splice the shield wires together also. For best results, the shield wire must maintain connection from the controller to the temperature sensor.

Cable Routing & Wire Connections
A cable routing and wire connections label is included inside the Junction Box for quick reference. Refer to Figure 3.

(13) Starting at the top of the enclosure, insert the 2-conductor shielded cable thru the top and bottom mounting holes as shown in Figure 3.
(14) Remove the enclosure cover by locating the corner cover notches and slowly pulling outward at each corner.
(15) Insert the cable through the cable fitting.
(16) Remove 3 inches of the cable outer jacket and remove the shield/wire.
(17) Strip 1/4 inch of the Black and White conductor insulation.
(18) Insert the cable wires into the terminal block and tighten securely with a small, flat-head screwdriver. Black wire to Black and White wire to White.
(19) Tighten the cable fitting securely around the cable.
(20) Reinstall the enclosure cover and ensure the cover snaps into place securely.

Attaching Cable to Controller
(21) Be sure to attach the shield wire to the white wire (or equivalent) of the cable. The bare shield wire MUST NOT come in contact with any of the electrical components inside the control box. Electrical tape should be used to insulate the bare shield wire from the electrical components to insure that it will not pose a problem in the future.

Sensor Calibration
(22) Temperature sensor calibration is vital to the operation of the control system. Sensors should be calibrated immediately upon installation of the system to insure that they are accurately measuring temperature. They should also be calibrated on regular intervals. Our suggestion would be to calibrate the sensors at the end of the first flock to verify stability. After this point, temperature sensor calibration should be performed once per year and only at the end of flocks.

While calibrating, obey the following rules:
• Sensors that are inside ±1% full range (±1°F/±0.5°C) should be left alone.
• Use an accurate temperature measuring device. The temperature sensor you are using has a very high degree of accuracy so do not use a thermometer with a large error factor. We prefer a Fluke® thermocouple device or its equivalent with an accuracy of ±1% or better.
• When calibrating temperature sensors, equipment needs to be off for at least 10 minutes to allow the sensors to stabilize. We recommend this being done between flocks.
• Once sensors are stabilized, place a thermometer beside the sensor being calibrated and allow the thermometer to stabilize (wait approximately one minute). Then relay the reading to another person who is monitoring the reading on the controller. If the values are different, calibrate the controller. Refer to the controller manual for proper sensor calibration; the appropriate steps may be different depending on the model.

Conclusion
If the previous rules and specifications are obeyed, the life of your temperature sensors and also the environmental controller can be extended. These rules will not only help to protect the temperature sensor but will also decrease the likelihood that a controller is destroyed by lightning. These same rules can be applied to any low voltage signal line that is being extended from the controller to decrease the chances of lightning damage and increase noise immunity.