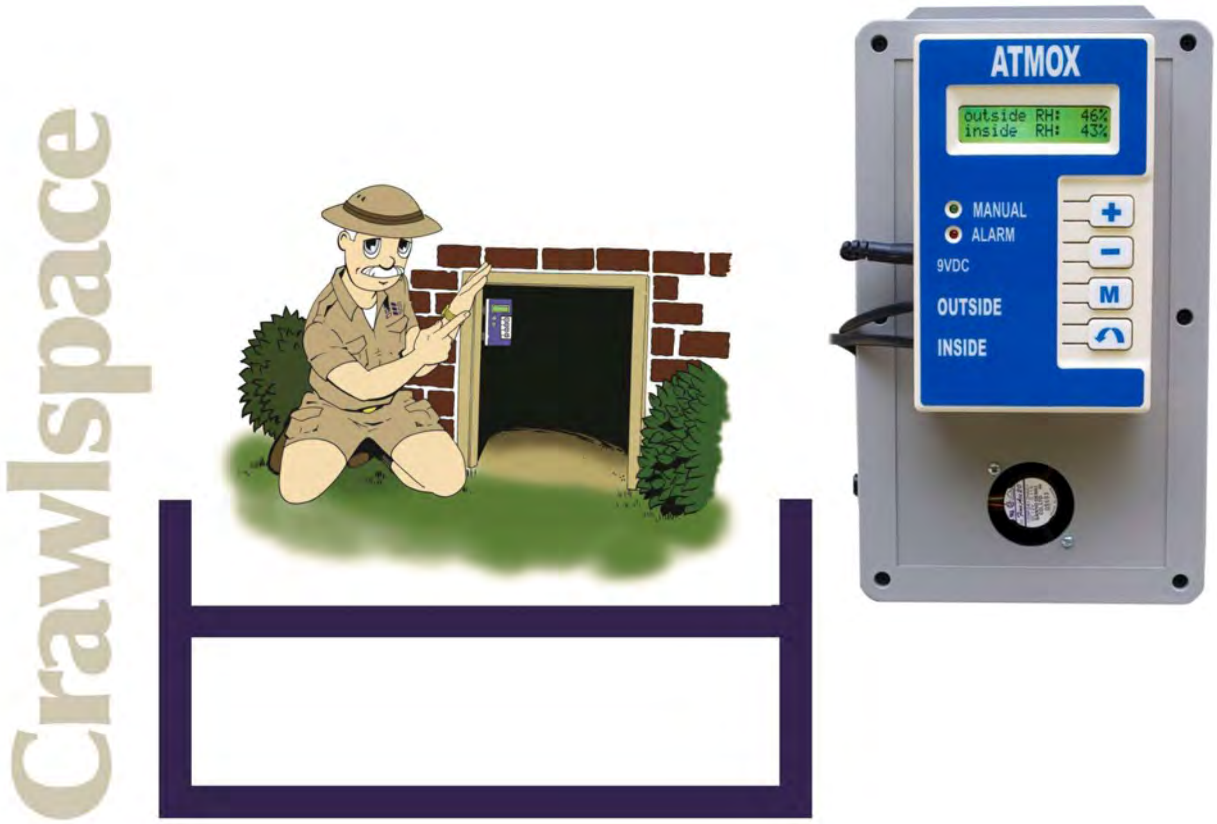
ATMOX

Crawlspace
Basement
Attic

Controlled Ventilation Systems



ATMOX EZ 150 System

MANUAL

Software 6.28
Issue 2016-06

ATMOX Controlled Ventilation Systems

Crawlspace Systems: EZ 150

Issue 2016-06, Software 6.28

Contents of Manual

1. Understanding the ATMOX System

Thank you for purchasing the ATMOX Controlled Ventilation System for your crawlspace.

This section covers the basics of the ATMOX system for a homeowner once the system has been installed. This manual covers the ATMOX EZ System.

ATMOX EZ System Control Box mounted on attached Power Supply

1.1 Operating Principle

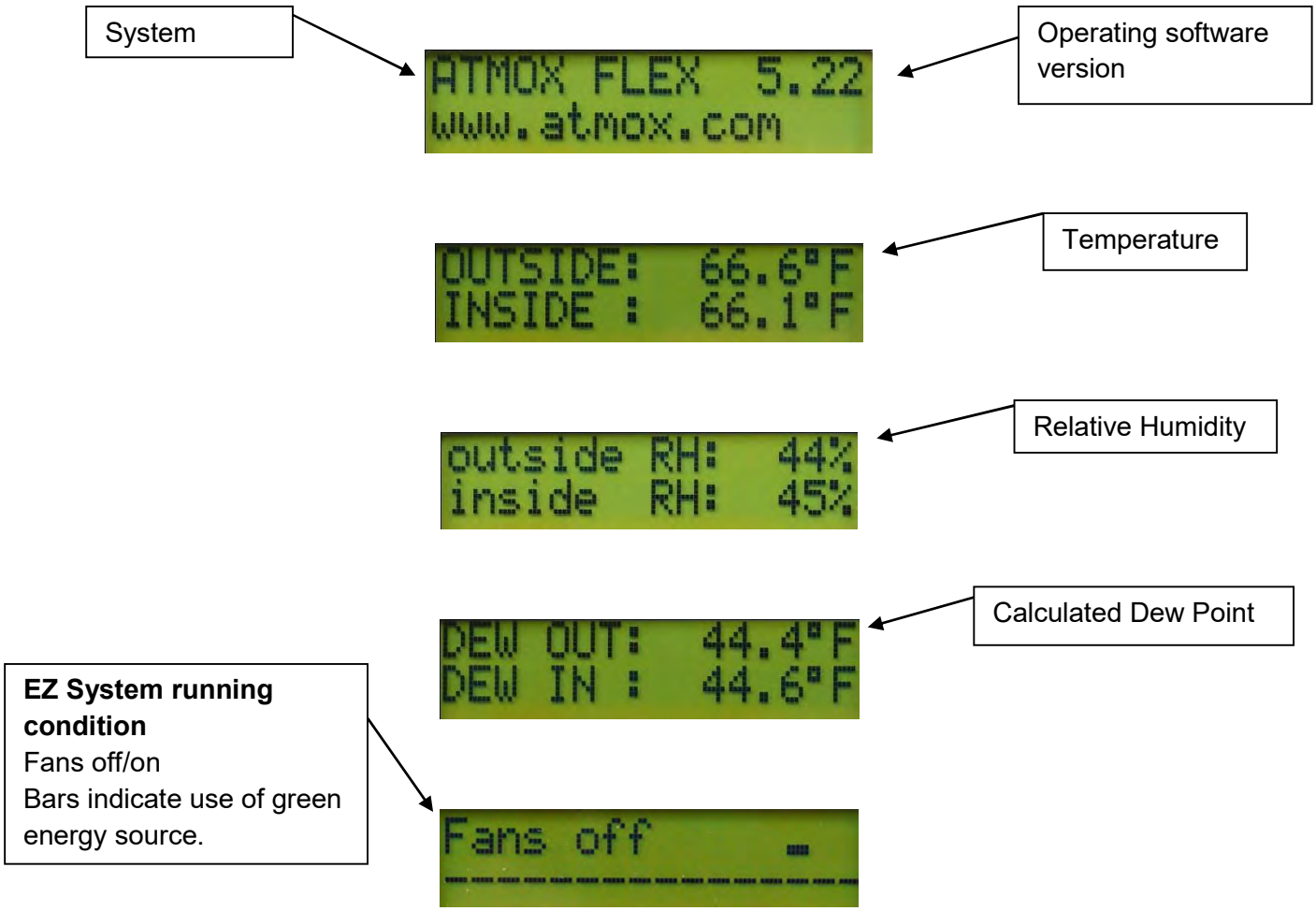
Crawlspaces need dry and proper ventilation. The goal of ATMOX is simple – reduce the moisture and humidity level in your crawlspace.

The basic principle of how it works is also simple. Ventilate with “good” air from the outside only when it will improve the conditions in the crawlspace. Using sensors, ATMOX measures dew point inside and outside your crawlspace to determine when the fans or dehumidifier should run. The fans allow for natural air circulation into the crawlspace.

Once installed properly, the ATMOX System will operate on its own and automatically. The system will adjust for seasonal changes as needed. There is no need to manually make any changes to the system.

Display

The LCD Display on the ATMOX Controller provides you with information on the system. The ATMOX Controller auto rotates between five standard information screens.

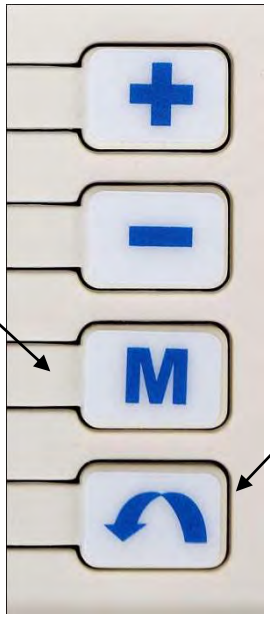


1.2 Control Buttons

ATMOX Systems have four control buttons to control the system, adjust system from defaults and test hardware attached to the system. From these buttons you can manually turn the fans on and off, change quickly between default information screens, and get to any of the three setup parameter menus.

The + and − Buttons are used for accessing parameter menus and changing values. Once installed, you will rarely need to use these buttons.

Each time you push the M button, the system will switch between default displays. If the system is in one of its setup menus tapping this button will allow you to scroll through the setup menu.



The ↶ button serves two functions. It returns out of a custom menu. It starts a manual key stroke sequence that will manually start and stop the fans.

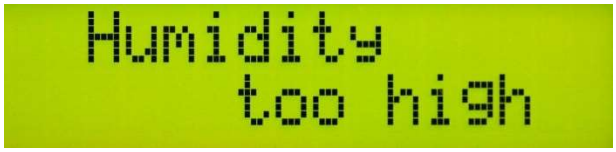
1.3 Alarms and Notifications

The ATMOX Controller has an alarm light to notify you of any problems. The alarm could be an indication of hardware that is not working correctly, such as a defective or missing sensor. The alarm is also there to show when there is a potential problem in the crawlspace. Depending on the alarm issue, the alarm light will either be a flashing red light or a solid red light. By tapping the M button several times, you can scroll through the display and the system will tell you what the problem is.

High Humidity Alarm

The goal of the High Humidity Alert alarm is to let you know that the humidity level within the crawlspace is above a preset limit.

Red Alarm Light



The humidity alarm setting is defaulted to the off position, so it may not be active on your system. This feature can be turned on to alert you anytime the crawlspace exceeds a set internal relative humidity level. It can be set anywhere between 73-98%, in increments of 5%. See Section 10.5.5 for alarm settings.

Note: It is not recommended to set this alarm setting below a relative humidity level of 88%. The alarm may trigger on and off too often if set lower. Temperatures and humidity levels in crawlspaces can swing a great deal from day-to-day weather conditions. Even if the alarm goes off for short periods of time, it does not mean you have a problem as fluctuation is normal. However, if you have the humidity alarm set at 88% and the alarm is consistently triggered, then the setup of the ATMOX system should be reviewed. In this case, contact ATMOX or your installer to check on your crawlspace and see if a dehumidifier needs to be added to the system. While the ATMOX EZ system cannot incorporate the use of a dehumidifier, it is possible to upgrade the ATMOX EZ system to an ATMOX FLEX system if a dehumidifier is desired. The fans and wiring used would be the same. Contact ATMOX for more information.

1.4 Maintenance

As mentioned before, the operation of the ATMOX system is completely automatic and no action or adjustments are required once installed.

Controls

Of course, the ATMOX system cannot run without electrical power. You should periodically check that the system has power (the LCD display will be on). In the case of a power outage, the system will reset and restart itself. If the system is set on a GFCI outlet and the outlet trips for any reason, the GFCI usually has to be manually pushed to reset.

Fans

It is also encouraged that the fans be kept reasonably clean. Depending on where external fans are located and the landscaping around them, they can get full of debris, particularly intake fans. Just check to make sure landscaping materials are not clogging any fans. They can be cleaned off by just sweeping with broom or blowing with a leaf blower.

You should also periodically check that all of the fans are running properly. You can manually turn the fans on and just walk around the perimeter of the house to make sure that they are active. How to turn the fans on manually is described in the next section.

1.5 Manual Operation of Fans

The following describes how to start or stop the fans manually by overriding the automatic controls of the ATMOX system. Press the buttons as described below.

To start the fans manually:


To stop the fans manually:


Note: After tapping the return arrow, the manual light should be lit before you tap the + or – keys.

The system will return to automatic in one of three ways:

- After 24 hours the system resets automatically.
- If you unplug the system or the power is reset, the system restarts in automatic.
- If you input the same start/stop command a second time in a row, it will reset to automatic.

1.6 Frequently Asked Questions

When will the fans run?

Basically, the ATMOX system will activate the fans to run when the dew point calculated by the outside sensor is lower than the dew point calculated by the inside sensor. The fans will not run continuously as the system just wants to make sure that you get several exchanges of air flow through the crawlspace. There can be some variations to this in the case of extreme temperature and weather conditions.

Will the fans running cause too much cold air to be brought in during the winter?

The system adjusts for Summer and Winter ventilation modes. The fans will not bring outside air into the crawlspace below a set temperature setting during the winter.

It is raining outside and the fans are running. What is wrong?

The answer is probably nothing. You have to trust the system even when it doesn't seem intuitive. The fans will be activated by dew point and not humidity levels. If a cold front comes through (even with rain), it is possible that the colder air will have a lower dew point than what is in the crawlspace. The air with the lower dew point will be beneficial to the crawlspace.

I have question, who should I contact?

Contact your local installer first as they will have more information about the specifics of your home and system. For any additional information or questions, contact ATMOX by phone at 704-248-2858 or email at info@atmox.com.

2. Planning for Installation

As you prepare for the installation of your ATMOX System, you will need to determine where you will place your components and fans. The system can be adapted to various crawlspaces so placement can be customized for your setup.

The goal of the fan placement is to create a cross circulation of air throughout the entire crawlspace. You will want to keep intake fans on one side and exhaust fans on the other side to pull and push air across. Depending on your crawlspace, it may be advantageous to close or block other vent openings to keep air from escaping without pushing through the entire area.

We are happy to provide any assistance needed with layout suggestions. Just email or fax us a sketch of your crawlspace.

2.1 Placement of Control Box

The starting point in setting up the overall layout is often determined by where the control box will be placed. The power source or outlet that is going to be used will need to be located or created.

EZ System

- The entire system uses one electrical outlet for controls and fans.
- The EZ Control Box can be placed in a viewable location such as a garage or closet but wires will need to be fed down into the crawlspace.
- The EZ Control Box will have 2 telephone wires for sensors and at least one low voltage wire that will visible.

2.2 Placement of Fans

- Intake fans should not be placed under a deck or porch, which are often sources of high moisture.
- Intake fans should not be installed within 10 feet of a horizontal HVAC gas chimney or a gas meter.
- Openings under a deck should either be closed off or if necessary used as an exhaust side.
- Intake fans should not be installed in the vicinity of the outside HVAC compressor. This could pull in the hot air from around the compressor.
- Ideally, an intake fan should not be put in an underground vent well as it will collect too much debris.
- Try to exhaust the air from the area that has the worst moisture problem, which is normally the shallow side.
- If there is no “worst spot”, exhaust on the side of the house where the outside compressor(s) of the HVAC is (are) located.
- Always establish a cross air circulation. Fans only work to dry out the crawlspace if enough air can flow across all areas of the crawlspace.

2.3 CFM Calculation Tool

In order to determine how many fans will be needed, the following table gives a simplified calculation to achieve approximately 4 air exchanges per hour. (It is recommended to have between 4-6 air exchanges per hour.)

Cubic Feet of Crawlspace (Square footage times average height)	=
	Multiply above number by 0.07
Total CFM of Exhaust Fans Needed	=
	Divide number by CFM of fan selected to determine number of exhaust fans needs
Total Quantity of Exhaust Fans Needed:	=
	• If Exhaust Fan Quantity is 1-2, then Intake Fan Quantity should be equal to Exhaust Fan Quantity. • If Exhaust Fan Quantity is 3+, then Intake Fan Quantity should be no less than Exhaust Fan Quantity minus 1.
Total Quantity of Intake Fans Needed:	=
	Quantity of Dead Space Fans needed will be determined by layout of crawlspace. Look for any areas that would not get a cross circulation of air.
Total Dead Space Fans:	=

2.4 Other suggestions for Crawlspaces

- We highly recommend that the crawlspace has a vapor barrier. It should be a 6 mil plastic covering at least 90% of the soil throughout the crawlspace.
- Keep shrubs back at least one foot from the wall.
- Make sure that rainwater and downspouts from gutters can flow away from the house.
- Avoid excessive water from a sprinkler system that can contribute to moisture in the crawlspace.
- Make sure the condensate from your HVAC air-handler is pumped or gravity drained at least 4 feet away from house (same for any other HVAC air-handler in the attic, or a service pack right outside the crawlspace).

3. Material and Tools

3.1 Hardware shipped with each EZ System

Controls and Sensors:

- EZ Control Box (Shows Display) mounted on 12V Switching Power Supply (Gray Box) (EZ 150 is 150W)
- Inside and outside combination climate sensors (RH and Temp). Included are “straight” couplers for extensions.
- Four 25ft extension wires with couplers for inside and outside sensors to reach location needed
- Low-voltage cable banana clips (Set of Red and Black).
- Small Electrical Screwdriver
- Snap Splices (4). These can be used if secondary low voltage cable needs to be added.

3.2 Low Voltage Cable

The EZ system uses a low voltage cable to either be purchased from ATMOX or a local hardware store. (This is the same type of wire used in landscape lighting.) **The low voltage cable must be 14 gauge.**

3.3 ATMOX Fans

For details on ATMOX Fans, please refer to information on latest fan specification sheet. The ATMOX EZ Systems are designed to be used with ATMOX DC-Powered Fans. These fans will connect to the low voltage cable with snap splices and connector wires. ATMOX will provide for these with purchase of each fan.

While ATMOX fans are recommended, other manufacturers’ fans (including AC-Powered Fans) can be used with the ATMOX EZ System with proper setup. Please contact ATMOX for further information and materials needed to use these fans. If using other DC-Powered Fans, please contact ATMOX to make sure wattage and load is compatible with the ATMOX Power Supply. Using incompatible fans could cause electrical surges and damage the Control Box, which would not be covered under warranty.

3.4 Optional Accessories

If the usage rate of the fans needed exceeds the 150 Watts of power available from the ATMOX EZ System, then an optional power supply booster can be used in conjunction with the system. To add power booster to the EZ system, see detailed installation instructions that are supplied with the power booster.

The EZ System can also incorporate a Solar/Battery Option Kit, but it must be factory installed:

ATMOX also has other crawlspace items that can be used to assist in the control of air flow:

- Vent Covers (Open or Solid)
- Solid Plates for closing vent openings internally
- Non-insulated Pipe for getting air flow in closed off areas

3.5 Tools Needed

- Wire staple gun or nailing clamps for control wiring and wires of the sensors.
- General tools including:
    - Flashlight or floodlight
    - Assortment of screws (best to use Philips head) and plastic anchors.
    - Drill
    - Screwdrivers
    - Pliers

4. Installing the Controls

4.1 Controls for EZ System

- The controls for the EZ system can be plugged into any outlet in the house but must be in a location that low voltage cable and sensor wires can be fed to the control box. In most cases, it is the easiest to mount the control box in the entrance to the crawlspace. The control box can be mounted in a garage or closet in the house for viewing but then the wires will need be fed up to it.

4.2 Sensors

- Sensors should be mounted as described in Section 5.
- All the extension wires should be brought to the Control Box location.
- Climate Sensors: The inside sensor plugs into the jack marked “Inside” and the outside sensor plugs into the jack marked “Outside”.

5. Installing the Sensors

5.1 General Instructions

Before you begin, test all components by plugging the inside and outside sensors directly into jacks on the Control Box and plug in control box and check for errors. This will allow you to test that all sensors are working properly. Then unplug the sensors to bring them to their permanent location and use extension wires as needed. If any error messages show on the control box after installation, you now know that it is in your wiring as the sensors alone worked correctly.

Since all crawlspaces are different in size, the inside and outside climate sensor come with a cable and separate extension wire so that you can best place the sensors. The extra or slack wire should be tied up to keep it out of the way. When pulling the wire through the crawlspace, be careful not to put too much tension on the wire as this can cause the internal copper to break.

5.2 Combination Climate Sensors (Temp/RH)

The **inside sensor** is supplied with a 6 foot cable, a black mounting bracket and a coupler for the wire extension. The extension length will depend on the distance from the sensor to the Control Box. Extension wires with couplers are included.

Place the inside sensor in a location where it is away from any heat sources, outside walls or an HVAC unit or anything else in your crawlspace that can give inaccurate readings of the general conditions in the crawlspace. The distance can be up to 40 ft from the control box.

You will need two screws to mount the bracket to a joist. This also serves as a tensioning device for keeping the sensor in place. If the screws are too tight, it might be difficult to snap the sensor into place. If it does not go in easily, try to loosen the screws of the bracket.

The **outside sensor** is supplied with a 6 foot cable, a black mounting bracket, an outside cover and a coupler for the wire extension. The extension length will also depend on the distance from the sensor to the Control Box. Extension wires with couplers are included. The inside and outside sensors are identical. The distance can be up to 40 ft from the control box.

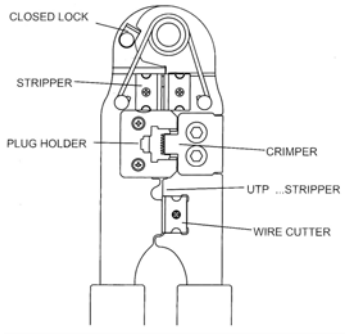
The outside sensor should ideally be placed on the east or north side of the house, away from direct sun light. The cover will help to keep water from staying on the sensor. The sensor can get wet, but it can be damaged from pressure washing or being sprayed with chemicals or paint.

The inside and outside sensors will plug into the corresponding jacks on the left side of the control box.

If the outside sensor can only be placed in a direct sunlight setting, please see Section 10.6.2 to make an adjustment in the settings to account for the excessive heat on the outside sensor.

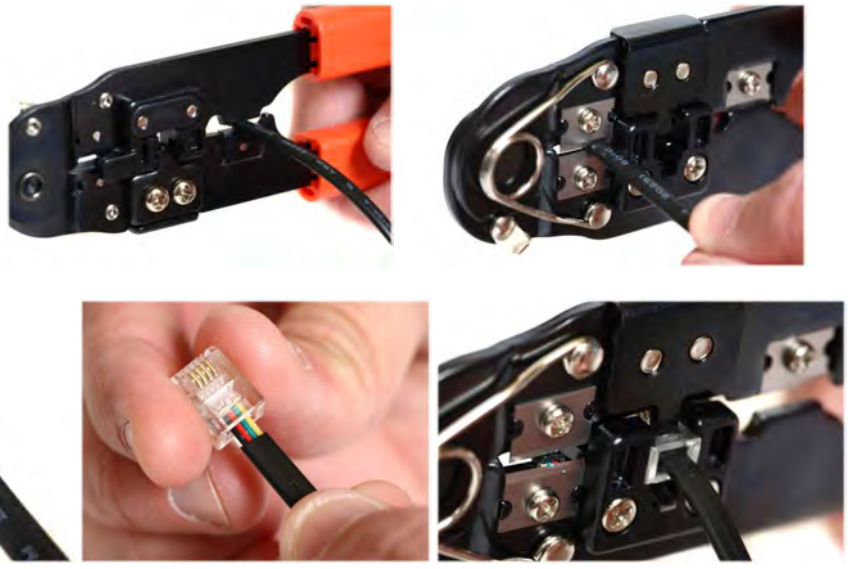
5.3 Using the Crimper Tool

All sensors and wires shipped by ATMOX will have already been crimped with jacks. The RJ11 crimper tool will only be needed to install the sensors if extension wire supplied is not long enough. It can be purchased from ATMOX or if you purchase your own, it should be similar to this.

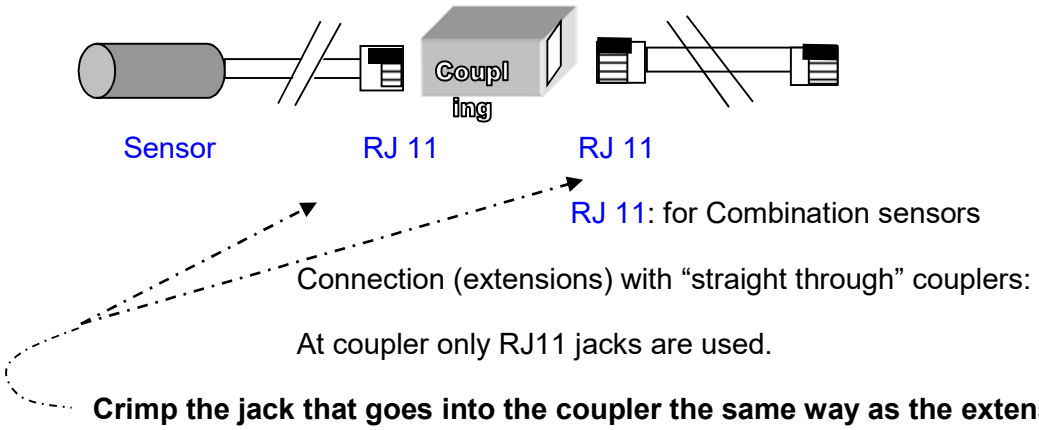


Steps for crimping the wires for sensors:

1. Use the “wire cutter” to cut the desired length with a flush end.
2. Use the “stripper” to remove the outer sheath of the cable to a standard working length. Hold the crimper tool in your right hand with the “tools side” facing you. Then place the cable into the “stripper” section on the right side until it is “stopped” by the black plastic block. This gives you the proper length to strip your cable.
3. Take your jack and align the wires so the black wire is on the left side when placing the cable into the RJ jack with the gold contacts on the jack facing up.
4. Place RJ jack (with cable inside) into the “plug holder” and press firmly on the handles to secure the cable to the RJ plugs to “crimp” it.



5.4 How to Wire the Extensions to the Sensors



Crimp the jack that goes into the coupler the same way as the extension wire that was shipped to you. You will always crimp the extension wire to have the black on your left with gold contacts on top.

All line couplers used to connect or extend sensor cables cannot get wet or be exposed to condensation. It is important that any of the couplers are inside the crawlspace and protected from the elements.

Do not use the crimper on any lines plugged into a system with power.

If you make a mistake, the system will let you know after you plug the sensors in. The alarm will flash and provide you a message on the screen. The sensor should not be damaged from a “wiring mistake”.