360 RAIN

INFRASTRUCTURE

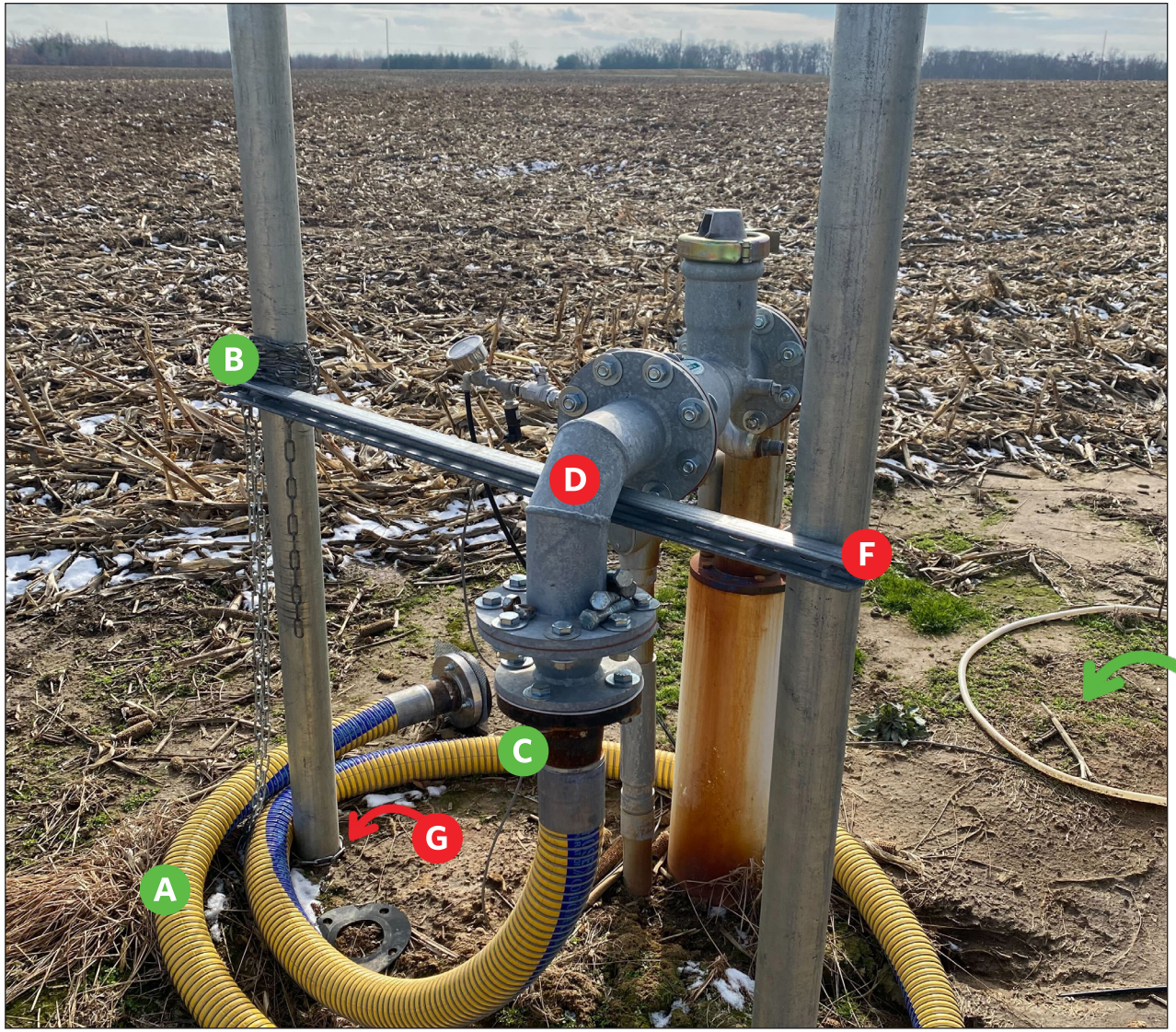
INSTRUCTIONS

360YIELDCENTER.COM

FOR QUESTIONS PLEASE CONTACT OUR
PRODUCT SUPPORT TEAM AT 309-300-3120

10.1.2024 • V14

RISER INSTALLATION



360 RAIN SETUP

360 YIELD CENTER PROVIDES...

- A Fifteen feet of 3" high pressure flex hose - **DO NOT CUT**
- B Chains to secure flex hose
- C Hardware & gaskets to connect flex hose to growers ANSI 3" flange

GROWER PROVIDES...

- D All plumbing after the flex hose to well or water source
- E Pump - *not pictured*
- F Riser posts
- G Bagged concrete
- H Injection site and hardware (if desired) - *not pictured*

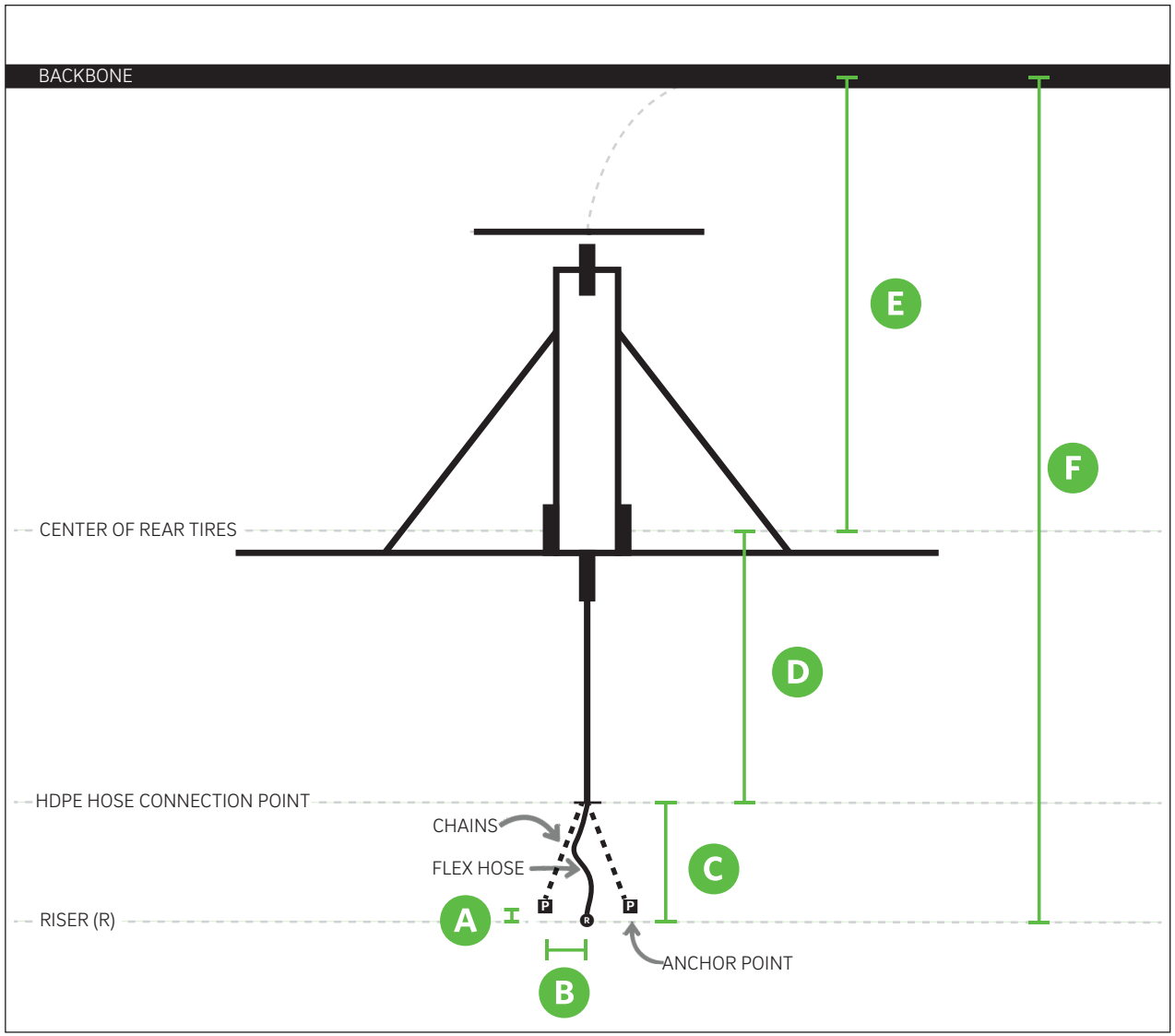
At the back of the 360 RAIN machine, HDPE hose is dispensed. At the end of this hose is a 3" ANSI 4-bolt flange. This flange will connect to the 3" ANSI 4-bolt flange at one end of the provided flex hose. The other end of the flex hose will connect (via another 3" ANSI 4-bolt flange) to the rest of the growers plumbing back to their liquid source.

WHAT IS A "RISER"

The term "riser" is used to define the location of the joint between the 360 flex hose and the rest of the grower provided plumbing.

There should be at least two anchor points (anchor posts) in the ground. These posts can be metal or wood and should be cemented at least 3' in the ground for stability.

RISER INSTALLATION



HOSE CONNECTION POINT

The provided fifteen feet of 3" flex hose will connect to the HDPE hose on the 360 RAIN machine. The provided chains should be installed from this connection point back to each of the anchor posts. **When the chains are pulled tight, there should be no more than 10' between the connection point and the riser. The chains should be tight but the flex hose should have extra slack**. The extra flex hose is needed to avoid stress on the connection points or flex hose.

When the machine leaves this "home base" location the hose will pull on the chains until there is enough hose dispensed that the weight of the hose will hold it in place. The chains and anchor posts provide stability during this time, therefore the riser posts must be sturdy.

NOTE: Do NOT connect chains to the base station structure.

RAIN HOME LOCATION

When choosing a location for the RAIN home location which includes the riser, the following measurements should be considered:

- A 0-2' between anchor point (P) and riser (R) front to back
- B 2-3' between anchor point (P) and riser (R) left to right Center riser between two anchor points.
- C 10' between riser and HDPE hose connection point
- D 25' between HDPE connection point and middle of rear tires
- E 40' between center of rear tire and the center of the field's backbone
- F 75' between the riser and the center of the field's backbone

Let's look at some examples.

RISER INSTALLATION
RECOMMENDED EXAMPLES

EXAMPLE 1
6" WELL CASING TO 3" ANSI FLANGE

Posts: 3" electrical conduit

Stability: Posts were secured 4ft in the ground with concrete.

Unistrut connect to the conduit with round u-bolts supports the riser.

EXAMPLE 2
EXISTING PLUMBING TO BOOSTER PUMP

Posts: Three 4"x4" posts positioned 3ft apart and secured together with 2"x6" and 2"x 4".

Stability: Because the posts were not cemented into the ground a third post was added in behind the original two posts for additional strength. While this worked as a quick fix it is still the recommendation to use concrete to secure the posts in the ground.

EXAMPLE 3
INJECTION SITE AND WELL

Posts: One 6"x6"

Stability: Posts were secured in the ground with concrete.

BASE STATION INSTALLATION

WHAT IS A "BASE STATION"

The "base station" is the operation center for the 360 RAIN machine. This is the point from where RTK corrections are provided as well as where specified outputs are controlled.

The following "best practices" should be considered when configuring your base station setup.

360 YIELD CENTER PROVIDES...

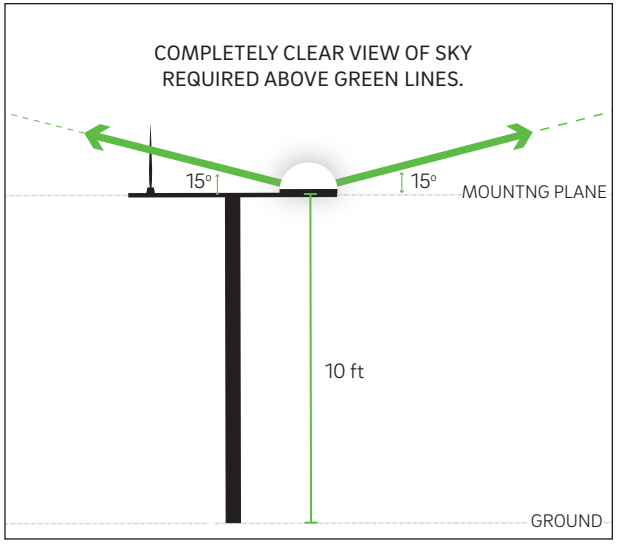
- A 360 base station (box and components) 20"x24"
- B 360 GPS antenna
- C 900 MHz antenna
- D Antenna mount
- E Two coax cables

GROWER PROVIDES...

- F Structure + hardware to hold 360 base station box
- G Structure + hardware to hold antenna mount
- H Standard 120AC single phase power consisting of three wires: line, neutral and ground.

  Three-phase power supply options available by contacting product support at 309-300-3120
- I Pump controller(s) or contactor(s)
- J Optional valves
- K Wires and conduit to connect 360 base station box to power
- L Wires and conduit to connect 360 relays to pump controller

BASE STATION INSTALLATION



BASE STATION RECOMMENDATIONS

Base station structure components are not provided by 360 Yield Center.

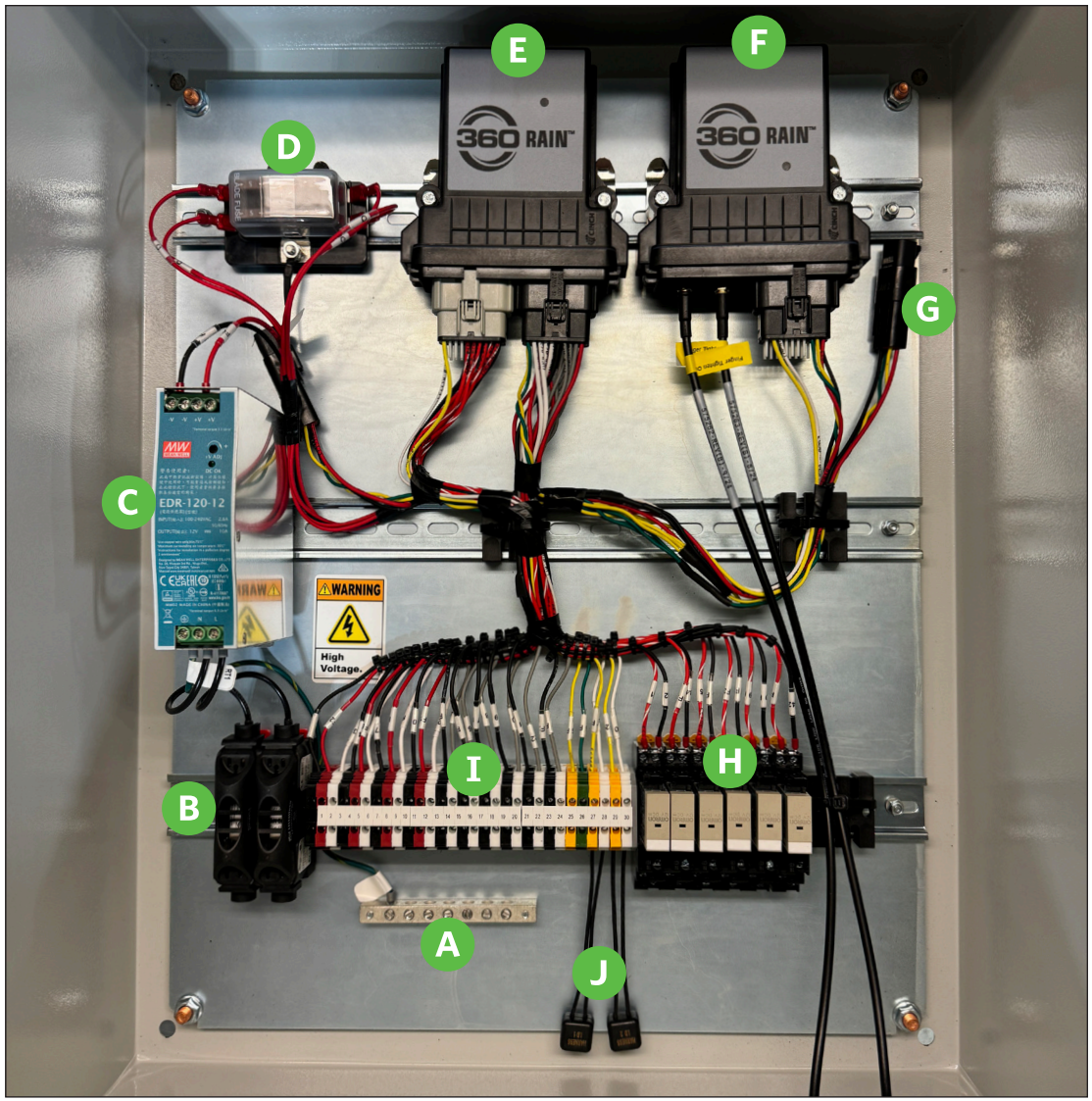
The structure pictured consists of 3" conduit with Unistrut cross members.

Height and width of base station will vary depending on site's specific box requirements. **Receiver and antenna must be mounted 10ft off the ground and have a clear view of the sky.**

The grower and/or electrician is responsible for mounting the base station box in a manner appropriate for climate conditions, ensuring that the connections are on the bottom away from water. Some sites will require addition boxes for different pump controllers - it is the grower's and/or electrian's responsibility to supply those boxes and pump controllers.

It is also the grower's and/or electrician's responsibility to supply power and wires (in weatherproof conduit) to the 360 base station.

BASE STATION INSTALLATION
BOX COMPONENTS



BASE STATION BOX COMPONENTS

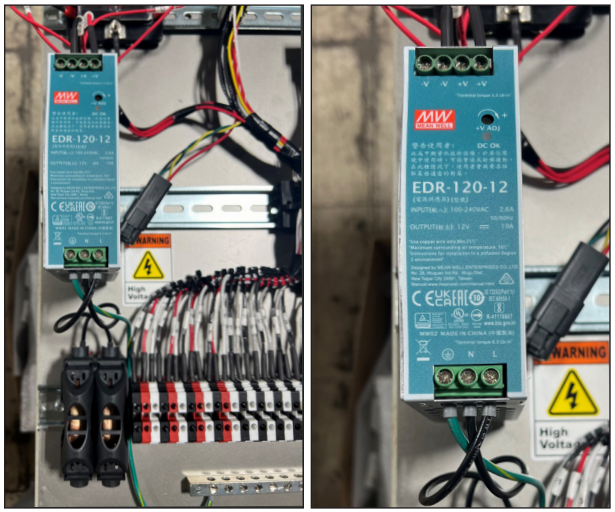
- A Ground Bar
- B High Voltage AC Fuse Block
- C AC to DC Transformer (Power Supply)
- D 12V Fuse Block
- E Input/Output Controller
- F GPS Receiver and RTK Radio
- G CAN Terminating Resistors
- H Relays
- I Screw terminals
- J ID Tags

Let's look at the component details.

BASE STATION INSTALLATION
BOX COMPONENTS

A B C

HIGH VOLTAGE FUSE BLOCK AND AC-DC TRANSFORMER



The base station box comes standard with a 120 V AC single phase power supply.

The electrician should bring in standard 120 V AC power consisting of 3 wires: line, neutral, and ground going to appropriate locations in the AC fuse block and ground bar.

A 3-phase 480V power supply option is available upon request by contacting your dealer or 360 Yield Center product support at 309-300-3120.

AC fuses are provided to ensure the power supply is fuse protected.

A ground wire is already installed from the power supply to the ground bar. It is the electrician's responsibility to connect the ground to the 360 base station ground bar.

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RELAYS

Starting from the left the relays are named Output 1, Output 2, Output 3, Output 4, Output 5 and Output 6.

Examples of uses for these relays include controlling a booster or pump controller to trigger it on remotely or controlling a valve to open and close.

Relays can be wired to be normally open or normally closed. See next page for examples.

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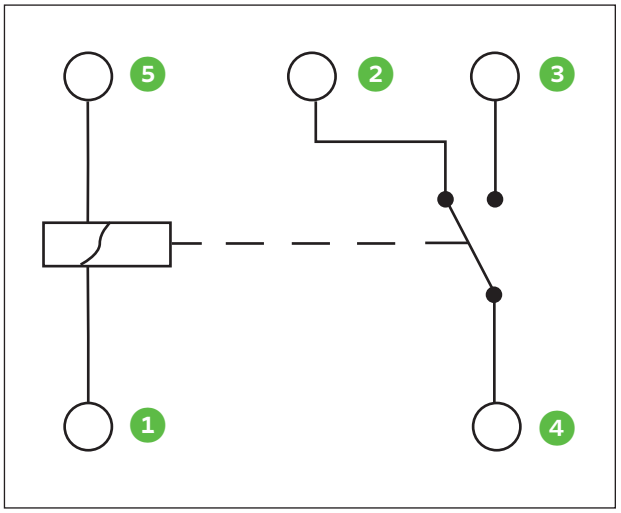
RELAY EXAMPLE



Wiring for the relays:

360 provides the wiring to control the relays.

Terminals 1 and 5 are used to switch the relay output.

The installed needs to provide the wires to signal the pump controllers or valves.

Terminal 2 is NORMALLY CLOSED.

Terminal 3 is NORMALLY OPEN.

Terminal 4 is COMMON.

BASE STATION INSTALLATION
BOX COMPONENTS

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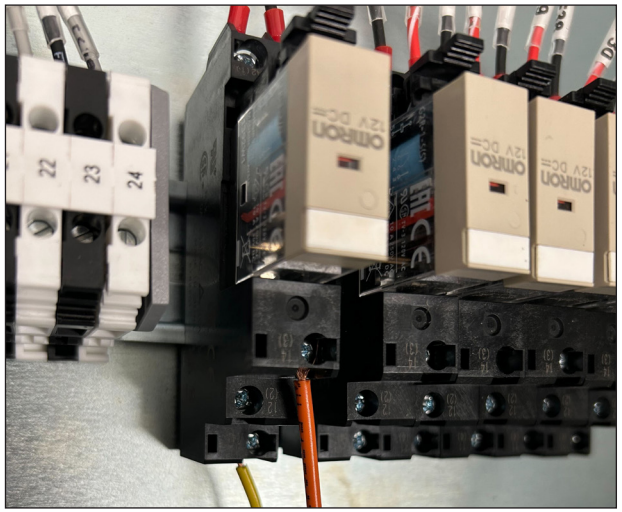
RELAY EXAMPLES



Normally Open Example

YELLOW = COMMON, Terminal 4

ORANGE = NORMALLY OPEN, Terminal 3

The user should strip the end of the wire and insert into the screw terminal. Then, tighten down and secure the wire in the screw terminal.

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RELAY EXAMPLES

Normally Closed Example

YELLOW = COMMON, Terminal 4

BLUE = NORMALLY CLOSED, Terminal 2

The user should strip the end of the wire and insert into the screw terminal. Then, tighten down and secure the wire in the screw terminal.

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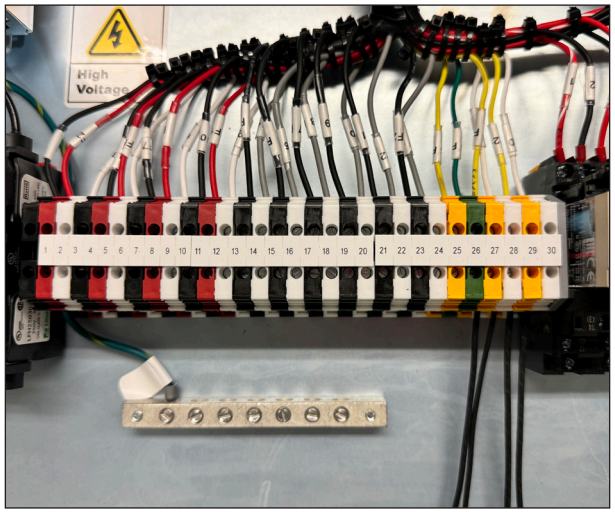
SCREW TERMINAL INPUTS



The first three screw terminals (black, red and white) are Analog 1. The next three are Analog 2, followed by Analog 3 and Analog 4.

The black and white screw terminals are the digital inputs. Starting from the left they are Digital 1, Digital 2, Digital 3, Digital 4, Digital 5 and Digital 6.

Terminals 1-12 (Black-Red-White Pattern) are analog inputs used for pressure sensors.

Terminals 13-24 (Black-White Pattern) are digital inputs used for flow meters.

Terminals 25-26 can be used for adding CAN devices.

Terminals 27-30 are for connecting ID tags.

See additional information on the next page.

BASE STATION INSTALLATION
BOX COMPONENTS

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SCREW TERMINAL INPUTS

PRESSURE 1	INPUT 1	GROUND
	INPUT 2	POWER
	INPUT 3	SIGNAL
PRESSURE 2	INPUT 4	GROUND
	INPUT 5	POWER
	INPUT 6	SIGNAL
PRESSURE 3	INPUT 7	GROUND
	INPUT 8	POWER
	INPUT 9	SIGNAL
PRESSURE 4	INPUT 10	GROUND
	INPUT 11	POWER
	INPUT 12	SIGNAL
FLOW 1	NPUT 13	GROUND
	INPUT 14	SIGNAL
FLOW 2	INPUT 15	GROUND
	INPUT 16	SIGNAL
FLOW 3	INPUT 17	GROUND
	INPUT 18	SIGNAL
FLOW 4	INPUT 19	GROUND
	INPUT 20	SIGNAL
FLOW 5	INPUT 21	GROUND
	INPUT 22	SIGNAL
FLOW 6	INPUT 23	GROUND
	INPUT 24	SIGNAL
CAN EXPANSION	INPUT 25	CAN HIGH
	INPUT 26	CAN LOW
ID TAGS	INPUT 27	I/O CONTROLLER
	INPUT 28	
	INPUT 29	GPS DEVICE
	INPUT 30	

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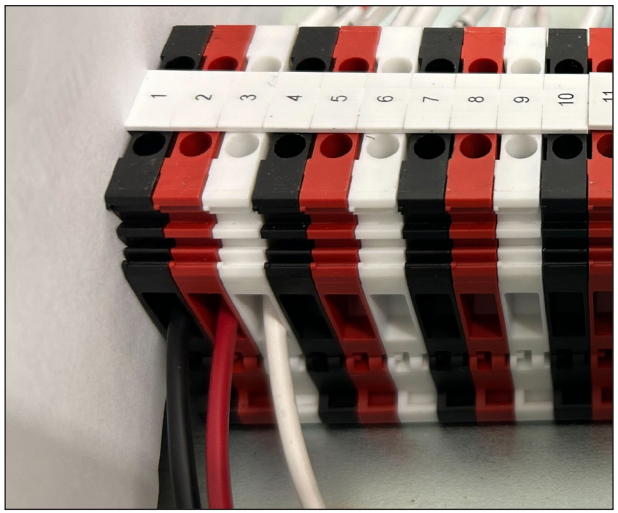
SCREW TERMINAL INPUT - PRESSURE EXAMPLES



All pressure sensors (analog) will have three wires: power, ground, signal.

Wiring into analog 1:

BLACK = analog ground

RED = 5V power

WHITE = signal wire

The user should strip the end of the wire and insert into the screw terminal. Then, tighten down and secure the wire in the screw terminal. **Wire color may vary.**

Example: Pressure sensors/transducers will be wired in this manner.

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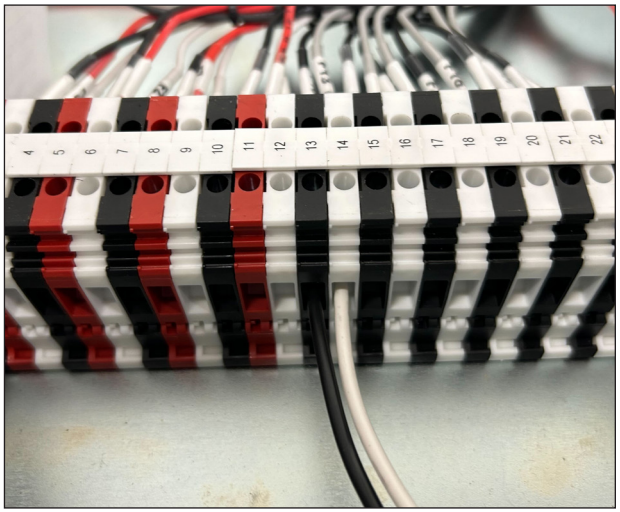
SCREW TERMINAL INPUT - FLOW EXAMPLES



All flow sensors (digital) will have two wires: ground and signal.

Wiring into digital 1:

BLACK = digital ground

WHITE = signal wire

The user should strip the end of the wire and insert into the screw terminal. Then tighten down and secure the wire in the screw terminal. **Wire color may vary.**

Example: Flow meters with a pulse based output would be wired in this manner.

BASE STATION INSTALLATION
ANTENNA AND RECEIVER MOUNT

STEP 1
LOCATE COMPONENTS

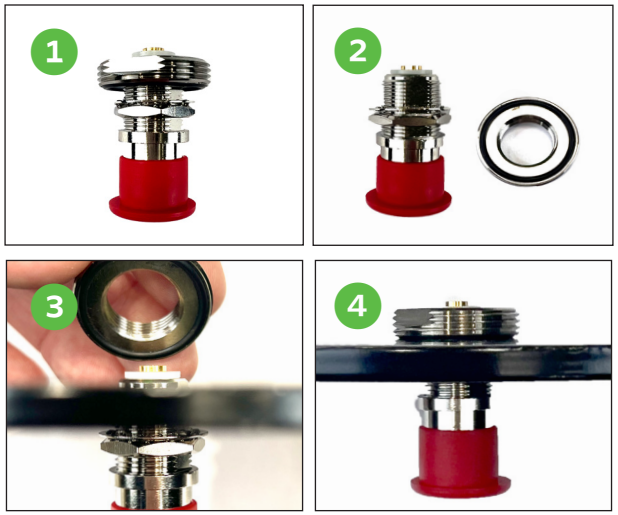
Locate the 900 MHz antenna package (part # 575137), GPS antenna (part #575149) and antenna mount (part #574544).

NOTE: The 900 MHz antenna package includes the antenna, large seal, small o-ring seal and an allen wrench. Only the antenna and large seal will be used.

NOTE: The GPS box includes the white GPS antenna and a cord. Only the antenna will be used.

Orient the mount as shown in the picture above. With the mount properly oriented the 900 MHz antenna will be installed on the circular end of the mount with the white GPS antenna being installed on the opposite end.

STEP 2
INSTALL 900 MHZ ANTENNA



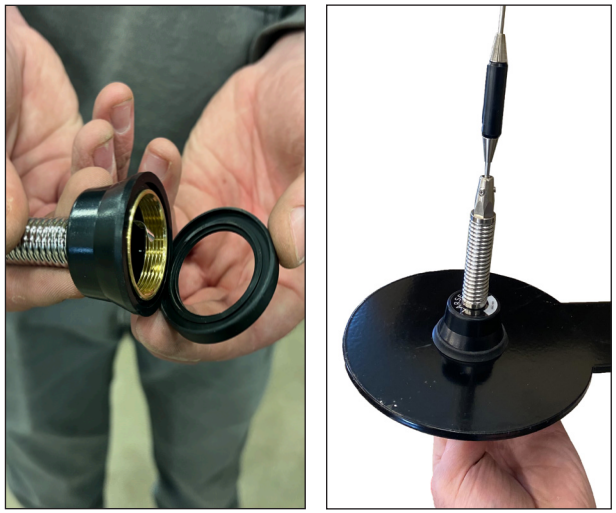
1 Locate the 900 MHz antenna adapter and 2 remove the antenna mount threads from the end of the adapter.

3 Thread the antenna adapter through the hole in the circular end of the metal mount.

4 Reinstall the antenna mount threads on the top side of the antenna adapter. Ensure the rubber o-ring on the antenna mount threads is oriented down towards the antenna mount.

NOTE: When properly installed, the white peg at the top of the threads should be flush with the antenna mounting nut.

STEP 2 CONTINUED
INSTALL 900 MHZ ANTENNA



Insert the flat rubber seal into the threaded end of the antenna ensuring it is fully seated.

NOTE: There is only one direction to properly install the seal.

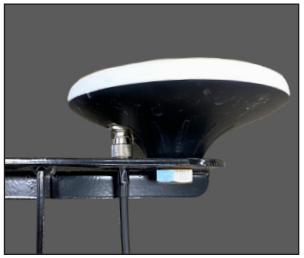
With the seal installed thread the 900 MHz antenna onto the antenna adapter and hand tighten.

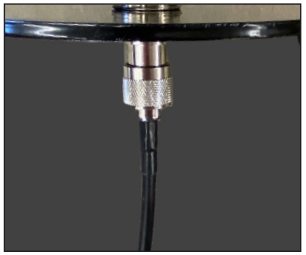
BASE STATION INSTALLATION
ANTENNA AND RECEIVER MOUNT

STEP 3
INSTALL GPS ANTENNA

Install the white GPS antenna (part # 575149) on the outer most hole of the square end of the antenna mount using the provided 5/8" bolt, washer and lock washer.

STEP 4
INSTALL CABLES





Install the coax cable with the smaller connectors (part # 575733) by threading it on the white GPS antenna.

Install the remaining coax cable with the larger connectors (part # 575735) by threading it onto the 900 MHz antenna.

The other ends of both cables will be connected to the base station box.

STEP 5
SECURE TO BASE STATION

With the antenna mount assembled, it can now be secured to the base station structure.

The vertical post (provided by the grower) that the antenna mount will attach to should be 10 ft off the ground.

NOTE: This structure needs to be extremely sturdy - if it has the ability to twist or sway with wind the GPS signal could be negatively affected.

With the mount secured to the vertical post, attach the remaining ends of the two coax cables to the base station box.