Athena IR-Tech

Transp-IR

Installation Guide

Table of Contents

What's Inside the Box?

Transp-IR field Unit

Our field unit that measures leaf and ambient temperature, humidity and solar radiation and transmits this information every 10 minutes to the cloud.

Bird Spikes

Our unit has a solar panel that recharges the battery and records how much solar radiation the plant is receiving. It's critical this panel is always clean. We have included bird spikes to prevent birds from landing on our unit and (ahem!) relieve themselves on the unit, therefore inhibiting the solar panel from performing optimally.

Before Heading Out To the Vineyard

Installation Accessories Checklist

Be sure to bring these additional items for the installation.

Mounting pipe for CCA vineyard post

1 – 40mm low pressure drain pipe with an outside diameter of 40mm (typically grey)

See p. 7 for pole length worksheet and mark height placement guide.

For metal vineyard posts

If you are attaching the mounting pole to a metal vineyard post such as Ocloc, we recommend bringing either:

☐ **2 metal hose clamps**
to attach at the top and at the base of the vineyard post. For 90-100mm CCA posts select hose clamps that have a minimum 125mm diameter

☐ **4 cable ties**
at least 300mm x 4.8mm to attach at the top and at the base instead of using metal hose clamps. Link 2 cable ties together for each post

Tools

☐ **Flathead screwdriver -** To tighten the hose clamps

☐ **Tape measure -** To measure the PVC pipe height

☐ **Small Phillips head screwdriver -** To tighten the gimbal screws

☐ **Small handsaw -** To cut the PVC pipe to length

☐ **A notepad and pen or electronic device-** To record the field device serial number and where it is installed in the field

Transp-IR Field Placement Overview

Carefully planning and aligning the unit's placement is critical to accurate Vine Water Index measurement.

Choose a representative location

The Transp-IR units should be placed in a locations that best represents the vineyard conditions you want to monitor. Typically, they will be installed in areas where there is low or high vigour or growth variability. The Transp-IR unit has 2 IR sensors embedded in the gimbals that must point down directly at the vine canopy and not at the midrow. The IR sensors have a 35° field of view.

Check Mobile Reception

The device should be place in a location with good mobile service. Generally, if you see two bars on your mobile phone the Transp-IR device will be able to connect to the cloud and transmit data.

LED Secret Decoder

Just inside the clear cover where the serial number is, there is an LED that will provide the unit connection status. Here is what the colours of the LED mean:

Blinking Green – Active connection and transmitting data

Blinking Red/Green – Looking for the celluar network. This can take up to a day depending on the location of the unit.

Blinking Red – The unit has connected to the cellular network but has not yet established a connection to the cloud service (Amazon Web Services).

Blinking Blue - The unit has been turned on or reset and is in startup mode. This should only last a few seconds.

Solid Blue – SIM card out of slot.

North-south row orientations

Point the internal arrow North (Southern Hemisphere)

If you're in the Southern Hemisphere, there is an arrow on the serial number sticker, just inside the clear cover, that should be pointed towards the North as long as the IR sensors are still aligned with the rows and across them.

Point the internal arrow South (Northern Hemisphere)

If you're in the Northern Hemisphere, there is an arrow on the serial number sticker, just inside the clear cover, that should be pointed towards the South as long as IR sensors are still aligned with the rows and not across them.

East-West rows, point the internal arrow West for (both Hemispheres)

If you're rows are oriented in an east-west direction, there is an arrow on the serial number sticker, just inside the clear cover, that should be pointed West as long as IR sensors are still aligned with the rows and not across them.

Pro Tip

Consider installing the **Transp-IR** *unit where you already have other sensing technology such as soil moisture probes or dendrometers installed. This will allow you correlate your Vine Water Index measurements with the measurements from your other technology.*

Gimbal Angle

The gimbals are designed to pivot up and down to provide the best field of view for the IR sensors to capture the canopy temperature. The IR sensors have a 35° field of view and when placed at the correct height and angle will only record the canopy temperature. If placed incorrectly the IR sensors will record the midrow soil temperature providing erroneous results.

Early Stage and VSP Canopies

For early EL stage canopies and VSP canopies the gimbals should be pointing down at an approximate 20° angle as shown in this photo.

Early Stage Alternate Installation

An alternate installation method for early stage vineyards where the required height of the field device is below the top of the vineyard post would be to secure the field device post to the side of the vineyard post as indicated in this photo. Note: The gimbals are pointed down at a slight angle to maximise reading the canopy as there is minimal canopy at this point. As the canopy grows higher and widens, raise the unit up and start to point the gimbals down so they are at a 45° angle.

Transp-IR Device Post Length

The 40 mm PVC device post will need to be long enough to extend above the canopy approximately 300 mm later in the season but close enough to the canopy early in the year (approximately 100mm) to ensure the infrared temperature sensors are only reading the canopy temperature and not the midrow.

Determine the length of the PVC device post

To determine the length of the PVC device post measure from the soil level to the top of your current canopy. This will be the length you will need to cut the PVC pipe.

Transp-IR Height Placement Guide

Use this guide for the placement of Transp-IR unit at the correct height for your vines.

Recommended height above the canopy

The most important thing to consider is that the infrared temperature sensors in the gimbals are using their 35° field of view to only capture the temperature of the canopy and not the midrows. To achieve this, the unit should be placed above the canopy at a height of about 70% of the width of the canopy with the gimbals at a 45° angle.

Pre-flowering it is recommended that the unit is place no more than 10 cm above the canopy and the gimbals are angled down are up at their maximum level as indicated in the photo on p. 7.

Adjust device post throughout the year

Throughout the year you will need to adjust the device post up so that the device is always above the canopy by no more than 70% of its width.

Example

Post Flowering

For a 50 cm wide canopy the unit should be about 35 cm above the canopy with the gimbals at 45°.

Installation Guide for Grapevines

This will walk you through how to install Transp-IR device in your vineyard.

Important Note: It's important that you do not turn on the Transp-IR device until you are at the position in the vineyard where you will install the device. The built in GPS in the Transp-IR will determine its location when turned on and send the location to the cloud for storage.

Step 1. Post Placement

It is optimal to place the device post attached to a vineyard post. Place the device post next to the vineyard post and adjust it between any wires and the canopy to get the device post as vertical as possible. Don't secure the PVC pipe to the vineyard post yet; you'll want to be able to tilt it towards yourself to put the device on the top of the PVC pipe before securing it to the vineyard post.

Step 2. Install field device

On the bottom of the device, where the gimbals are, there is a 40mm PVC pipe cap. Insert the end of the PVC device post into the PVC pipe cap. Then flip the black switch to turn on the device.

Inside the device next to the power switch an LED will start to blink to indicate the unit has initiated the sequence to find the cellular network and begin transmitting data to the cloud. NOTE: This may be hard to see in the vineyard so look carefully. It should take about 10-15 seconds to see the first flash and then it will flash every 10 seconds. This sequence should take about a minute or less. When the initiation sequence has finished, the LED will be flashing green. If after a minute the unit is still flashing blue / red please contact your Athena representative for advice on how to proceed.

At this point the field device will have sent the location of the unit to the cloud. When you add the device to a block within the software the unit will show up on a map. You can then manually move the pin representing the unit on the map to place it in the exact location if the GPS coordinates didn't quite get it right.

Step 3. Record device number

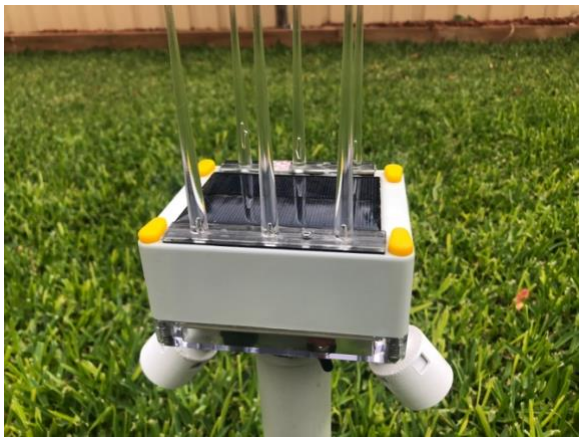
Inside the device is a serial number that uniquely identifies the device. You will need to record this number, and the vineyard site and block where it is located, to assign the device to the correct vineyard block you will create in the software.

Step 4. Attach the bird spikes

To ensure the solar panel is charging the unit and recording the solar radiation accurately we have included two bird spikes that need to be attached to the solar panel side of the device.

Prior to applying the bird spikes use a clean cloth to wipe away any moisture or dirt on the top of the unit around the solar panel.

Each bird spike unit has an adhesive strip that needs to be peeled away. Peel away the adhesive strip backing and apply the bird spike between the two rubber yellow feet on either side of the solar panel as indicated in this photo.



Step 5. Attach the PVC post to the vineyard post

Tilt the PVC post up so that it is positioned against the vineyard post. Turn the PVC post so that the two gimbals are oriented along the vine row and the arrow inside the unit is pointing in the correct direction depending on whether you are in the Northern or Southern hemisphere or whether the vineyard rows are running East/West. Please consult details on p. 5 to determine the exact orientation of the device.

Once the device is oriented then lift the PVC post so that the device is at the height according to the height of your canopy. Please consult details on p. 7 for height details.

After adjusting the PVC post to the correct height then secure the PVC post to the vineyard post with either the hose clamp or cable ties. We recommend securing the PVC post near the base and also just below the top of the vineyard post.

You're finished in the field!

Great job! Transp-IR is now setup and has already started transmitting data to the cloud.

Welcome email and Spam

Should have already received a welcome email from noreply@athenairtech.live. If you have not received this email please check your spam folder. If you are part of a larger organisation that use Outlook please contact your IT department and ask them to find any emails that may have been blocked at the corporate firewall that have a domain of athenairtechlive.

Please also ask them to add the following domains to their "allowed list" or "white list" of internet domains that are allowed through the firewall:

- Athenairtech.live
- Athenairtech.com

You can now either choose to complete the installation in the software using your phone or tablet in the field or back at your desk. You will now need to create your site(s) and block(s) and assign your device to your blocks.

Software Configuration Quick Start Guide

Now that you've installed the device in the vineyard, let's get it connected to the software so you can start to see your Vine Water Index.

The process of assigning the devices to the software involves configuring your organisation and then assigning the devices.

Process Overview

1. **Log in to Athena IR-Tech dashboard.**
2. **Create your site(s).** These will be the vineyard locations you have.
3. **Create your block(s).** These will be the areas within your vineyard locations (Sites) where you have your various varieties planted.
4. **Assign devices to the blocks.** This step will link the device with the varietal planted in the block.

Step 1. Log in to Athena IR-Tech dashboard

Go to https://athenairtech.com and click the Login button at the top of the screen.
Enter your userid and password.

Step 2. Create your site(s).

1. Click on **Sites** on the left hand side of the screen.
2. Click on the **+ Add Site** yellow button.
3. Enter the name of the site and the street address.
4. Select the appropriate **GI Zone**, **GI Region** and **GI Subregion** from the lists.
5. Click the **Save** yellow button.

Step 3. Create your block(s).

1. Click on the name of the site you just created.
2. Click on the **+Add Block** yellow button.
3. Enter the **Name** of the block and select the appropriate **Crop Variety** from the list.
4. Click on the **Display in Dashboard** button if you want this block to appear in the dashboard you see when you initially sign in.

Step 4. Assign devices to the blocks

1. Click on the name of the block you just created.

2. Click on the **+Add Device** yellow button.

3. Click on the down arrow in the **Device** list and select the serial number of the device you installed in this block.

4. Enter a **Name** for the device.

5. Click the **Save** yellow button.

6. At the Block details screen ensure the phenological stage is correct at the top of the screen. If it is not then click the green button to **Change** to the next stage.

You are now done configuring your organisation and assigned the field devices to the organisation.

Note: The field device needs to accumulate 3 days worth of data before it will display the Vine Water Index every day. Until that time you can see the readings recorded every 10 minutes on the Dashboard graphs by clicking on the buttons to show the various data points.