Yarn Mesh TrapNode for AT520-AI AutoTrap

Deployment Guide v1.1

Extend connectivity up, down, over and beyond

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For Yarn Mesh Customers

1 Document Control

Revision History

Version	Date Issued	Author	Authoriser	Description
0.1	02/07/2024	Jonathan Clark		First draft
1.0	16/07/2024	Jonathan Clark		Release
1.1	07/05/2025	Acea Quigg		Update

1.1 Table of Contents

2 Introduction

This guide provides comprehensive instructions for the safe installation, setup, connection, and maintenance of the AT520-AI, Yarn Mesh, and integration into IMS (FTP's Integrated Management System). This manual will serve as a field reference to help users fully understand the device, technology, and commissioning process, ensuring they are self-sufficient in troubleshooting and fixing any issues encountered during installation or commissioning.

2.1 Component Summary

- AT520-AI: An intelligent, AI-powered pest trap with an integrated Yarn Mesh TrapNode designed for efficient and precise predator control.
- Yarn Mesh: A robust communication network ensuring extensive and reliable connectivity.
- IMS (Integrated Management System): A centralised platform for monitoring and managing all devices in the network.

3 AT520-AI Safety Information

3.1 Specific Warnings

- Always handle the trap with care and follow the safety instructions.
- Never place hands or fingers inside the trap.
- Ensure the kill bar is down and the battery is disconnected before handling.
- The trap trigger is sensitive and can be activated by a bump or knock.
- Use the provided tools for maintenance to avoid direct contact with the trap mechanism.

WARNING: Kill Bar Force and Speed:

The trap closes the kill bar with significant force and speed when triggered.

This presents a risk of severe injury. Never place your hand inside the trap for any reason. Always treat the trap as armed, even when it is not set.

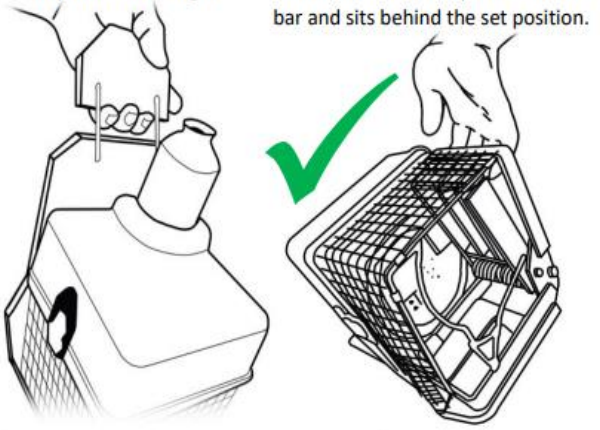
3.2 Using the AT520-AI Safely

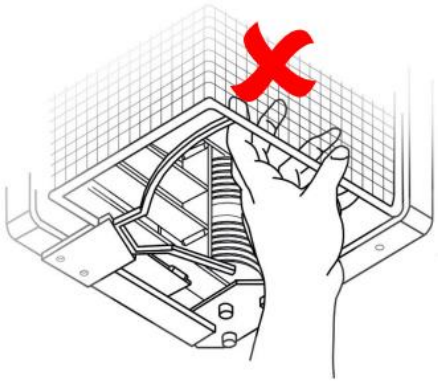
- Never move the trap while it is turned on or armed
- Never put hands or fingers into the kill zone even if the trap is disarmed and the kill arm not set.
- Always carry the unit by its articulated panel or back bar

Kill-Bar Direction

Carry or handle the trap from the hanger

You can also carry from the back bar which is never in the path of the kill bar and sits behind the set position.





Even if not set, the mechanism should be treated with an adequate level of vigilance

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WARNING: NEVER PLACE A HAND OR FINGER INTO THE INSIDE OF THE TRAP UNDER ANY CIRCUMSTANCE

4 Installation Instructions

You can download the Yarn Companion app from the following link:

https://tinyurl.com/ycapp25

4.1 Unpacking and Inspecting the Components

Included components

Open the box or if a palletised shipment ensure you have received all the components necessary for installation:

- AT520-AI trap (TrapNode is factory installed)
- Integrated battery pack
- Bait pouch
- Antenna
- Solar panel
- Solar panel mounting bracket

Customer supplied installation components

You will need to source the following components to ensure your installation aligns with recommended and best practices:

- Wooden running board
- Running board screws

4.2 Installation Pre-requisites

The following prerequisites need to be in place prior to the installation of any AT520-AI trap:

1. **Prior to trap deployment:**

    1. **An approved RF plan:** The IMS RF Plan for the area must be approved by the FTP Yarn Mesh team.
    2. **Gateway installed:** The Yarn Mesh Gateway must be installed first.
    3. **Relays installed (backbone network):** The Yarn Mesh Relays must be installed second (after the Gateway).

4.3 Installation Process - Step-by-Step

2. Mounting the trap

1. **Select a mounting location**:

    1. Unpack the trap prior to installation and ensure that all the needed parts are there.
    2. Find a suitable location within the planned Yarn Mesh coverage area, ideally on a tree that allows you to put the trap in place that has good sunlight and line of sight from the antenna of the trap to at least a relay or two.
    3. Mount the trap 300mm above a ramp or platform. The recommended mounting height is 1.2-1.5m above the ground.

2. **Mount the trap**:

    1. Use the provided mounting screws to secure the trap to the surface.
    2. Secure the 'rat strap' by clamping it behind or fixing it to the ramp.
    3. Secure the ramp under the trap with two 100mm screws (customer supplied).

3. Mounting the solar panel

1. **Select a location for the solar panel**:

    1. Choose a location that receives ample sunlight.
    2. Ensure the solar panel is facing toward the equator. If pointing the solar panel more east or more west gets better sun, then this is acceptable.
    3. **Aim to have the panel in full sunlight for at least an hour a day.**
    4. The Sunseeker mobile app should be used to find North and identify which direction to aim the panel for maximum solar gain during winter months.
    5. Sun Seeker - Solar AR Tracker - Apps on Google Play

2. **Mount the solar panel**:

    1. Ensure the solar panel is clean and free from debris to maintain optimal performance. Do not attempt to disassemble or repair the solar panel yourself.
    2. Mount the panel with the panel bracket behind the panel, with the cable looped through the channel in the panel bracket. This acts as a drip loop and a rip stop for the cable.

3. **Connect the solar panel**:

    1. Plug the solar panel cable to the TrapNode.
    2. Secure the solar panel cable screw connector by turning it clockwise until it no longer turns.

4. Installing the antenna

1. **Connect the antenna**:

    1. Attach the antenna to the AT520-AI antenna mount.

    2. <u>Always install the antenna before connecting the battery</u>

    3. Failure to connect the antenna before installing the battery will damage the TrapNode inside the AT520-AI.

5. Connecting the Battery

1. **Remove trap lid**:

    1. Remove the lid from on the trap.
    2. The battery is disconnected from factory to prevent the trap arming during shipping.

2. **Connect the battery**:

    1. Connect the (yellow) battery plug, ensuring the key is located correctly.
    2. If the plug is hard to insert, try angling the battery connector or using pliers to help push the plug in.

3. **Power on**:

    1. The AT520-AI will power on automatically when you attach the battery

6. Commission the trap and connect to Yarn Mesh

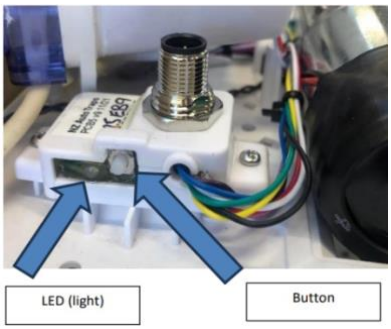
1. Use the Yarn Companion Mobile App

1. Within 30 minutes of powering on the AT520-AI you must use connect the Yarn Companion App and commission the trap, otherwise you will need to unplug then replug the battery to get the TreapNode to allow app pairing again.
2. See section 4.4 Using the Yarn Companion Mobile App below.

7. Installing the bait

1. **Open the bait compartment**:
    1. Open the lid of the trap to access the bait compartment.
2. **Secure the bait pouch**:
    1. Secure the bait pouch or bladder under the lid of the trap.
3. **Connect the bait tube to the pouch:**
    1. Insert the clear tube into the lid of the mayonnaise pouch, do not remove the lid.
4. **Prime bait pump and test lure overflow position on the running board:**

1. Push the trap function button 3 clicks to set the bait to manual pump (LED amber/orange).
2. Press and hold the function Button to run the pump.
3. Fill the bait tray and ensure that some bait runs over and drips onto the running board.
4. Manual pump operation will time out after 30 minutes.
5. Note: if you only push the function button 2 times, the trap will test fire.



6.

5. **Replace Trap Lid:**
    1. Replace the lid of the trap and secure using clips and rubber lid straps.

Mounting complete!

Do not leave the trap until you have commissioned it and the companion app shows no red boxes:

4.4 Using the Yarn Companion Mobile App

Instructions for using the Companion App to commission an AT520-AI or TrapNode are detailed below. However, we recommend downloading and reading the detailed instructions for the Yarn Mesh Companion App, contained in the Yarn Mesh: Companion App - Commissioning and UI Guide, located here: https://ftpsolutions365.sharepoint.com/:w:/s/FTPDocumentation/EZedDqCOOoxCn5t1wWRYBiMBRufZBcLZ86C5XyA0aVd2oA?e=t4XaPI

4.4.1 Overview

The Yarn Companion mobile app is a digital tool for field personnel deploying and maintaining the AT520-AI traps. It is available for smartphones running the Android operating system.

4.4.2 Downloading and Installing the App

1. **Download the App**:
   - Download the Yarn Companion app from the Google Play Store by searching for "Yarn Companion."
2. **Install the App**:
   - Open the app and follow the on-screen instructions to complete the installation.

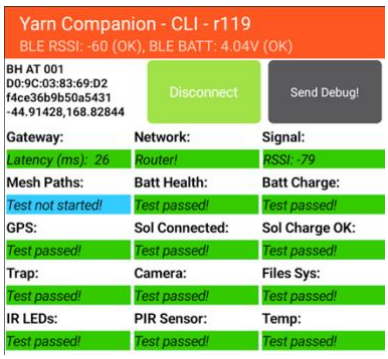
4.4.3 Connecting to the AT520-AI over Bluetooth

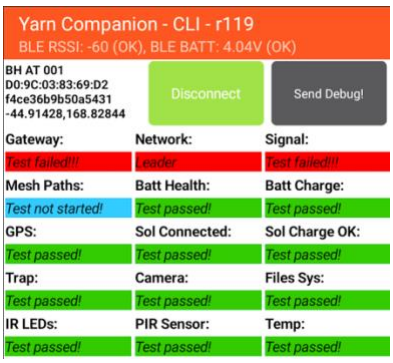
1. **Open the App**:
   - Open the Yarn Companion app and click on the "Scan" button to search for nearby Bluetooth devices.
2. **Select Device**:
   - The AT520-AI traps will appear in the list with their Bluetooth interface ID. Select the device you want to connect to.

4.4.4 Running Tests

1. **Initiate Tests**:
   - The app will automatically run a series of tests against the AT520-AI by connecting to the TrapNode.
2. **Interpret Results**:
   - Test results use a 'traffic light' color code system:
     - **Green**: Full pass (good)
     - **Yellow**: Minor issue but okay
     - **Red**: Test has failed; you need to change the relevant input and re-run the test for it to pass.
3. **Resolve Issues**:
   - If a test fails (red), investigate the failed item and rectify it before re-running the tests to re-validate.

Successful Commissioning Attempt **Failed Commissioning Attempt**





4.4.5 Naming the AT520-AI in IMS

1. **Set Device Name**:
   - Once all tests have passed (green), you can set the device name for the AT520-AI.
2. **Register Name**:
   - Enter a name for the device in the Yarn Companion app. This name will be registered as the "Asset Name" in the IMS backend system.
3. **Importance of Naming**:
   - Naming the device is important as it allows Yarn Mesh support to identify and manage each device from the backend system.

4.4.6 Command List for Yarn Companion App

1. **Scan**: Searches for nearby Bluetooth devices.
2. **Connect**: Connects to the selected device.
3. **Testing**: Once connected the series of tests to validate device functionality run automatically.
4. **Set Device Name**: Allows the user to name the device for IMS registration.
5. **Send Debug**: Sends debug information to Yarn Mesh support for troubleshooting.

4.4.7 Yarn Companion - TrapNode Tests

The following table provides detailed information on the tests performed by the Yarn Companion app:

Test Name	Purpose
Gateway OK	Checks if the TrapNode can access the local Yarn Gateway
Network OK	Checks if the TrapNode can access the Yarn Cloud services
Solar Panel OK	Checks if the Solar Panel is connected and receiving voltage
Mesh Paths OK	Verifies mesh network connectivity
GPS OK	Confirms GPS coordinates
Signal OK	Checks signal strength to the nearest Yarn node
Solar Sunlight OK	Verifies solar panel power generation
Battery Charge	Checks battery charge level
Battery State OK	Confirms battery is installed and connected
Trap OK	Verifies communication with the connected AT220 trap
Temperature OK	Checks the temperature sensor
IR OK	Verifies IR proximity sensors

Camera OK	Tests the camera functionality
Accel OK	Checks the onboard accelerometer
Compass OK	Tests the onboard compass

4.4.8 Yarn Companion - TrapNode Test Statuses

The test results are color-coded to indicate the status:

Yarn Companion - TrapNode Test Result Status	
Colour	Status Colour meaning
Blue	Test not started
Light Blue	Test in progress
Green	Test passed
Yellow	Sensor degraded
Orange	Potential issue
Red	Test failed

4.4.9 LED Functions

The following table provides information on the LED functions for the AT520-AI:

LED Colour	Flashing	Solid
Red	Network Error	Low Voltage
Green	System On	Charge Ok
Blue	Node Visible	Trap Message

The LED colour and state (flashing or solid) indicates the device status.

4.4.10 AT520-AI Button Functions

The following table provides detailed information on the button functions for the AT520-AI:

Function	Button Sequence	Description
Check Trap Status	Press function button 1 once.	Displays current battery status via LED colour and flash sequence.
Manual Trigger	Press function button 2 times.	Manually triggers the trap.
Manual Bait Pump Mode	Press function button 3 times, then hold button to pump lure.	Manually pumps bait.
Clear current Mode and Return to Auto Mode	Press function button 4 times.	Exits setup mode and returns to normal operation