Trakr

User and Installation Guide

UAV-1009202-001
Rev A

1 Revision History

Revision	Date	Comments
A	5/09/2025	Initial release

2 Warnings / Disclaimers

All device operational procedures must be learned on the ground.
uAvionix is not liable for damages arising from the use or misuse of this product.
This equipment is classified by the United States Department of Commerce's Bureau of Industry and Security (BIS) as Export Control Classification Number (ECCN) 7A994.

These items are controlled by the U.S. Government and authorized for export only to the country of ultimate destination for use by the ultimate consignee or end-user(s) herein identified. They may not be resold, transferred, or otherwise disposed of, to any other country or to any person other than the authorized ultimate consignee or end-user(s), either in their original form or after being incorporated into other items, without first obtaining approval from the U.S. government or as otherwise authorized by U.S. law and regulations.

3 Limited Warranty

uAvionix products are warranted to be free from defects in material and workmanship for two years from the purchase of Trakr. For the duration of the warranty period, uAvionix, at its sole option, will repair or replace any product which fails in normal use. Such repairs or replacement will be made at no charge to the customer for parts or labor, provided that the customer shall be responsible for any transportation cost.

Restrictions: This warranty does not apply to cosmetic damage, consumable parts, damage caused by accident, abuse, misuse, fire or flood, theft, damage caused by unauthorized servicing, or product that has been modified or altered.

Disclaimer of Warranty: IN NO EVENT, SHALL UAVIONIX BE LIABLE FOR ANY INCIDENTAL, SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, WHETHER RESULTING FROM THE USE, MISUSE OR INABILITY TO USE THE PRODUCT OR FROM DEFECTS IN THE PRODUCT. SOME STATES DO NOT ALLOW THE EXCLUSION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU.

Warranty Service: Warranty repair service shall be provided directly by uAvionix. Proof of purchase for the product from uAvionix or authorized reseller is required to obtain and better expedite warranty service.
Please email or call uAvionix support with a description of the problem you are experiencing. Also, please provide the model, serial number, shipping address and a daytime contact number. You will be promptly contacted with further troubleshooting steps or return instructions. It is recommended to use a shipping method with tracking and insurance.

4 Table of Contents

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7 About the Trakr Ecosystem

7.1 Trakr

Trakr is an ultra-low SWaP device that attaches to your UAS. It broadcasts your drone's position and altitude in real-time over the 915 MHz ISM Band.

Figure 1: Trakr

7.2 TrakrStation and TrakrStationLTE

Trakr signals are received by TrakrStations (part number UAV-1009046) and TrakrStationLTEs (part number UAV-1009048).

TrakrStation is usually permanently or semi-permanently installed by mounting to a pole.

TrakrStationLTE is a portable device powered by battery (Dewalt 20V MAX 'POWER STACK'). LTE is provided for backhaul connectivity only and does not provide C2 functionality to the UAS.

Figure 2: TrakrStation

Figure 3: TrakrStationLTE

7.3 FlightLine

The FlightLine ADS-B network provides real-time tracking of cooperative aircraft through a receiver network and web interface. General aviation aircraft broadcasting ADS-B Out for electronic conspicuity will be detected by uAvionix FlightStation receivers and sent to FlightLine for operator's situational awareness.

For more information about FlightLine, visit uavionix.com or contact sales@uavionix.com.

Trakr positions are displayed in FlightLine, alongside ADS-B data. With this situational awareness, operators can avoid low altitude airborne collisions with general aviation aircraft and report on UAS operations to comply with regulations.

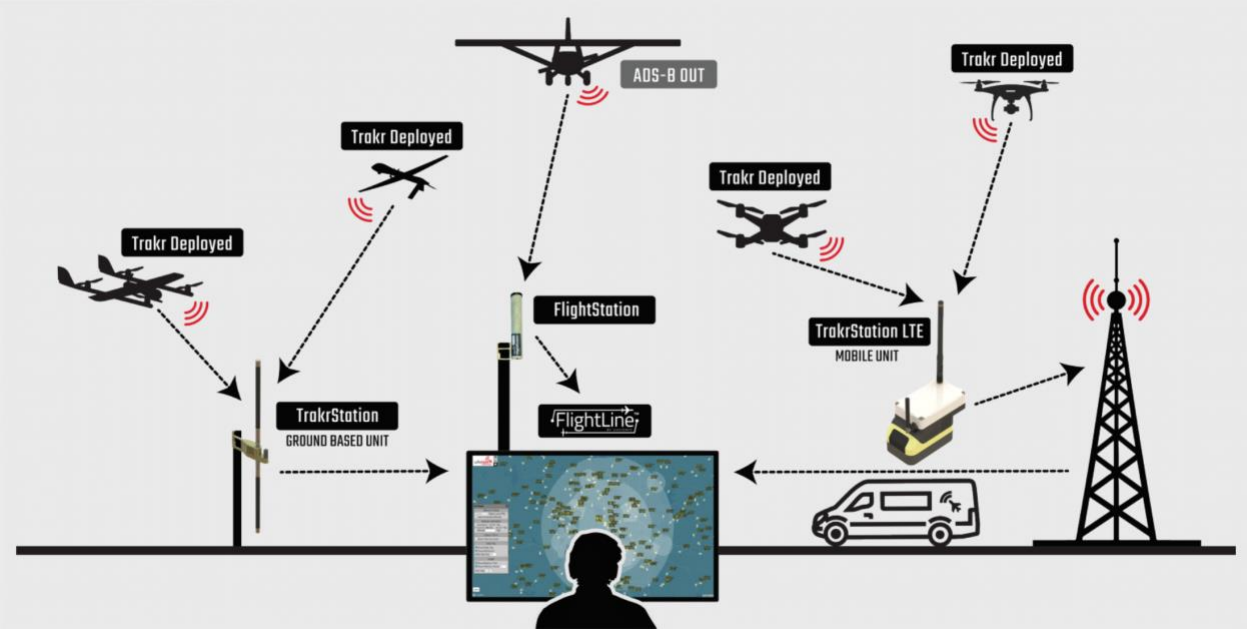

Figure 4: Trakr Ecosystem Includes FlightLine and TrakrStations

8 Compliance and System Information

8.1 Trakr Compliance

This installation manual provides mechanical and electrical information necessary to install Trakr. It is not equivalent to an approved airframe-specific maintenance manual, installation design drawing, or installation data package. The content of this manual assumes use by competent and qualified personnel using standard maintenance procedures in accordance with Title 14 of the Code of Federal Regulation and other related accepted procedures. The conditions and tests required for approval of this article are minimum performance standards. Those installing this article either on or within a specific type or class of aircraft must determine that the aircraft installation conditions are within the standards which include any accepted integrated functions not specified by the standards.

8.2 FCC ID

Model	FCC ID
Contains	2AFFTC2XISM

Table 1: FCC ID

8.3 Device Marking

8.3.1 Trakr Hardware

Figure 5: Trakr Label

8.3.2 FlightStation Hardware

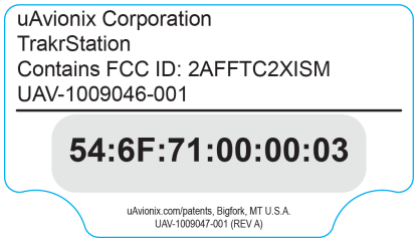

Figure 6: TrakrStation Label

8.3.3 FlightStation LTE Hardware

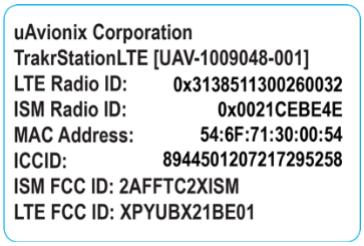

Figure 7: TrakrStationLTE Label

8.3.4 Trakr Software

The software contained in the Trakr is identified by electronic marking. Reference Section **Error! Reference source not found.** for information on determining the software part numbers.

8.4 Continued Airworthiness

Maintenance of Trakr is "on condition" only. The aircraft must be returned to service in a means acceptable to the appropriate aviation authority.

9 System Specifications

9.1 Trakr

9.1.1 System Functionality

Trakr is an ultra-low size and weight device that transmits the UAS's GPS position data on 915 MHz ISM band.

9.1.2 Physical Specifications

Characteristics	Specifications
Width	1.063 in (27.00 mm)
Height	0.915 in (23.25 mm)
Depth	1.686 in (42.83 mm)
Weight	0.99 oz (28 grams)
Operating Temperature Range	-45°C to +70°C
Charge Connector	USB-C
Battery	Internal, 740 mWh
Battery runtime	Up to 1.5 hours
Indicators	Charge LED Multi-function LED (Position / Transmit / System Status)
Power Switch	Mechanical On/Off

Table 2: Trakr Physical Specifications

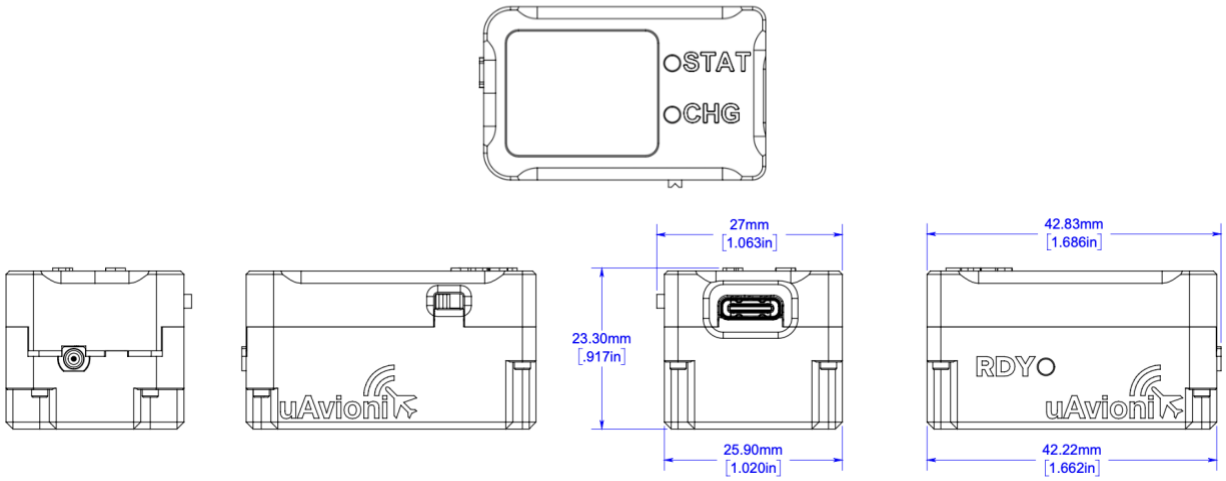

Figure 8: Trakr Dimensions

9.1.3 GNSS Specifications

Characteristics	Specifications
Number of Channels	72
Constellations	GPS, GLONASS, SBAS, QZSS
Frequency	1575.42 MHz L1, C/A code
Sensitivity Tracking Reacquisition Cold Start Hot Start	 -165 dBm -158 dBm -146 dBm -155 dBm
Horizontal position accuracy	2 m RMS with SBAS
Velocity accuracy	0.05 m/s
Heading accuracy	0.3 degrees
TTFF (Time to First Fix) Cold start Hot start	 26 s 1 s
Position update interval	1 second (1 Hz)

Table 3: GNSS Specifications

9.1.4 System Interfaces

Trakr is a self-contained system. A USB-C port is provided to charge the device.

9.2 TrakrStation

9.2.1 System Functionality

TrakrStation is a ground-based receiver of Trakr GPS position data on 915 MHz ISM band and is powered by PoE. Trakr send the data to FlightLine web application for situational awareness.

9.2.2 Physical Specifications

Characteristics	Specifications
Width	7.527 in (191.18 mm)
Height	34.921 in (887 mm)
Depth	1.417 in (36 mm)
Operating Temperature Range	-45°C to +70°C
Power and connectivity	PoE

Table 4: TrakrStation Physical Specifications

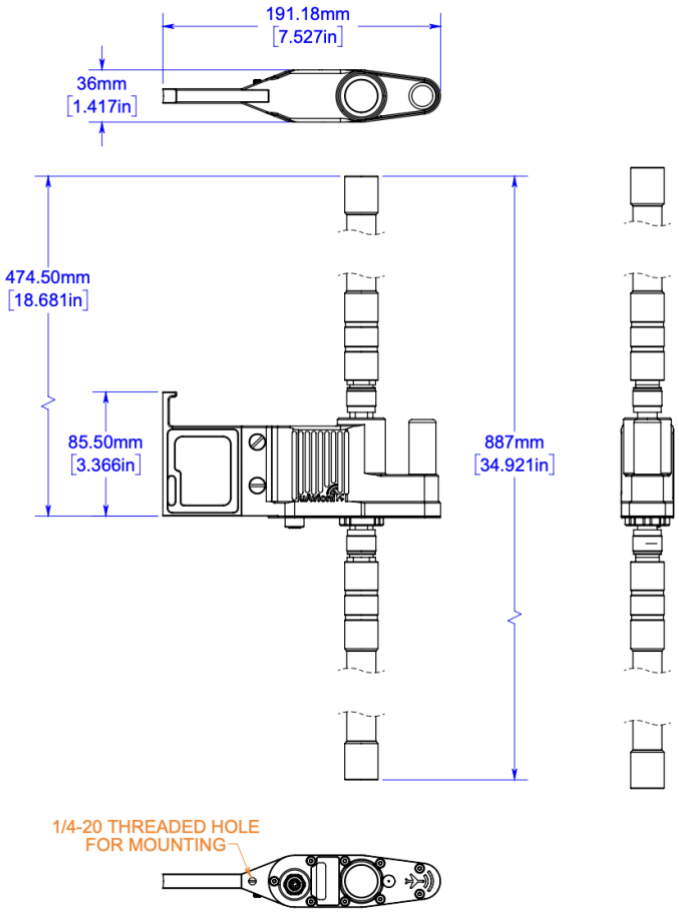

Figure 9: TrakrStation Dimensions

9.3 TrakrStationLTE

9.3.1 System Functionality

TrakrStationLTE receives GPS position data on 915 MHz ISM band.

9.3.2 Physical Specifications

Characteristics	Specifications
Width	2.370 in (60.20 mm)
Height	7.411 in (188.23 mm)
Depth	4.223 in (107.26 mm)
Operating Temperature Range	-45°C to +70°C
Power and connectivity	PoE

Table 5: TrakrStationLTE Physical Specifications

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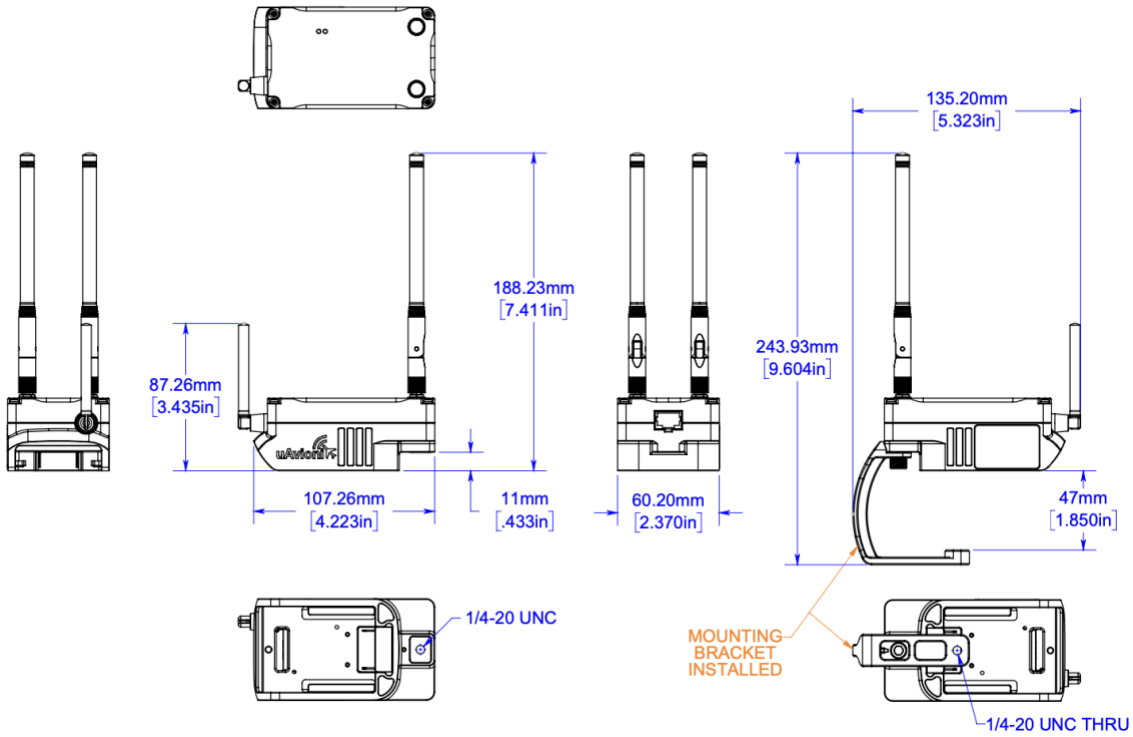


Figure 10: TrakrStationLTE Dimensions

10 Installation

10.1 Unpacking and Inspecting

Carefully unpack devices and make a visual inspection of the unit for evidence of any damage incurred during shipment. If the unit is damaged, notify the shipping company to file a claim for the damage. To justify your claim, save the original shipping container and all packing materials.

10.2 Trakr

10.2.1 Kit Contents and Part Numbers

Item	P/N	Quantity
Trakr Hardware	UAV-1008429-001	1
Antenna, Taoglas PC91 to MMCX Plug	UAV-1009196-001	1
USB-C charging cable (1ft, white)	UAV-1002158-001	1
Quick start card with QR Code	UAV-1005282-030	1
3M Dual-Lock™ fastener	UAV-1000302-001	2

Table 6: Trakr Part Numbers

10.2.2 Installation Materials and Tools

Trakr is provided with a 3M Dual-Lock™ fastener to quickly and safely provide attachment to the airframe.

10.2.3 Mounting

Trakr should be mounted in an accessible location using the include 3M Dual-Lock™ fasteners. Ensure the power switch is accessible for pre- and post-flight operation.

To ensure performance of the GNSS positioning system, the label side of Trakr **must** be facing the sky.

Typically, Trakr is powered by its internally battery which must be charged on the ground prior to use. Optionally, a USB-C cable providing 5V may be connected from an aircraft power source to Trakr and provide constant charge while in-flight.

10.2.4 EMC Checkout

An EMC check should be performed after Trakr installation is complete. The EMC check verifies that the newly installed equipment is not producing interference to other avionics and that the existing avionics are not producing interference impacting Trakr. The testing assumes

that a Trakr operational check has been completed and that the installed avionics are tested and in working condition.

1. Power on all avionics except the Trakr.
2. Verify all existing avionics are functioning properly.
3. After confirming all existing avionics are functioning properly, power off all existing equipment.
4. Power on Trakr and confirm proper operation and transmissions from Trakr.
5. Power on all existing avionics and repeat tests to confirm proper function.

10.3 TrakrStation

10.3.1 Kit Contents and Part Numbers

Item	P/N	Quantity
TrakrStation Hardware	UAV-1009046-001	1
Quick start card with QR Code	UAV-1005282-032	1
M12 Ethernet Cable, IP67, M12 X-CODED, RJ45, CAT5	UAV-1005899-002	1
Hose Clamp, 1-5/16"- 2-1/4"	UAV-1005632-001	2
LoRa Gateway 3dbi Gain Glass Fiber Reinforced Antenna	UAV-1003059-001	2
Shoulder Screw, Slotted, M5 x .8, 8mm Shoulder Length	UAV-1005620-004	2

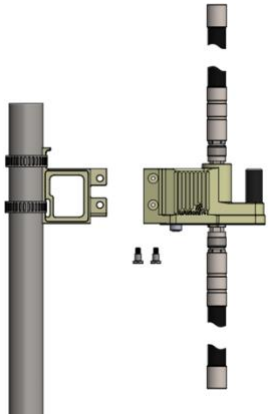
Table 7: TrakrStation Part Numbers

10.3.2 Installation

TrakrStation is an IP67 weatherproof, Power over Ethernet (PoE) Class1 4W network connected GRS which provides visibility to your UAS's position (via Trakr data) by connecting to the FlightLine system. This connection is via the M12 X-Code Ethernet PoE connection which must be connected to an internet-connected Local Area Network (LAN).

The required GPS is integral to the TrakrStation, and no additional inputs are required.

1. Secure the mounting bracket to a pole with the included stainless steel hose clamps.
2. Align the GRS with the mounting bracket and slide the GRS into place over the end of the bracket. The bracket will now hold the GRS in place.
3. Use the included mounting screw(s) to fasten the GRS to the bracket.
4. Attach the GRS antennas and tighten.



10.3.2.1 Network Connection

The TrakrStation connects to a network via POE using an M12 X-Coded connector.

Parameter	Value
Standard	803.3af (802.3at Type1)

Maximum power	Class 1, 4W
Voltage Range	37 – 57V
Supported Cabling	Shielded Cat 3 and Shielded Cat 5
Maximum Cable Length	100 meters

Table 8: TrakrStation POE Specifications

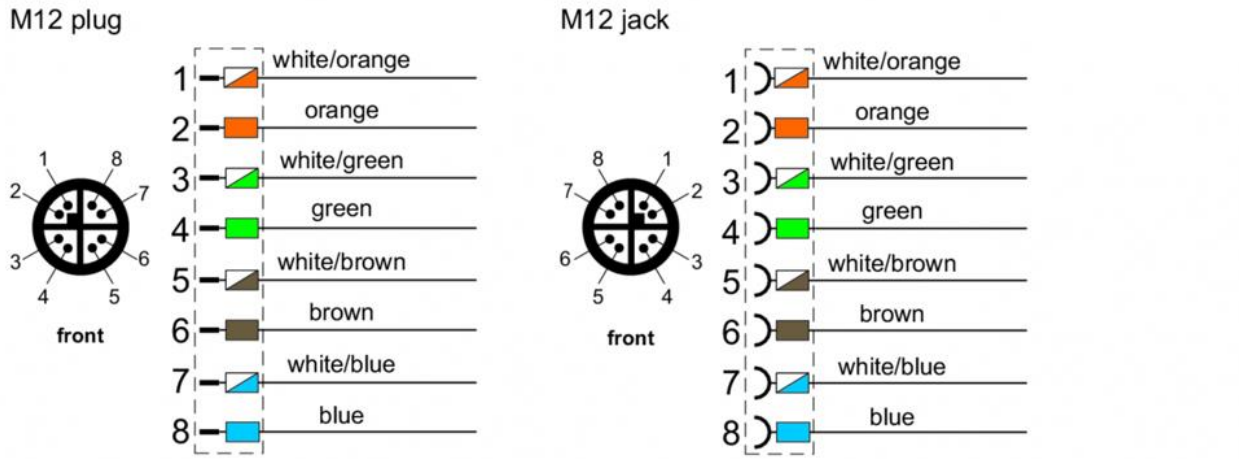


Figure 11: M12 Wiring Diagram

10.4 TrakrStationLTE

10.4.1 Kit Contents and Part Numbers

Item	P/N	Quantity
TrakrStationLTE Hardware	UAV-1005282-033	1
4G LTE Omni-Directional Antenna	UAV-1006826-001	1
RF Antenna 916MHZ WHIP TILT SMA MALE	UAV-1005802-001	2
Mounting Bracket	UAV-1007324-001	1
Quick start card with QR Code	UAV-1005282-033	1

Table 9: TrakrStationLTE Part Numbers

10.4.2 Installation Materials and Tools

1. Install a charged compatible DeWalt battery into battery cradle.
2. Next, confirm the battery is firmly latched into place. TrakrStationLTE is designed to be compatible with the DEWALT POWERSTACK™ 5ah battery and power adapters.

DeWalt Part Number	Description	Estimated Run Time
DCBP034	DeWalt 20V MAX POWERSTACK	12 HRS

3. Attach two ISM omnidirectional antennas and two LTE omnidirectional antennas tightly. All antennas are vertically polarized and should be positioned perpendicular to the ground.

10.4.3 Mounting

TrakrStationLTE is a complete standalone all-in-one GRS that requires no physical mounting or physical network connection.

Optional – TrakrStationLTE can be mounted on a standard camera tripod using the included ¼-20 extension attachment.

11 Maintenance

Trakr, TrakrStation and TrakrStationLTE are not user serviceable products. All service must be performed either by uAvionix or an authorized uAvionix repair center.

12 Care and Cautions

Trakr, TrakrStation and TrakrStationLTE should be regularly cleaned with a soft cloth micro-fiber rag. Trakr is not waterproof - do not use liquid cleaners, chemicals, or degreasers. Trakr, TrakrStation and TrakrStationLTE may not be painted.

13 Normal Operation

13.1 Trakr

13.1.1 Indicators and Interfaces

13.1.1.1 Power Switch

Figure 12: Trakr Power Switch

The power switch is highlighted in red. The switch is shown in the Off position. Slide it towards the USB-C port to turn power On.

13.1.1.2 LED Indicators

The LED are highlighted below in blue (status), green (flight readiness) and orange (charging status). The information the LEDs convey is described in the tables below.

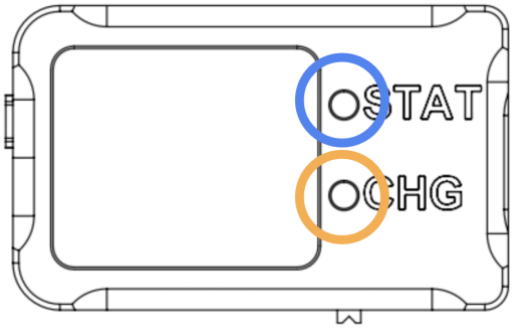


Figure 13: Trakr STAT and CHG LEDs

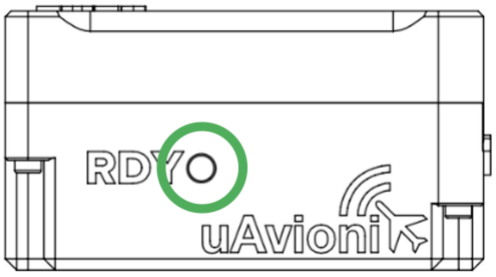


Figure 14: Trakr RDY LED

STAT LED	Status
Off	Waiting for position lock.
Green Blinking	Position acquired, ready for takeoff.

CHG LED	Status
Off, USB-C Plugged In	Charge complete.
On, USB-C Plugged In	Charging.

RDY LED	Status
Off	Not ready for takeoff.
Blinking	Acquiring GPS lock.
On	Ready for takeoff.

Table 10: Trakr LED Indicators

13.1.1.3 USB-C Charge Port

The USB-C charge port is highlighted in green.

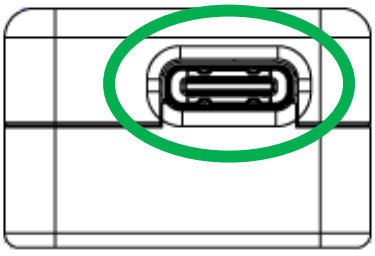


Figure 15: Trakr USB-C Charge Port

13.1.1.4 Antenna Connection Port

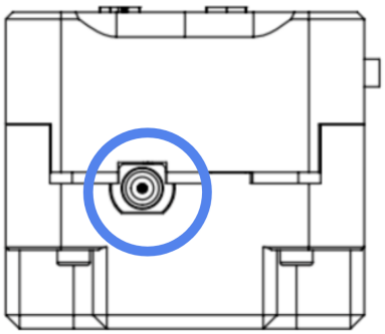


Figure 16: Trakr Antenna Connection Port

The antenna port is highlighted in blue. Connect the supplied antenna prior to turning on Trakr. Locate the antenna as clear from the drone frame as possible to optimize the signal.

13.1.2 Charging

To charge Trakr, connect a USB-C cable to the device. Trakr is compatible with USB chargers capable of providing 5V.
The charge LED will illuminate while charging and extinguish when charging is complete.
Ensure an appropriate level of charge has been provided prior to flight.
Optionally, a USB-C cable providing 5V may be connected from an aircraft power source to Trakr and provide constant charge while in-flight.

13.1.3 Pre-flight

Ensure the battery is fully or appropriately charged for your mission. See Section 13.1.2.
Power on Trakr using the mechanical power switch as shown in Section 13.1.1.1. Ensure that the STAT LED is blinking– reference Section 13.1.1.2 for information on the LED indications.

You must ensure that Trakr has a obtained a valid GNSS position prior to takeoff. This is indicated by a blinking green STAT LED.

Once the STAT LED is blinking and the RDY LED is on, continue remaining aircraft pre-flight checks and takeoff when ready.

13.1.4 During flight

UAS location and altitude may be monitored by using the uAvionix FlightLine web application. For more details visit: uavionix.com/

13.1.5 Post-flight

Power off Trakr using the mechanical power switch as shown in Section 13.1.1.1. then recharge as appropriate.

13.2 TrakrStation

On connection to power and internet via the M12 cable, TrakrStation will become visible as a node in the Flightline application.

13.3 TrakrStationLTE

A charged Dewalt battery should be connected.

13.3.1.1 LED Indicators

POWER LED (Green)	Status
Off	Not powered.
Solid	Powered.

RDY LED (Blue)	Status
Off	Not ready.
Blinking blue	Ready.

Table 11: TrakrStationLTE LED Indicators

Once powered and ready, TrakrStationLTE will become visible as a node in the Flightline application.

14 Support

For additional questions or support please visit: uavionix.com/support/

15 Appendix

15.1 Trakr Top Level Assembly Diagram

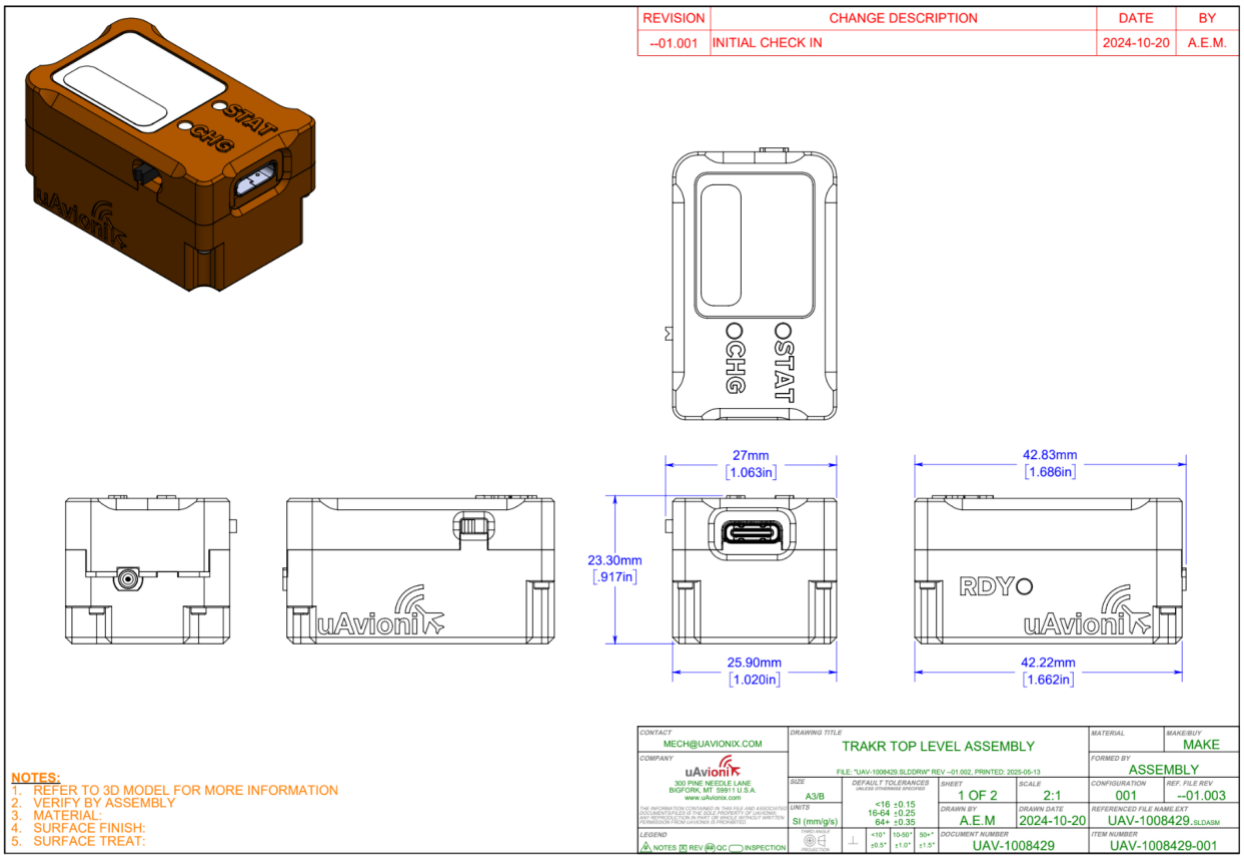


Figure 17: Trakr Top Level Assembly

15.2 Trakr Antenna Top Level Assembly Diagram

TrakrStation Top Level Assembly Diagram

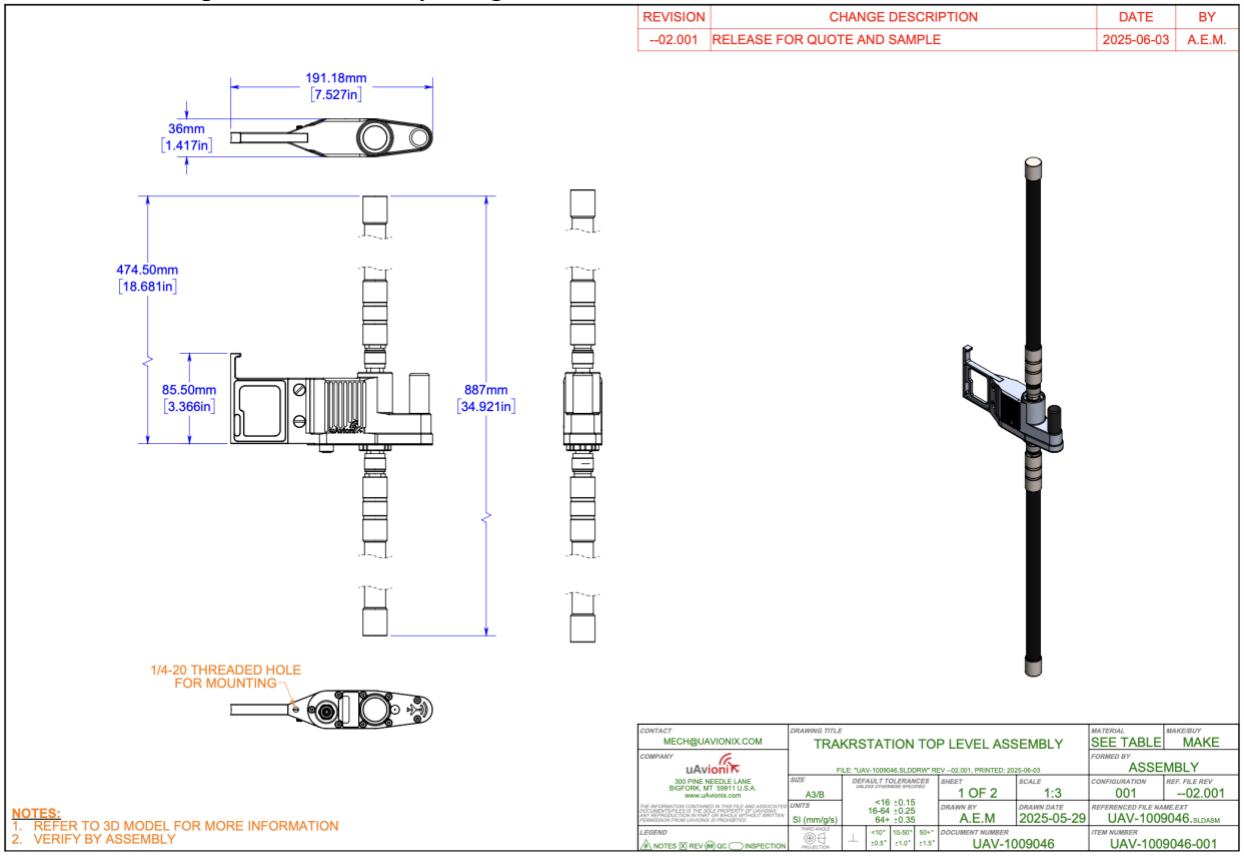


Figure 18: TrakrStation Top Level Assembly

15.3 TrakrStationLTE Top Level Assembly Diagram

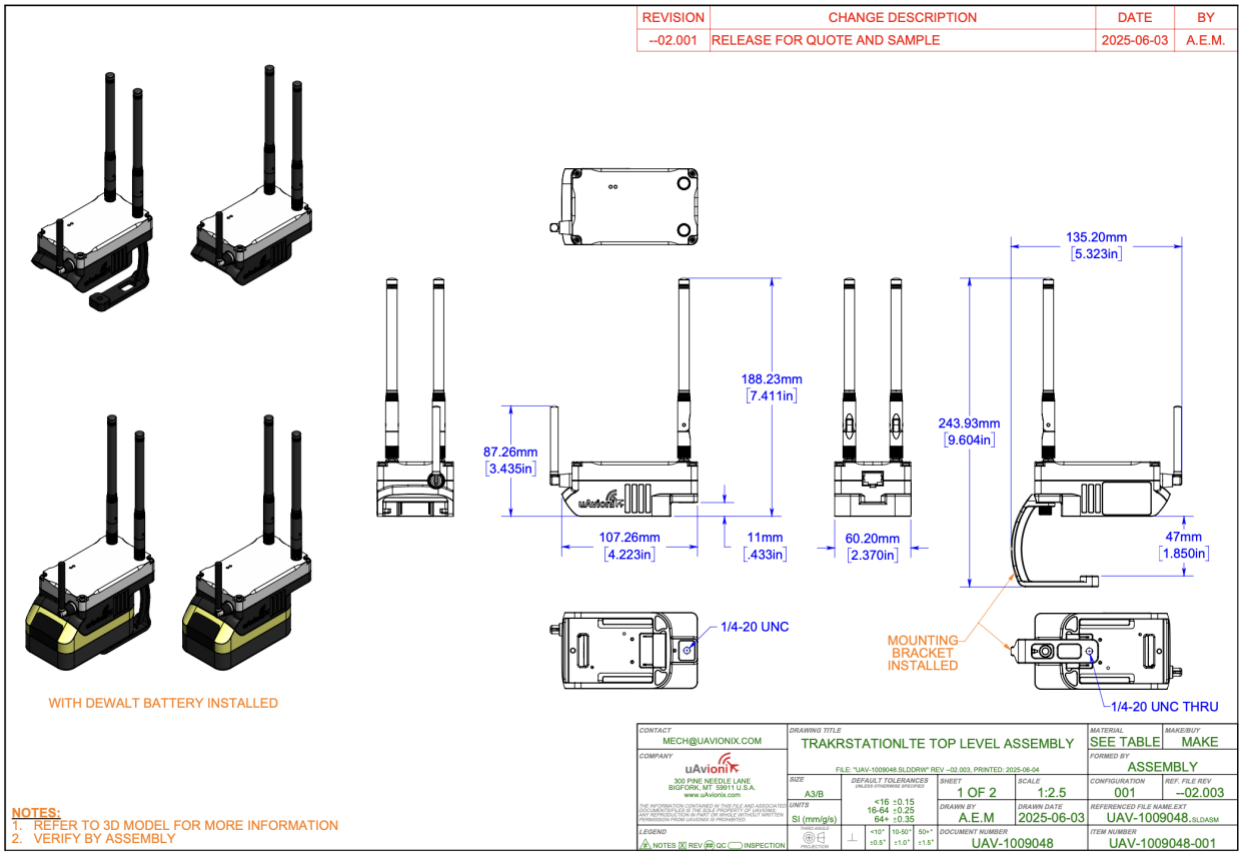


Figure 19: TrakrStationLTE Top Level Assembly