TRACTIAN

Instruction Manual

Uni Trac

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About your **Uni Trac**

TRACTIAN System

Through online and real-time monitoring of machine condition, the TRACTIAN system provides solutions to optimize day-to-day processes and reliability.

The system integrates analog and digital sensors with mathematical models, generating alerts that prevent unplanned equipment downtime and high costs resulting from inefficiencies.

Uni Trac

The Uni Trac sensor samples analog and digital data through a universal physical interface, processes the data, and sends it to the platform via the Smart Receiver Ultra.

The Uni Trac is powered by a lithium battery and has a 3-year lifespan on default settings.

Simply attach the sensor to the asset, configure the interface, and start using the system.

Installation

The ideal installation location for the Uni Trac depends on the interface used.

As the device communicates via radio waves, it is important that it is not installed inside metal panels, which act as signal blockers.

The sensor is IP69K rated, designed to be used in harsh environments and withstand adverse conditions, such as water jets and dust.

Smart Receiver Ultra

The Smart Receiver Ultra communicates with sensors within a range of 330 feet in obstacle-filled environments and 3300 feet in open fields, depending on the plant's topology. To install more sensors or cover greater distances, additional receivers are required.

It is best to position the receiver in a high and central location relative to the sensors for optimal performance.

Intuitive Platform

Data samples and analyses are intuitively displayed on the TRACTIAN platform or app, easily accessible via computer or mobile device, enabling integrations with other systems.

The platform also allows complete control of operations with an hour meter, correlation with different variables, and the creation of specific indicators.

Fault Detection and Diagnosis

The unique TRACTIAN analysis system allows for precise detection of process faults.

The algorithms are constantly trained and optimized based on feedback from field analyses, and supervised by our team of TRACTIAN experts.

Thousands of data points are sampled daily in a system that identifies and diagnoses the operation in real time.

Precautions

DO NOT place the device on surfaces with temperatures exceeding 230°F (110°C).

DO NOT expose the device to solvents such as Acetones, Hydrocarbons, Ethers or Esters.

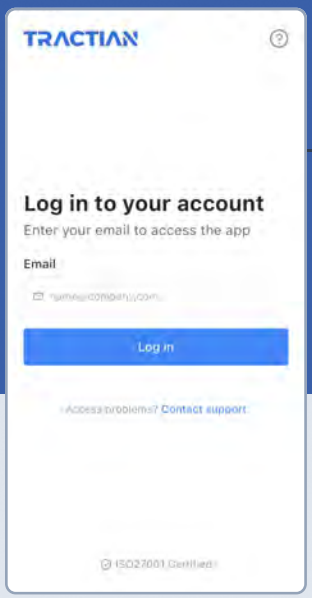
DO NOT submerge the device.

DO NOT subject the device to excessive mechanical impact, dropping, crushing or friction.

TRACTIAN **DOES NOT** take responsibility for damages caused by the use of devices outside the standards defined in this manual.

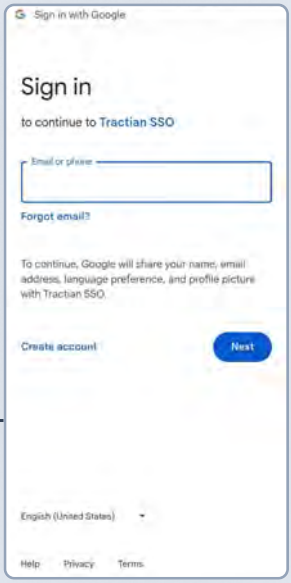
Activation and Safety

Access our platform by following the steps below:



1 Go to **app.tractian.com** and fill in your e-mail.

2 Log in through SSO using your e-mail.



Sensors

The Uni Trac is a sensor capable of sampling digital and analog signals from other sensors and systems and sending them to the platform.

It is crucial to choose the right installation locations and ensure connectivity and data transmission.

Installation Locations

Choose elevated locations without obstacles between the sensor and the receivers.

Avoid installing the sensor inside metal enclosures, as they can weaken the signal.

Take advantage of the IP69K protection rating to ensure the sensor is installed in a suitable location.

IP69K Rating

Complete protection against solid particles, including dust

Protection against rain, water jets, and steam. Does not protect against submersion

The **mounting magnets** allow it to be positioned on any metallic surface or tubular profile, and the **cavities** enable it to be secured with a clamp.

Interfaces

The Uni Trac connects to other devices through the 4-pin external connector, available in screw or lever models, as shown beside.

For each interface, follow the terminal functions of the connector according to the table below.

Screw connector

Lever connector

Terminal	4 to 20 mA	0 to 10 V	Counter	I2C	RS485
1 - Brown	V+	V+	V+	V+	V+
2 - White	N/A	Signal	NPN/PNP	SCL	B (+)
3 - Blue	GND	GND	GND	GND	GND
4 - Black	Signal	N/A	NPN/PNP	SDA	A (-)

Power Source

The Uni Trac allows for two power modes: external or internal.

External: Both the Uni Trac and the external sensor are powered by an external source. This mode is required for serial communications and configurations with reading intervals shorter than the standard.

Internal: In this mode, the Uni Trac is powered by its internal lithium battery, and the external sensor can be powered either externally or by the Uni Trac itself. In this case, the output voltage is configurable within the limits specified in the table.

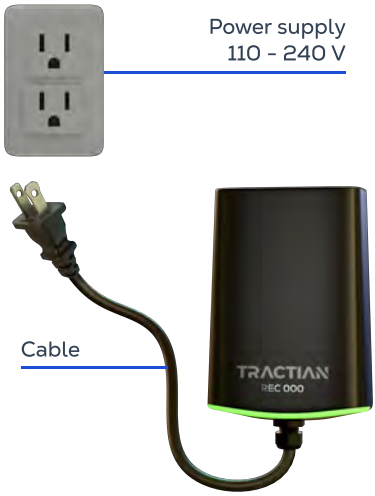
Mode	Voltage	Current	Reading Interval
External	5 to 24 V	› 50 mA	N/A
Internal	5 to 15 V	‹ 100 mA	‹ 100 ms

WARNING! Check the polarity of the external power supply before connecting the cables and ensure that the voltage and current values are within limits.

Receivers

The **Smart Receiver Ultra** needs mains power. Therefore, make sure that there are electrical connections near the installation locations.

DO NOT install the Smart Receiver Ultra inside metal electrical panels, because they may block the receiver's signal. Other materials such as plastic usually do not affect connectivity.



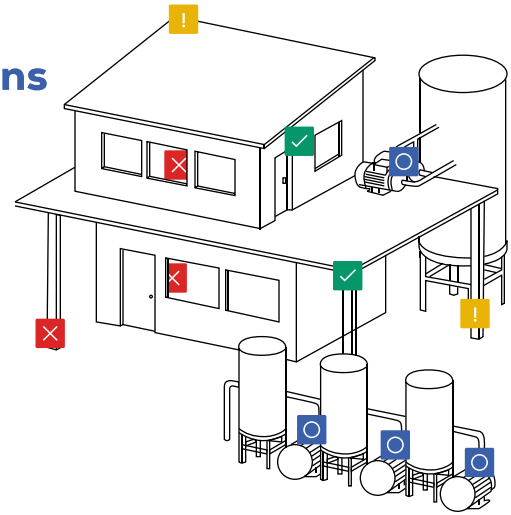
The ideal amount of receivers needed to cover a certain area will depend on factors like obstacles (walls, machines, metal reservoirs) and other elements that may harm signal quality. It might be necessary to increase the number of receivers in order to ensure satisfactory coverage.

It is recommended to assess the environment's topography and the layout of assets in the area to establish the quantity and adequate positioning of the receivers. Reach out to our experts for more detailed information.

Installation Locations

It is recommended to install the receiver in high places, facing the sensors.

Also, look for places with no obstacles between the sensors and the receiver.



- Ideal
- Not ideal, but acceptable
- Inadequate position
- Uni Trac Sensor

Connectivity

Mobile Network

The Smart Receiver Ultra connects automatically to the best available LTE/4G network in your region.

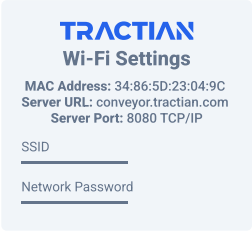
Wi-Fi

In case there is no mobile network available or you would rather connect it to a Wi-Fi network, the connection is possible.

Once plugged into the power outlet, the receiver will turn on a white light and generate its own network that can be found in the Wi-Fi settings of nearby devices (such as smartphones or computers).

By connecting your device to the receiver's temporary network, you will see a form that must be filled out with your company's Wi-Fi information so the receiver can connect to it.

Continuous White
Awaiting Connection



Settings Page

The receiver's own network will be generated 10 seconds after it is plugged in.
If no device connects within 1 minute, the receiver will search for the best available mobile network.

Blinking Blue
Searching for connection

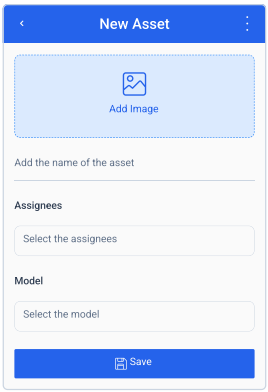
Blinking Green
Sending data

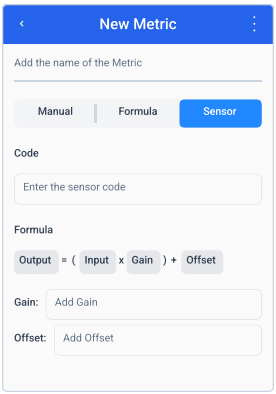
Continuous Green
Connected

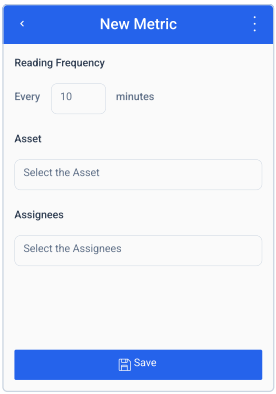
Blinking Red
Not connected

Continuous Red
Damaged device

Metrics Registration





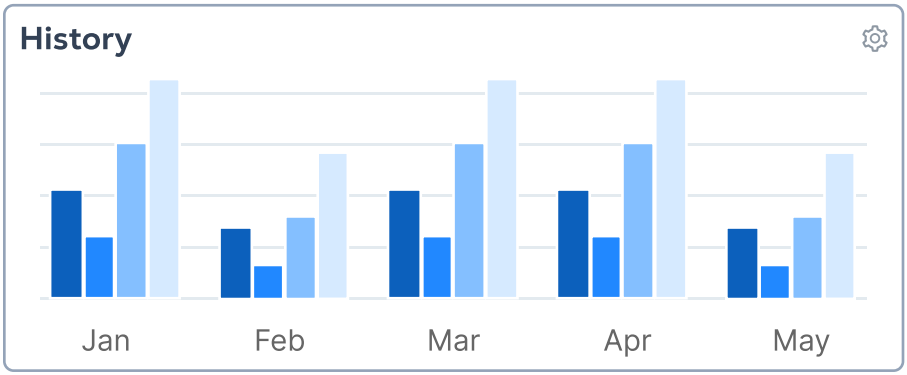


1 If the Asset to which this metric will be linked does not yet exist, click on **Add Asset** in the "Assets" tab of the platform and register the name and model of the machine.

2 Then, click on **Add Metric** in the "Metrics" tab and register the name of the metric and the sensor code, along with the formula for processing the data, if necessary.

3 Fill in the other intrinsic information for the metric, such as reading frequency, the responsible persons, and the asset to which this metric is associated, and click Save.

4 Now, simply access your asset on the platform to monitor real-time readings.



Battery Replacement

WARNING! Before replacing the battery, disconnect the sensor connector and take the Uni Trac to a suitable and well-lit location.

1 Remove the 4 screws from the battery cover located on the underside of the Uni Trac.

2 With the cover open, remove the used battery and replace it with a new one.

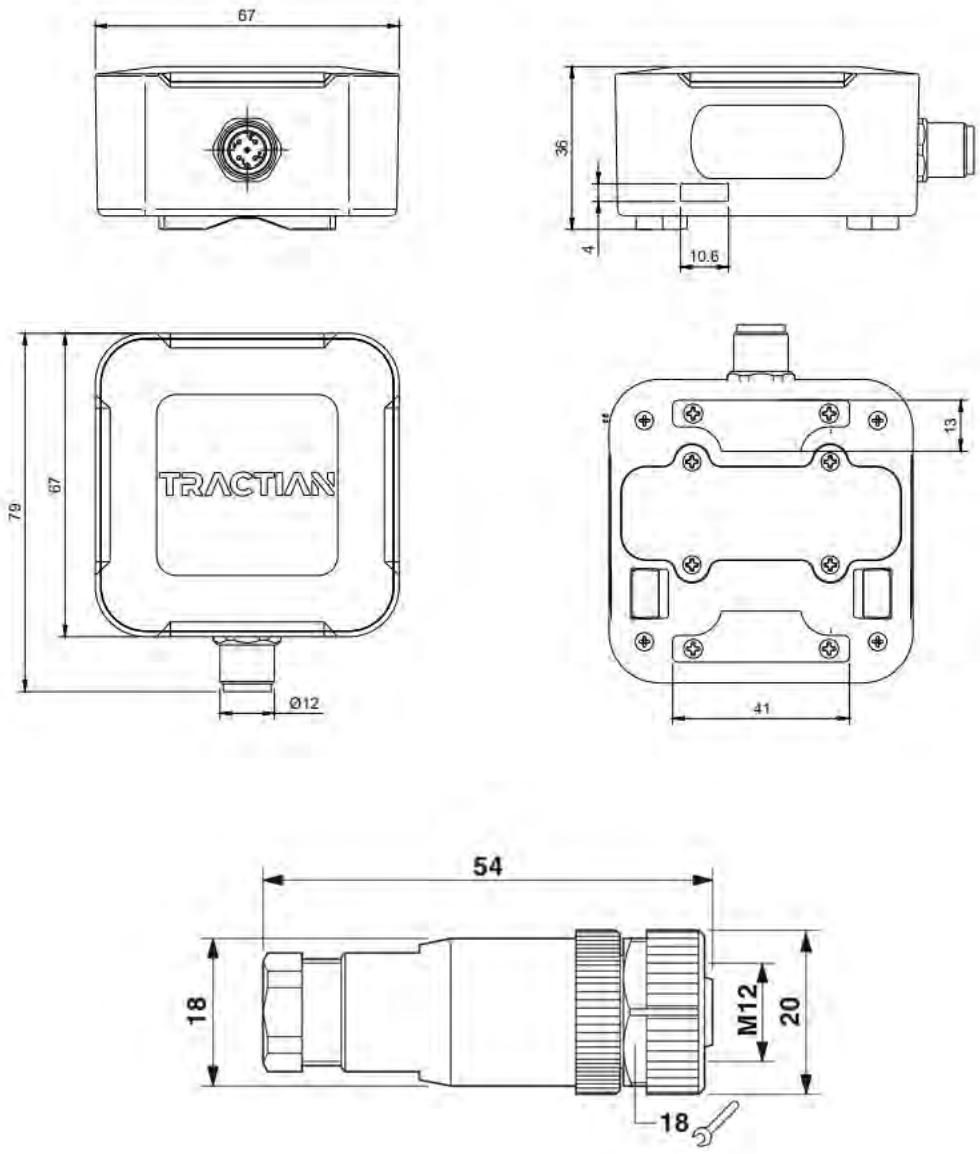
WARNING: **Check the polarity of the new battery before inserting it.**

Then, close the cover and tighten the screws.

3 Done! Reconnect the external connector and enjoy your real-time data!

IMPORTANT! TRACTIAN recommends only using batteries with identical specifications as described in the Technical Specifications of this manual. Using unauthorized batteries voids the product warranty.

Wireless Communication	
Frequency	915MHz ISM
Protocol	IEEE 802.15.4g
Line of Sight Range	Up to 1km between sensor and receiver, depending on the industrial plant topology
Internal Environment Range	Up to 100m between sensor and receiver, depending on the industrial plant topology
Default Setting	Samples every 5 minutes
Physical Characteristics	
Dimensions	40(L)x40(A)x36(P)mm, excluding the connector
Height	79 mm
Weight	120g
External Material Building	Makrolon 2407
Fixation	The sensor can be attached to metallic surfaces using magnets or secured with clamps.
Installation Location Characteristics	
Rating	IP69K
Operating Temperature (ambient)	From -40°C to 90°C / -40°F to 194°F
Humidity	Suitable for installation in high humidity areas
Hazardous Locations	Not certified
Power Source	
Battery	Replaceable AA Lithium Battery, 3.6V
Typical Lifetime	3 to 5 years, depending on the selected settings
Adverse Factors	Temperature, transmission distance, and data acquisition configuration
Cybersecurity	
Sensor to receiver communication	Encrypted AES (128 bits)
Certification	
FCC ID	2BCIS-UNITRAC
IC ID	31644-UNITRAC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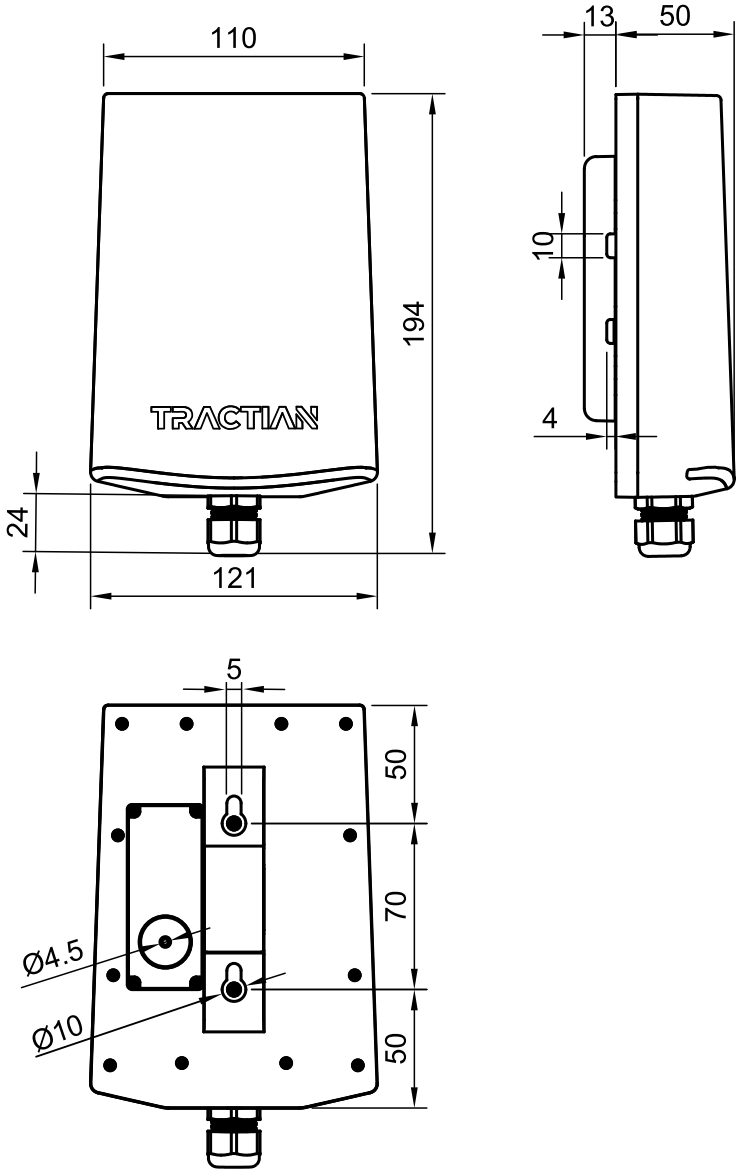
Connections	
Physical input	Power supply and external antennas (LTE and Wi-Fi)
Physical output	LED to indicate functioning status
Wireless Communication	
Frequency	915 MHz ISM and 2.4GHz ISM
Protocol	IEEE 802.15.4g and IEEE 802.11 b/g/n
Bands	2.4 GHz: 14 frequency channels, dynamically assigned
Line of Sight Range	Sensors within 100 meters
Network Communication	
Mobile Network	LTE (4G), WCDMA (3G) e GSM (2G)
Mobile Frequencies	LTE B1/B2/B3/B4/B5/B7/B8/B28/B66/B40 WCDMA B1/B2/B5/B8 GSM 850/900/1800/1900 MHz
Wi-Fi Network	802.11 b/g/n, 2.4 GHz, WPA2-Personal e WPA2-Enterprise
Wi-Fi Configuration	
Wi-Fi network setup	Captive Portal through a smartphone or a computer
Physical Characteristics	
Dimensions	121 (W) x 170 (H) x 42 (D) mm/4.8 (W) x 6.7 (H) x 1.7 (D) in
Cable Length	3m or 9.8ft
Attachment	Nylon cable ties
Weight	425g or 15oz, excluding cable weight
External Material	Lexan™
Environmental Characteristics	
Operation Temperature	From –10°C to +60°C (14°F to 140°F)
Humidity	Maximum relative humidity of 95%
Hazardous Locations	For Hazardous Locations, request the Smart Receiver Ex to a TRACTIAN expert.
Power Source	
Power supply input	127/220V, 50/60Hz
Power supply output	5V DC, 15W
Other Specifications	
RTC (Real Time Clock)	Yes
Receiver Firmware Updates	Yes
Sensor Firmware Updates	Yes, when associated to a receiver
Certification	
FCC ID	2BCIS-SR-ULTRA
IC ID	31644-SRULTRA


110
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Ø10

FCC Class A Information

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference,

2. This device must accept any interference receive, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Changes or modifications not expressly a proved by the party responsible for compliance could void the user's authority to operate this equipment. The radiated output power of this device meets the limits of FCC radio frequency exposure limits.
This device should be operated with a minimum separation distance of 20 cm (8 inches) between the equipment and a person's body

ISED Certification

This device complies with ISED Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

1. This device may not cause interference; and

2. This device must accept any interference, including interference that may cause undesired operation of the device.

Changes or modifications not expressly a proved by the party responsible for compliance could void the user's authority to operate this equipment.

The radiated output power of this device meets the limits of ISED Canada radio frequency exposure limits. This device should be operated with a minimum separation distance of 20 cm between the equipment and a person body.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. l'appareil ne doit pas produire de brouillage, et,

2. l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Les changements ou modifications non expressément approuvés par la partie responsable de la conformité peuvent annuler le droit de l'utilisateur à utiliser l'équipement.

Cet appareil numérique de classe A est conforme à la norme canadienne NMB-003.

La puissance de sortie rayonné de cet appareil est conforme aux limites de la ISDE Canada limites d'exposition aux fréquences radio. Cet appareil doit être utilisé avec une distance minimale de séparation de 20 cm entre l'appareil et le corps d'une personne.

TRACTIAN

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