TRACTIAN

Datasheet

Smart Trac

About your Smart Trac

Introduction

Based on real-time machine condition monitoring, Tractian's solutions ensure optimized maintenance management, increased reliability, and reduced equipment downtime. The system integrates vibration and temperature sensors with mathematical models to generate alerts that help prevent failures.

Failure Detection

Tractian's analysis system enables accurate and early detection of failures. Its algorithms are continuously improved using field data and human feedback. Spectral collections are regularly performed, made available, and analyzed on the Tractian online platform to identify early signs of issues before they become functional failures.

Real-Time Data

Samples and analyses are displayed intuitively on the Tractian web platform and mobile app, easily accessible via computer or mobile device. This allows seamless integration with your system. The platform also provides full maintenance control with a runtime counter and automatic maintenance indicators.

Smart Trac and Smart Receiver

The Smart Trac sensor is powered by a lithium battery with a minimum lifespan of 3 years under standard settings. It communicates with the Smart Receiver to send data samples. Simply assign the sensor to an asset on the Tractian platform to start monitoring.

The Smart Receiver collects sensor data and sends it to the Tractian platform. Data is transmitted over 4G/LTE networks using the best available carrier in the area, selected automatically. If needed, Wi-Fi transmission is also supported.

Attachment

The sensor can be attached using adhesive or screws on the machine housing to ensure secure attachment and high-quality data acquisition.

Installation

One Smart Receiver can communicate with up to 100 sensors within a range of 330 feet in environments with obstacles, or 0.6 miles in open areas, depending on the plant's topology.

To connect more sensors or cover longer distances, additional receivers are required. It is recommended to install the receiver in elevated locations, facing the sensors.

Features

Asset Tree	Yes
Complete Asset Health Checkup	Yes
Automatic Alarms	Yes (Artificial Intelligence)
Failure Modes	Looseness Cavitation Wear Unbalance Misalignment Bearing Failures Gearing
Machine Learning	Yes
Analysis Tools	BPF BPFI BPFO BSF FTF GMF Harmonics
Access Profiles	Yes (manual and automatic, in trend of global values and spectrum, with a waterfall view)
Access Profiles	Yes (customizable access permissions)
Smart Filters	Yes
Reports and KPIs	Availability Energy Consumption MTBF Reliability Custom Indicators
Virtual Floorplans	Yes (Visual Management)
Mobile App	iOS & Android (tablet and smartphone, with remote and offline access)

Features

Alerts History	Yes
Instant Setup	Yes (Plug & Play)
Connectivity to Mobile Network	Yes (4G/LTE)
Quantities	Velocity and Acceleration • RMS • Peak • Peak-to-peak • Crest factor Velocity and Acceleration Spectrum • Peak • Envelope Temperature Hour Meter
Non-Invasive Mounting	Yes (magnet, thread, structural adhesive)
Power Supply	Battery with a typical lifespan/duration of 3 years
Protection Rating	IP69K
Offline Storage	Yes (250 samples on the default setting)
Access via QR Code	Yes
ERP Integration	Yes (Open API)
Real-Time Notifications	Yes (mobile app, email)
Customer Support	24/5
Training	Included
Overview of Asset Status	Yes
Unlimited Users	Yes

Sensor Technical Specifications

Measurements

Frequency	From 0 Hz to 32000 Hz
Acceleration	Up to 16 g
Velocity	Up to 100 mm/s RMS
Temperature	See table on page 32
Default Setting	Samples every 5 minutes

Sample Configuration

Acq. Frequency (Hz)	Duration(s)				Min RPM[1]
500	8.2	16.4	32.8	65.5	0.9
1000	4.1	8.2	16.4	32.8	1.8
2000	2.0	4.1	8.2	16.4	3.7
4000	1.0	2.0	4.1	8.2	7.3
8000	0.5	1.0	2.0	4.1	14.6
16000	0.3	0.5	1.0	2.0	29.3
32000	0.1	0.3	0.5	1.0	58.6
Number of lines	**4096**	**8192**	**16384**	**32768**	

[1]RPM calculated considering one full cycle of the machine

Wireless Communication

Frequency	915MHz ISM
Protocol	IEEE 802.15.4g
Bands	6 frequency channels, dynamically assigned
Line of Sight Range	Up to 0.6 miles between sensor and receiver, depending on the industrial plant topology.
Internal Environment Range	Up to 330 feet between sensor and receiver, depending on the industrial plant topology.

Physical Characteristics

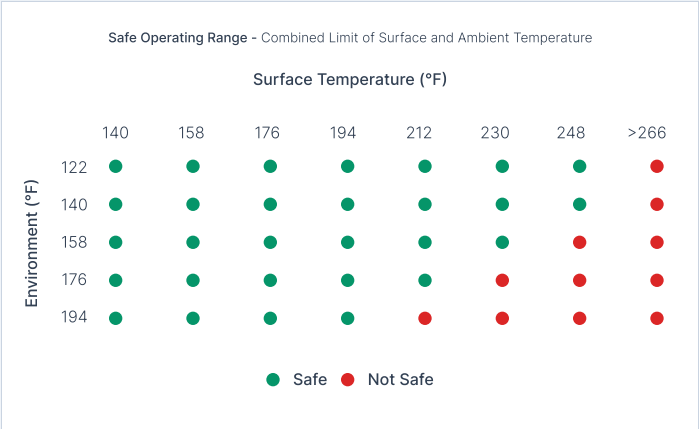
Dimensions	40 (W) x 71 (H) x 40 (D) mm or 1.6 (W) x 2.8 (H) x 1.6 (D) in
Max height with base	87 mm / 3.4in
Weight	180g / 6.4 oz
Fixation	The sensor base must be adhered using structural adhesive or screwed onto the device's housing.

Sensor Technical Specifications

Environmental Characteristics

IP Rating	IP69K
Surface Temperature	–40°F to +248°F*
Ambient Temperature	–40°F to +194°F*
Humidity	Suitable for installation in high humidity areas**

* Respecting the limits expressed in the **Safe Operating Range** graph.
** For environments with high humidity, it is recommended to install using screw.



Power Source

Battery	Lithium battery
Typical Lifetime	3 years
Adverse Factors	Temperature, transmission distance, and data acquisition configuration.

Cybersecurity

Sensor to receiver communication	Encrypted AES (128 bits)

Certification

FCC ID	2BCIS-ST-ULTRA
IC ID	31644-STULTRA

Chemical Resistance Information

SOLVENTS	
Water	1
Xylene	1
Acetone	1
Methanol	1
Ethyl Acetate	1
Butyl Acetate	1
Benzene	1
Methyl Isobutyl Ketone	1
Methylene Chloride	1
Heptane	1
Cyclohexane	1
Toluene	1
Trichloroethylene	2
Hexane	1

ALCOHOLS	
Butyl Alcohol	1
Ethyl Alcohol	1
Isopropyl Alcohol	1
Methyl Alcohol	1

ACIDS	
Acetic Acid	1
Citric Acid	1
Hydrofluoric Acid	4
Lactic Acid	1
Hydrochloric Acid	4
Sulfuric Acid	2
Nitric Acid	4
Phosphoric Acid	1
Chromic Acid	2
Formic Acid	1
Hydrogen Peroxide	2

BASES	
Calcium Hydroxide	1
Potassium Hydroxide (caustic potash)	1
Magnesium Hydroxide	1
Sodium Hydroxide	2
Ammonium Hydroxide	1
Sodium Hypochlorite	3

OILS	
Diesel Fuel Oil (20, 30, 40, 50)	1
Fuel Oil (1, 2, 3, 5A, 5B, 6)	1
Hydraulic Oil (Synthetic)	2
Silicone Oil	2
Soybean Oil	1
Mineral Oil	1

FUELS	
Diesel Fuel	1
Gasoline	1
Kerosene	1

OTHERS	
Seawater	1
Detergents	1

Valid for sensors installed using the screwing method

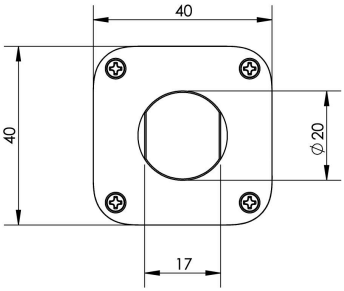
Important note: This table should be used for reference purposes. In case of incompatibility or if a substance is not listed, please contact our support team.

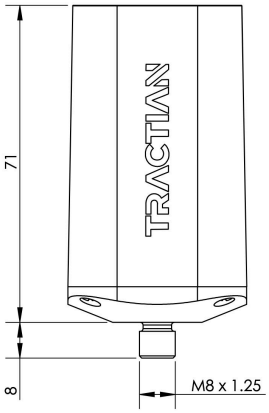
General information: Adhesive mounting is not recommended for environments with prolonged exposure to chlorine or substances with high oxidative potential. Tractian is not responsible for any damage resulting from contact with materials classified as low chemical resistance.

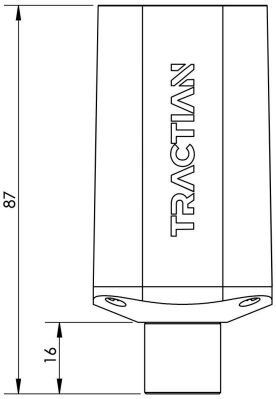
1 Excelent resistance 2 Good resistance 3 Medium resistance 4 Low resistance

Smart Trac: 2D Drawing

in millimeters







Receiver Technical Specifications

Conexions

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	• 915 MHz
	  • 6 frequency channels, dynamically assigned
	• 2.4 GHz
	  • 14 frequency channels, dynamically assigned

Open-field range	Up to 0.6 miles between sensor and receiver, depending on the industrial plant topology.
Indoor range	Up to 330 feet between sensor and receiver, depending on the industrial plant topology.

Network Communication

Mobile Network	LTE (4G)
Mobile Frequencies	LTE B2/B3/B4/B5/B12/B13/B25/B26/B41/B66
Wi-Fi Network	802.11 b/g/n, 2.4 GHz, WPA2-Personal and WPA2- Enterprise

Wi-Fi Setup

Wi-Fi network setup	Captive Portal through a smartphone or a computer

Physical Characteristics

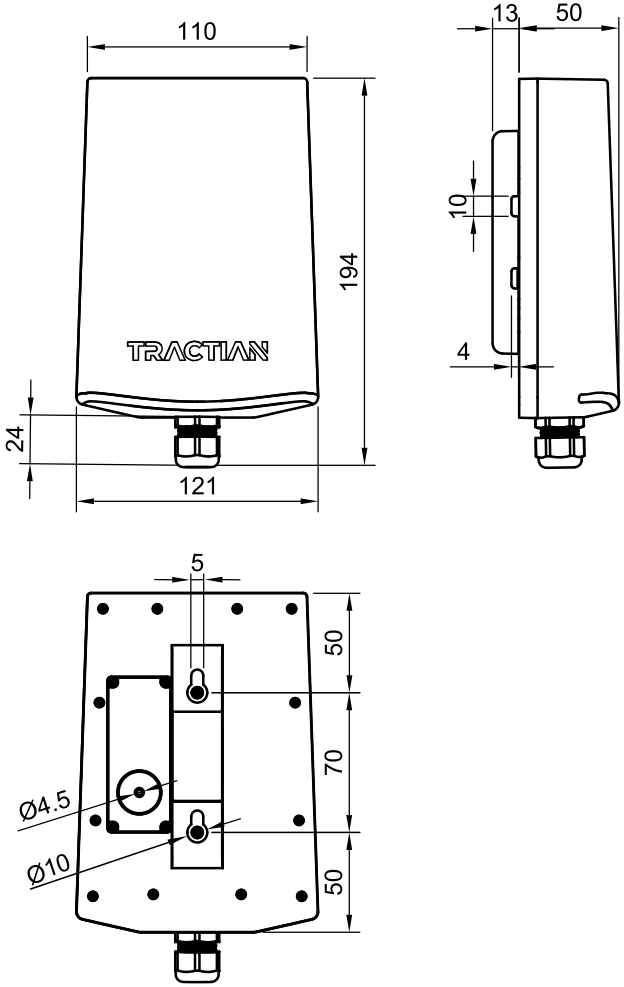
Dimensions	121(W)x170(H)x42(D) mm or 4.8(W)x6.7(H)x1.7(D) in
Cable Length	2m or 6.6ft
Attachment	Magnets; Nylon cable ties; Screws
Weight	425g or 15oz, excluding cable weight

Receiver Technical Specifications

Power Supply	
Input	127-240VCA 0.6A, 50/60 Hz
Environmental Characteristics	
Operation Temperature	14°F to 122°F
Storage Temperature	–40°F to 140°F
IP Rating	IP69K
Humidity	Suitable for installation in high humidity areas.
Certifications	
FCC ID / IC ID	2BCIS-SR-ULTRA / 31644-SRULTRA
Other	
RTC (Real Time Clock)	Yes
Receiver firmware updates	Yes
Sensor firmware updates	Yes, when associated with a receiver

Smart Receiver: 2D Drawing

in millimeters



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