

BlueTraker



VMS

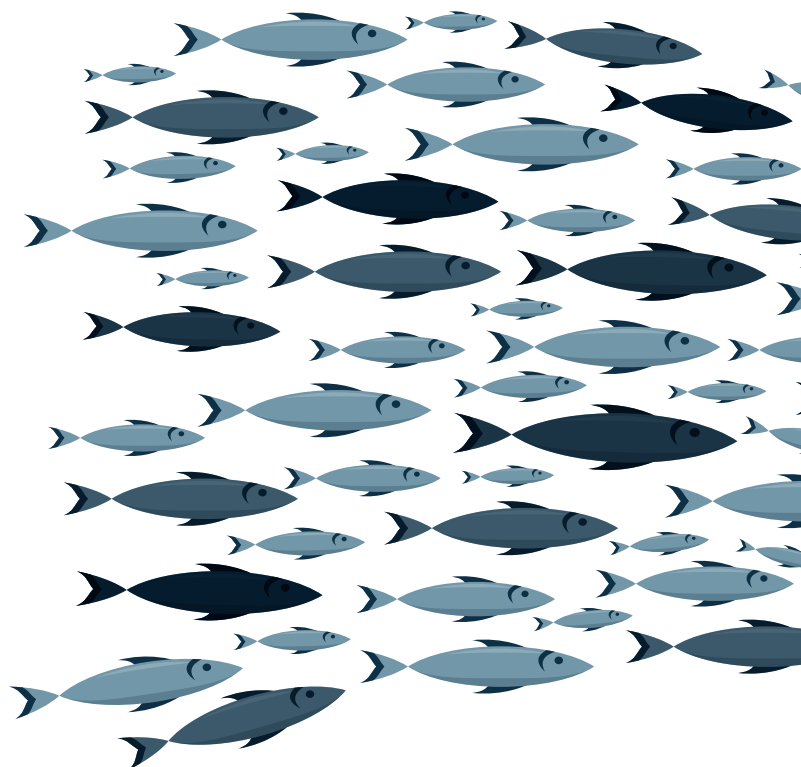
VESSEL MONITORING SYSTEM

BlueTraker



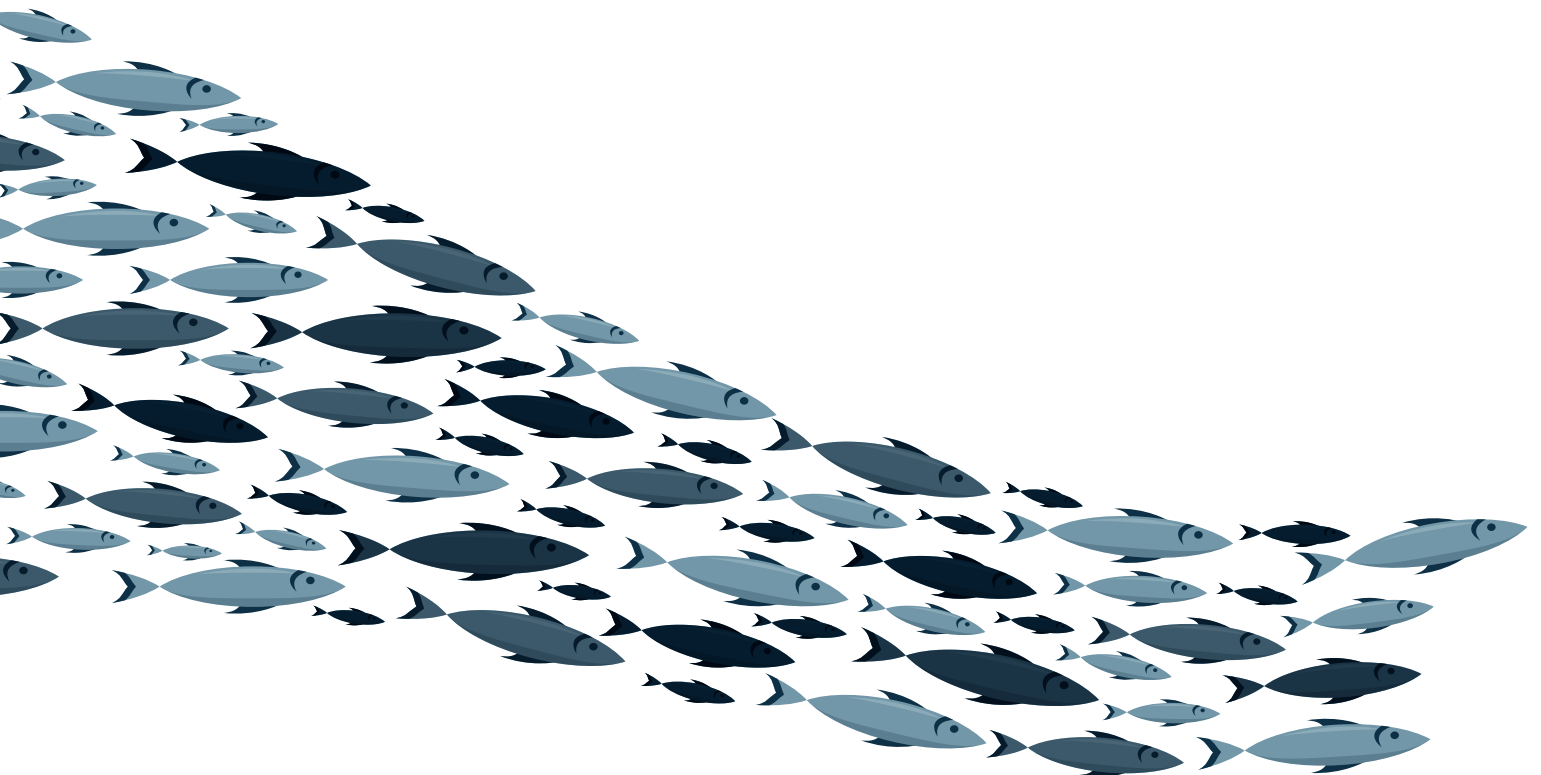
BlueTraker customers get nothing less than state-of-the-art engineering, advanced technology, flawless user experience, and stellar customer care.

Welcome to the family.



Authorities need to choose an optimal VMS system which strikes the right balance between the investment and expected benefits while making sure they are future-proof. With advanced features, technology and references, **BlueTraker VMS** is

THE PERFECT CHOICE



A photograph of a fishing boat on the water, with many birds flying in the sky. The boat is white with a yellow stripe. The sky is blue with some clouds. The water is blue and white with waves. The boat is moving towards the right. The birds are flying in various directions. The overall scene is bright and clear.

+6000

ACTIVE TRANSPONDERS AND COUNTING

BlueTraker is a trusted partner and VMS provider to numerous governments and their respective Fisheries Authorities around the World. Our common goal is to eradicate illegal, unreported and unregulated commercial fishing.

ADVANTAGES OF BlueTraker VMS

VMS is a safeguard satellite technology that helps protect the sensitive marine environment and fragile fish population. It is a crucial tool in fighting illegal, unregulated and unreported fishing.

HYBRID COMMUNICATION, GLOBAL COVERAGE

BlueTraker VMS transponder is a hybrid device that uses GPRS and satellite communication channels thereby enabling the Fisheries Monitoring Centres (FMCs) to get the data in real-time. At any given time, they can monitor vessel/fleet data on position, bearing speed, time etc. The vital advantage of BlueTraker VMS transponder is that the geozones are embedded on the device itself, providing true real-time notifications of geozone crossings. This allows specific operational rules (e.g. reporting intervals, alerts).

INSIGHT INTO FISHING EFFORT AND IUU

BlueSenz range of sensors enables monitoring of the fishing gear by automatically detecting when the gear is in use. This data combined with the data from VMS transponder helps calculate the FISHING EFFORT which is instrumental for sustainable management of any fisheries. FMCs can also quickly establish if a particular vessel is breaching the geofence, fishing over quota, using blacklisted gear, transshipping, or using a prohibited technique (e.g., use of trawl nets and hydraulic dredges)..

SOCIAL + ECONOMIC BENEFITS = CREW WELFARE

BlueTraker VMS provides a secure two-way communication system and emergency beacon for the fishing crew. Fishermen will benefit by increasing communication with markets, family members, vessel owners, and Coast Guard. It can increase revenues by allowing less burdensome regulations and more fishing time.



BlueTraker VMS OVERVIEW

BlueTraker VMS is a robust, cost effective and intelligent turn-key solution for monitoring commercial fishing fleets. It is the only proven solution for true global satellite coverage and comes with a plethora of unique features. One of them is the ability to adapt to the needs of the end customer. In general, BlueTraker VMS operates in four key stages.

1

VESSEL DATA COLLECTION

BlueTraker VMS transponder collects vessel data using GPS/GLONASS satellite signal and sends it along with speed, heading and BlueSenz sensor data via the GSM/GPRS terrestrial network, or the satellite network at predefined intervals.

2

COMMUNICATION CHANNELS

BlueTraker VMS technology is engineered as a hybrid solution. Switching between data delivery channels (satellite or GSM) is automatically applied, depending on the vessel's position and location.

3

DATA PROCESSING AND DELIVERY

Collected data is aggregated and processed at BlueTraker proprietary TDS communication Server. The process seamlessly enables reliable and near real-time data delivery to selected database, server or application.

4

DATA REPORTING AND APPLICATION

On the front-end, national Fisheries Monitoring Centres can use any third party VMS monitoring software application to display and analyze the data. BlueTraker offers state-of-the-art SecondScreen Application for BlueTraker devices management and fast overview of the fleet.

BENEFITS OF CHOSING BlueTraker

LOW OPERATING COST



BlueTraker VMS is an affordable, running-cost economical and low-maintenance system. For example, the embedded 'authorized port' function ensures that the devices only transmit positional messages every 2 hours.

IP68 RATED



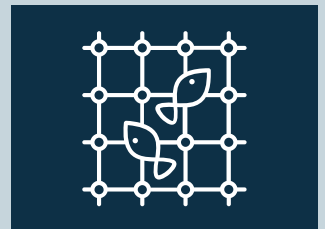
BlueTraker's unique double-shell housing protects the components against anything that the hostile marine environment can throw at it: extremes of temperature, wind-chill, humidity and salt.

ALERT MESSAGING

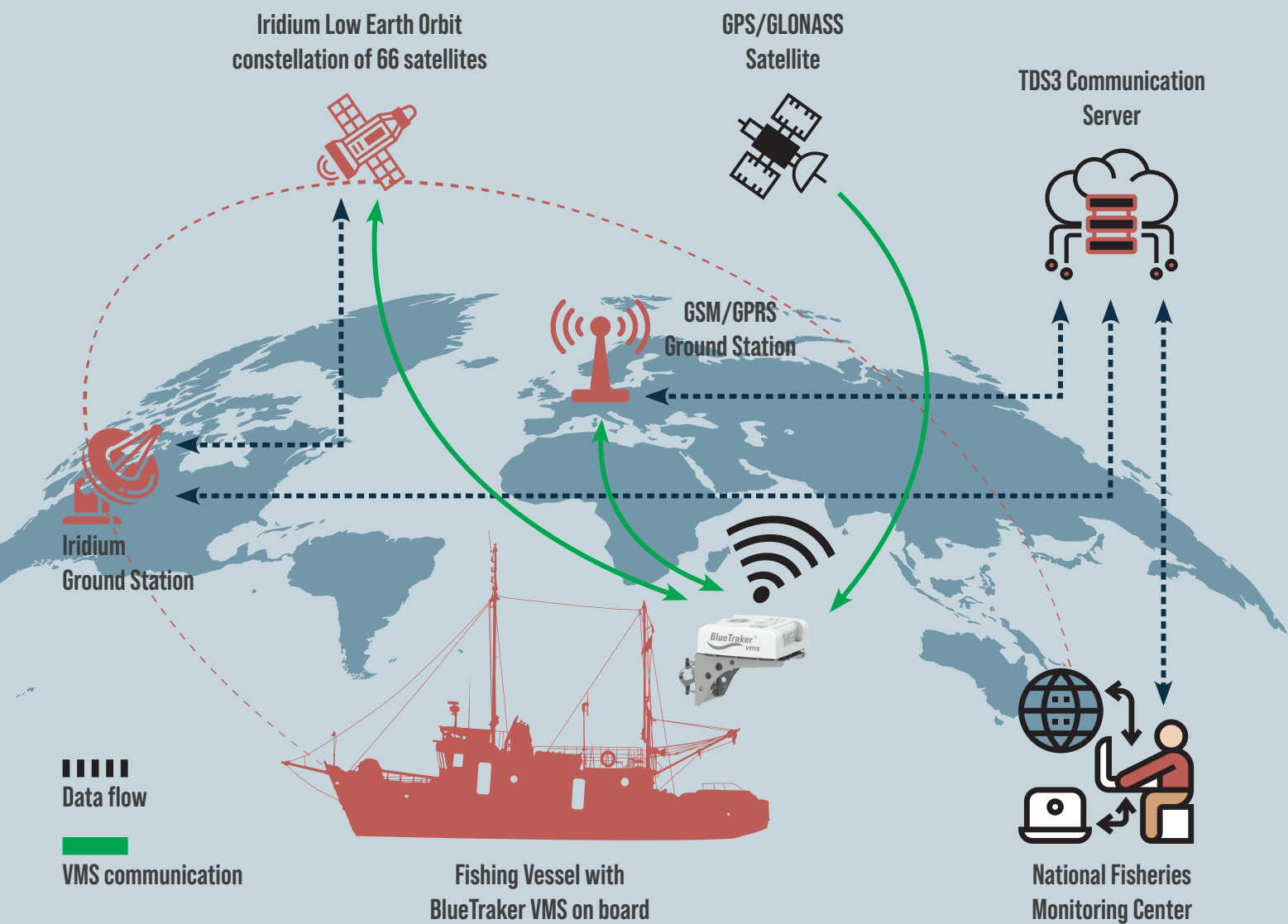


A full set of remote alert messages can be triggered upon detection of interference or other equipment malfunction. In such cases, BlueTraker integrated support protocols allow FMC or vessel crew to rectify them.

INSIGHT INTO FISHING EFFORT



BlueSenz range of sensors enables monitoring of the fishing gear by automatically detecting when the gear is in use. This data combined with the data from VMS transponder helps calculate the FISHING EFFORT which is instrumental for sustainable management of any fisheries.



SIMPLE INSTALLATION



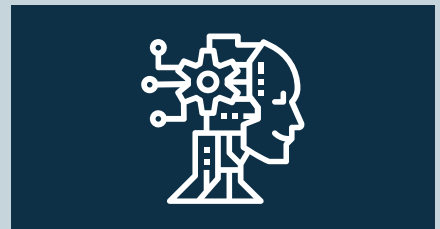
BlueTraker is one of the most straightforward terminals to mount and set-up. We provide easy to understand user manuals and a how-to videos for a quick and easy installation process. BlueTraker VMS transponder is enclosed in a double shell housing for unprecedented environmental protection and has no external parts or antennas.

UNMATCHED SECURITY FEATURES



Several mechanical and electrical security measures protect data integrity and security from tampering or fraud. Hardwired security codes prevent swapping of modules. Sealed with laser marked wiring. Access to the software code can be disabled remotely to prevent against hacking/patching.

FUTURE-PROOF ENGINEERING



Fully upgradable for the next generation of fisheries monitoring techniques. Can be upgraded with IoT fishing gear sensors. Firmware is updated over-the-air with no vessel boarding required. BlueTraker transponders only draw an average of 2W at 12V DC.

FAMILY SNAPSHOT



MEET OUR AFFORDABLE, RUNNING-COST ECONOMICAL AND LOW-MAINTENANCE VMS SYSTEM

BlueTraker VMS IS THE MOST EXTENDABLE, UPGRADABLE AND FLEXIBLE PRODUCT FAMILY ON THE MARKET

With state of the art technology and comprehensible solutions for vessel tracking and monitoring, BlueTraker sits firmly at the forefront of global industry leaders. Vessel Monitoring System for Fisheries is the core of our expertise based on hybrid GPRS/Satellite tracking.

We engineered our VMS product family to be technologically future-proof, expandable and upgradable in functionality and localized per

respective customer requirements. We offer bespoke VMS solutions based on local legislation and client needs.

With no exception, all BlueTraker VMS equipment is built to withstand harsh marine environment. Rest assured: BlueTraker hybrid solutions (via satellite and GSM signal) are designed for unprecedented accuracy, safety, scalability, and performance.

UNPARALLELED AND UNIQUE FUNCTIONALITIES

Turn to the next page to for in-depth description of the unique functionalities of our VMS solutions and optional equipment expansions.



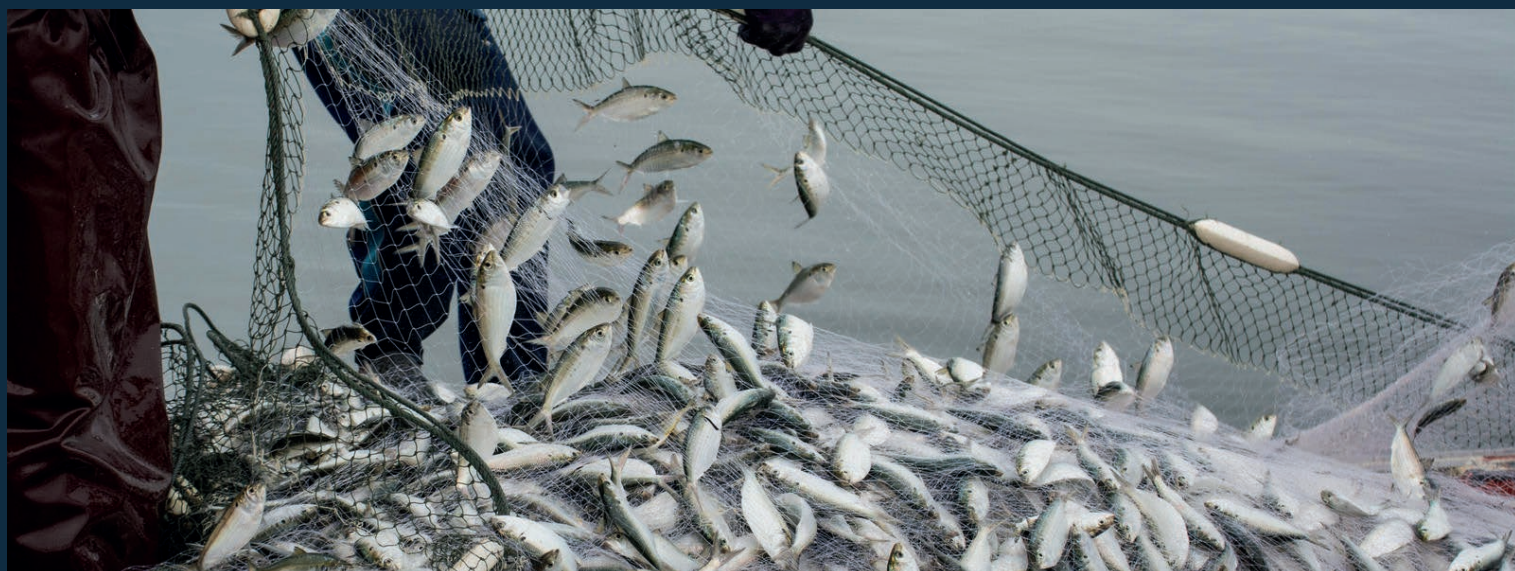
BlueTraker VMS scalability

Every BlueTraker equipment setup for on-board installation, including the most basic, consists of three key components: the BlueTraker VMS transponder, the connection box for power supply and appropriate cable set. Optionally, we offer advanced connection boxes, a sea-grade touch terminal for communication, a range of precise remote sensors and monitoring software as well.



**DESIGNED FOR UNPRECEDENTED
ACCURACY, SAFETY, SCALABILITY,
AND PERFORMANCE.**

**FULLY
COMPLIANT
WITH THE
REGULATIONS
COVERING
VMS BASED
SOLUTIONS.
WE GAIN
EXPERIENCE
FROM THE
FISHERIES
INDUSTRY.**



True Global Coverage

VMS can report its position, send alarms and transfer data from anywhere on Earth. This offers an unprecedented advantage to Fisheries Authorities tracking globally dispersed fishing fleets. BlueTraker takes full advantage of Iridium's 66 low earth orbit satellites - even in the A4 Sea Area!



Hybrid Communication

BlueTraker VMS dramatically reduces cost by using two communication channels. Switching between channels depends on vessel location. Beyond the reach of a GPRS signal, tracking data is transferred via the satellite communication channel. In coastal waters it switches to a low cost mobile network automatically.

Up to 100 geographical areas (polygons and associated rules) in the form of geofences can be remotely uploaded, edited, activated and deactivated for every BlueTraker VMS transponder. Precise geographical areas can be defined and specific operational rules can be put into effect.



VMS intelligently sends navigation at predefined intervals. The sampling period is automatically adjusted. Within an authorized port, position broadcast is scheduled for every 2 hours. When the vessel is out of an authorized port, the device transmits its position every 10 minutes.

Embedded Geozones

Position Reporting

ALL THE FEATURES THAT MAKE THE DIFFERENCE

eLogbook Compliance

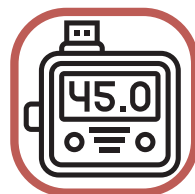
The worldwide e-Logbook initiative is gathering pace in helping to eradicate illegal, unregulated and unreported fishing. With built-in data-pass functionality for transferring reports, only approved Electronic Reporting Systems (ERS) can be integrated as authentication is required.



Tamper Detection

BlueTraker VMS is designed with a high level of mechanical, electrical and electromagnetic security features. In order to avoid any tampering or fraud, we have integrated tamper detection and antenna blockage detection. Unique serial number is laser engraved into the housing with security seals.

To prevent unauthorized data modification, a symmetric AES 256-bit key authentication method is used. In addition to encrypting data before transmitting it, BlueTraker VMS transponder also prevents sending unauthenticated external data (e.g. Catch reports) to FMC with the purpose of deceiving the authorities.



BlueTraker VMS can be upgraded with BlueSenz technology allowing FMCs to easily monitor the precise fishing effort of their fleets. BlueSenz is family of on-board sensors mounted directly to the fishing gear for accurate and precise assessment of the fishing effort for every vessel in the fleet.

Encrypted Data

Remote Gear Monitoring

A SEA OF POSSIBILITIES



← ConBox 2018

A lot more than a wiring cabinet

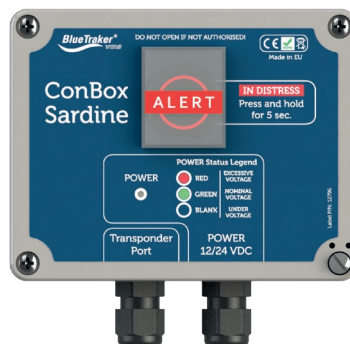
ConBox 2018 is a wiring box (connecting BlueTraker VMS transponder, vessel power supply, and optionally other devices and sensors) purposely designed for fisheries monitoring applications. ConBox 2018 comes in two versions:

ConBox 2018 LED - provides a wide range of features, including alert triggering and fishing activity reporting, on-board VMS system and other system statuses, etc.

ConBox 2018 LCD - includes everything available in the LED version with the addition: LCD display with interactive user interface, texting with FMC, current geo-location information, and much more.

LET'S TALK USER EXPERIENCE

BUTTON FUNCTIONALITIES, DISPLAY MESSAGES AND FRONT LABELS CAN BE CUSTOMIZED AND LOCALIZED TO SPECIFIC CLIENT OR COUNTRY REQUIREMENTS.



← ConBox Sardine

Our basic connection cabinet is as simple as it gets. While power indicator is self-explanatory, alert button sends a message to FMC of a fishing crew in distress.

Octopus 10



A seaworthy eLogbook assistant for fisheries

Meet a touch screen terminal with pre-installed applications for fisheries, designed to be tough and rugged. An ideal companion for use at sea.

Octopus 10 communicates with BlueTraker VMS for sending documents (catch reports) and exchange other data with the Fisheries Monitoring Centre.

FEATURES

- Ready to be used without additional interfacing, modifications and testing.
- Pre-installed HMI application for monitoring vessel data. Third-party applications compatible.
- eLogbook compliant with ERS requirements (catch, transshipment, landing report, etc.) - *optional*.
- OceanMail application for messaging anywhere on the planet from the vessel to FMC or vice versa - *optional*.

VMS ON-BOARD CONNECTION DIAGRAM

3
BASIC
SETUPS

Intelligent Scalability

From the most basic to the most advanced BlueTraker setups, all on-board installations consist of three key components: the BlueTraker VMS transponder, the connection box for power supply and the appropriate cable set.

Optionally, every installation can be extended and upgraded with advanced connection boxes, a sea-grade HMI terminal for communication, a range of BlueSenz sensors and state-of-the-art monitoring software.

INFINITE POSSIBILITIES

Depending on the requirements of the respective fisheries authorities, BlueTraker VMS can be installed in numerous configurations.

Octopus 10



optional

BlueTraker VMS



BlueSenz IoT wireless Sensors

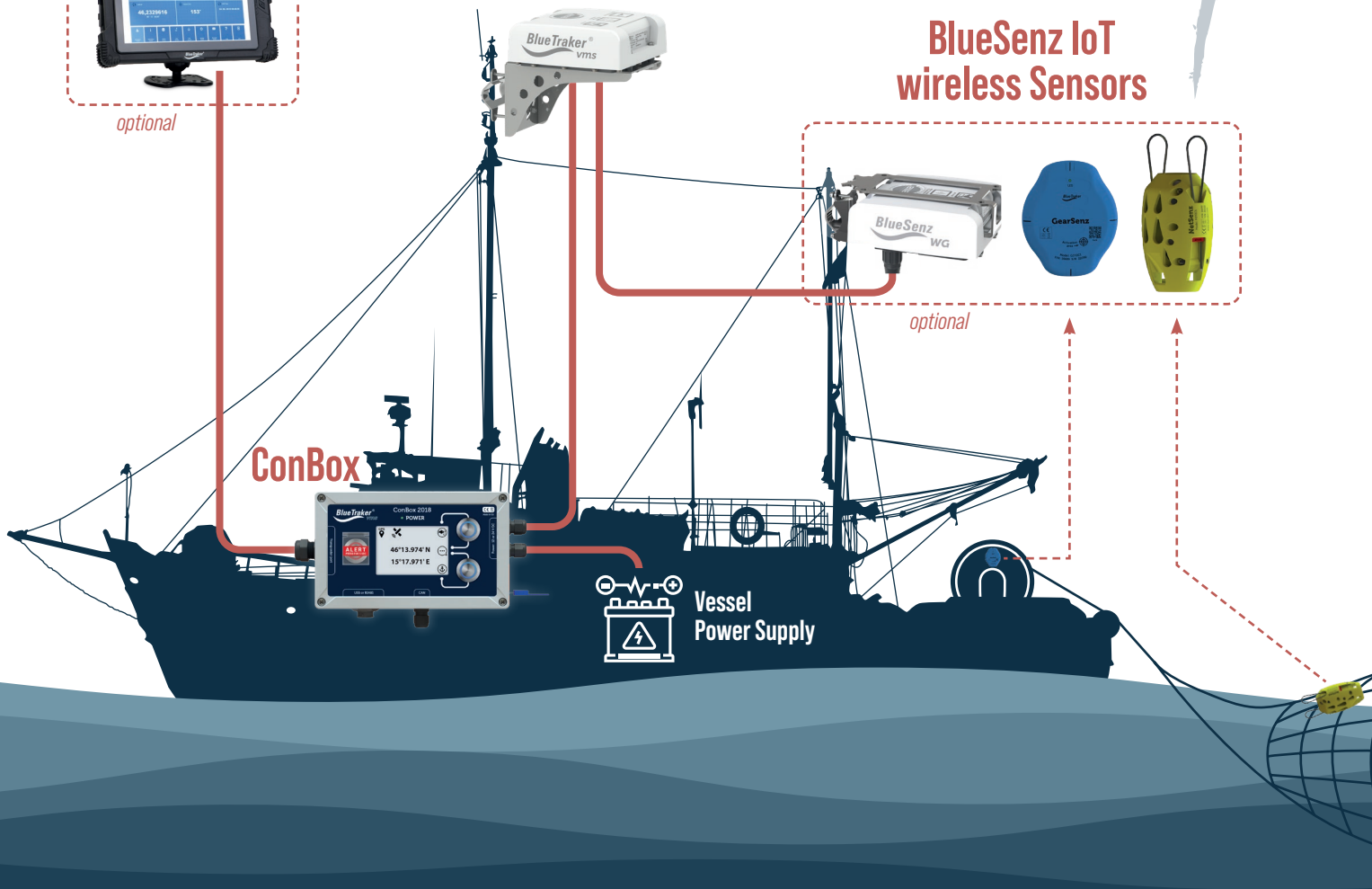


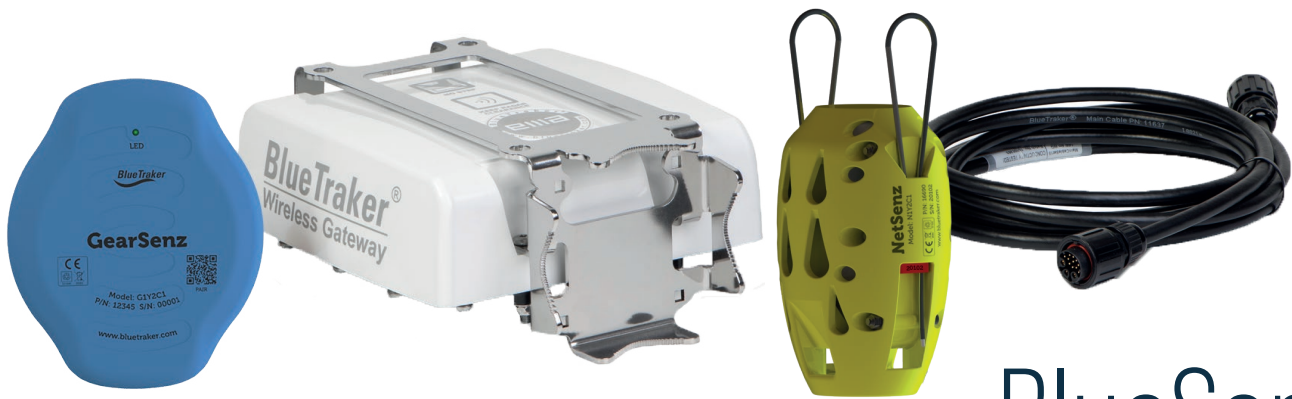
optional

ConBox



Vessel
Power Supply





BlueSenz

IoT SENSORS FOR FISHERIES

The future of fisheries monitoring

BlueSenz range of sensors enables monitoring of the fishing gear by automatically detecting when the gear is in use. This data combined with the data from VMS transponder helps calculate the **FISHING EFFORT** which is instrumental for sustainable management of any fisheries.



HOW THEY WORK TOGETHER

GearSenz is a wireless sensor attached directly to the fishing gear winch. It detects its rotation and decides whether this activity represents a deployment of a fishing net or it is just a minor manoeuvre of a ship in a stormy sea. An equally smart detection of the gear-up procedure marks the finishing moment of the activity called "Gear Immersion".

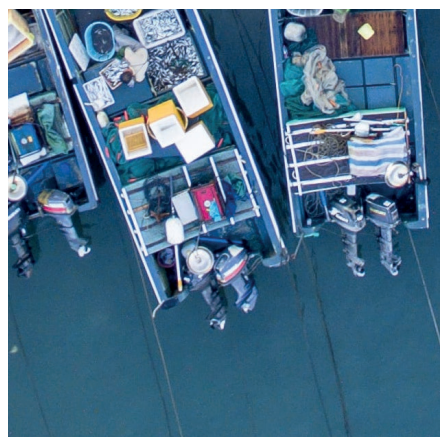
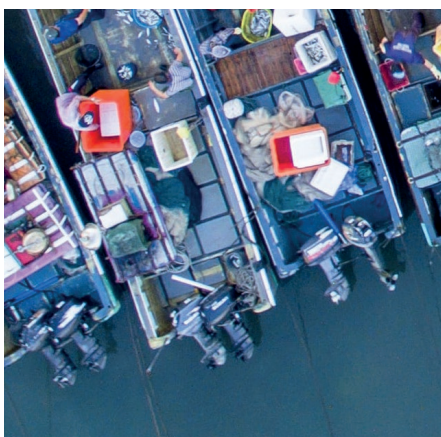
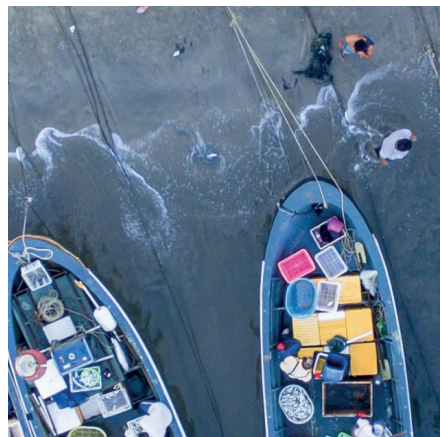
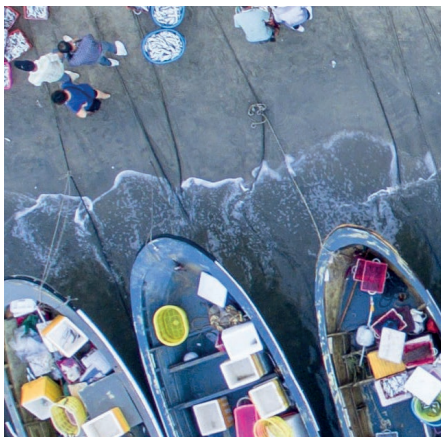
NetSenz is a wireless sensor that can be easily mounted on almost any type of fishing net (on the headline or footrope). It detects the positions and time of the start and end of the fishing session and also records the exact time-depth profile that the net passed.

WirelessGateway collects the data and sends it over BlueTraker VMS transponder to a cloud-based server for processing. Based on the results, authorities can better understand fishing activities and adapt national fisheries policy accordingly.

iVMS - A SOLUTION FOR SMALL-SCALE ARTISANAL BOATS

Traditional VMS works well for large fleets, but it may not be the best fit for artisanal vessels. At BlueTraker we are aware how critical are small-scale fisheries to coastal economies. With this in mind, we created iVMS for monitoring inshore fishing activities. Designed for vessels below 12 meters, iVMS performs equally stellar compared to its full-scaled sibling with one crucial difference - it uses exclusively inexpensive GPRS mobile data instead of the satellite signal. It is our most affordable and economical tracking solution.

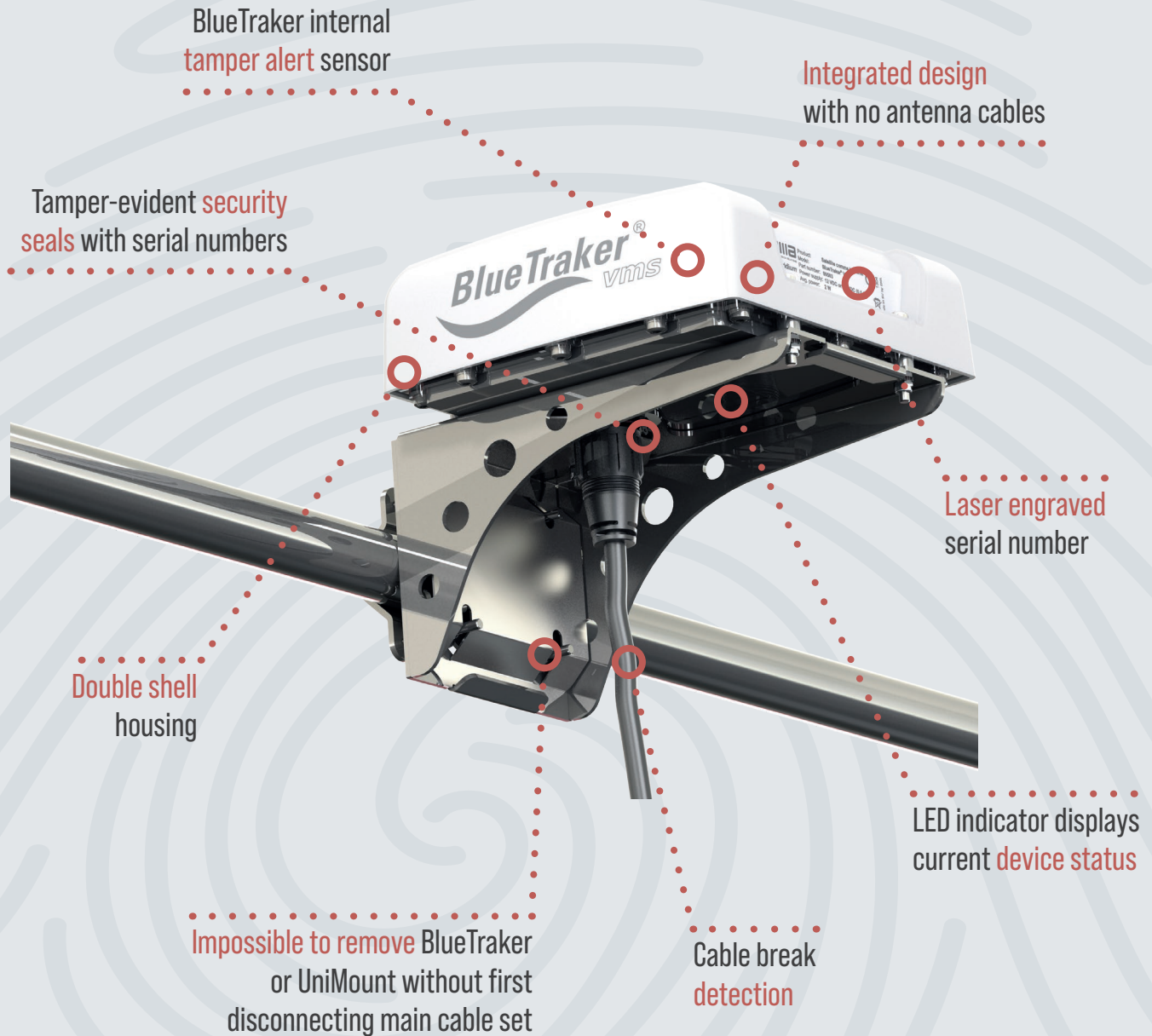
BlueTraker iVMS comes with the same range of functionalities and security features for the fishermen as well as for the authorities in helping them to better map traditional fishing grounds. With embedded SIM card with no additional roaming cost, iVMS uses longer reporting intervals to even further reduce the already affordable operational cost.



iVMS USES INEXPENSIVE GPRS
MOBILE DATA EXCLUSIVELY
AND COMES WITH EMBEDDED
SIM CARD WITH NO
ADDITIONAL ROAMING COST.

Contact sales@bluetraker.com for details.

MULTIPLE LAYERS OF SAFETY AND SECURITY



ALERT MESSAGES

BlueTraker alert messages are automatically transmitted upon the occurrence of certain events. Such events are for example: when the device switches to backup battery due to external power failure, when the power is restored, when the cover of transponder or ConBox is open, when the GPS signal is unavailable for 2 hours, when the unit is relocated, etc.

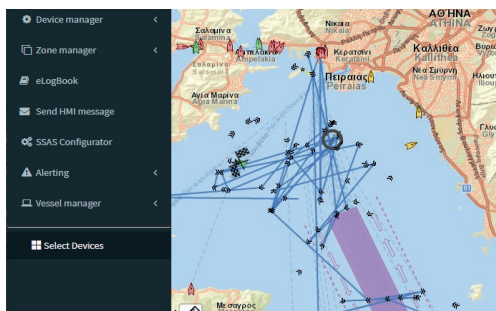
SecondScreen, FLEET MANAGER'S CHIEF MATE

Your fleet's every move

With a range of diagnostic and navigation controls, centralized device and fleet monitoring and geofence management, SecondScreen could easily be every Fleet Manager's Chief Mate.

Not only did we designed it as an extension of your chosen mapping software, we also created an advanced interface that makes real-time tracking and monitoring a breeze.

There is no extra software to install or maintain, simply log in with BlueTraker ID and start managing the fleet.



Everything in one application

Voyage data replay, fishermen subaccounts, vessel register, eLogbook, alerting - all in one place. Vessels using BlueSenz technology see precise GPS coordinates with exact fishing locations and time spent.

BlueTraker VMS system allows bidirectional communication between FMC and vessel captain in the form of short text messages. Texting is possible when vessels are either equipped with ConBox 2018 LCD wiring box, transponder with Bluetooth technology paired with BTAApp mobile phone application, or Octopus 10 tablet with installed HMI software.



Synchronized activities

SecondScreen is loaded with a variety of tools and functionalities. Map view offers fleet's activities and current diagnostic status.

Message view comes handy when communication history is needed while geozones management gives FMCs everything they need: either to easily add, remove or edit geozones or to synchronise them to individual vessels, groups or the entire fleet.



- Advanced reporting and in-depth analytics
- Real-time geofence management and communication
- Device management with map, message and command view
- Customizable functionalities, configuration and global access
- Direct access to eLogbook
- Fast, simple and efficient communication with messaging
- Sensor data messages when used with BlueSenz technology

BlueTraker VMS GLOBAL FOOTPRINT

References

BlueTraker is a trusted partner and turn-key service provider for numerous national fisheries authorities around the world. Our products and solutions are applicable to a broad range of industries, appropriate for service providers, end customers and system integrators. BlueTraker VMS global footprint along with a list of our VMS reference countries is growing stronger day by day.



COMPLIANCE APPROVALS, CERTIFICATES AND STANDARDS

- **IEC 60529/IP68** - Water and dust ingress protection
- **IEC 60945** - Maritime electronic navigation and communication equipment and systems
- **MIL-STD-810G** - Operating temperature test
- **ISO 7367-2:2004** - Electrical transients along supply lines - load dump
- **ISO 16750-2** - Environmental conditions and testing for electrical and electronic equipment - part two; electrical loads - load dump
- **IEC 60068-2-1** - Low temperature functional test
- **Iridium** ICE certified
- **Russian Maritime Register of Shipping** Type Approved
- **US Coast Guard** Certified
- **DNV** Type Approved
- **VTU** Conformance Certificate



AN INTELLIGENT FUTURE AHEAD



ADVANCED TELEMATICS PLATFORMS HAVE ALREADY REVOLUTIONIZED HOW FISHERIES MONITORING CENTRES TRACK INDIVIDUAL VESSELS AND FLEETS. THEY PROVIDE REAL-TIME DATA INSIGHTS FOR REGULATORS THAT SUPPORT PROACTIVE - RATHER THAN REACTIVE - DECISION-MAKING IN THEIR PRIMARY MISSION: FIGHTING ILLEGAL, UNREPORTED AND UNREGULATED FISHING.

THE NEXT GENERATION OF VESSEL TRACKING AND MONITORING

LEARNING OF VESSEL BEHAVIOR PATTERNS WILL ADD A NEW LAYER OF VALUABLE DATA FOR TARGETING BROAD SUSTAINABILITY OBJECTIVES

Within a few years, with new AI telematic platforms, regulators will get a more in-depth insight into the vessel's behavior and it's recognizable patterns. How will this be done?

Through tailored operational parameters, intelligent catch reporting, expanded tracking of vessel behavior patterns, predicting the probability of rogue operators, partnering with third party service providers (weather, radar, and

satellite imaging) to monitor and learn behaviors within the sea environment and with the usage of enhanced location capabilities (more "context-aware" systems improve locations down to the centimeter).

Industries that have implemented an advanced telematics platform are already realizing benefits from today's artificial intelligence systems and will gain a competitive edge which could prove crucial.

BlueTraker VMS **TECHNICAL SPECIFICATION**

Physical

External dimensions	198 mm (width) x 198 mm (length) x 67 mm (height)
Weight	1.140 g (including one back-up battery)
Housing	Double shell housing, light colour outer shell, resistant to UV solar radiation

Environmental

Operating temperature	-40°C to +60°C (Arctic version) -25°C to +60°C (Standard version)
Storage temperature	-25°C to +70°C
Humidity	From 10% to 100% Relative Humidity including condensation
Dust and water ingress	IP68 protection class (depth 6 m, duration 30 min.)
Vibration	IEC 60945:2002, 5 Hz - 13.2 Hz sweep sine, displacement 0.001 m, sweep rate 0.5 oct/min; 13.2 - 100 Hz sweep sine, acceleration amplitude 7 m/s ² , sweep rate 0.5 oct/min

Electrical

Input Voltage Range	9 V DC to 36 V DC (max. supply cable length: 50 m)
Nominal Supply Voltage	24 V DC or 12 V DC
Energy Consumption (Average)	2 W @ 12 V DC
Input Protection	Resettable fuses, Level 4 ESD protection according to ISO 61000-4-2, Overvoltage protection above 36 V DC, Load Dump protection according to ISO 7637-2:2004(E) (pulse 5a), ISO16750-2:2002 (load dump)
Backup battery	Li-Ion rechargeable battery / 5300 mAh
Autonomy with backup battery	More than 72 hours with 10 min reporting interval at +23°C

Satellite data communication

Network	Iridium, Low Earth Orbit (LEO)
Satellites	Low earth orbit, total globe coverage, 66 satellites, mesh network
Frequency	1616 MHz to 1.626,5 MHz
Average radiated power	< 1 W
Antenna	Integrated, low profile, low elevation, optimised, high gain, custom designed antenna

GSM/GPRS channel (For Firmware Upgrades and Servicing)

Supported bands	Quad Band 850/900/1800/1900 MHz
SIM card	Global SIM, supplied with the transponder
Data features GPRS	Embedded TCP/IP and UDP/IP protocol stack Embedded FTP SSL - Secure Encrypted Connection
Antenna GSM	Integrated, omnidirectional

Interface

Wired	USB (ConBox with USB interface must be selected)
Wireless	WiFi, Bluetooth (optional items)

GPS/GLONASS positioning receiver

Channels	33 tracking, 99 acquisition
Acquisition	Cold start 28 s, Hot start < 1 s, sensitivity -167 dBm @ tracking
Accuracy	5 m CEP
Antenna	Integrated patch antenna



ARCTIC

We are the world's first and only certified manufacturer of tracking terminals for A4 sea area where harsh polar conditions prevail.

For details visit:

www.bluetraker.com/solutions/arctic-solutions/



-  EMA d.o.o., Teharje 7B, SI-3000 Celje, SLOVENIA, EU
-  +386 3 42 84 800
-  sales@bluetraker.com
-  www.bluetraker.com

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