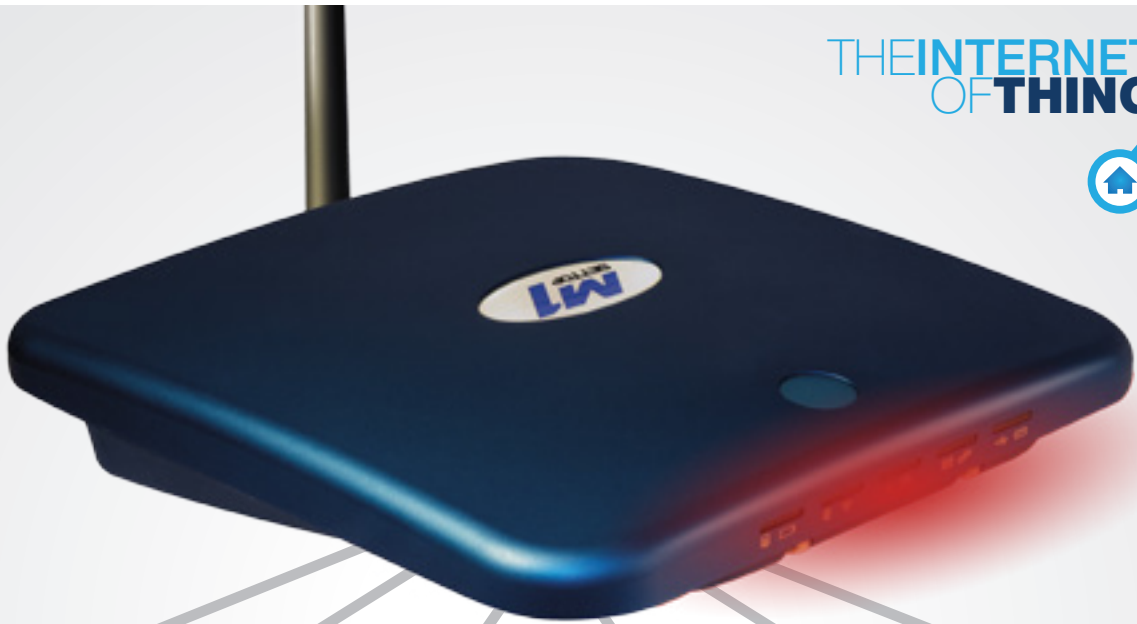
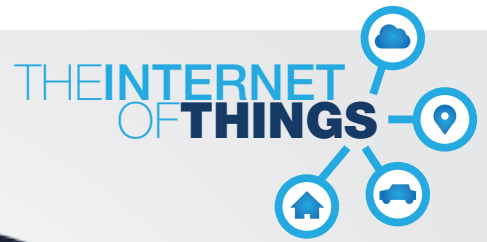




MULTIFUNCTION GNSS



**SURVEY
BASE APPLICATION**

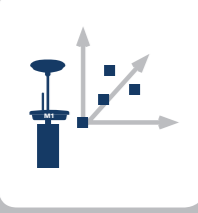

BASE
Transmission of differential corrections via Radio and the Internet (Caster).

**SURVEY
ROVER APPLICATION**



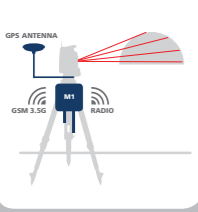


ROVER
Configured as a mobile device, receiving corrections via Radio or the Internet (NTRIP client).

**GNSS
MONITORING**

MONITORING
The device can be configured for carrying out monitoring tasks in order to observe deformations and movements. All of the data are sent in real time via the Internet to a server that will process, analyze the data and generate alarms.

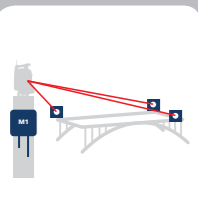

**MONITORING
STATIC APPLICATION**

Different configuration possibilities:

- GNSS MONITORING
- MONITORING WITH TOTAL STATION
Dynamic Monitoring (bridges, platforms, etc.) or Static Monitoring (slopes, buildings, etc.)
- STATIC MONITORING
Combined monitoring that employs GNSS and Total Station.

**3D MONITORING
PITCH, ROLL & HEADING**




IT IS POSSIBLE TO PROGRAM CUSTOMIZED APPLICATIONS

SETTOP M1 offers flexibility so that customized application may work in the device



INFRASTRUCTURE CORS
Configured as a base station for transmitting differential corrections Radio and the Internet (internal caster and sending to a specific IP address) and for the storage of post-process files.

**INFRASTRUCTURE
CORS APPLICATION**



INDUSTRIAL
Development of new applications in accordance with the particular specifications of a project.

**INDUSTRIAL
VERSATILE APPLICATION AND
CONTROL**



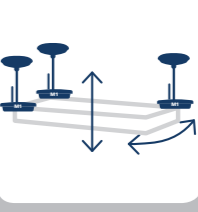


CONTROL OF CRANES
The device is configured as a mobile receiver in combination with a crane guide application for the placement of concrete blocks. One is allowed to see the position of the block in real time by means of the data output via serial port and the Internet.

**MARINE
CRANE CONTROL**

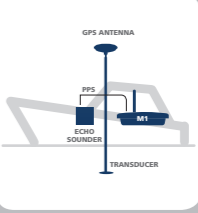

PLATFORM POSITIONING
The device can be configured as a mobile receiver in combination with an application for the positioning of platforms, bridges, etc. The position of the platform can be seen in real time by means of the data output via serial port and the Internet.

**MARINE
PLATFORM POSITIONING**

BATHYMETRY
Configuration as a mobile device with PPS output for synchronizing bathymetric equipment.

**MARINE
BATHYMETRY APPLICATION**

WHAT MAKES IT DIFFERENT?

The Settop M1 is a fully modular GNSS receiver that can perform the remote control of a Total Station.

Settop M1 is a Base, Rover and Infrastructure Base GNSS receiver which permits the connection of external sensors, various communication modes such as radio, Wi-Fi, Bluetooth, Ethernet and GSM, GNSS data management and also, if desired, the performance of monitoring tasks. This provides a versatility that is unique in a receiver of such characteristics.

Its design - small, lightweight and easy to connect - makes it extremely easy to install and put into operation.



WHERE TO USE THE SETTOP M1 DEVICE?

The Settop M1 has been designed for a wide variety of uses and offers the most advanced technology in the surveying sector.

Among the most common uses, mention should be made of the **base mode**, with which it can function as a simple base receiver, mounted on a tripod from which it transmits differential corrections via its integrated radio or, alternatively, via the NTRIP protocol by means of a SIM, thanks to the caster function, which is automatically generated, and to the integrated 3.5G telephony module. It also makes it possible to store post-process data in the internal memory.

Another of the basic setups is its **rover mode** use. This being a small, lightweight receiver, it can be fixed onto the landmark and connected to a data collector for carrying out daily field work tasks, such as surveys and stakeouts of road points. Additionally, there is the possibility of receiving corrections via radio or NTRIP, connected to a CORS network.

Installing in **infrastructure base mode** makes it possible to set up the device for a permanent 24-hour, 7-day use, transmitting the corrections via radio, via NTRIP protocol for a direct connection or sending these very same data to a central server so as to enable the management of multiple stations. It also aids data storage management for post-processing purposes.

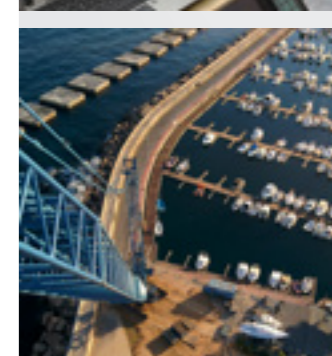
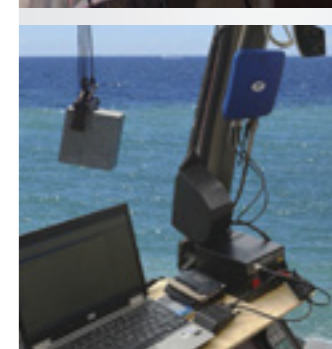
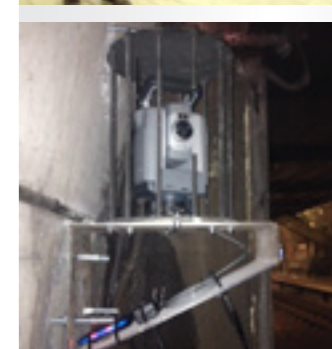
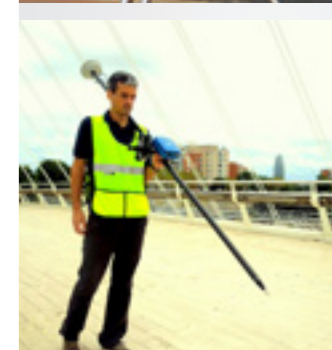
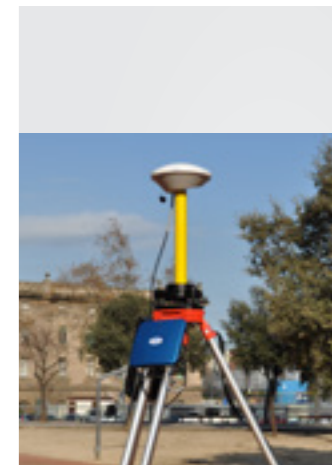
Thanks to the possibility of its remote control, it is also possible to handle a Total Station. One of the most productive uses is the **monitoring mode** setup in all its aspects. From a static control using a Total Station only to a full control combining Total Station data, GNSS data and/or external sensors such as temperature, tilt and other sensors. Energy control will permit a totally autonomous 24-hour, 7-day functioning. The monitoring applications are useful for controlling movements on slopes/in buildings, for the dynamic launching of bridges/platforms, etc.

The use of the **Settop M1 in a crane/heavy machinery** and configured in rover mode, can make it possible to accurately locate large blocks in dykes and determine their position in real time. Thanks to the small size, it is very easy to install in the cabins of this machinery as well as a very useful guide for the machine operator. The data can be sent via the internet in order to gain real-time control of the location of the block.

The Settop M1 can be used in **maritime works** thanks to the PPS output for the synchronisation with probes and other bathymetric equipment types. The small size of the Settop M1 makes it ideal for boats, where space constitutes a handicap due to the large amount of necessary material.

With the combination of the **Settop M1+³** accessory, guiding the **accurate positioning of large platforms (3P)** is carried out very simply as the data can all be seen on the same screen, as can the platform's tilts and drifts. With the inclusion of the CAN BUS, it is possible to synchronise more external sensors to control all of the information desired.

Thanks to the considerable versatility of the Settop M1, it can reach where others can do nothing. Its application for **developments at an industrial level and customised setup** makes it possible to create new functions, taking advantage of all available technology, adapted to the individual specifications of each project. SettopSurvey can help you in the development or adaptation of the Settop M1 to your individual demands.



KEY FEATURES AND CHARACTERISTICS

The Settop M1 has been developed to satisfy all customer needs, using the most advanced technology and meeting the quality standards required by the final user.

- 220 Channels: GPS, GLONASS, GALILEO, BEIDOU, QZSS and SBAS
- Up to 50MHz of output positions and raw data storage.
- 3.5G telephony module
- Radio Transmitter/ Receiver of up to 1w. Compatible with Trimtalk and Satel
- Bluetooth 4.1 + BLE / Wi-Fi 802.11 b/g/n
- USB and RS232 communication ports
- Internal memory of 1Gb+1Gb Flash, expandable up to 9Gb
- Energy control
- Web Server
- Small and Lightweight
- Customisable
- Control by means of Web UI
- IST Connect service. The Internet of things



SUCCESS STORIES IN SPECIAL APPLICATIONS

The Settop M1 has adapted perfectly to the various needs of each customer.

CAISSON POSITIONING AND ANCHORING

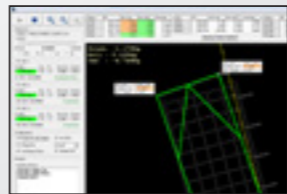
The solution consists in connecting three Settop M1 network receivers within an industrial case, along with the specific development of the software for the positioning and anchoring of the caissons, favouring a full adaptation to the needs of each project.



The airtight case has three GNSS antenna connectors; a connector for the radio antenna, an RJ45 connector and a power connector.



The software developed by Settop Survey provides information in real time on all the data needed for the anchoring: positioning, course, roll and pitch of the caisson, etc. The application offers the possibility of loading site axes, digital terrain models (DTMs) and background files. All of the data generated during the anchoring process can be stored and subsequently reproduced.

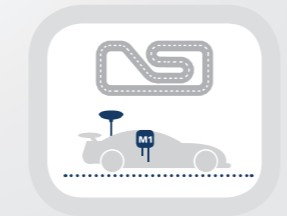


POSITIONING IN A TEST CIRCUIT

The solution to the need of the location of a vehicle at a test circuit consists in using a Settop M1 with a data output at 10 Hz, receiving corrections via radio and conditioned in a customized industrial box.



The adaptation and expulsion of a specific string of characters for the interpretation of the data in the specific software of the customer. The high speeds of the vehicles and the importance of their location make it necessary to perform the projection calculations over an axis in a very fast and effective way. Adapting the chain of commands so that they can be used with the customer's own software was another of the requirements that SettopSurvey fulfilled in order to successfully complete the project.



SETTOP M1 SETUP

With no need of an application installed in the computer; simply via any mobile device with Wi-Fi (PC, iPad, Android, etc)

The Settop M1 has been designed to be set up via web browser, without having to install any software within the device. Simply with internet access or by connecting to your Wi-Fi network, you can set up the multifunctional Settop M1 device. The web interface has been designed for the user to be able to obtain all information and setup possibilities with one click. As it is easy to use, the learning curve will be minimal.



IST CONNECT SERVICE

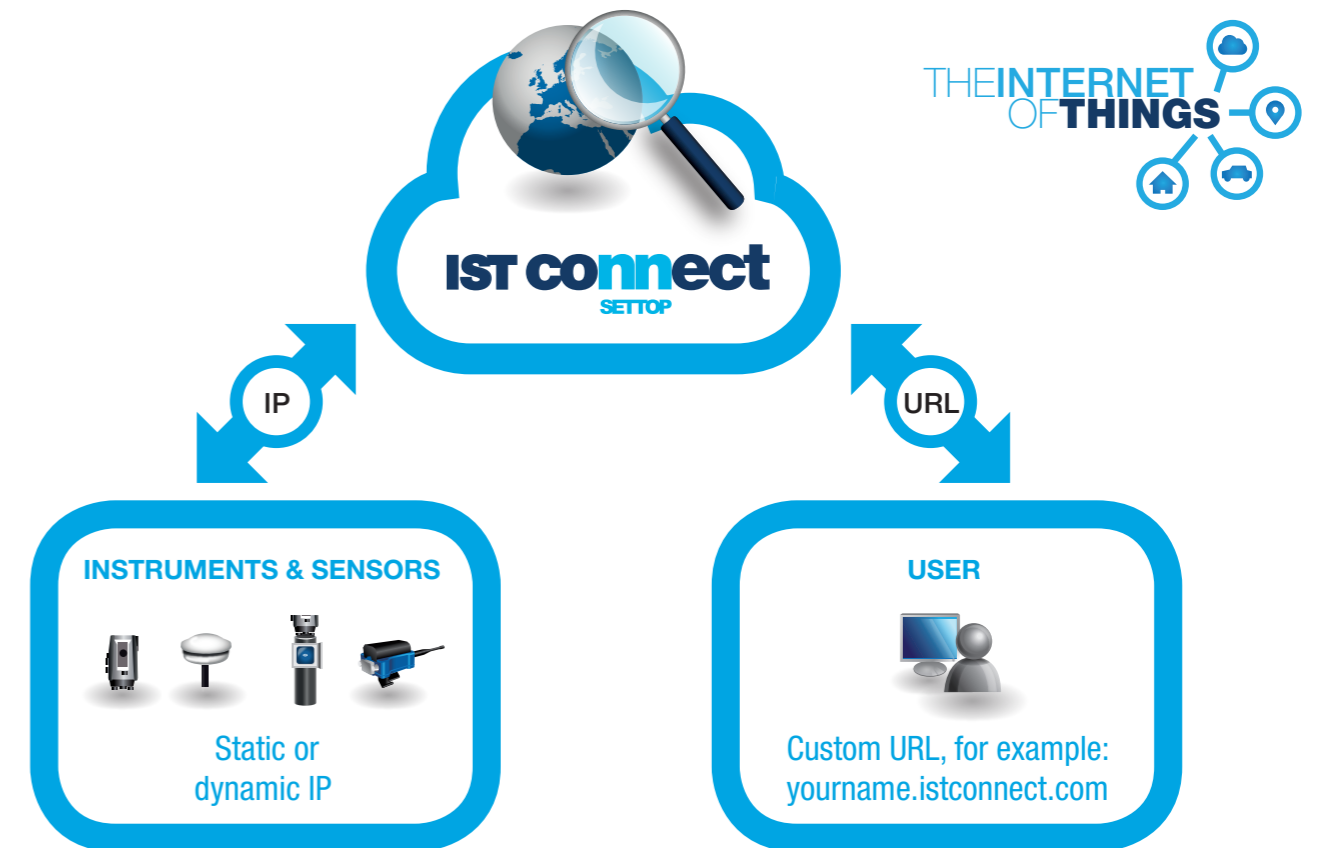
Access, manage and control your equipment (in a concept *The Internet of Things*).

The Settop IST Connect is a cloud service thanks to which you can control your surveying instrument via the internet.

Every time a monitoring project is begun, a difficult challenge is raised for you as well as for your surveying supplier. Receiving all numerical and visual information in real time with your instrument requires deep experience in communications. You need not worry any more about static IPs, complicated setups and complex contracts with your telephony providers: Settop IST Connect will do it all for you.

MAIN FEATURES

- No SIM card or Router with static IP required
- Custom URL
- Ntrip caster service
- Port mapping for monitoring projects
- Customized services



PRODUCT SPECIFICATIONS

- Model **SETTOP M1**
- Model **SETTOP M1-15** (no GNSS, no Radio Module)

GPS/GNSS
<ul style="list-style-type: none"> • 220 Channels : <ul style="list-style-type: none"> - GPS: Simultaneous L1 C/A, L2E,L2C, L5 - GLONASS: Simultaneous L1 C/A, L1 P, L2 C/A (GLONASS M Only), L2 P - SBAS: Simultaneous L1 C/A, L5 - Galileo: Simultaneous L1 BOC, E5A, E5B, E5AltBOC¹ - BeiDou: B1, B2 - QZSS: L1 C/A, L1 SAIF, L2C, L5 • Advanced Trimble Maxwell 6 Custom Survey GNSS Technology • High precision multiple correlator for GNSS pseudorange • Unfiltered, unsmoothed pseudorange measurements data for low noise, low multipath error, low time domain correlation and highdynamic response • Very low noise GNSS carrier phase measurements with <1mm precision in a 1 Hz bandwidth • Signal-to-Noise ratios reported in dB-Hz • Proven Trimble low elevation tracking technology • Initialization time: typically <10 seconds • Initialization reliability: > 99.9 % • 1 Hz, 2 Hz, 5 Hz, 10 Hz, 20 & 50 Hz positioning outputs (depends on installed option) • Reference outputs: CMR, CMR+, RTCM 2.1, 2.2, 2.3, 3.0, 3.1 • Navigation outputs ASCII: NMEA-0183 GSV, AVR, RMC, HDT, VGK, VHD, ROT, GGK, GGA, GSA, ZDA, VTG, GST, PJT, PJK, BPQ, GLL, GRS, GBS

POSITIONING SPECIFICATIONS			
Mode	Accuracy	Latency	Max. Rate
Single Baseline RTK (<30Km)	8 mm + 1ppm H. 15 mm + 1ppm V.	<20 ms	50 Hz
DGPS	0,25 m + 1ppm H. 0,50 m + 1ppm V.	<20 ms	50 Hz
SBAS6	< 5m 3D	<20 ms	50 Hz

COMMUNICATION PORTS
<ul style="list-style-type: none"> • 1 RS232/USB Host Event port, PPS Power In/Out • 2 RS232/USB OTG port Power In/Out • 1 TNC connector for GPS antenna • 1 TNC connector for radio antenna • 1 FME connector for GSM antenna • 1 Slot SIM card • 1 Slot MicroSD card

ELECTRICAL AND OPERATING REQUIREMENTS
<ul style="list-style-type: none"> • External Power: 12V – 30V DC. • Power: <ul style="list-style-type: none"> - All components activated at full power: 12.8W - GSM reception mode: 5.6W - GSM mode & radio off: 3.6W • Operating temperature -40° to 75° C • Storage temperature -55° to 85° C • Random vibrate MIL-STD 810F (7.7g RMS) • Vibe SAEJ1211 (4g) • Bump/Shock IEC 68-2-27 (30g) • IP67

CONNECTIONS
Radio Module
<ul style="list-style-type: none"> • Bandwidth
403-470 Mhz
<ul style="list-style-type: none"> • Frequency Control • Synthesized 12.5 kHz resolution setting • Frequency Stability ± 1 ppm • 12.5/25 kHz Channel Spacing (detectable) • RF Transmitter Output • 0.0 w (RX-only) y 0.1-2 w (Programmable) • Sensibility: <ul style="list-style-type: none"> -110 dBm VER = 1 x 10⁻⁵ • Adjacent Channel Sensitivity: <ul style="list-style-type: none"> > 55 dB • Certification type • All models are accepted and certified to operate in the U.S., Australia and Canada FCC, IC, EU, NZ, Australia ETS300-113-2
GSM HSDPA modem (3,5G)
<ul style="list-style-type: none"> • Five-Bands UMTS/HSPA+ (WCDMA/FDD) (800/850/900/1900/2100 MHz) • Quad-Band GSM (850/900/1800/1900 MHz) • HSDPA Cat. 10 / HSUPA Cat.6 data rates • DL: max. 14.4 Mbps, UL: max. 5.76 Mbps • EDGE Class 12 data rates DL: max. 237 kbps, UL: max. 237 kbps • GPRS Class 12 data rates • DL: max. 85.6 kbps, UL: max. 85.6 kbps
WiFi
IEEE 802.11 b/g/n Access Point Mode
Bluetooth 4.1 + BLE

INTERNAL MEMORY
<ul style="list-style-type: none"> • 1GByte + 1GByte Nand flash • Expansion Micro SD port

SIZE AND WEIGHT
<ul style="list-style-type: none"> • Frontal Panel: 10 LED status indicators • Size: 138 x 138 x 35 mm • Weight: 600 g.

ACCESORIES AND OPTIONS
<ul style="list-style-type: none"> • Power cable 2 meters • Clip for tripod • External power font • GSM Antenna • Radio Antenna • GPS Coaxial cable • USB cable • Serial cable • Optional: USB to RJ45 adapter

1. Developed under a License of the European Union and the European Space Agency.

Specifications may change without notice.

