

Innovative Security Systems



RADIOBARRIER

Wireless Perimeter
Security System



ABOUT US

POLUS-ST is an international manufacturer of innovative security solutions that use seismic, microwave, thermal, video, and infrared sensors for border security, law enforcement, perimeter and force protection, critical infrastructure, and tactical missions.

POLUS-ST focuses on innovations in security and defense. We strive to develop strong and mutually beneficial relationships with our clients to generate new ideas that we can convert to reliable and efficient solutions.

With over 20 years' experience designing & producing security products, as well as successfully implementing local and international projects, POLUS-ST is well positioned to offer reliable and effective autonomous wireless security solutions for:

- **Borders**
- **Armed Forces**
- **Oil & Gas**
- **Defense**
- **Law Enforcement**
- **Infrastructure**



20+ years' experience in security and defense



300 employees; 80 R&D specialists and engineers



25+ unique technical solutions



6,500 sqm of wholly owned production and R&D facilities



200+ clients, 25 countries, 5 continents, 9 climate zones



50,000+ product items manufactured annually



Over 8,500 km of perimeter protection

SYSTEM DESCRIPTION

RADIOBARRIER is an advanced perimeter security system for area surveillance and perimeter protection in zones with little to no access to communication and infrastructure. This fully autonomous system utilizes different sensor combinations to efficiently and effectively detect moving targets.

THE RADIOBARRIER SYSTEM

The RADIOBARRIER Wireless Perimeter Security System is a stand-alone autonomous solution for surveilling extended perimeters in remote areas with complex terrains.

SENSORS

Sensors combines the detection devices of seismic (UGS), microwave and passive infrared (PIR) to meet modern challenges in security and defense. The system protects any remote location regardless of size and shape.

COMMUNICATION

All system devices automatically form a mesh network, enabling remote system management. They transmit alarm data to a desktop control center or a handheld receiver with guaranteed delivery.

COMMAND AND CONTROL

Various types of receivers can be used to operate the system remotely, such as handheld, laptop or desktop PCs supplied with special command and control (C2) software.

SOFTWARE

GIS RADIOBARRIER command and control software collects and stores all information from the sensors and displays it on a digital map. The software allows users to bind the sensors' GPS coordinates to the map to see their layout, analyze the situation, and take necessary measures.

CCTV

For visual evidence, a CCTV subsystem supplements the main system. The CCTV subsystem includes thermal imaging and video sensors.

FEATURES & BENEFITS



MESH NETWORK

RADIOBARRIER uses wireless communication between all system components, so the detection devices function as communication nodes within a mesh network.



LONG MISSION LIFE

RADIOBARRIER detection devices operate on batteries that ensure up to 5 years of autonomous operation.



RELIABILITY

A secure two-way radio channel provides complete control of the system remotely, and transmits alarm data over long distances with guaranteed delivery.



ERGONOMIC DESIGN

Deploy RADIOBARRIER in just a few hours due to its light weight, small device sizes, and simple installation. Various configurations and detection principles make the system flexible, scalable, and suitable for a wide range of applications.



HIGH PERFORMANCE

Enjoy an unrivalled detection range and field-proven technology with RADIOBARRIER detection devices. This MIL-STD-810H compliant equipment can be installed covertly on any terrain and in all climate conditions.



INTEGRATION

Use RADIOBARRIER as a stand-alone security solution with the set of software programs for control over the entire system. The system can also be utilized as the first layer of defense in complex security systems or any C2 software at your site.

COMMAND AND CONTROL

THE RADIOBARRIER OPERATOR'S CONSOLE WITH "GIS RADIOBARRIER" CONTROL SOFTWARE

The Operator's Console is a desktop or portable PC that comes with the installed GIS RADIOBARRIER command and control software. It monitors and controls RADIOBARRIER devices and their status. The Console informs the operator of any alarm event in the monitored area. It also receives, stores, and displays video acquired by the CCTV subsystem.



SYSTEM REQUIREMENTS:

- ▶ OS Windows XP SP3, Windows Vista, Windows 7, Windows 8, Windows 10
- ▶ CPU speed of 1.6 GHz or higher
- ▶ 1 GB of RAM
- ▶ DirectX 9-compatible video adapter
- ▶ 500 MB of hard drive space

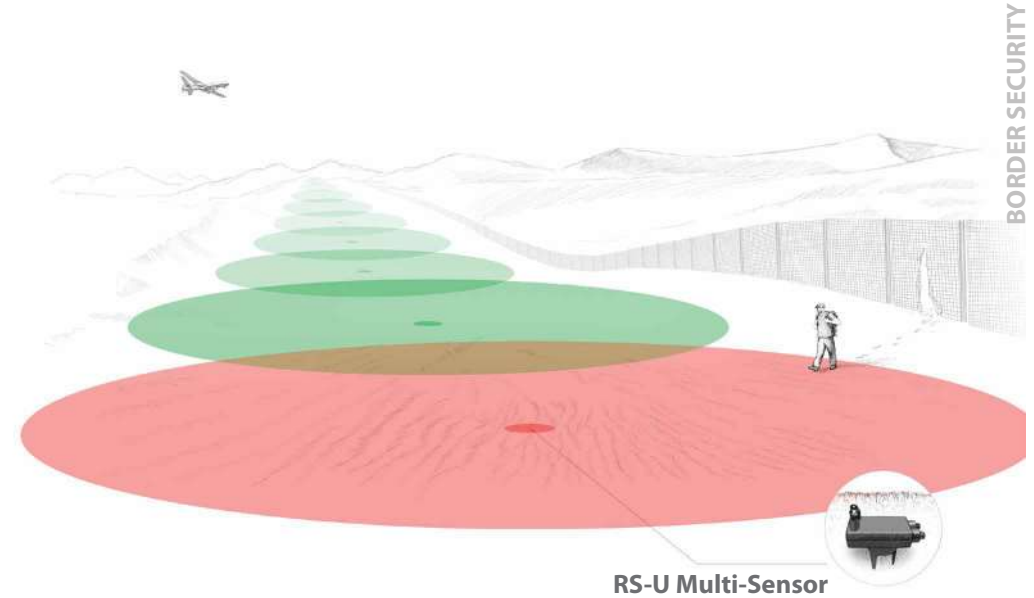
KOPR CONTROL RECEIVER

The KOPR manages RADIOBARRIER system devices. It sets up and configures sensors and registers sensor GPS/GLONASS coordinates during installation. This allows the user to efficiently locate the sensors during their removal. KOPR also monitors the status of the RADIOBARRIER detection devices, receives and displays alarm and service messages, and controls several networks.

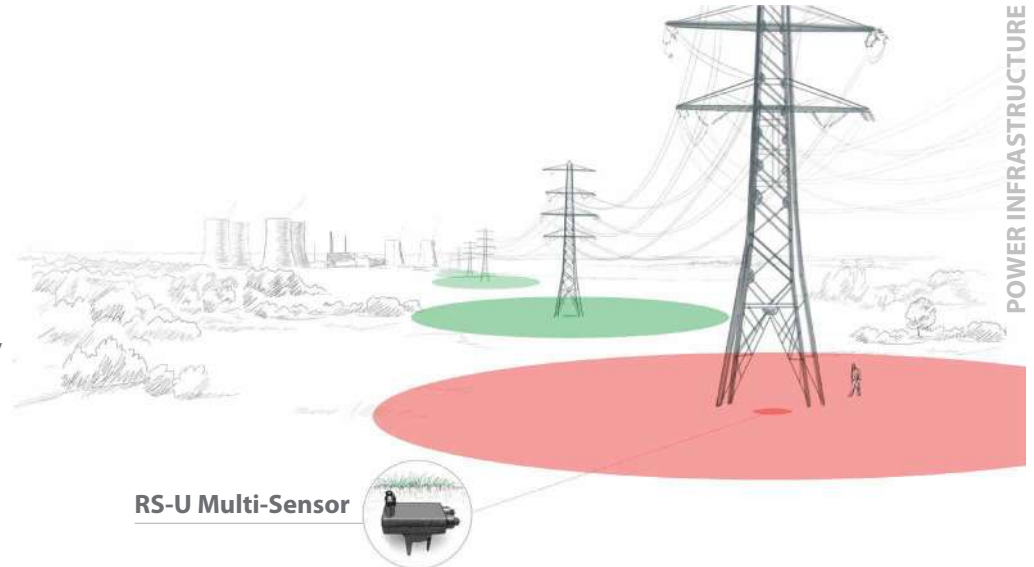


FEATURES:

- ▶ At least 72 hours of operation using a built-in battery
- ▶ GPS/GLONASS receiver
- ▶ Up to 10 km communication range
- ▶ Operating temperature range: from -10°C to +50 °C
- ▶ Compliant to: MIL-STD-810H
- ▶ Weight: 0,7 kg
- ▶ Dimensions: 210×95×45 mm



RS-U Multi-Sensor



RS-U Multi-Sensor

COMMAND AND CONTROL

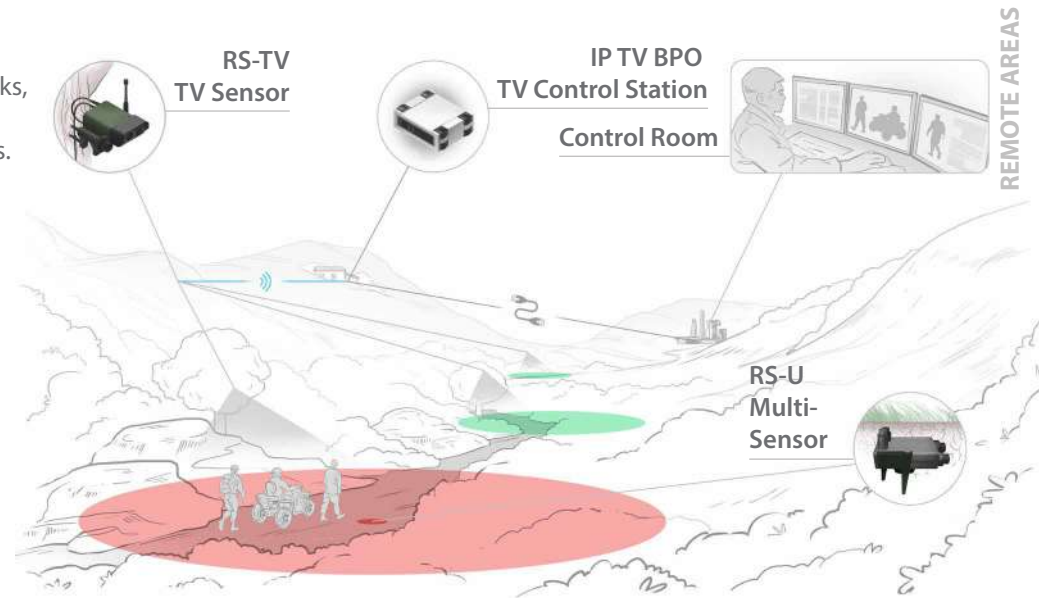
IP TV BPO TV CONTROL STATION

The IPTV-BPO controls system devices and their status in radio networks, retransmits the video signal from the CCTV devices over an Ethernet network using an IP protocol, and informs the operator of alarm events.



FEATURES:

- ▶ IP video server module for GIS RADIOBARRIER
- ▶ Scalable solution for CCTV



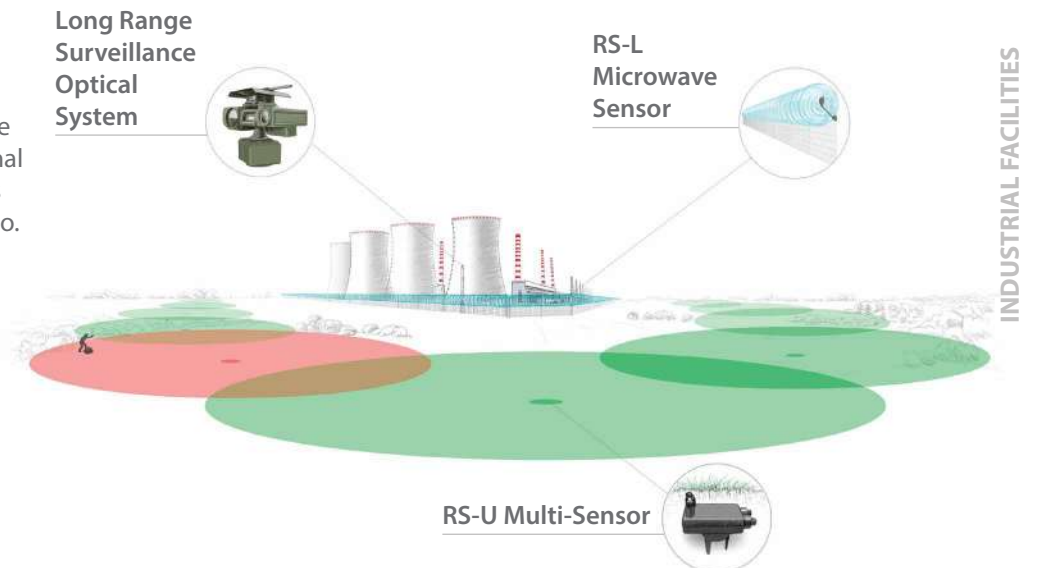
PTV PORTABLE TV RECEIVER

The PTV is a portable TV receiver that displays the video signal from the RADIOBARRIER CCTV subsystem. The TV receiver adjusts the video signal quality and the camera position of the CCTV devices. The PTV provides visual control of the monitored area and displays black-and-white video.



FEATURES:

- ▶ Built-in battery
- ▶ Black-and-white half-tone LCD



DETECTION

RS-U MULTI-SENSOR

The RS-U is a multifunctional seismic sensor. It detects and classifies intruders based on the seismic signature they produce within a circular detection zone. The device is powered by an external battery.



FEATURES:

- ▶ Seismic sensor
- ▶ Break-wire sensor
- ▶ Autonomous repeater
- ▶ Network controller

AS ACOUSTIC SENSOR

The AS acoustic sensor improves the RS-U multi-sensor detection accuracy of various vehicles, including motorcycles, motorbikes, 4-wheelers, and buggies.



FEATURES:

- ▶ Detection range of up to 130m
- ▶ Fully camouflageable

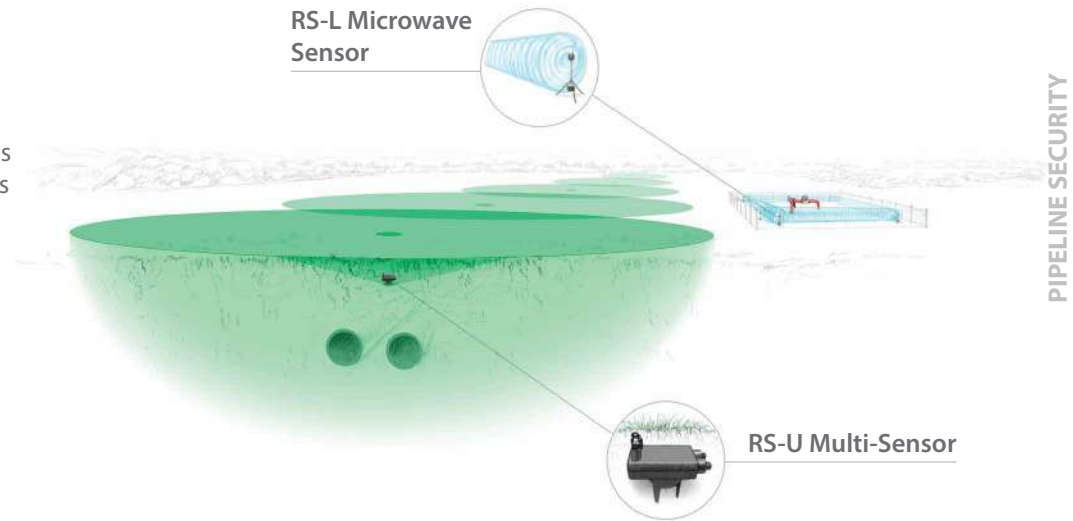
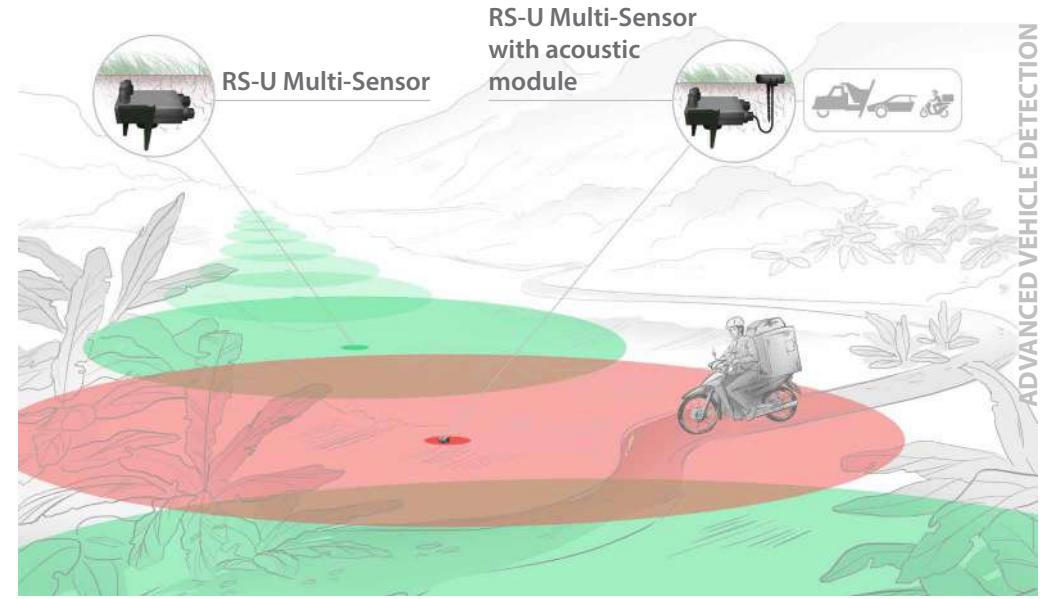
RS-N DIRECTIONAL MULTI-SENSOR

The RS-N is a multifunctional seismic sensor. It detects and classifies intruders by registering and processing the seismic signals they produce. It determines and tracks their movement, and then sends an alarm to a receiver. The device is powered by an external battery.



FEATURES:

- ▶ Directional seismic sensor
- ▶ Seismic sensor
- ▶ Autonomous repeater



DETECTION

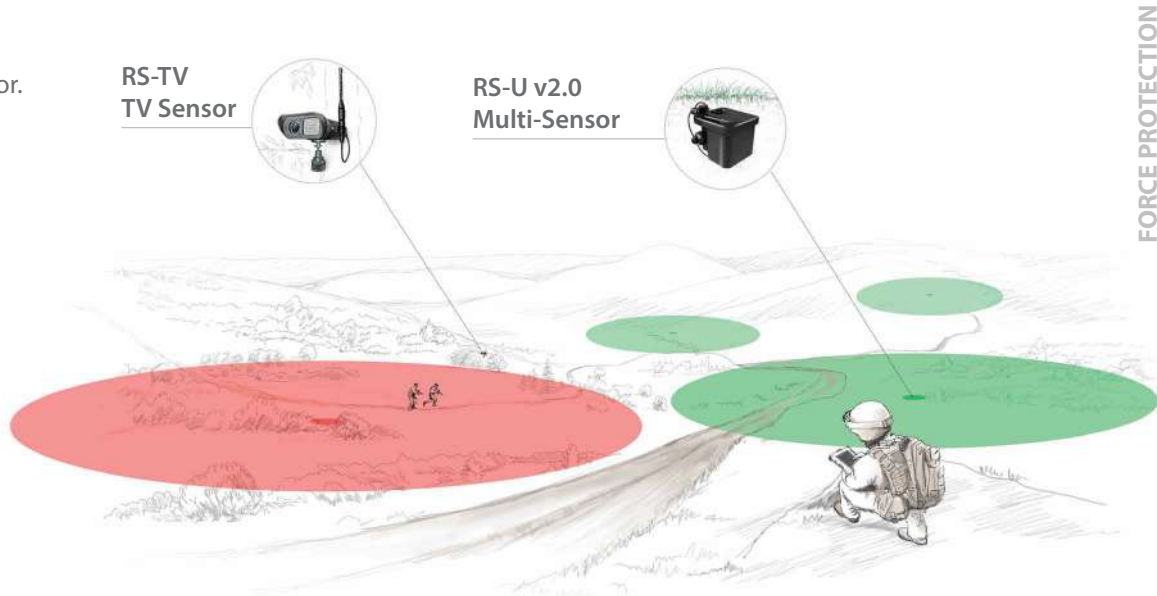
RS-U v2.0 MULTI-SENSOR

The RS-U v2.0 is a compact version of the RS-U Multi-Sensor. It is powered by a built-in battery and used during short-term missions and special operations.



FEATURES:

- ▶ Seismic sensor
- ▶ Break-wire sensor
- ▶ Autonomous repeater



FORCE PROTECTION

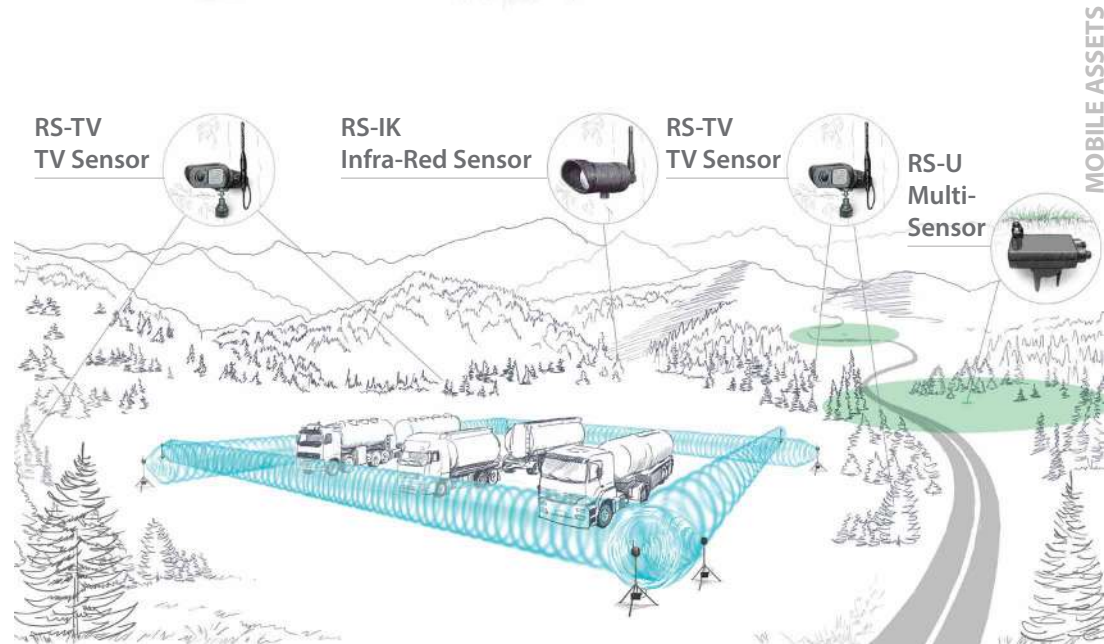
RS-IK INFRARED SENSOR

The RS-IK is a passive infrared (PIR) sensor that measures and processes changes in the infrared radiation of the environment. Changes are caused by an intrusion within the sensor's field-of-view. It is powered by an external battery.



FEATURES:

- ▶ Passive infrared sensor
- ▶ Autonomous repeater
- ▶ Allows establishing a perimeter with a narrow detection zone



MOBILE ASSETS

DETECTION

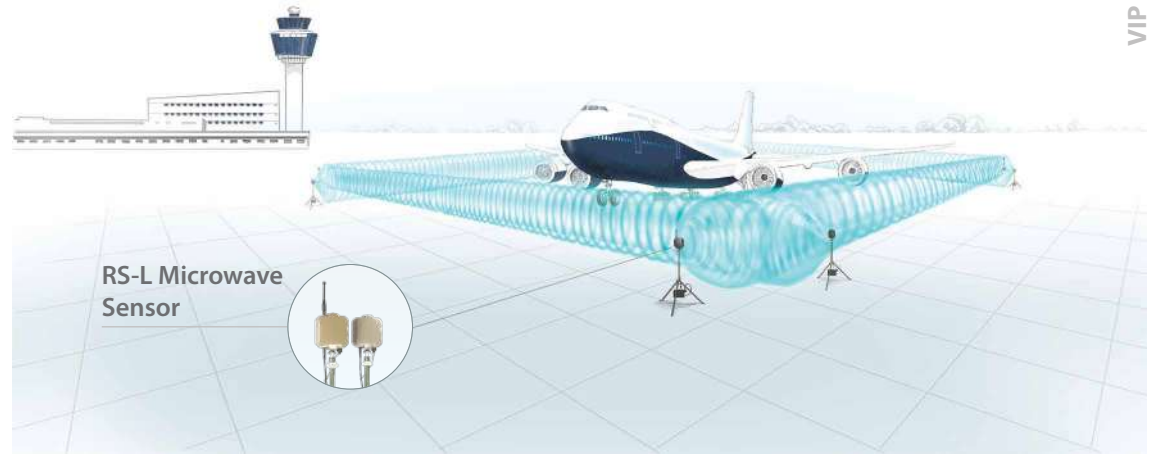
RS-L MICROWAVE SENSOR

The RS-L is a microwave sensor that detects intruders based on variations within the volumetric electromagnetic field formed between its constituent parts: the PRM Receiver and PRD Transmitter Units. The units are powered by external batteries.



FEATURES:

- ▶ Microwave sensor
- ▶ Break-wire sensor
- ▶ Autonomous repeater
- ▶ Two versions available:
 - with a range up to 100m
 - with a range up to 200m



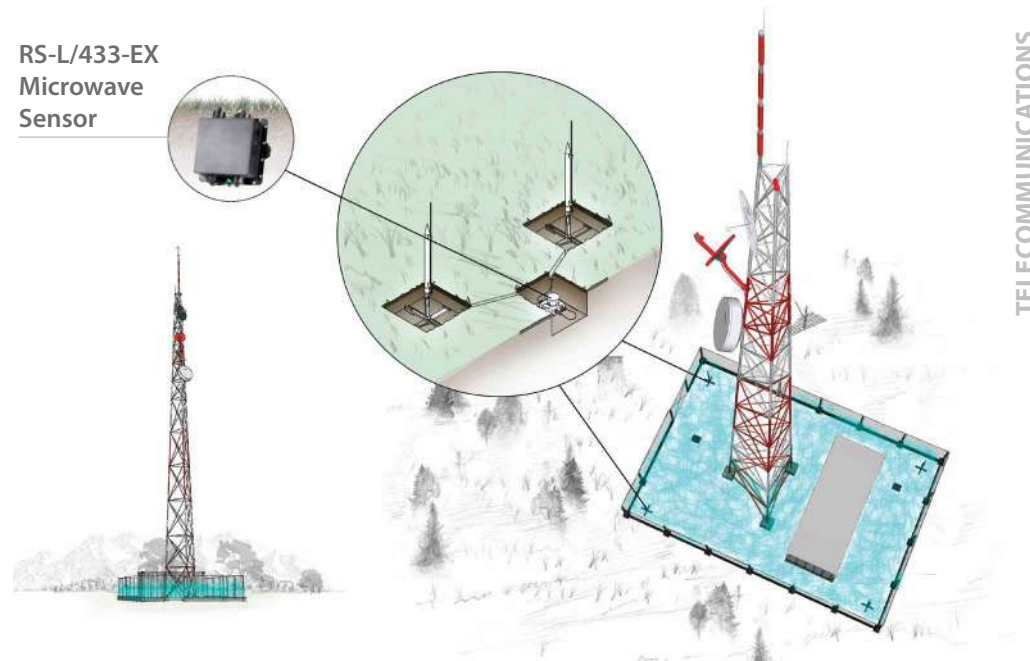
RS-L/433-EX MICROWAVE SENSOR

The RS-L/433-Ex is a microwave sensor housed in an explosion-proof casing for use in potentially explosive zones. The RS- L/433-Ex is installed underground and protects chain-link or welded wire fence enclosures where the electromagnetic field reflects off the metal fence and fills the entire enclosure volume. The RS-L/433-Ex consists of two units: the PRM Receiver Unit and the PRD Transmitter Unit. The units are powered by external batteries.



FEATURES:

- ▶ Microwave sensor
- ▶ Break-wire sensor
- ▶ Autonomous repeater



DETECTION

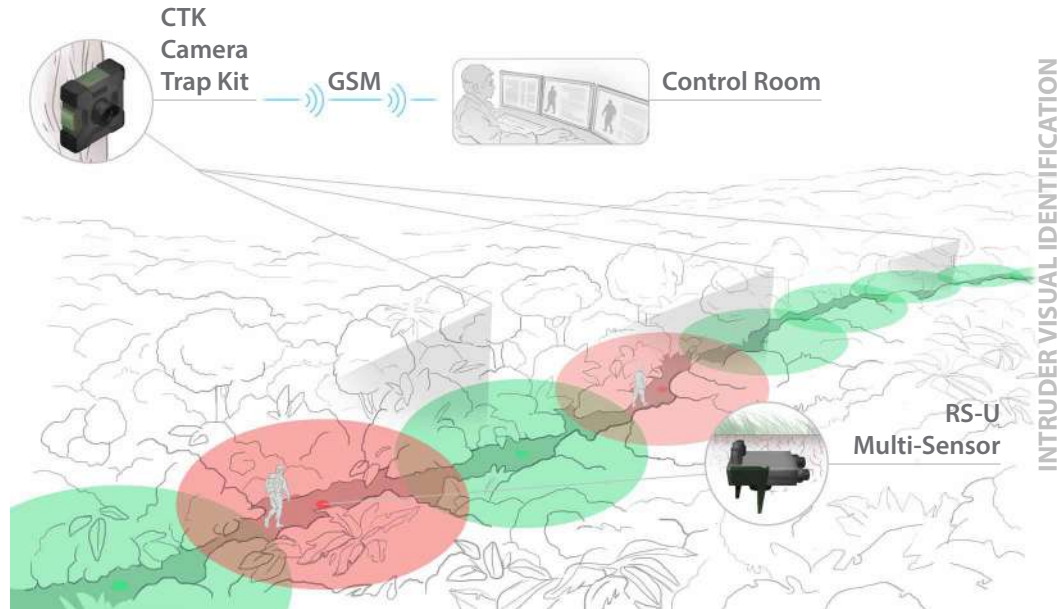
CTK CAMERA TRAP KIT

The CTK Camera Trap Kit takes photo images of intrusions at the operator's command or when triggered by a RADIOBARRIER sensor. The operator can identify the intruder by viewing images on a portable PC on a server remotely in real time via a cellular network.



FEATURES:

- ▶ Transfer of images through GSM
- ▶ Angle of view:
 - Vertically - 46°
 - Horizontally - 35°
- ▶ JPEG, 2048x1536 pixels
- ▶ MicroSD card



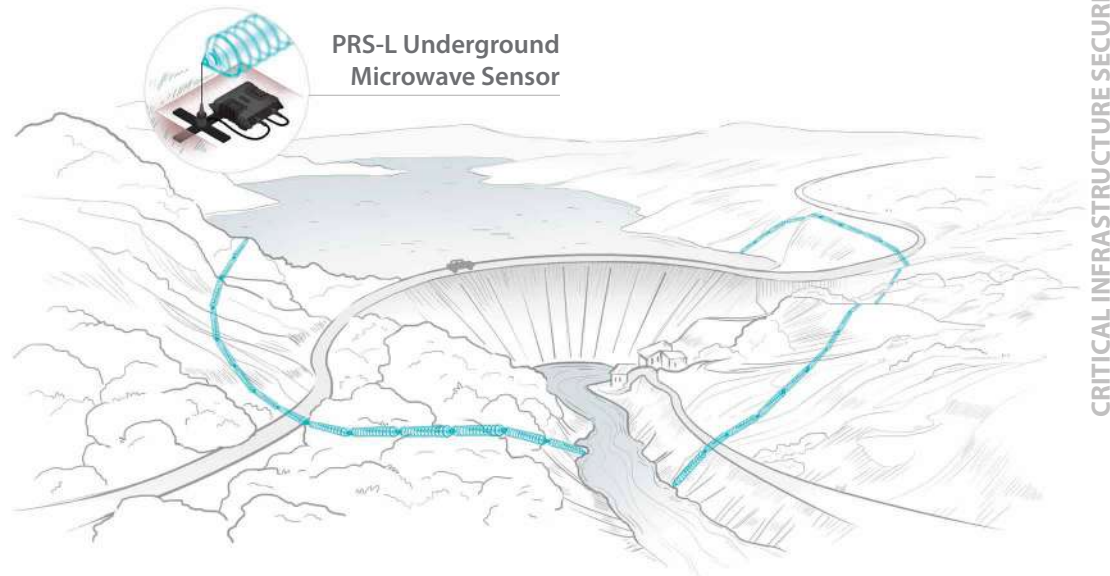
PRS-L UNDERGROUND MICROWAVE SENSOR

The PRS-L is a microwave sensor that detects intruders based on variations within the volumetric electromagnetic field formed between its constituent parts: the PRM Receiver and PRD Transmitter Units. All modules except the upper parts of the antennas are completely concealed in the soil. This makes it almost impossible for intruders to locate the sensor. The units are powered by external batteries.



FEATURES:

- ▶ Microwave sensor with a 20m detection field
- ▶ Break-wire sensor
- ▶ Autonomous repeater



SENSOR SPECIFICATIONS

| Sensor | Communication range ¹ | Detection range | Operation time ² | Operating temperature range | Compliant | Weight | Dimensions |
|---|----------------------------------|---|--------------------------------------|-----------------------------|--------------|-----------------------------|--|
| RS-U MULTI-SENSOR | up to 21 km | Personnel: up to 170 m; Vehicle: up to 300 m | up to 5 years (ext. battery) | from -40 °C to +50 °C | MIL-STD-810H | 0.65 kg | 140×80×70 mm |
| RS-U v2.0 MULTI-SENSOR | up to 21 km | Personnel: up to 170 m; Vehicle: up to 300 m | up to 5 months (built-in battery) | from -40 °C to +50 °C | MIL-STD-810H | 0.55 kg | 110×95×85 mm |
| RS-N DIRECTIONAL MULTI-SENSOR | up to 21 km | Personnel: up to 90 m; Vehicle: up to 220 m | up to 4 years (ext. battery) | from -40 °C to +50 °C | MIL-STD-810H | 0.9 kg | 140×150×90 mm |
| RS-IK INFRARED SENSOR | up to 21 km | Personnel/Vehicle: up to 70m; Horizontal angle: 5°; Vertical angle: 2.4° | up to 4 years (ext. battery) | from -40 °C to +50 °C | MIL-STD-810H | 0.5 kg | 175×100×70 mm |
| RS-L MICROWAVE SENSOR | up to 21 km | • up to 100 m • up to 200 m (depending on version) | up to 4 years (ext. battery) | from -40 °C to +50 °C | MIL-STD-810H | PRD: 0.7 kg, PRM: 0.8 kg | PRD 185×140×50 mm PRM 200×140×50 mm |
| RS-L/433-EX MICROWAVE SENSOR | up to 21 km | Detection zone: length: 12 m width: 6 m height: 1.6 m | up to 3 years (ext. battery) | from -40 °C to +50 °C | MIL-STD-810H | 3.65 kg | 260×250×80 mm |
| CTK CAMERA TRAP KIT | up to 1 km | Day: at least 100 m; Night: at least 25 m | up to 6 months (ext. battery) | from -40 °C to +50 °C | MIL-STD-810H | 0.35 kg 0.95 kg | CTU 70×75×100 mm TRU 170×60×200 mm |
| PRS-L UNDERGROUND MICROWAVE SENSOR | up to 21 km | Detection zone: length: up to 20 m width: up to 15 m height: up to 5 m | up to 40 months (ext. battery) | from -40 °C to +50 °C | MIL-STD-810H | 1.15 kg | 160×160×50 mm |

¹ Depends on the type of antenna installed.

² Depends on the type of battery installed.

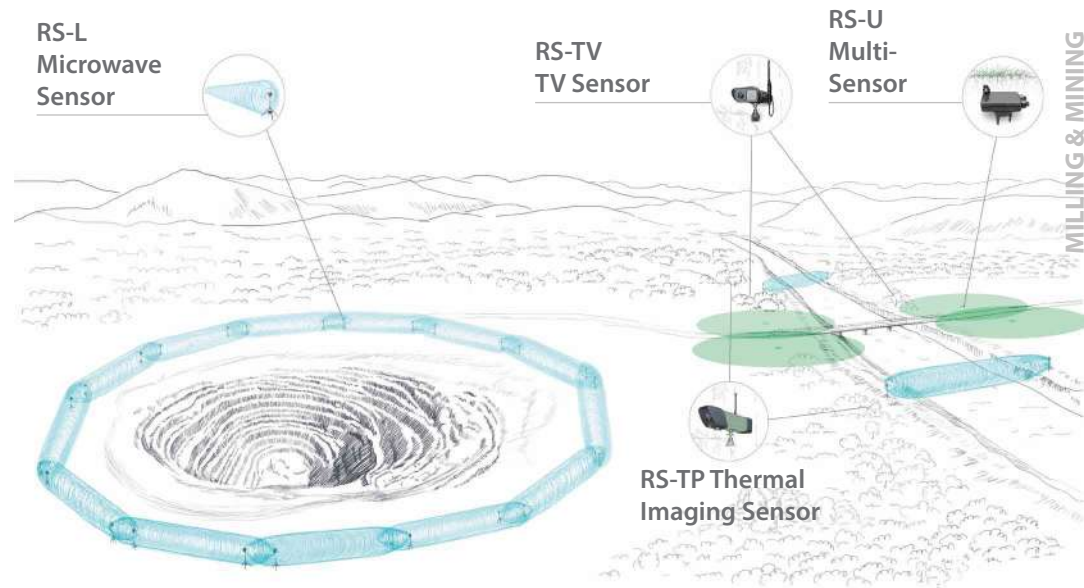
RS-TV TV SENSOR

The RS-TV provides autonomous video surveillance in any weather, any time of day. It is equipped with an IR illuminator to operate in low-light conditions. The video feed is transmitted via radio network and can be processed by the PTV portable receiver or by the RADIOBARRIER Operator's Console. The broadcast can be engaged manually or triggered by the RADIOBARRIER sensor alarm. The RS-TV is powered by an external battery.



FEATURES:

- ▶ Angle of view:
 - Horizontal: 20.0°
 - Vertical: 12.5°



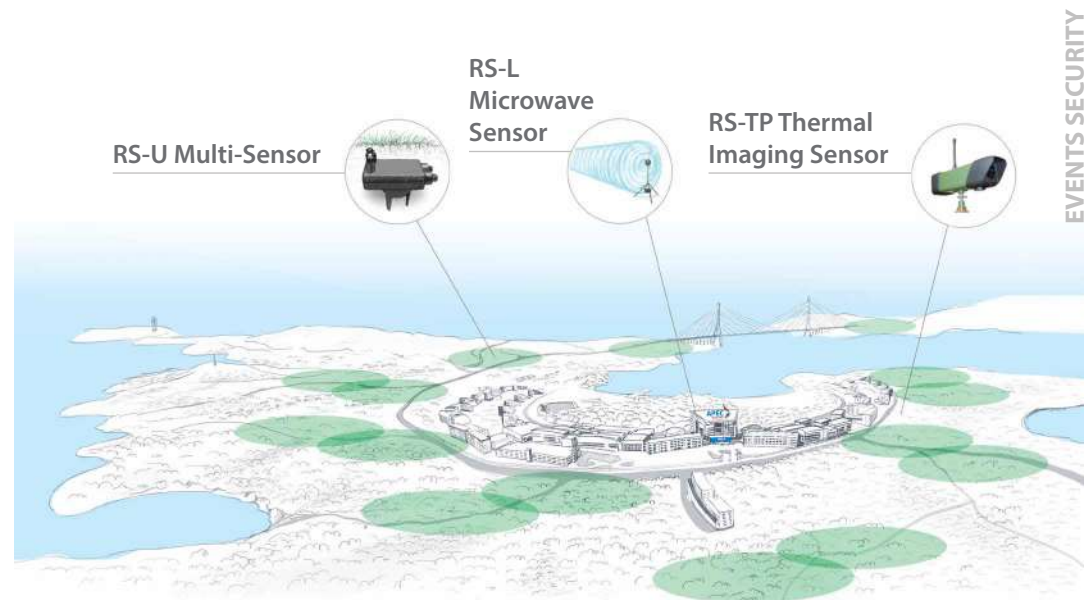
RS-TP THERMAL IMAGING SENSOR

The RS-TP captures black-and-white half-tone video of the monitored area based on objects' heat signatures. The RS-TP then transmits the video to a video receiver or to the Operator's Console via a radio network. The RS-TP detects moving targets in real time and in low-light conditions. It is activated manually at the operator's command or automatically by a sensor when triggered by an intruder.



FEATURES¹:

- ▶ Black-and-white half-tone video
- ▶ Angle of view:
 - Horizontal: 23.0°
 - Vertical: 17.0°



¹The RS-TP parameters may vary depending on the country.

CCTV SPECIFICATIONS

| Device | Communication range ¹ | Detection range | Operation time ² | Operating temperature range | Compliant | Weight | Dimensions |
|---|----------------------------------|-----------------|----------------------------------|-----------------------------|--------------|--------|---------------|
| RS-TV TV SENSOR | up to 15 km | up to 100 m | up to 12 months (ext. battery) | from -40 °C to +50 °C | MIL-STD-810H | 2 kg | 185×140×65 mm |
| RS-TP THERMAL IMAGING SENSOR³ | up to 15 km | up to 200 m | up to 12 months (ext. battery) | from -40 °C to +50 °C | MIL-STD-810H | 1.6 kg | 230×90×75 mm |
| PTV PORTABLE TV RECEIVER | up to 15 km | – | up to 3 hours (built-in battery) | from -10°C to +50°C | MIL-STD-810H | 0.9 kg | 220×110×50 mm |
| IP TV BPO TV CONTROL STATION | Ethernet | – | 220V mains supply | +5°C to +35°C | MIL-STD-810H | 1.9 kg | 250×215×80 mm |

¹ Depends on the antenna type installed and the retranslator configuration applied.

² Depends on the type of battery installed.

³ The RS-TP parameters may vary depending the country.

COMMUNICATION

GSM IN-FIELD TRANSCEIVER

The GSM in-field transceiver receives and transmits system data between a deployed RADIOBARRIER sensor network and a remote command and control center through the cellular internet protocol. It is located within the communication range of RADIOBARRIER system devices

and within the coverage area of the chosen GSM operator. The transceiver is powered by an independent power supply that consists of a solar panel and a rechargeable battery.



FEATURES:

- ▶ GSM: 850/900/1800/1900 MHz
- ▶ Continuous operation: min. 200 hours
- ▶ Powered by a solar power supply



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