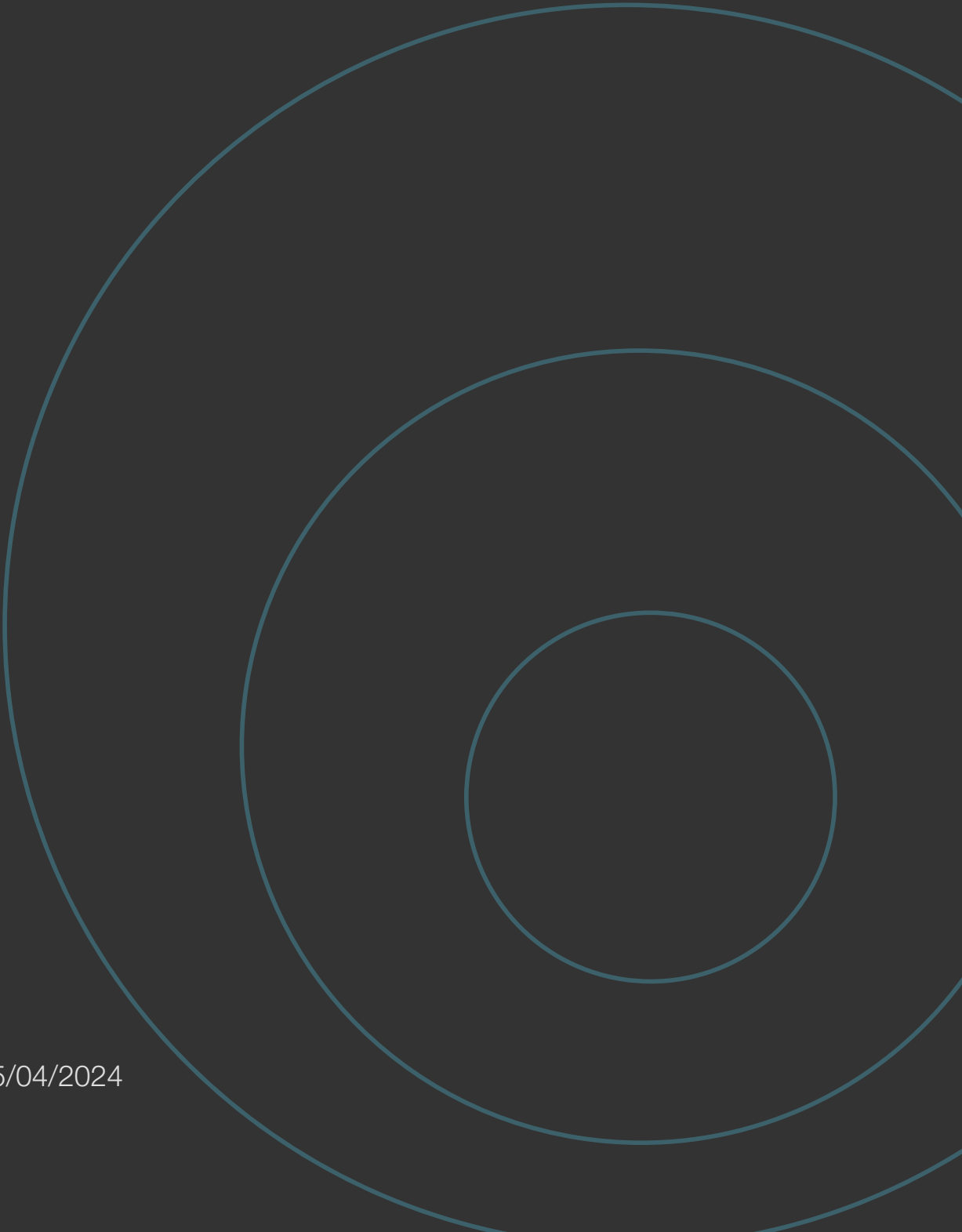




Product Catalogue



Last version: 25/04/2024



MUCH MORE THAN RADAR TECHNOLOGY

About us

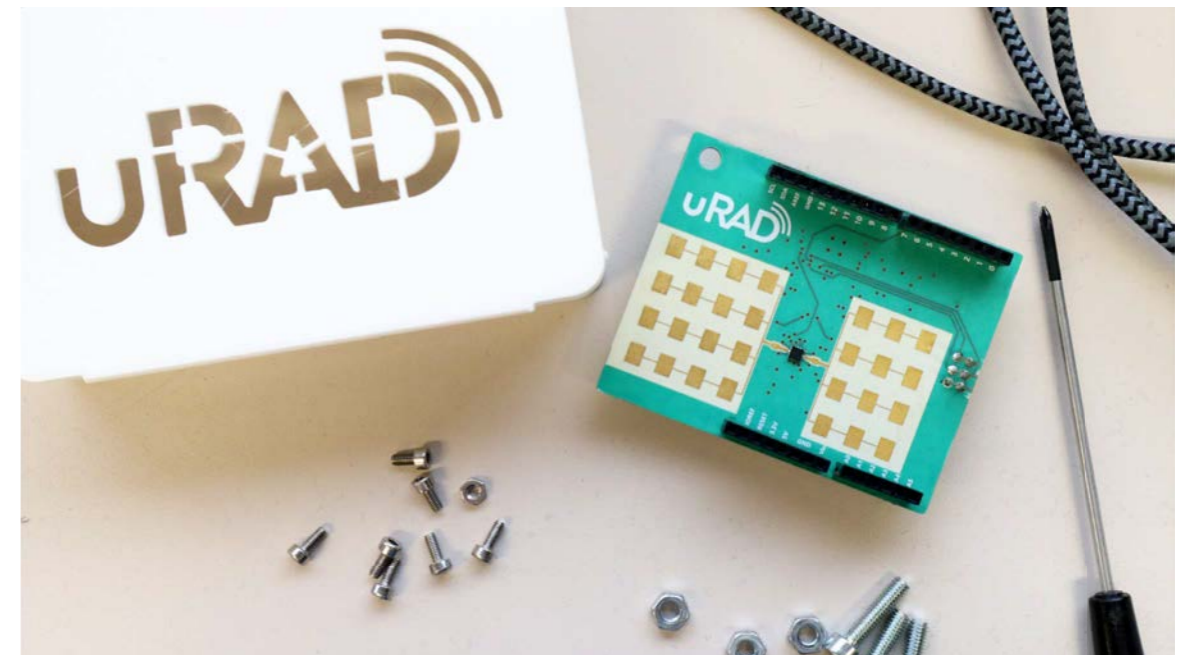
Anteral, under its brand **uRAD**, develops **microwave radar solutions** with the aim to bring closer radar technology to everyone.

Anteral is formed by a high-qualified and multidisciplinary team able to face the most demanding challenges. Our main **goal** is to impulse the technological innovation while we try to meet the needs of modern society.

Our committment with the client necessities results in a company with a culture based on **innovation**, **team building** and **self-improvement**. Following this culture, Anteral develops innovative technology in the fields of antennas, passives and radar technology for space, telecommunications, defence, smart cities and industry and academia sectors, among others.

Different standard radar boards are already available at **three frequency bands**. These products are perfect to develop innovative applications for **industry**, **smart cities**, **automotive** and much more.

Apart from the standard products, we also offers **ad-hoc designs** considering the client's requirements and developing custom solutions for them.



uRAD - Universal Radar - by Anteral

The easiest way to measure velocity, distance and detect presence.



Velocity

Measure the velocity of several targets up to 270 km/h.

3D Positioning

Precisely calculate the position (xyz coordinates) of many targets at the same time.

Presence

Use the presence mode to detect any movement within its coverage range.

What advantages can uRAD offer to you?

1. Versatility

3 sensors in 1. Create any kind of application.

2. High-tech

Enjoy the specifications of a professional radar at a much lower price.

3. Multiplatform

Compatible with Arduino, Raspberry Pi, USB and serial port.

4. Portable

Place it anywhere thanks to its compact design and energy-saving.

5. Easy use

Plug & Play. Intuitively, program applications thanks to open-source libraries.

6. Educational

Learn about radar technology and boost your creativity!

WHAT ARE THE APPLICATIONS?



Traffic monitoring



People counting



Point cloud visualizer



Altimeter



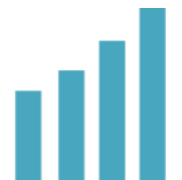
Vital sign recognition



Robotics



Automated doors



Level sensing



Gesture recognition



Speedometer



Vibration sensor



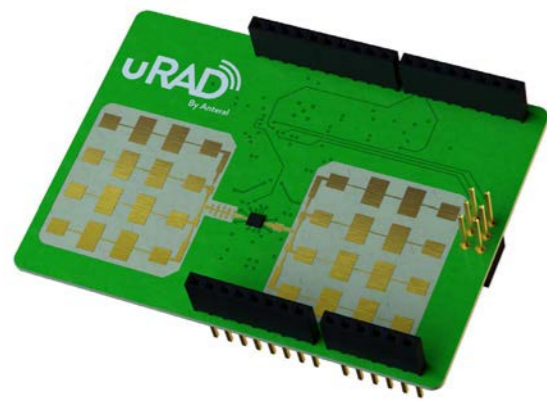
Distance sensor

& much more!

24 GHz basic radars

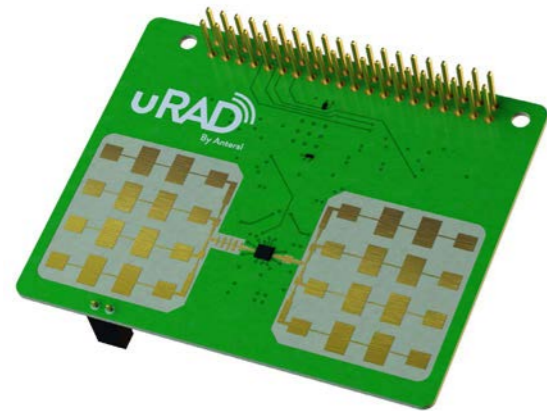
uRAD 24 GHz radars are tiny shields for Arduino, Raspberry Pi or USB that work as a completely functional **microwave radar**. Operating in the free emission 24 GHz ISM frequency band, uRAD has four different operation modes that can be easily programmed.

You will be able to measure distance, velocity and other magnitudes of your surrounding world with great accuracy!



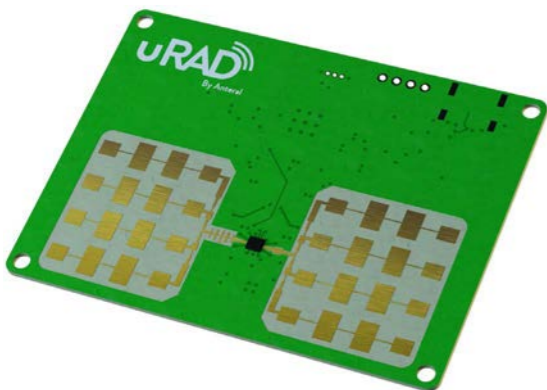
uRAD Arduino

- FMCW radar at 24 GHz
- 1D positioning (distance only)
- Velocity, SNR, RAW data IF signal
- Arduino shield



uRAD Raspberry Pi

- FMCW radar at 24 GHz
- 1D positioning (distance only)
- Velocity, SNR, RAW data IF signal
- Raspberry Pi shield



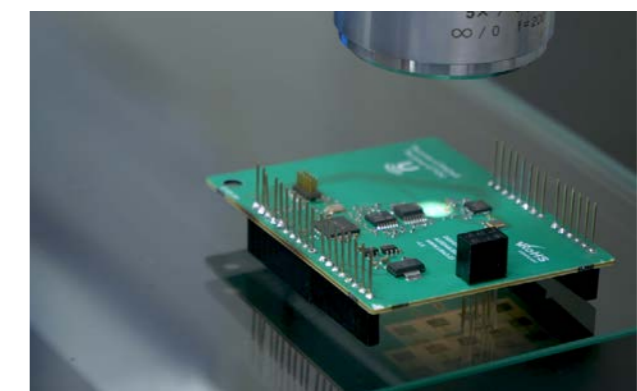
uRAD USB

- FMCW radar at 24 GHz
- 1D positioning (distance only)
- Velocity, SNR, RAW data IF signal
- USB, UART

Parameter	uRAD basic radars
Frequency bandwidth	24 - 24.25 GHz (ISM)
Azimuth field of view	± 15 deg
Elevation field of view	± 15 deg
Supply voltage	5V
Supply current	170 mA
Distance	YES
Velocity	YES
Angle	NO
SNR	YES
RAW data	YES
Distance range	car: 70 m person: 40m
Accuracy range	± 0.04 m
Velocity range	75 m/s
Velocity accuracy	± 0.05 m/s
Angle accuracy	-



CERTIFIED PRODUCTS

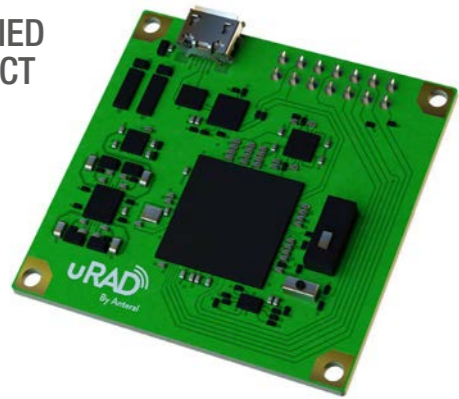


High-Performance Radars

uRAD high-performance radars are **millimeter wave radar sensors** with outstanding measurement capabilities in a very compact size. Based on Texas Instruments chips, uRAD detect range, velocity and angle of objects with high accuracy and robustness.

uRAD exhibits up to three times higher spatial and velocity resolution than others solutions in the market. Connect uRAD and discover the power of radar technology!

CERTIFIED
PRODUCT



uRAD Industrial

- FMCW radar at 60 GHz
- 3D positioning, velocity and SNR
- Superior **detection accuracy**
- USB, serial port and Raspberry Pi adaptor
- Industrial applications



uRAD Automotive HPA

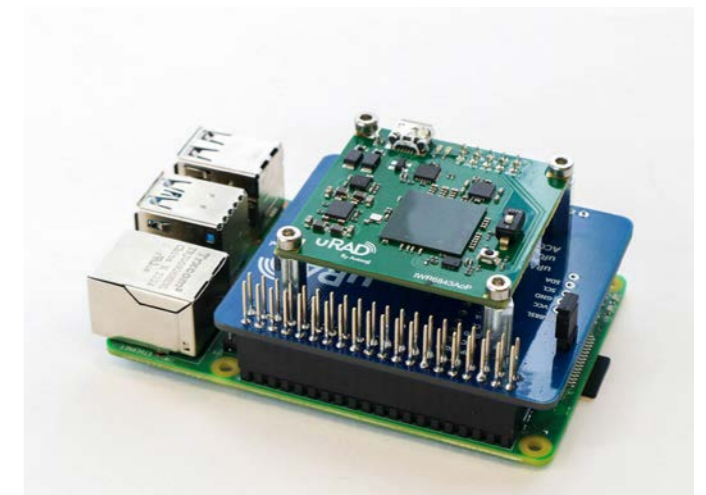
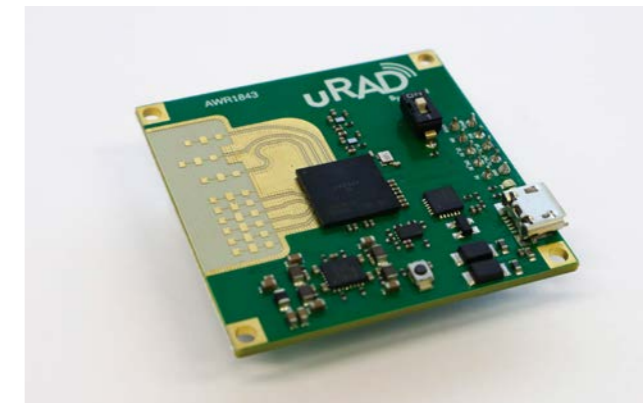
- FMCW radar at 77 GHz
- 3D positioning, velocity and SNR
- Superior **azimuth angular resolution**
- USB, serial port and Raspberry Pi adaptor
- Automotive applications



uRAD Automotive

- FMCW radar at 77 GHz
- 3D positioning, velocity and SNR
- Superior **detection accuracy**
- USB, serial port and Raspberry Pi adaptor
- Automotive applications

Parameter	uRAD Industrial	uRAD Automotive HPA	uRAD Automotive
Frequency bandwidth	60 - 64 GHz	76 - 81 GHz	76 - 81 GHz
Azimuth field of view	± 80 deg	± 60 deg	± 80 deg
Elevation field of view	± 80 deg	± 20 deg	± 80 deg
Connector	microUSB / UART	microUSB / UART	microUSB / UART
Supply voltage	5V	5V	5V
Supply current	340 mA	440 mA	340 mA
Distance	YES	YES	YES
Velocity	YES	YES	YES
Angle	YES	YES	YES
SNR	YES	YES	YES
RAW data	NO	NO	NO
Distance range	car: 70 m person: 40m	car: 70 m person: 40m	car: 70 m person: 40m
Accuracy range	± 0.01 m	± 0.01 m	± 0.01 m
Velocity range	45 m/s	45 m/s	45 m/s
Velocity accuracy	± 0.15 m/s	± 0.15 m/s	± 0.15 m/s
Angle accuracy	1°	1°	1°



uRAD Smart Traffic

In addition to our standard products, we are very focused on some specific applications, mainly within the **Smart City** framework. uRAD Smart Traffic are specific solutions for **non-invasive traffic monitoring** in urban environments.

All our systems are **affordable, easy to install and configure**, very **versatile** since can be installed in any road, and outstandingly **accurate**, with an effectiveness higher than 95%.

USE CASES



Velocity measurement up to 180 Km/h.



Dense or light traffic scenarios.



Urban and interurban roads.



Up to 4 lanes monitoring with a single radar.
* Up to 3 lanes in each direction.



Counting vehicles with positive (go away) and negative (approach) velocity simultaneously.

VERSIONS AND MAIN FEATURES

SMART TRAFFIC SOLUTIONS

- Battery
- Wifi, 3G & 4G connectivity
- AC power supply
- Linux OS
- API for uploading data
- Powered by FIWARE - IoT ready device

SMART TRAFFIC COMPACT

- Compact design
- Low consumption
- DC power supply
- RS 485 connectivity via MODBUS communication protocol
- LTE-4G connectivity
- Powered by FIWARE - IoT ready device



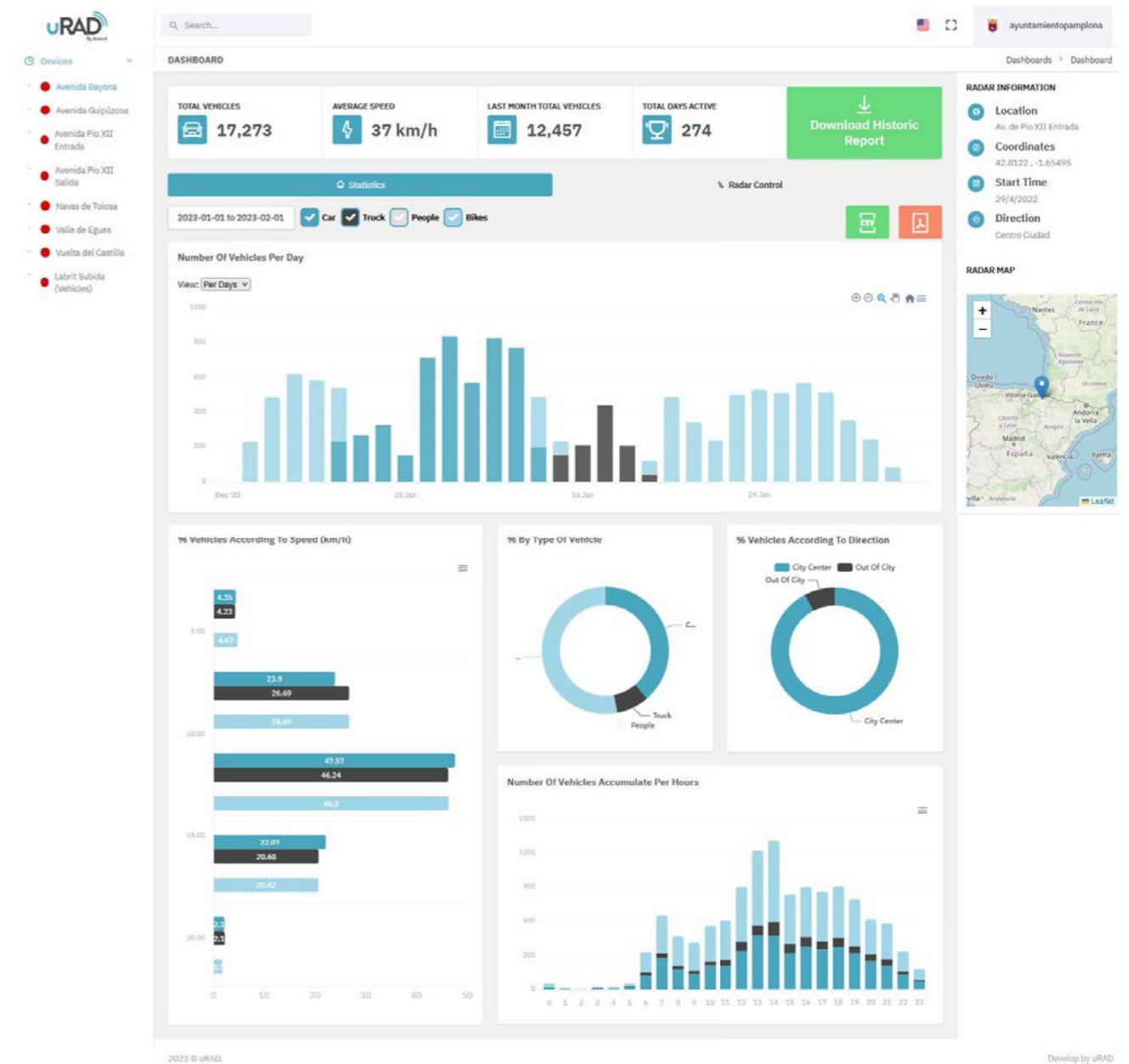
Together with Smart Traffic devices, we also offer an **online platform to visualize real-time statistics** that is customizable to each client according to specific requirements. Users can also download **reports** with all the information in a quick and easy way.

CONTROL PANEL

- Device list of the installations, so the user can access to each one and visualize the particular information.
- Details about the status, location and installation parameters.

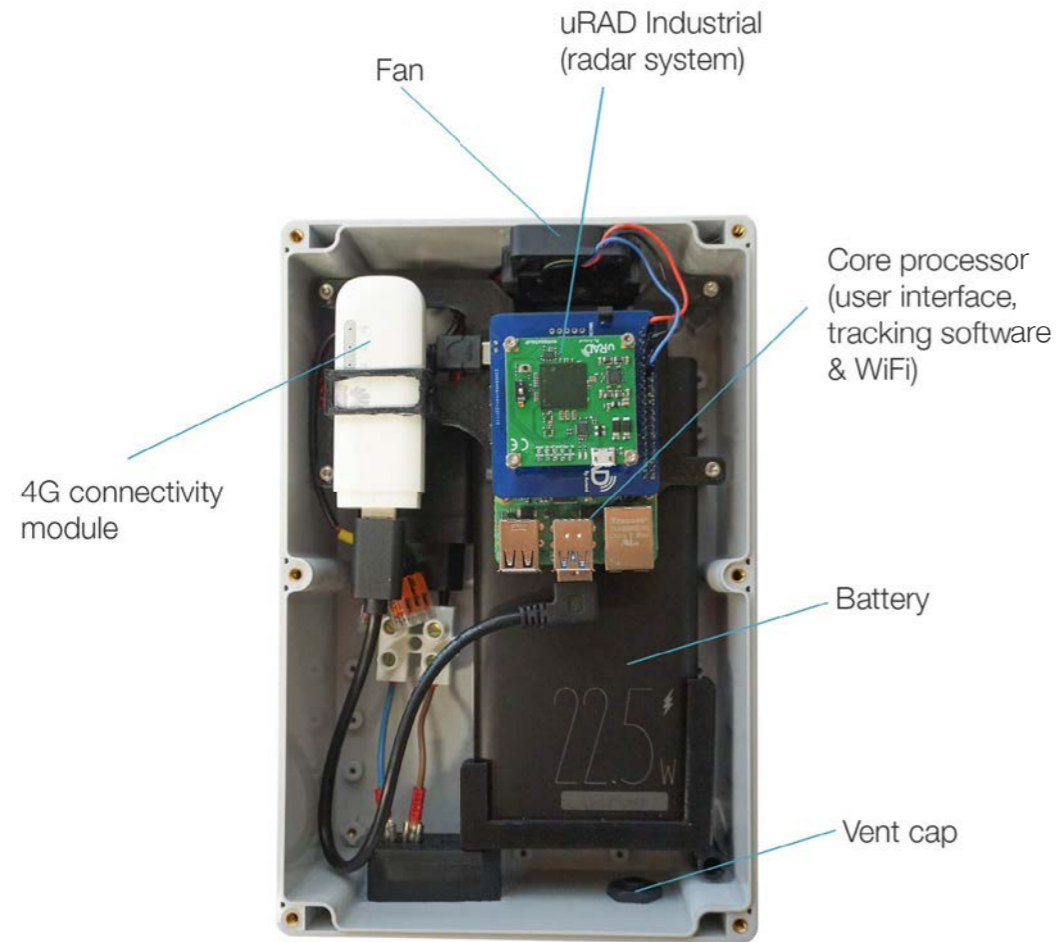
REAL-TIME TRAFFIC STATISTICS

- The number of vehicles per hour and per day (data period selectable).
- The percentage of vehicles according to velocity.
- Other global statistics such as total vehicles or average velocity.



SMART TRAFFIC SOLUTIONS

These **finished customizable solutions for traffic monitoring** integrate our radars along with additional specific software and hardware.



TECHNICAL FEATURES

RF Parameters

Frecuency	60 - 64 GHz
Modulation	FMCW
Emitting power	15 dBm
Field of view	160 °

Power supply

Voltage	AC 100 - 240 V, 50/60 Hz
Connector	3 Pin IEC320 C14 standard connector
Consumption	4.5 W
Battery	40000 mAh (~30 h)

Mechanical Parameters

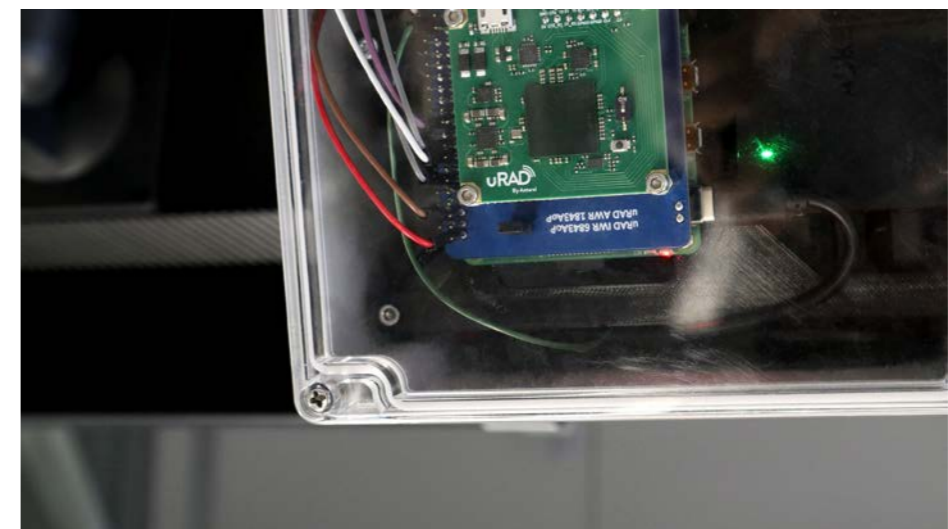
Dimensions	240 x 160 x 90 mm
Material	Polycarbonate
Protection	IP68, NEMA 1,2,4,4X,12,13, UL-508
Installation	Optional clamping structure. Joint for vertical orientation. Brackets for circular support.

Other parameters

Core processor	Quad-core 64-bit ARM Cortex-A53, 1 GHz, 512 SDRAM
Operating temperature	-20°C a +80°C
Communication	WiFi and 4G
Operative system	Linux (Raspberry Pi OS)

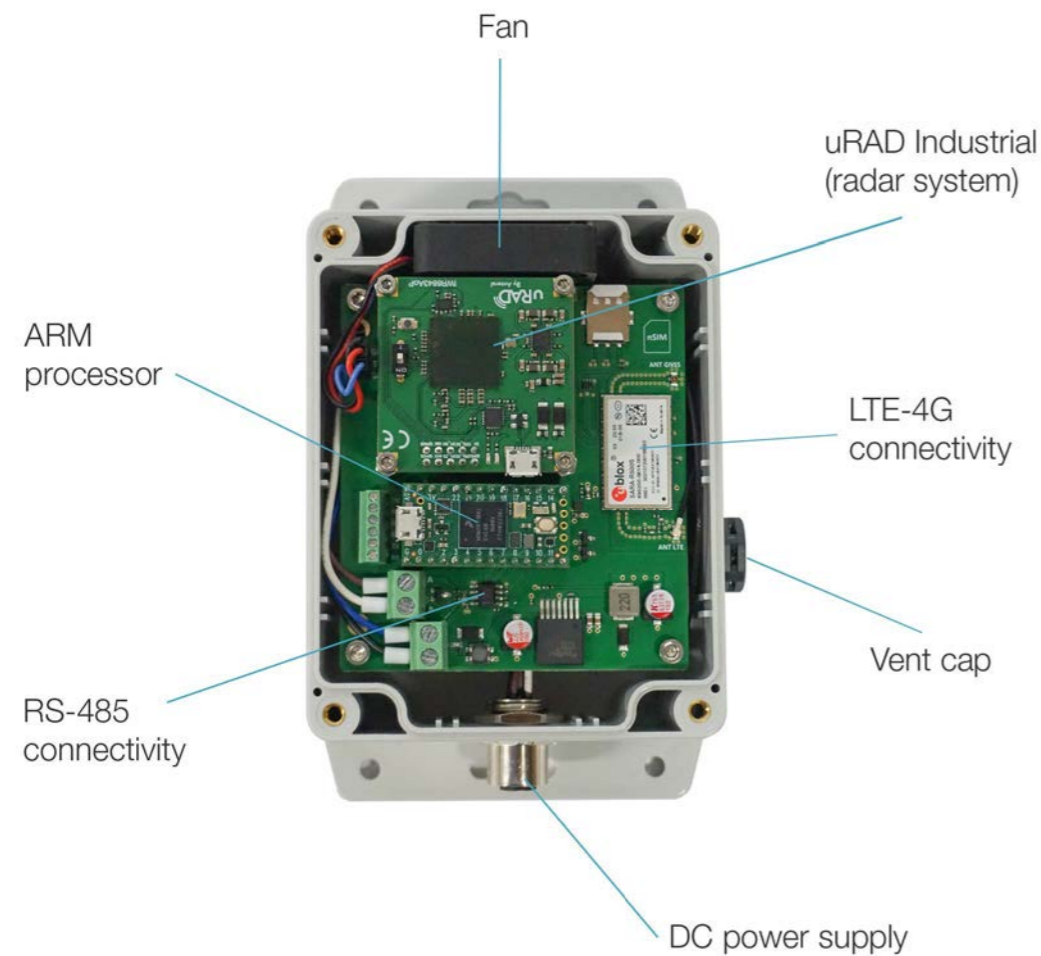
Performance

Maximum velocity	180 Km/h
Maximum distance	60 m
Side distance	±15 m



SMART TRAFFIC COMPACT

Smart Traffic Compact is the **most compact and low consumption version**, integrating MODBUS communication protocol, wired RS-485 and wireless LTE-4G connectivity together with the most advanced uRAD radar hardware.



TECHNICAL FEATURES

RF Parameters

Frecuency	60 - 64 GHz
Modulation	FMCW
Emitting power	15 dBm
Field of view	160 °

Power supply

Voltage	8 V to 42 V DC
Connector	M12 female five-pole circular connector
Consumption	2.5 W

Mechanical Parameters

Dimensions	115 x 90 x 65 mm
Weight	285 g
Material	Polycarbonate
Protection	IP68, NEMA 1,2,4,4X,12,13, UL-508
Installation	Optional clamping structure. Joint for vertical orientation. Brackets for circular support.

Other parameters

Wired Interface	RS-485 via MODBUS RTU protocol
Wireless Interface	LTE-4G via API (FIWARE but also customizable)
Core processor	ARM Cortex-M7, 600 MHz, 1024K RAM
Operating temperature	-20°C to +80°C

Performance

Maximum velocity	180 Km/h
Maximum distance	60 m
Side distance	±15 m









uRAD Smart Radar Sensor

Radar sensor for non-invasive traffic applications

uRAD Smart Radar Sensor is a specialized radar solution designed for the deployment of non-invasive traffic applications in both urban and interurban environments. This sensor incorporates the latest and most advanced uRAD radar hardware specifically tailored for Smart Cities applications.

The system is affordable, easy to install, very versatile, since it can be installed on any road, and can be easily configured for a multitude of use cases or applications.

USE CASES

-  Velocity measurement up to 180 Km/h.
-  Activation of light and warning signals.
-  Intelligent pedestrian detection at crosswalks.
-  Dense or light traffic scenarios.
-  Detecting vehicles with positive (go away) and negative (approach) velocity simultaneously.
-  Multiple lanes at the same time

TECHNICAL FEATURES

RF Parameters	
Frequency	60 - 64 GHz
Modulation	FMCW
Emitting power	15 dBm
Field of view	160 °

Power supply	
Voltage	8 V to 42 V DC
Consumption	0.5 - 2 W (Depending on the application)

Mechanical Parameters	
PCB dimensions	75 x 70 x 20 mm
PCB weight	50 g
Dimensions with box	115 x 90 x 65 mm
Weight with box	285 g
Box protection	Polycarbonate. IP68, NEMA 1,2,4X,12,13, UL-508
Connector	Customizable. M12 5-pole, cable gland, etc.
Installation	Optional clamping. Ball joint and brackets.

Other parameters

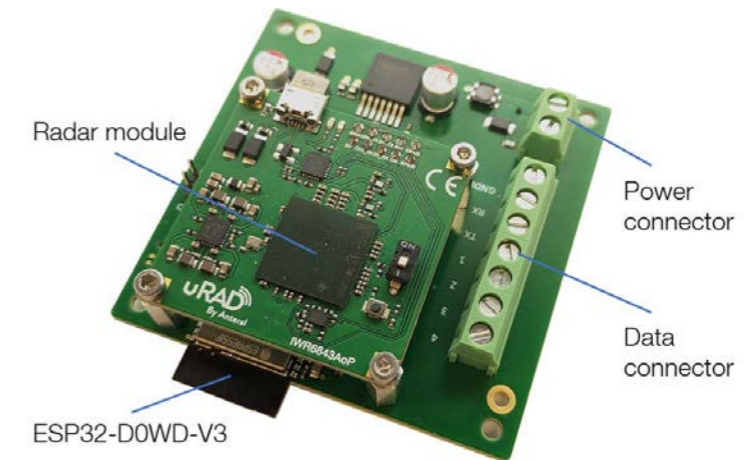
Communication interface	UART (TTL 3.3V), 4 x GPIOs, Wi-Fi & Bluetooth.
Protocol	Customized (depending on the application)
Core processor	ESP32-D0WD-V3
Operating temperature	-20°C to +80°C

Performance

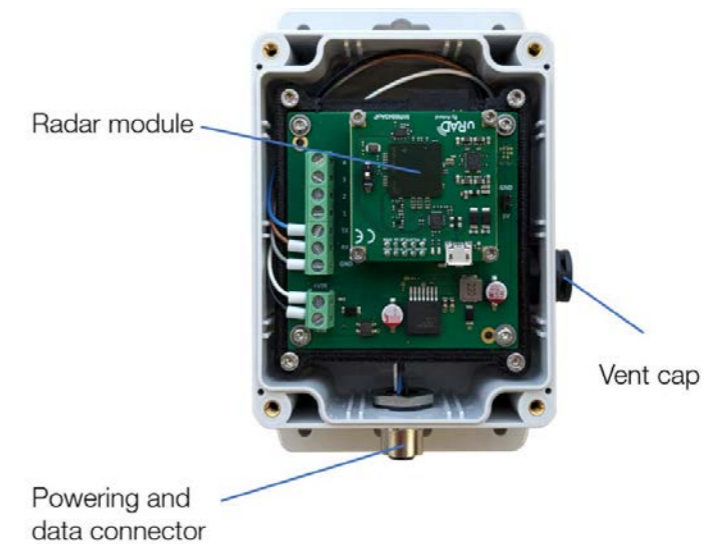
Maximum velocity	180 Km/h
Maximum distance	60 m
Side distance	±15 m

*Performance depends on the application: vehicles detection, pedestrians, sensor placement, etc.

PCB



PCB WITH BOX INCLUDED



The device can be purchased with or without box

uRAD Level Sensing

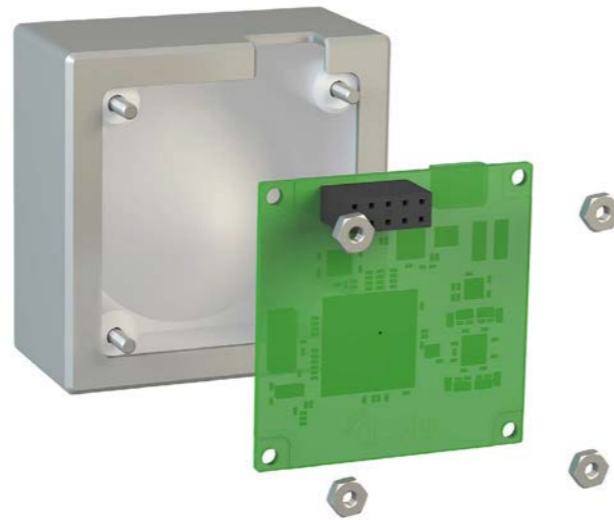
uRAD level sensing solution is a millimeter wave radar sensor specifically designed to measure **frontal distance** with outstanding accuracy. It is easy to integrate thanks to its communication interface, open libraries and simplicity.

MAIN FEATURES

- Outstanding accuracy (< 1 mm)
- Large range (> 100 m)
- Two options: 60 or 77 GHz

APPLICATIONS

- Altimeter
- Flowmeter
- Filling sensor in different industrial sectors



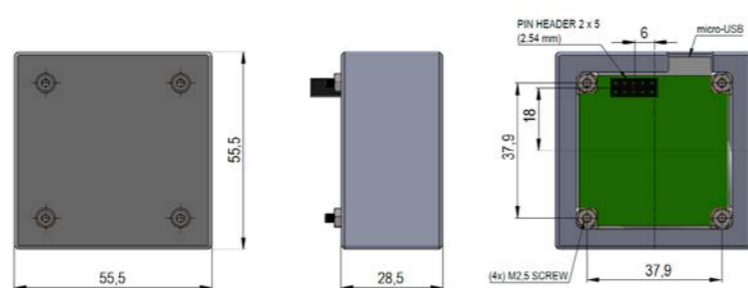
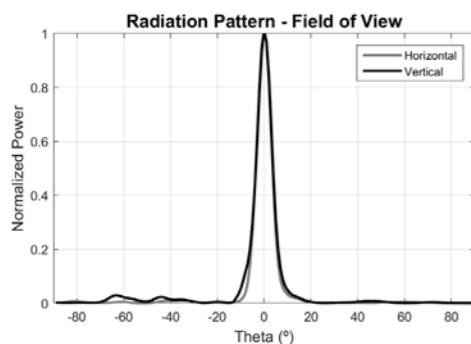
TECHNICAL FEATURES

Operating conditions

Supply voltage	4.5 - 5.5 V
Supply current	140 mA
Digital signals	3.3 VV
Operating temperature	-20 to +85 °C

Performance

Frequency range	60 - 64 GHz (uRAD Industrial version) 77 - 81 GHz (uRAD Automotive version)
Range	0 to 150 m
Accuracy	1 mm
Field of view	6 x 6 deg



THE POWER OF RADAR. THE POWER OF YOU.



uRAD

