

# OPTRACER AIR QUALITY MONITOR SYSTEM

## INTRODUCTION

The OPTracer is an optical particle counter for outdoor environments capable of measuring the concentration of particulate matter dispersed in the air in real time, discriminating it in 30 dimensional classes between 0.3 and 10  $\mu\text{m}$ .

The instrument is able to estimate the mass of the particles by providing the concentration data of PM 10 and PM 2.5



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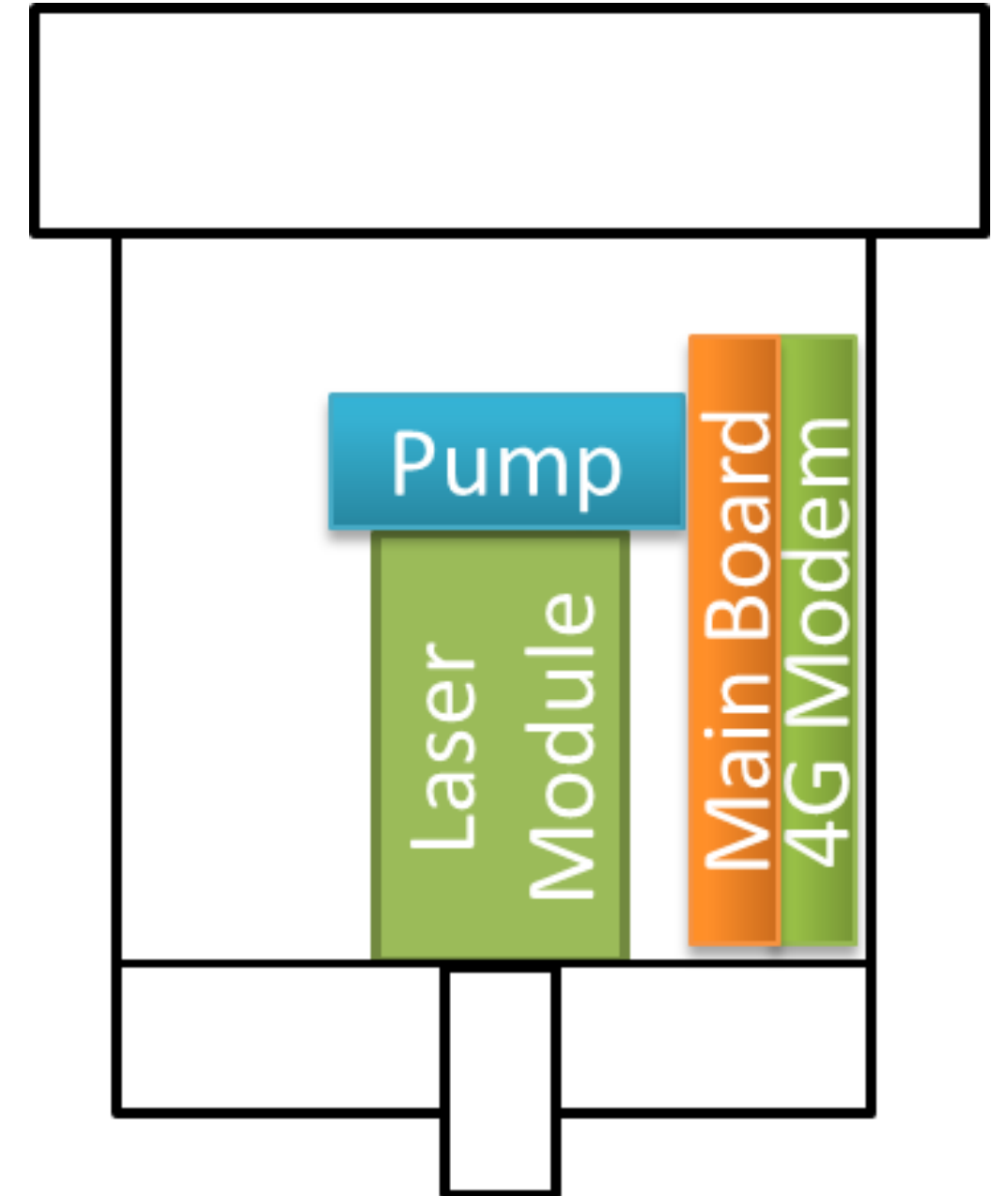
## MAIN FEATURES

- Real-time measurement of the concentration of particles from 0.3 to > 10  $\mu\text{m}$ , discriminating them in 30 particle size classes
- Real-time estimate of the value of PM 10 and PM 2.5
- Recording of the main environmental parameters (Temperature, Pressure and Relative Humidity)
- Control via Bluetooth
- Data available via USB key and via Wifi (access point)

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## FLOW CONTROL SYSTEM

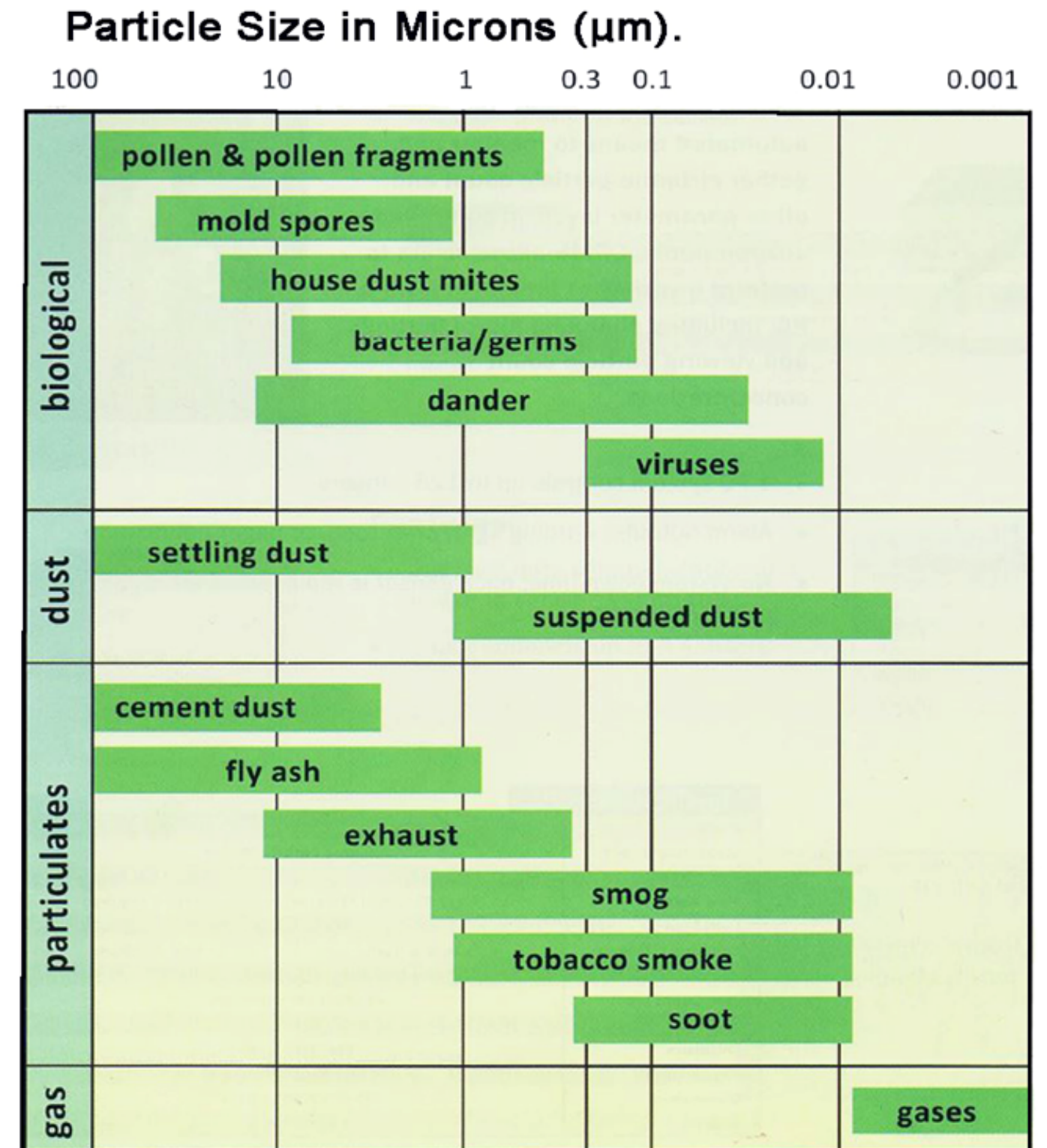
- The instrument operates at a flow rate of 2.831 l / min (0.1 ft<sup>3</sup>)
- The system performs dozens of flow measurements per second to adjust the pump speed and have a constant flow in the optical chamber as environmental conditions change.
- The quality of the pump control system and the sensors used allows for excellent flow accuracy (<3%)



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## PARTICLE MEASUREMENT SYSTEM

- The particles present in the air are of various types, sizes and origins
- The size can vary from a few nanometers to tens of  $\mu\text{m}$
- It is important to know the size distribution of airborne particulate matter

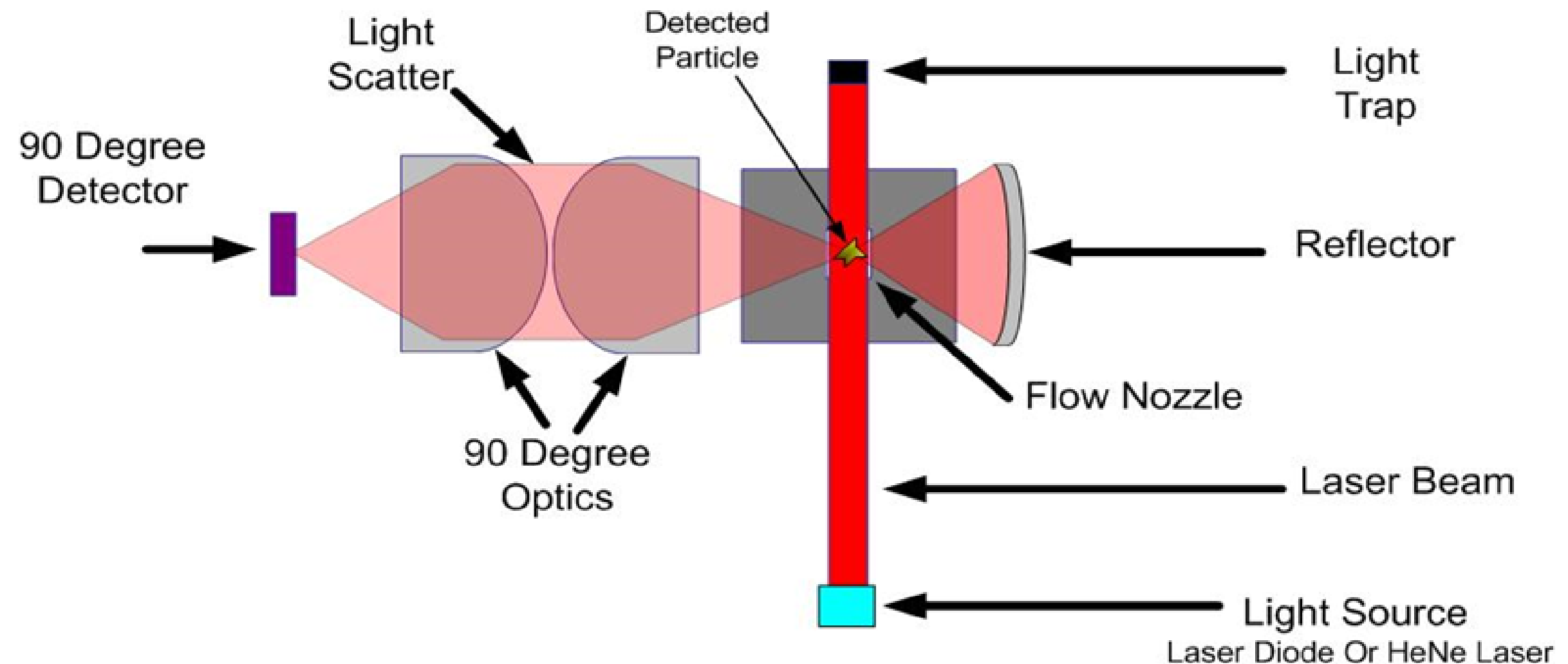


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## PARTICLE MEASUREMENT SYSTEM

- The measurement of the concentration of the particles is entrusted to an optical counter which detects and classifies the particles dimensionally.

Top Down View of Particle Counter



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## MASS PARTICLE ESTIMATION

- By associating a density to each class of particles, the instrument can estimate the mass providing the data of PM 10 and PM 2.5
- Since the nature of the particles can be different for the same size, the calculation of the mass depends on the composition of the particles which can vary according to their origin; this can have punctual variations, more rare or slow seasonal variations
- The tool allows you to set correction values for the PMx value in order to correct the particle / mass conversion quickly and easily

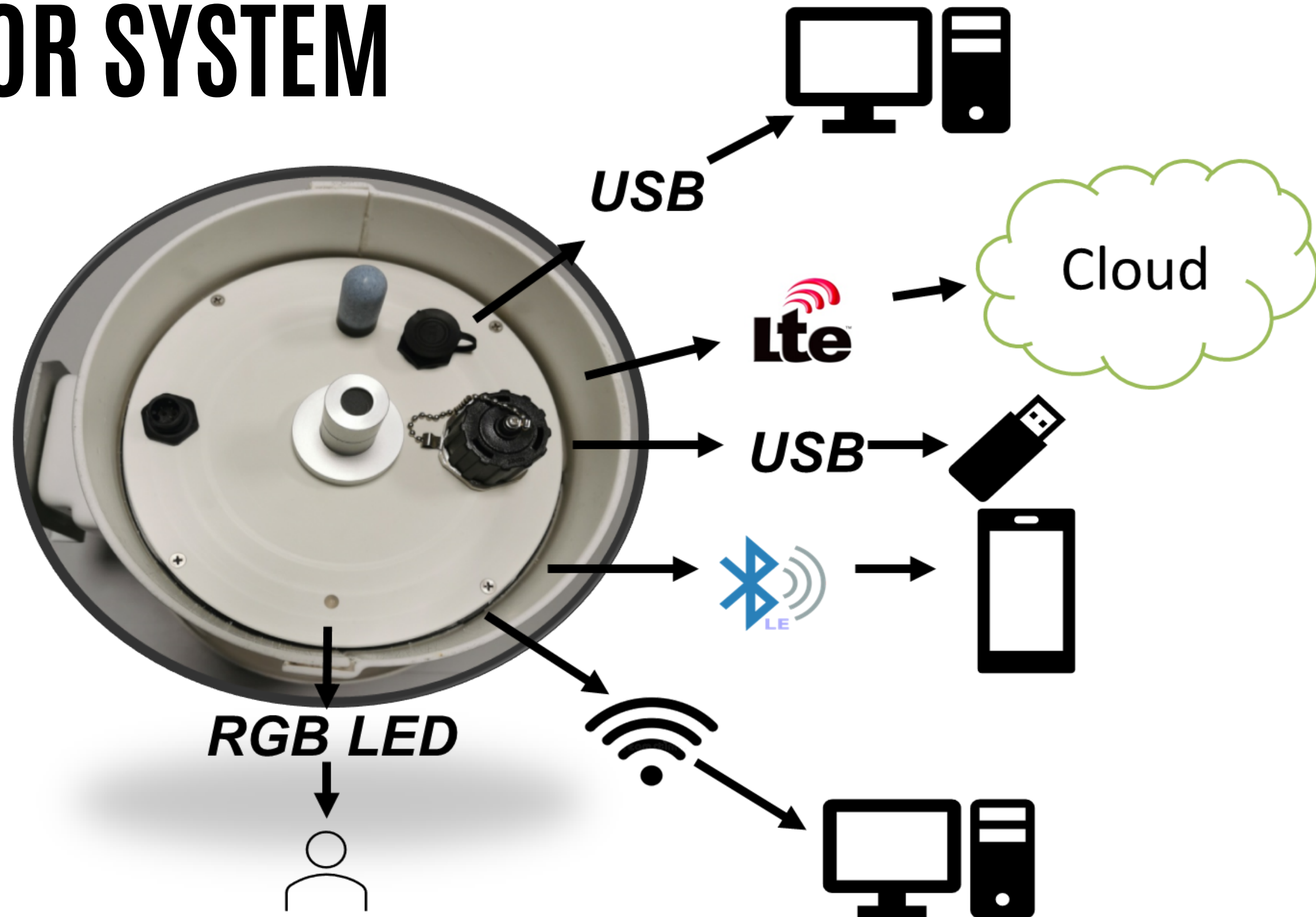
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## TECHNICAL FEATURES

- Operating flow: 1 cfm (2,831 l / min)
- Number of channels: 30
- Size range: 0.3-10  $\mu\text{m}$
- Counting efficiency: 50% @ 0.3  $\mu\text{m}$ ; 100% > 0.45 according to JIS B9921 and ISO 21051-4
- Zero count <1 per minute
- Coincidence error: 10% @ 15000000 particles /  $\text{ft}^3$
- Measuring range: 0-20000  $\mu\text{g} / \text{m}^3$
- Calibration: according to ISO 21501-4 (recommended annually)
- Light source: long life laser diode
- Sampling period: 10s-99h
- Storage:> 1 year of data every minute (continuous sampling)

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## CONNECTIVITY





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## POWER SUPPLY

- 110 / 220V external mains power supply



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## CONCLUSIONS

- The OPTracer is a quality optical instrument, compliant with the reference standards for optical particle counters
- The technology used for this instrument allows to have a reliable sensor network distributed throughout the territory and easy to manage
- The OPTracer is equipped with all the most modern interfaces to enable simple and reliable use
- This tool, inserted in a network with certified reference systems, can allow a more complete monitoring without the complexity and burden of traditional systems

