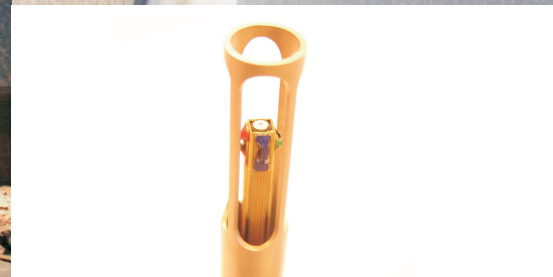


# Sound Ranging Artillery Localisation System



## Application Leaflet

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# Sound Ranging Artillery Localisation System

Microflown's **Sound Ranging Artillery Localisation System** is a passive system using acoustic signals to detect blasts from artillery such as mortars, main tank guns and howitzers. The system is modular, comprising a small acoustic vector sensor (AVS), a processing unit and a visual display unit. The system can be stand-alone or networked with other detection systems.

A microphone based system measures the time of arrival difference between sensors. With three microphones an angle can be derived *if* their spacing is known. More arrays are required to estimate the range, and the location of all the microphones must be accurately known.

With Microflown's **Sound Ranging Artillery Localisation System** the bearing and range can be determined with just two AVS and without prior knowledge of the distance between the AVS. It can therefore be used on a vehicle convoy or a section of soldiers for example. The first AVS determines the bearing of a blast and triggers the second system. Once the second AVS measures the blast too, out of the time difference the distance between the two AVS is derived. The range is determined by the two bearings of the AVS systems and the AVS spacing.

**Example.** A blast will generate a sound wave that propagates with the speed of sound. Vehicle A of the convoy will detect the wave and a short time later Vehicle B will as well. Because Vehicle A has an AVS, it determines the direction and the elevation of the blast. This direction is transmitted directly to the other vehicles. At the moment of Vehicle A's detection, Vehicle D starts measuring the time until it too detects the blast. As it is also carrying an AVS it measures the direction of the blast and transmits this angle to the other vehicles. Now two angles are known and also the time difference of the detection. From the time difference the distance between the individual vehicle's AVS is known. This distance, together with the two AVS directions, means the distance to the blast can be derived. Thus, the direction and distance of the enemy artillery can be found using just two small AVS, and without the need to know the distance between the AVS.



## Application features

- ✓ Passive system (hard to detect)
- ✓ Can detect wide range of artillery
- ✓ Small footprint
- ✓ Ground, building, vehicle, or soldier mounted
- ✓ Fast response time (<5ms)
- ✓ 360 degree field of view
- ✓ Not affected by background/engine noise
- ✓ Bearing and range
- ✓ Stand-alone: bearing
- ✓ Networked: bearing and range

