



ULTRASONIC ANEMOMETER UFM20

The UFM20 ultrasonic anemometer has been designed and developed by TUNNELVISTA specifically for the monitoring of the air velocity and direction in road tunnels. However, the reliability, precision and easiness of installation permit to use this device in other interesting applications as outlined above.

The two values obtained from the measuring system (velocity and direction) are useful to detect dangerous conditions and to conveniently inform the tunnel venting control system so that it can act in the best way to clean the air and to save power as well.



The UFM20 is made of:

- 2 ultrasonic elements (transducers) that transmit and receive ultrasonic signals
- 1 microprocessor control panel and elaboration unit

The two transducers have to be installed on the opposite sides of the tunnel forming a fixed angle between their working path and the tunnel direction. The working principle is based on the transit time of the ultrasonic sound to cover the distance between the two transducers. The transit time going from transducer A to transducer B is compared with the one from B to A. The two transit times are influenced by the velocity and direction of the air flowing in the tunnel. This monitoring system results precise and reliable for a long time.

The use of the Ultrasonic barrier technology has many advantages:

- determination of the mean value of the air velocity and direction in all the section of the tunnel
- immunity to dust, humidity and various types of dirt present in road tunnels
- no contact measuring: the element where the ultrasonic sound is flowing through is the air
- easy and uncritical installation: the ultrasonic elements must simply be oriented at each other
- cheap maintenance: the system requires an easy and cheap programmed maintenance that depends on the physical characteristics of the environment where it is installed
- long life: the system will work well for a long time because it doesn't have any moving parts inside of it

The UFM20 has several outputs: analog 0–5V and 4–20mA proportional to the air velocity, digital for the indication of the air direction 0–1 (+5V), digital RS232/RS485 for data transferring to a PC.



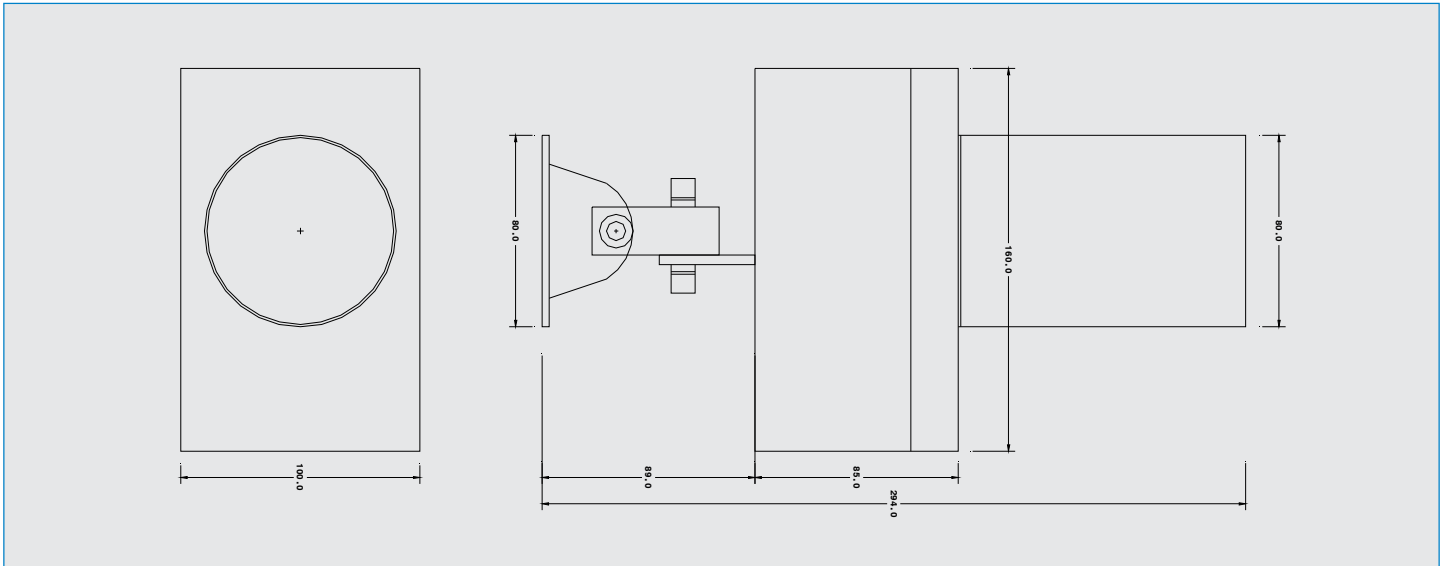
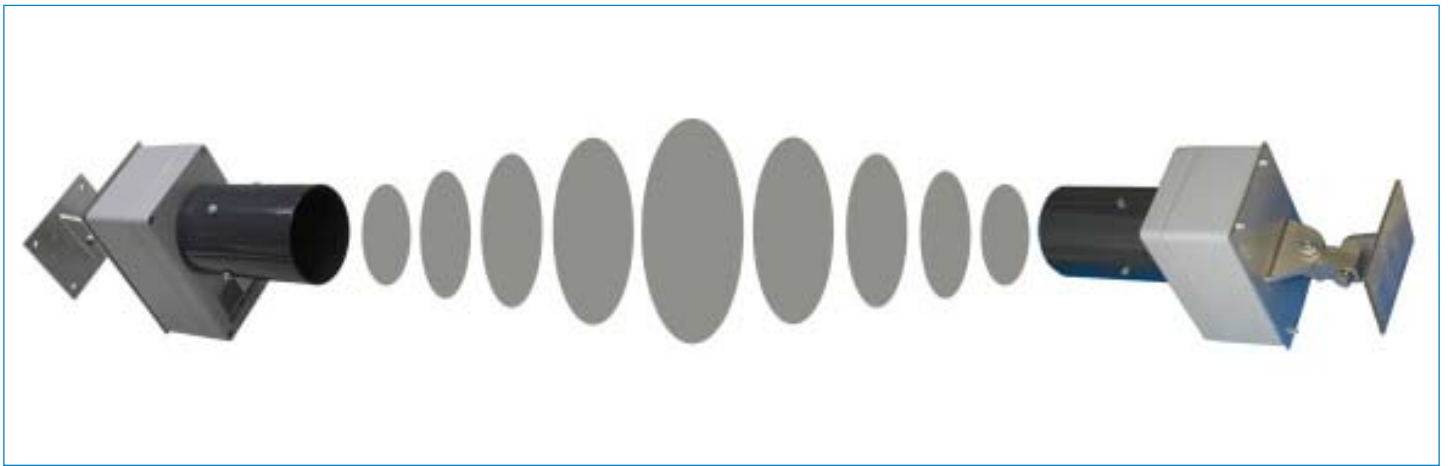
APPLICATIONS

Detection of air flow speed and direction in the following environments:

- road and rail tunnels
- tunnel's escape ways and bypasses
- venting pipes
- exhaust gases extraction pipes
- industrial installations

FEATURES

- no moving mechanical parts
- no need of spare parts
- ultrasonic "barrier" technology
- no contact measuring
- no need of maintenance – operational check once per year
- LCD display for viewable measurement and setup
- analog and digital outputs
- easy and quick installation
- long life



TECHNICAL DATA

- power supply : 220 Vac
- power consumption: 120 mA
- measuring principle: difference between ultrasonic transit times
- measuring range:- 20 / +20 m/s
- resolution: 0,1 m/s
- accuracy: +/- 2% on full measuring range
- ultrasonic path: 0-20 m
- analog voltage output: 0-5 V
- analog current output: 4-20 mA
- relay output for digital air direction
- digital output for PC interface: RS232/RS485
- alarm output for high temperature (+60°C) – optional
- working environment temperature: -20 +55 °C
- max distance between the transducers and the control unit: 200 m.
- protection index: IP65
- built according to the standards: DIN EN ISO 9001-2008 and CE directives 2004/108 and 2006/95

INSTALLATION EXAMPLE

