



Infrared Dual Beam Long Path – OPACITY METER REDLINE 250

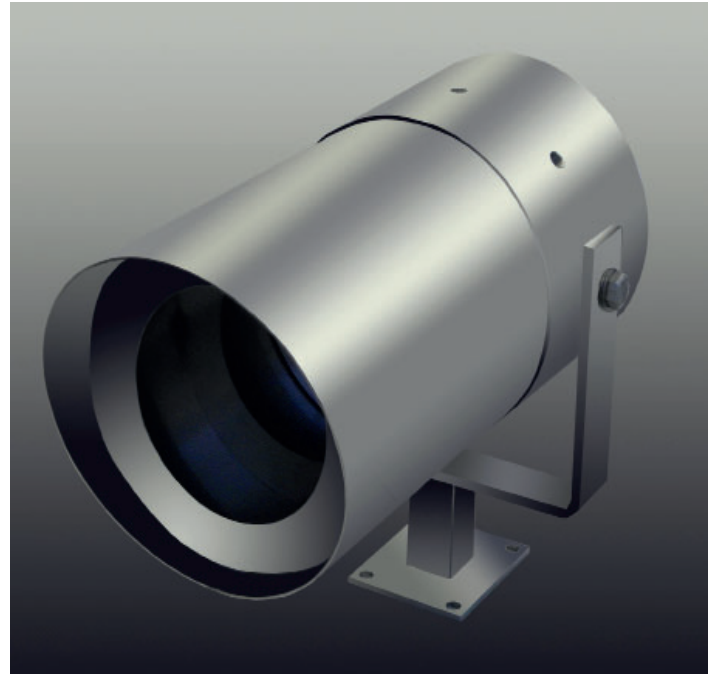
TECHNICAL INFORMATION

Advantages

- long optical path: 250m
- infrared dual beam technology
- microcontroller management
- analog and relays output
- RS232 or RS485 serial port
- low power consumption
- long life
- easy installing
- easy use
- low cost maintenance

Applications

- road tunnels
- underground tunnels
- rail tunnels
- fog and vapour detection
- air quality monitoring
- industrial pollution monitoring



Redline250 is an optical–electronic device that has its main application in road tunnel's modern venting and safety systems. Redline250 Opacimeter is designed for the optical surveillance of long paths of tunnel.

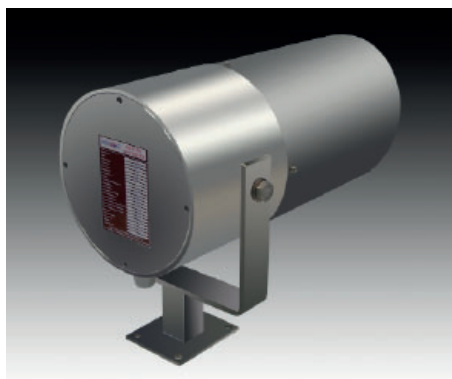
In detail the Red Line continuously monitors the air transparency level on a tunnel path long up to 250 m. It is possible to control several kilometers long tunnels by installing many Red Line devices on various paths along the tunnel.

Any variation in the air transparency, and so any rise of the air opacity, are quickly detected by the Red Line and converted in analog and digital output.

The tunnel air transparency level (or its inverse opacity) measuring is very important to conveniently drive the air venting system command and to monitor the air quality (together with the sensors for other parameters).

In fact the device analog or digital output it's directly proportional to the air opacity level and so its value can be transferred directly to the air venting system speed control allowing to save a lot of electrical power and to maintain the tunnel air as clean as possible from dust smoke and toxic gases.

The Red Line is made of a couple of elements: the transmitter and the receiver. It is equipper with a Laser pointer for a perfect TX–RX optical alignment.



The two devices normally have to be installed on higher part of a side wall of the tunnel or directly on the tunnel ceiling by using the sound steel fixing stirrups enclosed with the Red Line.

The trasmitter emits a powerful infrared dual beam beam, that has a power level in accordance with the safety norms, to the receiver's direction.

The receiver converts the received radiation in an electrical signal proportional to the radiation level.

Redline250 is designed for a long life of use (over 10 years).

Redline250 can be mounted with optional dust protection elements so that it can be also installed in dustful and dirty environments.

This device can also be equipped with an optional internal data storing system able to record events through a preset period of time or with a adjustable storing delay.

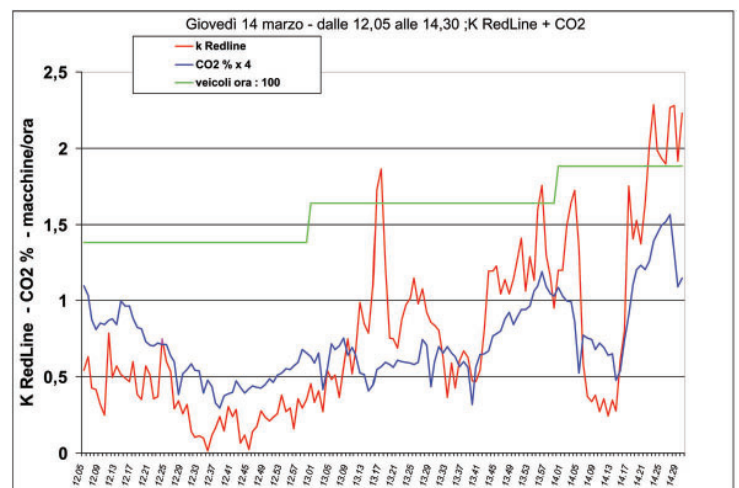
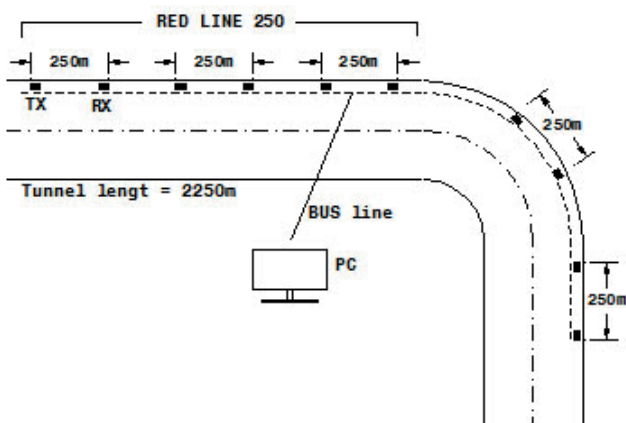
Then the obtained data can be downloaded on a PC to be analyzed and converted in graphs very useful in terms of evaluating the environment's air quality through time (for example the graphs and data can reveal the traffic flow in the consi-

Typical installation in tunnel road



Installation example in tunnel road

Output signal graph example



TECHNICAL DATA

- power supply: 12 – 24 V dc
- power consumption: 10W max
- transmitter current: 15 mA (110ma with heating resistors ON)
- receiver current: 150 mA (250ma with heating resistors ON)
- optical path: 250 m. max
- infrared dual beam technology
- measuring range: $K = 0 - 15 \cdot 10^{-3} \cdot m^{-1}$
- precision: 1%
- measuring principle: optical signal attenuation (transmissiometry)
- suggested installation height: 4 – 4,5m
- temperature range: $-25 + 55^{\circ}C$
- humidity range: 15–95 %RH
- analog output signals: 0–10V 5–0V 4–20mA
- Laser pointer for a perfect TX–RX alignment
- microprocessor control
- optical window thermostatic control
- internal level signal analog meter
- RS232 or RS485 serial port
- prealarm output relay: 1A/24Vcc
- alarm output relay: 1A/24Vcc
- fault output relay: 1A/24Vcc
- OC – Open Collector prealarm output: NPN – 50mA
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- OC – Open Collector fault output: NPN – 50mA
- optional: event data memory – 8000 points with programmable time delay
- enclosure: Aluminum alloy
- protection index: IP66 rated – IP69K in all directions but not frontal in the optical windows direction
- dimensions: $\varnothing 230 \times 200 \text{mm} - \varnothing 220 \times 500 \text{mm}$ (with dust seal tube)
- weight: 9,5 Kg + 9,5 Kg (TX + RX)