



OPACITY METER

REDLINE20

TECHNICAL INFORMATION

Advantages

- optical path: 10-25m (reflective)
- microcontroller management
- analog signal output
- 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



The Red Line 20 is made of three elements: the optical sensor (transmitter/receiver TX+RX, the optical reflector and the control panel. It is equipped with a Laser Pointer for perfect detector / reflector optical alignment.

The Red Line 20 is an optical-electronic device that has its main application in road tunnels modern ventilation and safety systems.

The Red Line 20 Opacimeter is designed for the optical surveillance of tunnel air transparency.

In detail the Red Line 20 continuously monitors the air transparency level on a tunnel.

It is possible to control several kilometers long tunnels by installing many Red Line devices along the tunnel. Any variation in the air transparency, and so any rise of the air opacity, are quickly detected by the Red Line 20 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 ventilation system command and to monitor the air quality (together with the sensors for other parameters).

In fact the device analog or digital output is directly proportional to the air opacity level and so its value can be transferred directly to the air ventilation 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 optical sensor TX+RX device normally has to be installed on higher part of a side wall of the tunnel or directly on the tunnel ceiling by using the robust steel fixing brackets enclosed with the Red Line 20.

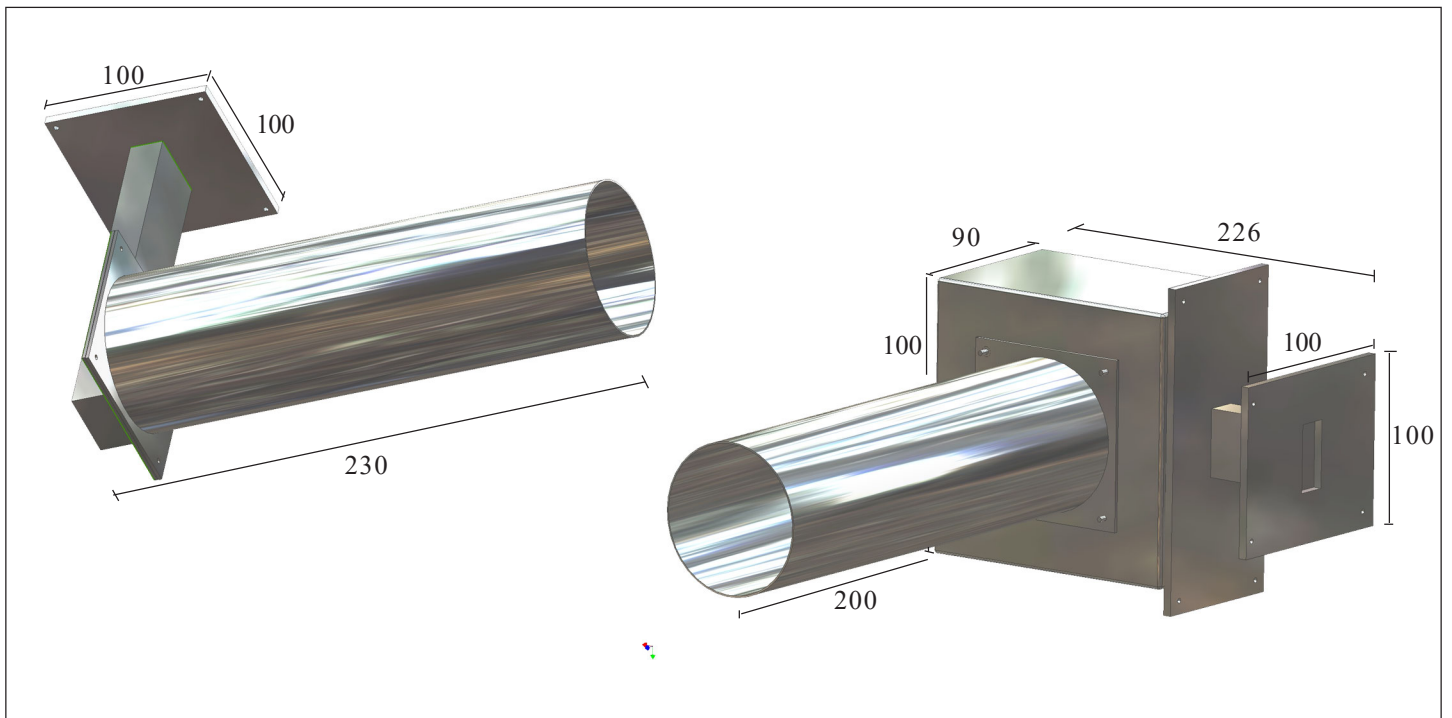
The transmitter emits a powerful infrared beam, that has a power level in accordance with the safety norms, to the receiver direction.

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

The Red Line 20 is equipped with special algorithms that make the unit immune to light variations and perturbations in the environment, also has elements of protection to dust so that it can also be installed in dusty and dirty environments.

The Red Line 20 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 air quality through time (for example the graphs and data can reveal the traffic flow in the considered period of time).



CONTROL PANEL

Control Panel - Electrical Data

- power supply: 230 Vac (+/-10%)
- power consumption: 10W
- LCD display
- output analog signals: 5-0V...4-20mA
- response time: 5 sec
- digital output for PC interface: RS485 serial port
- temperature range: -25 +55°C
- humidity range: 15-95 %RH
- Clear output relay (maintenance request): 1A/24Vcc
- Alarm output relay: 1A/24Vcc
- Fault output relay: 1A/24Vcc
- optional: event data memory - 8000 points with programmable time delay



Mechanical Data

- enclosure: antishock plastic material
- transparent cover for indications viewing
- protection index : IP54
- dimension : 185x180x85 mm
- weight : 1 Kg

OPTICAL SENSOR

Optical sensor - Electrical Data

- power supply: 11-15Vdc
- protection against reverse polarity
- optical path: 10-25 m. max.
- microprocessor control
- Laser Pointer for perfect detector / reflector optical alignment
- measuring range: $K = 0 - 15 \cdot 10^{-3} \cdot m^{-1}$
- precision: 1%
- measuring principle: transmissiometry - optical signal attenuation of infrared beam
- suggested installation height: 4 - 4,5m
- temperature range: -25 +55°C
- humidity range: 15-95 %RH
- heated optical window

Mechanical Data

- enclosure: stainless steel AISI 316L
- protection index: IP69K in all directions but not frontal in the optical windows direction
- sensor dimensions: 300x160x100 mm
- reflector dimensions: 300x160x100 mm
- weight: 9,5 Kg + 9,5 Kg (TX + RX)