



FLOWSIC200

The tunnel flow velocity measuring device for long-term operation

GAS FLOW MEASURING INSTRUMENTS

SICK
Sensor Intelligence.

Advantages



Reliable tunnel ventilation - even in the event of fire

The FLOWSIC200 reliably and accurately measures the air flow in road or train tunnels. Using the FLOWSIC200, ventilation systems in tunnels are controlled and sufficient aeration and ventilation of the tunnel is ensured over the long term. Thanks to the FLOWSIC200's rugged ultrasonic technology, differences in density and temperature fluctuations in the tunnel air do not influence the measurement result. This means that the measuring function of the FLOWSIC200 remains intact if the dynamics of the flow completely change within a short time as a consequence of a tunnel fire. The function proved to be without constraints during fire testing with the Forschungsgesellschaft für Verbrennungskraftmaschinen und Thermodynamik mbH (FVT mbH) Austria.

Air flow velocity monitoring in road and rail tunnels is a key component of ventilation technology in tunnel systems. Measurement of the air flow is subject to strict requirements. The measuring technology used must reliably and accurately measure the flow in the tunnel cross section, even when there is varying traffic volume. In order to avoid traffic interruptions, maintenance work on the measuring device must be kept to a minimum.

Measuring conditions completely change in the event of a fire in the tunnel. A large amount of thick smoke can develop in a short time. The gas composition changes significantly. The temperature increases very quickly at the site of the fire. The overall thermodynamic situation leads to a considerable change in the flow dynamics at the fire source. The FLOWSIC200 also works reliably under these extreme conditions - transmission of the acoustic signal is ensured at all times due to the integrated automatic signal amplification.

Rugged, reliable, powerful.



Tunnel installations such as fans or illumination do not affect the measurement result.



Functional testing in tunnel fire assessments of the Klaus tunnel system on the A9 highway in Upper Austria.



Exceptional performance and durability even under demanding measurement conditions characterize the FLOWSIC200.



FLWSIC200 M



FLWSIC200 H-M



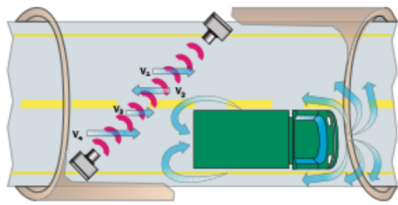
FLWSIC200 H

THE TUNNEL FLOW MEASURING DEVICE FOR LONG-TERM OPERATION

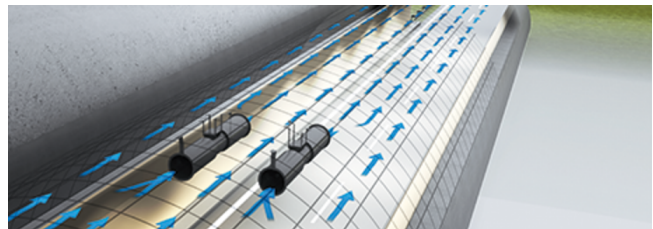
The FLOWSIC200 consists of the ultrasonic sensors and the MCU control unit. SICK offers the device in 3 versions for tunnel widths of up to 35 m. Thanks to rugged stainless steel or aluminum die-cast components, the FLOWSIC200 has a clear advantage in the event of a fire compared to conventional measuring technology made from plastic.

The MCU control unit is used to input and output signals and permits simple connection of the FLOWSIC200 to higher-level distributed control systems. Different interfaces are available for this which can be optionally expanded if necessary. An periodic control cycle checks the device function completely automatically, while the integrated self-diagnosis continuously monitors all important function parameters.

Compact and intuitive.



Principle of operation of the FLOWSIC200



Reliable signal transmission thanks to fully-automatic gain control



LOW OPERATING COSTS DUE TO RELIABLE OPERATION AND MAINTENANCE INTERVALS OF UP TO 5 YEARS.



Technical data overview

Measurement principle		Ultrasonic transit time difference measurement
Conformities		RABT 2006 ASTRA "Guideline - Ventilation of Road Tunnels" (2008) RVS 09.02.22
Enclosure rating		Sender/receiver units: IP66 MCU control unit: IP65
USB		✓
	Function	Connection to SOPAS ET software
Serial		✓
	Type of fieldbus integration	RS-232 RS-485
	Function	Connection to SOPAS ET software Internal system bus
Modbus		✓
	Remark	Option
	Type of fieldbus integration	RTU RS-485
Ethernet		✓
	Remark	Option
PROFIBUS DP		✓
	Remark	Option
HART		✓
	Remark	Option
Diagnostics functions		Internal zero and reference point check

Product description

The FLOWIC200 is used for the contact-free and accurate measurement of flow velocity and flow direction inside tunnels or exhaust ventilation ducts. Ultrasonic technology provides the cross-sectional mean average value of the flow velocity. This device is used for measurement necessary for optimal ventilation control and reducing running costs to a minimum when air flow is dictated by climatic conditions or by traffic.

In case of fires in tunnels the accurate, reliable and representative measurement of air velocity and direction across the tunnel is mandatory. This is the only way to check reliably the smoke propagation and to achieve the necessary information for optimal control of the ventilation system.

At a glance

- Very large measuring distances possible
- Non-contact measurement
- Extremely rugged components made of titanium, stainless steel, or die cast
- Versions for very corrosive tunnel atmospheres
- Determination of flow direction
- No mechanical moving parts

Your benefits

- Representative measurement across total tunnel width
- Very reliable measurement, compared with punctual measurement methods
- Accurate measurement even of very low flow velocities
- Long maintenance intervals of up to 5 years
- Low operating costs due to reliable operation and low maintenance
- High availability of devices and, therefore, of measurement data also

Fields of application

- Measurement in road and railway tunnels
- For control of tunnel ventilation
- For detection of smoke propagation

Ordering information

Other models and accessories → www.sick.com/FLWSIC200

- **Product segment:** Tunnel Sensors, Traffic sensors
- **Product family group:** Gas flow measuring instruments, Tunnel Sensors
- **Product family:** FLWSIC200
- **Measurement principle:** Ultrasonic transit time difference measurement

Conformities	Communication interface	Communication Interface detail	Enclosure rating	Type	Part no.
RABT 2006 ASTRA "Guideline - Ventilation of Road Tunnels" (2008) RVS 09.02.22	USB Serial Serial Modbus Ethernet PROFIBUS DP HART	RS-232 RS-485 RTU RS-485	IP66, IP65	FLWSIC200	On request

SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is “Sensor Intelligence.”

WORLDWIDE PRESENCE:

Contacts and other locations –www.sick.com