



VICOTEC450 EXTRACTIVE VISIBILITY MEASURING DEVICES

EXTRACTIVE VISIBILITY MEASUREMENT FOR
INCREASED SAFETY IN TUNNELS

Tunnel sensors

SICK
Sensor Intelligence.

EXTRACTIVE VISIBILITY MEASUREMENT FOR INCREASED SAFETY IN TUNNELS

Continuously monitoring the quality of the air in tunnels is an essential factor in ensuring road safety. SICK provides solutions that detect even the smallest concentrations of particles and measure visibility extremely reliably in foggy conditions. These measured values allow for effective and cost-efficient control of ventilation in tunnels.

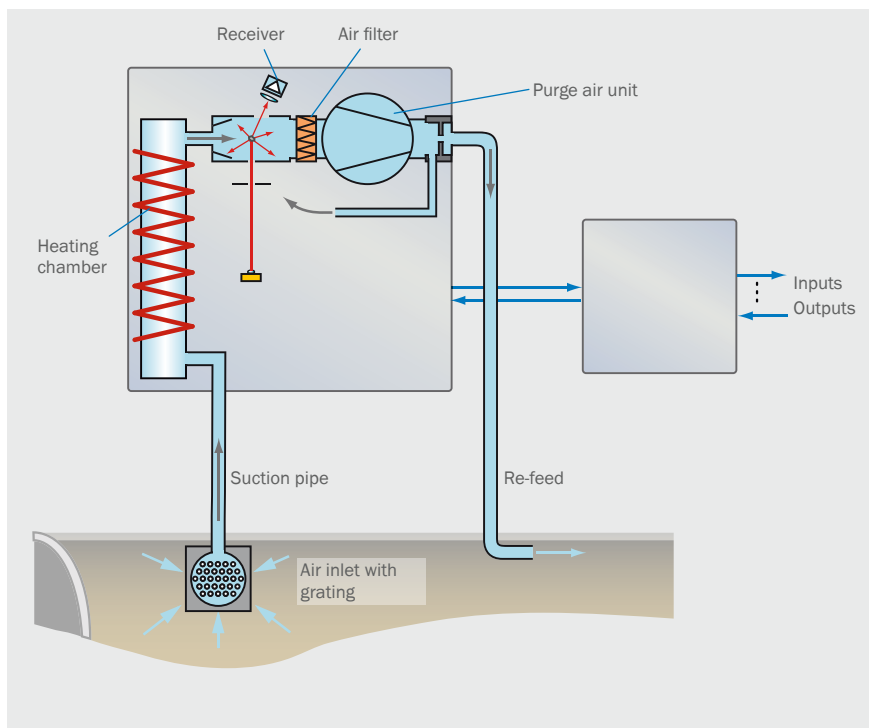
Extractive visibility measurement

The VICOTEC450 visibility measuring devices can be installed away from the driving space, meaning they can even be accessed during operation. The VICOTEC450 is extremely rugged and resistant to external influences, such as fog, contamination, and small animals. The measured values are used to control ventilation in tunnels precisely and reliably.

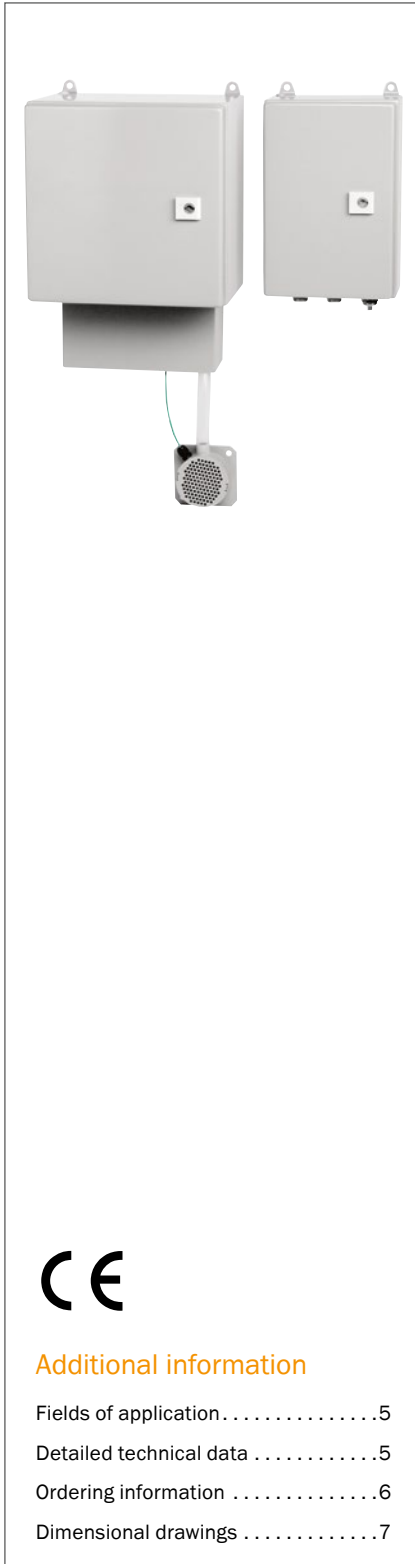


Principle of operation

The VICOTEC450 sucks air from the driving space in the tunnel, heats it up, and then determines the visibility using a scattered light measurement system, which can reliably detect even the smallest volumes of dust particles.



EXTRACTIVE MONITORING FOR VISIBILITY FOR INCREASED SAFETY IN TUNNELS



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Product description

The VICOTEC450 provides an optimal solution for visibility measurement if fixtures in the tunnel tube are not permitted or not possible due to lack of space. Fog should not be included in the visibility measurement. The VICOTEC450 draws air from inside the tunnel, heats it above the dew point and determines accurately the visibility by using scattered light technology. Regularly and automatically it carries out a functional test including

the function of the laser and receiver as well as the contamination of the optical surfaces. Maintenance requirements for cleaning and filter exchange are automatically registered and signalled in time by the VICOTEC450 due to contamination check and measurement of the air flow rate (optional).

At a glance

- Functional tests with contamination measurement
- Manual linearity test with filter set possible
- Internal purge air for increased intervals between cleaning
- Maintenance signal (filter and cleaning)
- Logbook function
- Extendable with various interfaces or I/O modules (e.g. PROFIBUS, Ethernet, analog module etc.)

Your benefits

- Very reliable operation due to full self-test
- Cost saving and fast commissioning (compact system, no optical alignment on site required)
- Flexible electrical integration due to optional interfaces and I/O modules

→ www.mysick.com/en/VICOTEC450

For more information, just enter the link and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.

Fields of application

- Visibility monitoring in tunnels for ventilation control
- Smoke detection in tunnels

Detailed technical data

The exact device specifications and performance data of the product may deviate from the information provided here, and depend on the application in which the product is being used and the relevant customer specifications.

VICOTEC450 system

Measured values	Visibility (K-value)
Maximum number of measurands	1
Measurement principles	Scattered light forward
Spectral range	640 nm ... 660 nm Laser, protection class 2, power < 1 mW
Gas flow rate	30 l/min ... 35 l/min
Measuring ranges	K-value Temperature
	0 ... 15 /km / 0 ... 5,000 /km -50 ... +250 °C Limit value for smoke detection: 15/km
Response time	0 s ... 600 s Freely adjustable; without measuring delay due to suction line
Accuracy	Temperature: ± +2 °C
Resolution	Visibility (K-value): 0.1 /km
Repeatability	Visibility (K-value): ± 2 % of measuring range full scale
Ambient temperature	-30 °C ... +55 °C
Storage temperature	-40 °C ... +60 °C
Electrical safety	CE
Enclosure rating	IP 66
Dimensions (W x H x D)	300 mm x 340 mm x 215 mm (for details see dimensional drawings)
Weight	12 kg
Power supply	Voltage Frequency Power consumption
	90 ... 250 V 50 Hz / 60 Hz ≤ 35 W
Test functions	Automatic self-test Contamination limits: at 30% warning, at 50% failure Manual linearity check with reference filter
Options	Temperature measurement

MCU control unit

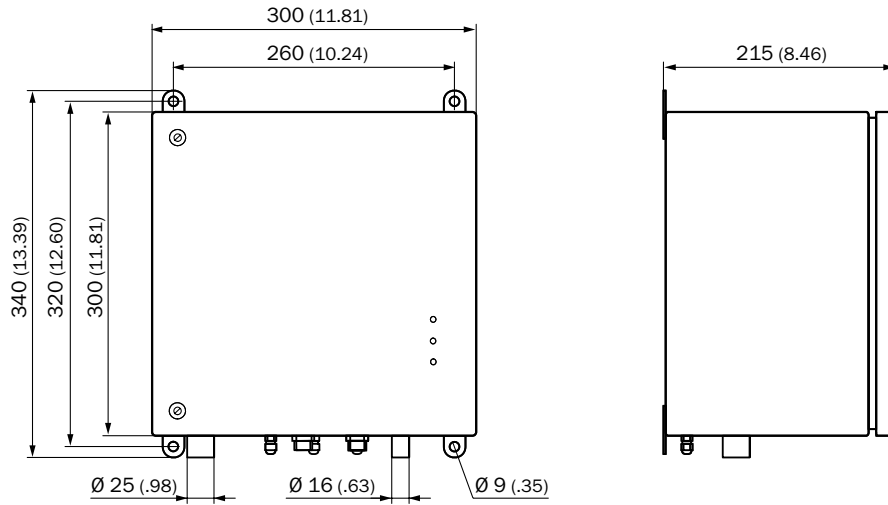
Description	Unit to control the system components and to evaluate and output the data provided by them						
Enclosure rating	IP 66						
Analog outputs	1 output: 0/2/4 ... 20 mA, 750 Ω Electrically isolated; additional outputs if using I/O modules (option)						
Analog inputs	2 inputs: 0 ... 20 mA Not electrically isolated; additional inputs if using I/O modules (option)						
Digital outputs	5 relay contacts: 48 V AC, 1 A Potential-free; for status signals; extendible by additional I/O modules						
Digital inputs	4 potential-free contacts: Additional inputs if using I/O modules						
Interfaces	USB (service interface) RS-232 (service interface) RS-485 Interface module (option)						
Indication	LC display Status LEDs: "Power", "Maintenance" and "Failure"						
Operation	Via LC-display or software SOPAS ET						
Dimensions (W x H x D)	210 mm x 340 mm x 125 mm						
Weight	≤ 5 kg						
Power supply	<table border="0"> <tr> <td style="padding-right: 20px;">Voltage</td> <td>90 ... 250 V AC</td> </tr> <tr> <td style="padding-right: 20px;">Frequency</td> <td>50 Hz / 60 Hz</td> </tr> <tr> <td style="padding-right: 20px;">Power consumption</td> <td>≤ 50 W</td> </tr> </table>	Voltage	90 ... 250 V AC	Frequency	50 Hz / 60 Hz	Power consumption	≤ 50 W
Voltage	90 ... 250 V AC						
Frequency	50 Hz / 60 Hz						
Power consumption	≤ 50 W						
Options	Interface module(s) I/O module(s)						

Ordering information

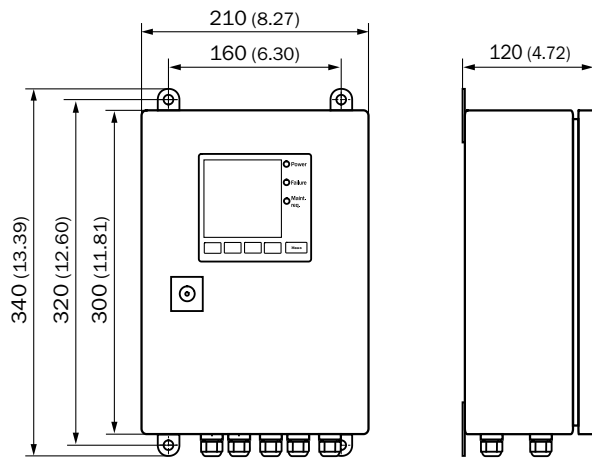
Our regional sales organization will help you to select the optimum device configuration.

Dimensional drawings (Dimensions in mm (inch))

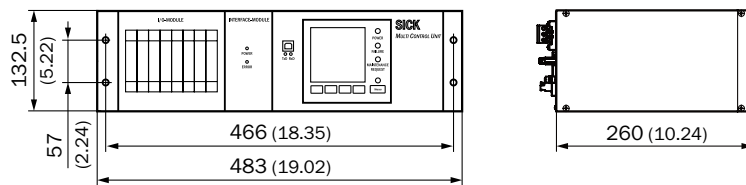
VICOTEC450 measuring unit



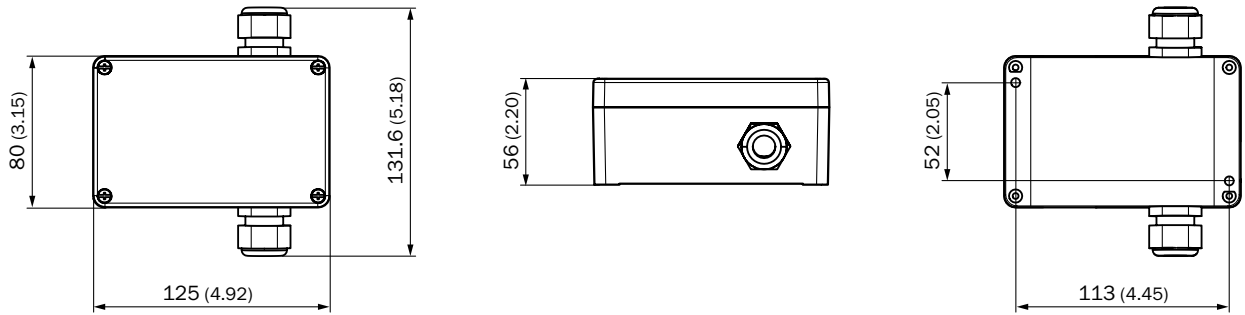
MCU-N control unit; wall-mounting enclosure, compact version (for non-hazardous areas only)



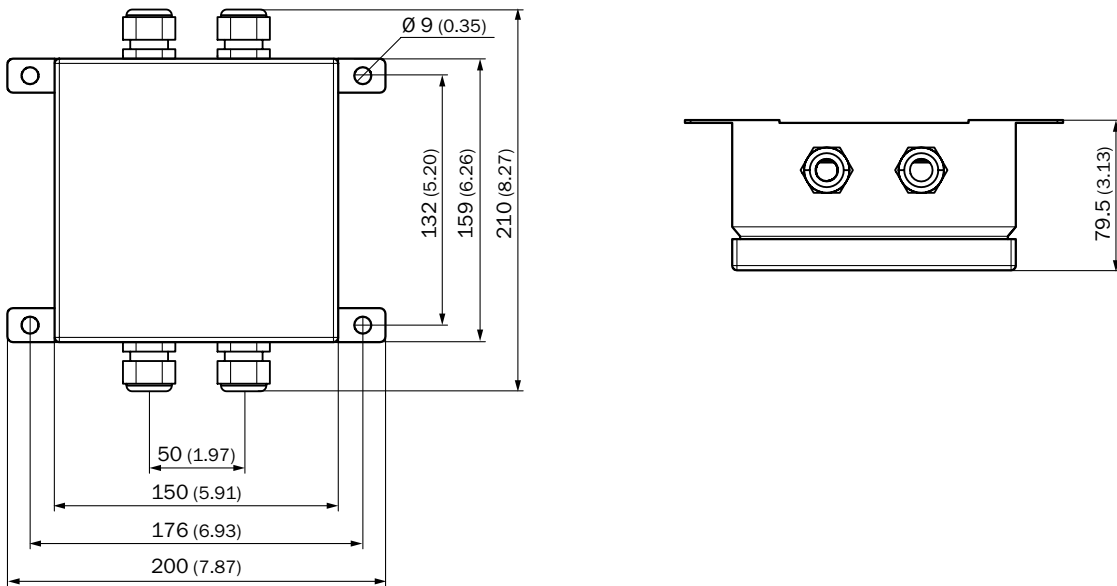
MCUP control unit; 19"-rack enclosure (for non-hazardous areas only)



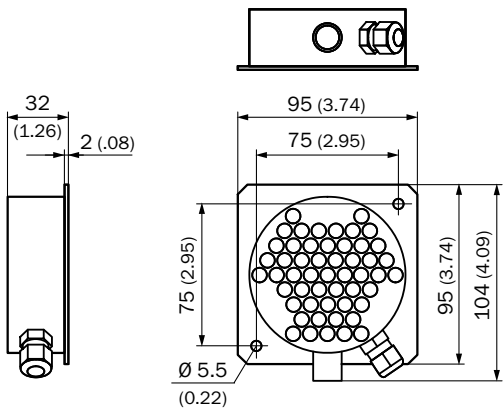
Connection unit; standard version



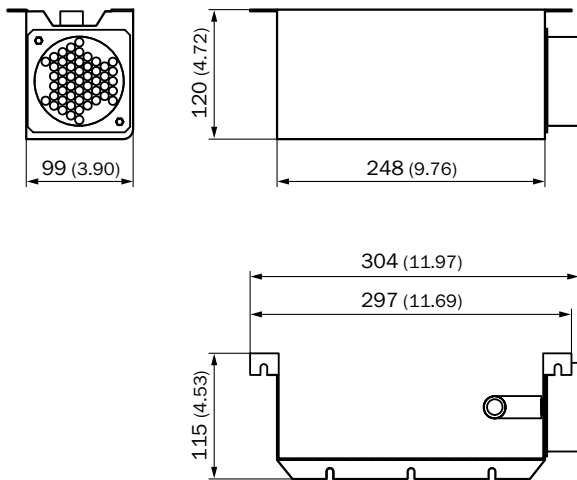
Connection unit; stainless steel version



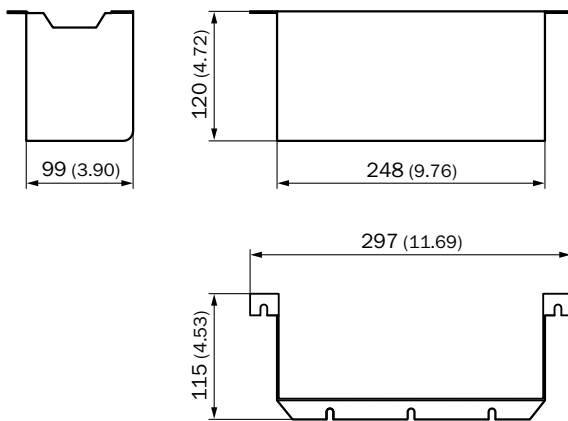
Air inlet with protective grating for wall mounting



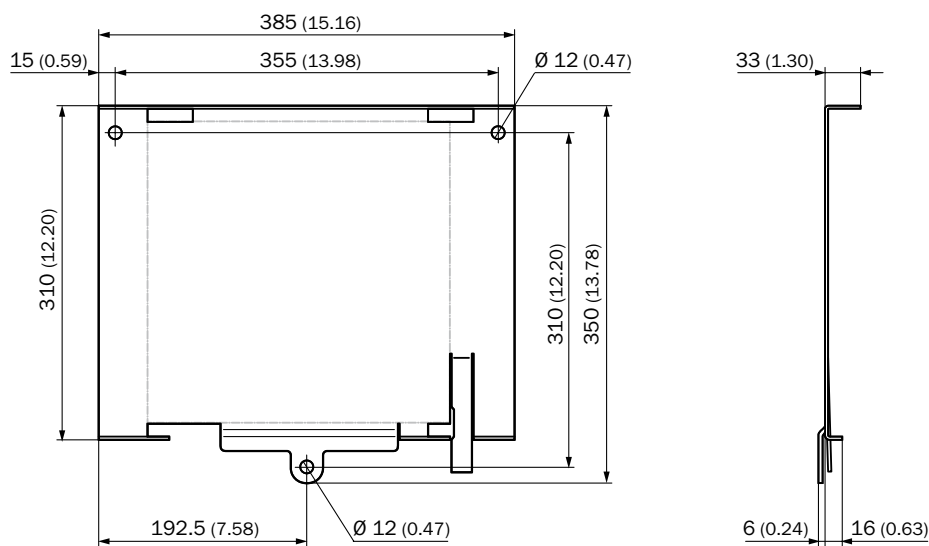
Cover for connections; with air inlet at the side



Cover for connections

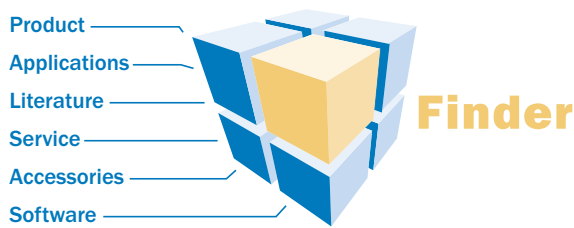


Mounting plate



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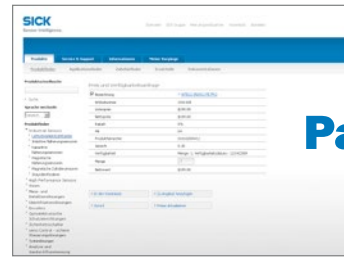
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SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for industrial applications. With more than 6,500 employees and over 50 subsidiaries and equity investments as well as numerous representative offices worldwide, we are always close to our customers. 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 various 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.

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Detailed addresses and additional representatives → www.sick.com