



FWE200DH – EXTRACTIVE SCATTERED LIGHT DUST MEASURING DEVICE

RELIABLE DUST MEASUREMENT IN WET GASES

Dust measuring devices

SICK
Sensor Intelligence.

RELIABLE DUST MEASUREMENT IN WET GASES

Particle measurement in a very wide range of application areas – from very small to average dust concentrations

Since drop formation interferes with the measurement of dust concentrations, measuring in wet exhaust gases, for example downstream from a flue gas desulfurization system, can be difficult. The Extractive Dust Measuring System FWE200DH

measures small to medium dust concentrations accurately and very reliably. The gas is extracted via a sampling probe and heated above dew point. Any droplets in the gas are vaporized, making it impossible for them to falsify the measurement results.



Compact measuring and control unit

With a scattered light cell, an optimized thermocyclone for evaporating wet gases, an effective ejector for sample gas feeding and a comfortable control unit.

Remote control unit (option)

For measured value and status display, data retrieval and remote control



measurement probe

For sampling and return of the test gas flow

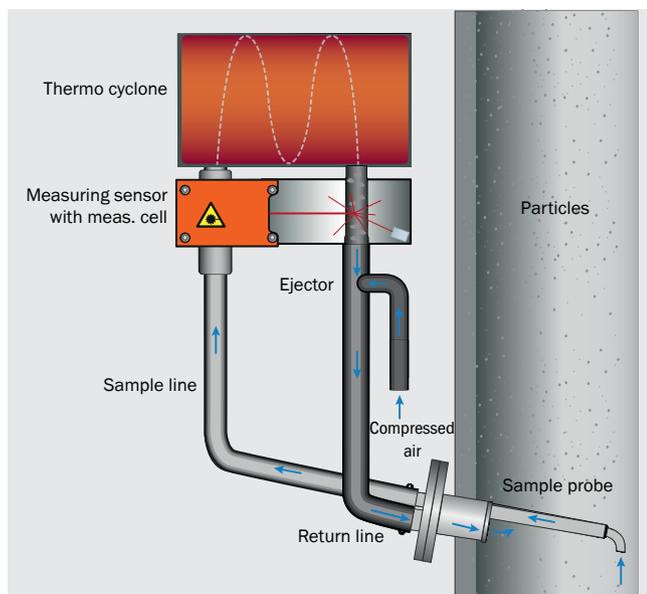


Sample and return hose

Flexible hoses in standard length of 1.2 m for the gas sampling (nominal diameter 32) and for gas return (nominal diameter 50)

Programmable blower unit

For compressed air supply of the ejector via a flexible hose (nominal diameter 25)



Principle of operation

The FWE200DH operates as a bypass system. A partial gas flow is exhausted out of the gas duct via a sample gas probe and heated up in a thermocyclone, so that water drops and aerosols vaporize. Afterwards the sample gas is fed in a measurement cell in which a laser beam illuminates the particles contained in the gas and thus generates scattered light. A sensitive receiver measures this scattered light extremely accurately. The scattered light intensity measured in this way is the basis for determining the dust concentration. Finally the sample gas is again fed back via the sample gas probe into the gas duct.

RELIABLE DUST MEASUREMENT IN WET GASES



Product description

The FWE200DH dust measuring system is designed to measure dust concentrations in wet gases. The gas is extracted via a sampling probe and heated above dew point in a thermocyclone. All of the droplets contained in the gas are condensed and are thus unable to falsify the

measurement result. The scattered light measuring principle enables even minimal dust concentrations to be measured. The FWE200DH meets the requirements of the EN 14181 and the EN15267.

At a glance

- For very low to medium dust concentrations
- Gas sampling and return combined in one probe
- Contamination check
- Automatic monitoring of zero and reference point
- Easy parameterization and convenient operation – optionally via supplemental remote unit
- Integrated system diagnostics for early detection of maintenance requirements

Your benefits

- Reliable and approved dust measurement in wet gas
- Efficient operation due to very few expendable items and very low installation requirements
- Low-maintenance thanks to the absence of moving parts coming into contact with aggressive gas
- Compact design for installation directly on the duct
- Simple commissioning directly at the measuring site due to automatic measuring range adjustment
- Very long life cycle due to compact design



Additional information

Fields of application	5
Detailed technical data	5
Ordering information	7
Dimensional drawings	7

→ www.mysick.com/en/FWE200DH

For more information, simply visit the above link to obtain direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

Fields of application

- Monitoring of wet scrubber facilities
- Measurement in saturated gas downstream of desulfurization plants
- Determination of dust concentrations in wet exhaust air

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.

FWE200DH system

Measured values	Scattered light intensity, dust concentration (after gravimetric comparison measurement)
Performance-tested measurands	Dust concentration
Measurement principles	Scattered light forward
Spectral range	640 nm ... 660 nm Laser, protection class 2, power < 1 mW
Measuring ranges	Dust concentration 0 ... 5 mg/m ³ / 0 ... 200 mg/m ³ Measuring ranges freely selectable Higher measuring ranges on request
Response time (t₉₀)	0.1 s ... 600 s Freely adjustable
Accuracy	± 2 % Of measuring range full scale
Process temperature	PVDF probe: ≤ +120 °C Hastelloy probe: ≤ +220 °C Versions for higher temperatures on request
Process pressure	With SLV7 2BH1100 purge air unit: -20 hPa ... 20 hPa
Process gas velocity	7 m/s ... 30 m/s
Process gas humidity	Max. 10 g/m ³ liquid water without water vapour
Ambient temperature	-20 °C ... +50 °C Intake temperatures for purge air: -20 °C ... +45 °C
Conformities	Approved for plants requiring approval 2001/80/EC (13. BImSchV) 2000/76/EC (17. BImSchV) 27. BImSchV TA-Luft (Prevention of Air Pollution) EN 15267 EN 14181 U.S. EPA PS-11 compliant
Electrical safety	CE
Enclosure rating	System: IP 54 Control unit: IP 65
Analog outputs	3 outputs: 0/2/4 ... 20 mA, 750 Ω Electrically isolated
Analog inputs	6 inputs: 0 ... 20 mA Not electrically isolated
Digital outputs	5 relay outputs (change-over contacts), potential-free: 48 V, 1 A
Digital inputs	8 inputs: Potential-free

Interfaces and bus protocols	Ethernet	Modbus TCP
	Ethernet	OPC (via optional interface module)
	Ethernet	SOPAS ET (via optional interface module)
	RS-485	Modbus RTU (via optional interface module)
	RS-485	PROFIBUS DP (via optional interface module)
	RS-485	SOPAS ET (via optional interface module)
	USB	SOPAS ET
	RS-232	Proprietary service interface
Indication	LC display and status LEDs on control and remote unit	
Input	Functional keys	
Operation	Menu-driven operation via control unit or software SOPAS ET	
Dimensions (W x H x D)	813 mm x 722 mm x 286 mm (FWE200DH measuring and control unit, for details see dimensional drawings)	
Weight	FWE200DH measuring and control unit: 65 kg Sampling probe: ≤ 15 kg	
Power supply	Voltage	115 V / 230 V
	Frequency	50 Hz / 60 Hz
	Power consumption	≤ 1.7 kW Without heated sample gas line
Test functions	Automatic self-test (linearity, contamination, drift, aging) Contamination limits: at 30% warning, at 40% failure Manual linearity test with reference filter	
Options	FWE200DH mounting rack	

SLV7-1 purge air unit, 2BH1100, 1-ph

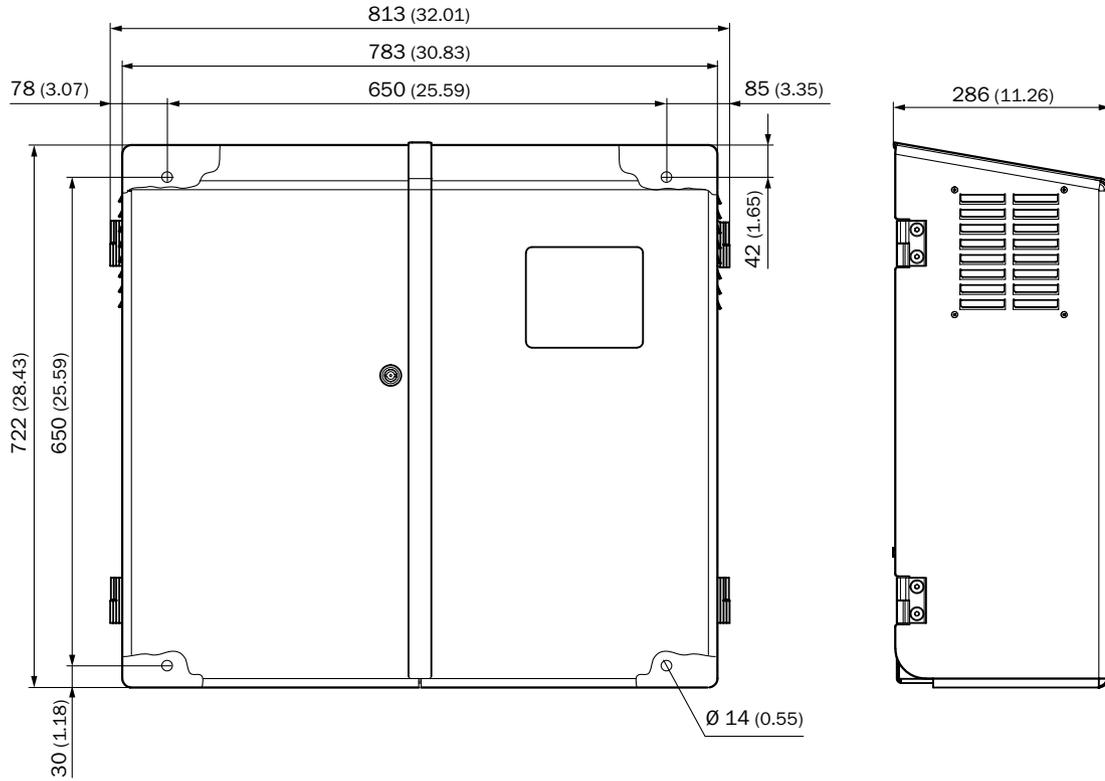
Description	Unit to provide dust-free air for flushing of optical surfaces	
Gas flow rate	30 m ³ /h ... 40 m ³ /h	
Ambient temperature	-20 °C ... +45 °C Intake temperatures for purge air	
Enclosure rating	IP 54	
Dimensions (W x H x D)	550 mm x 550 mm x 258 mm (for details see dimensional drawings)	
Weight	16 kg	
Power supply	Voltage	230 V / 115 V
	Frequency	50 Hz / 60 Hz
Auxiliary gas connections	Purge air: 40 mm	
Test functions	Pressure switch (switching point -35 hPa)	
Integrated components	2-step air filter, type Europiclone, dust capacity 200 g	

Ordering information

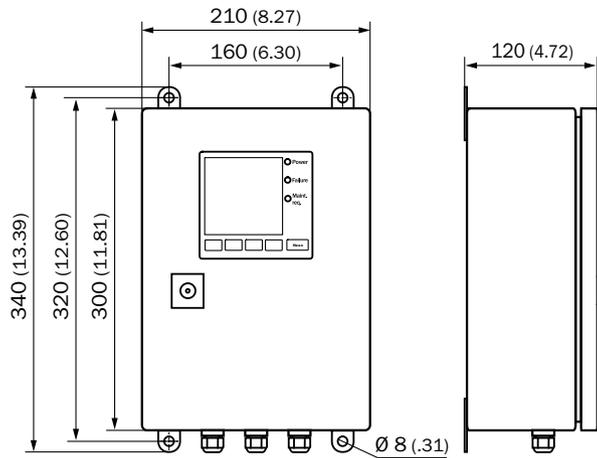
Our regional sales organization will help you to select the optimum device configuration.

Dimensional drawings (Dimensions in mm (inch))

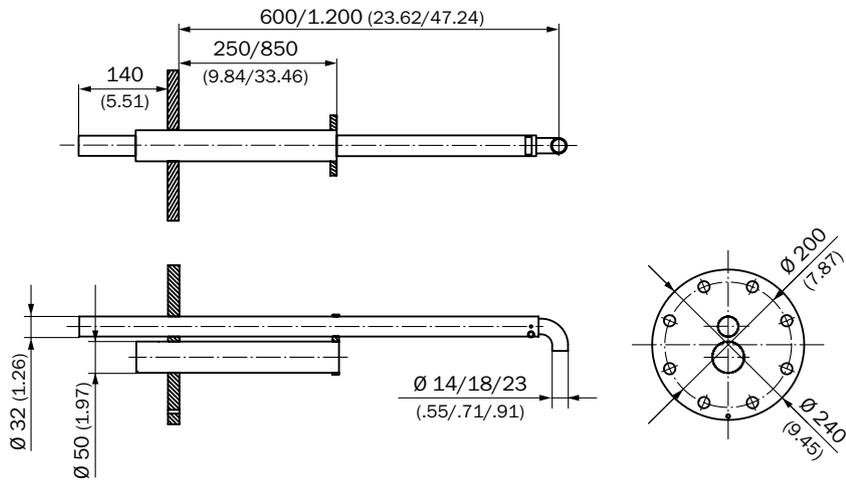
FWE200DH control unit



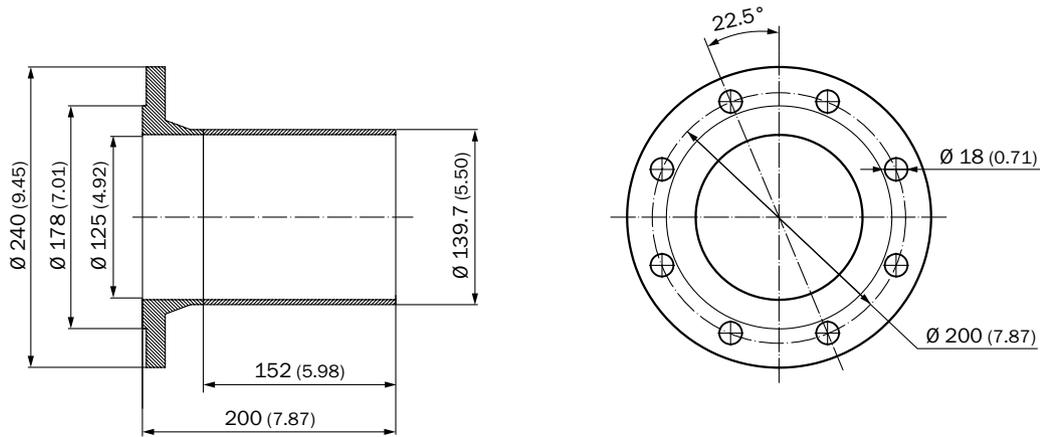
FWE200DH remote unit



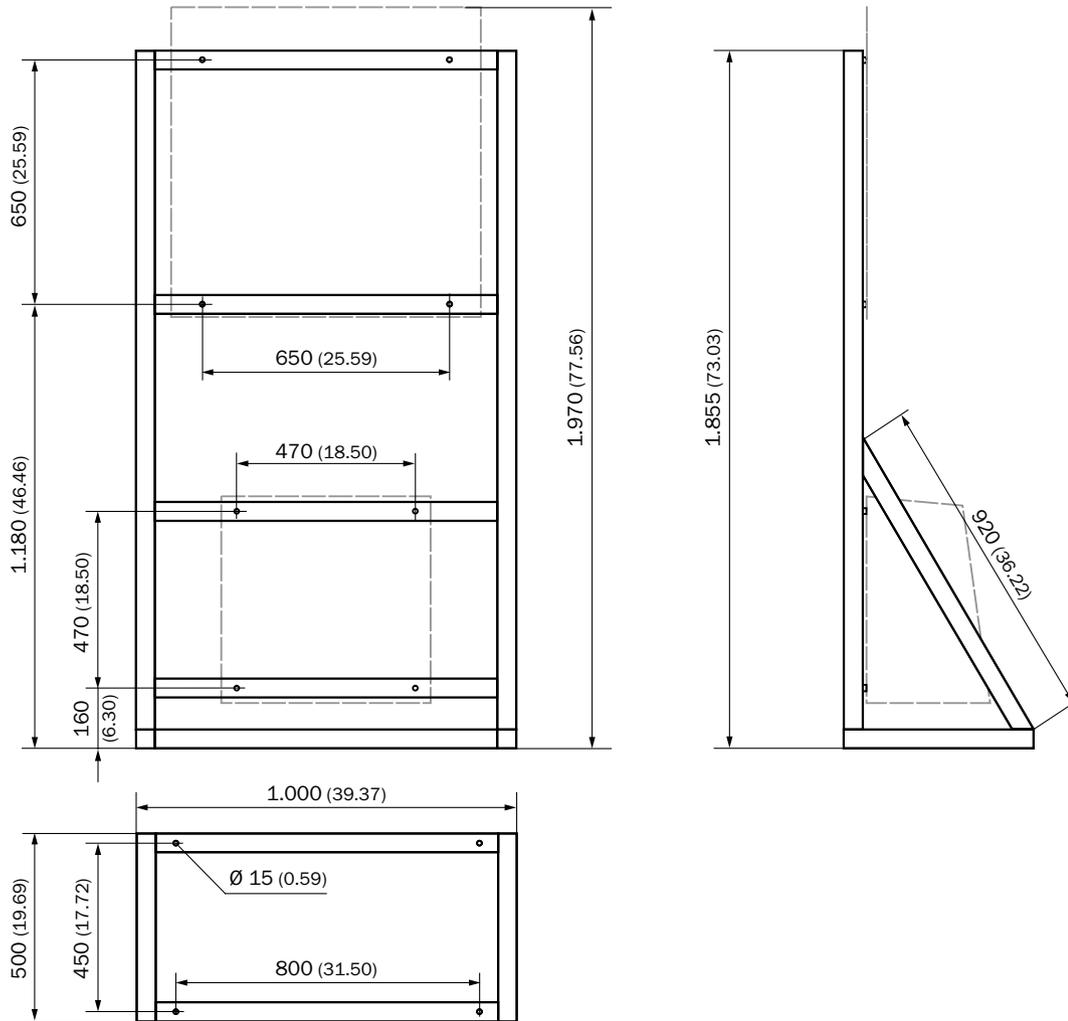
FWE200DH sampling probe



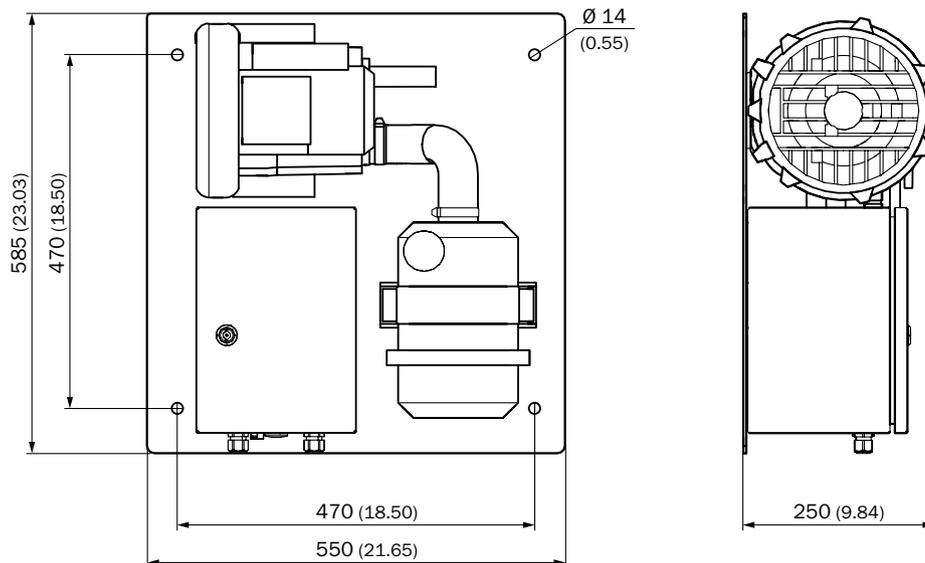
Mounting flange, $D_i=125$ mm



FWE200DH mounting rack



SLV7-1 purge air unit, 2BH1100, 1-ph

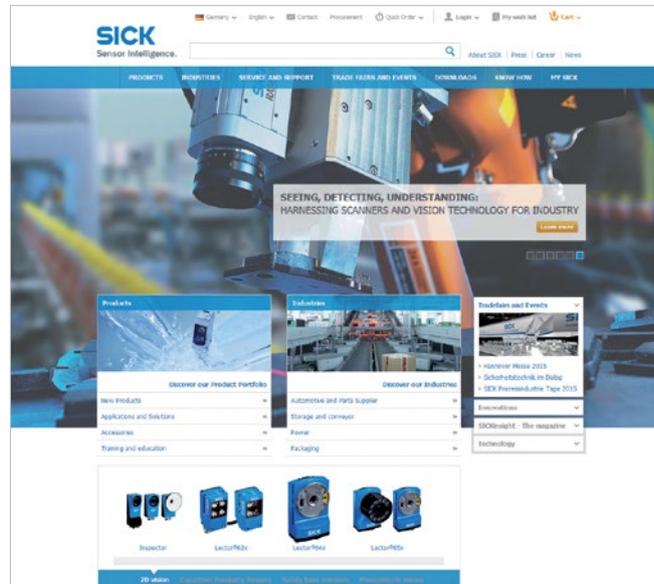


Weather hood for SLV4/SLV5/SLV7 purge air unit



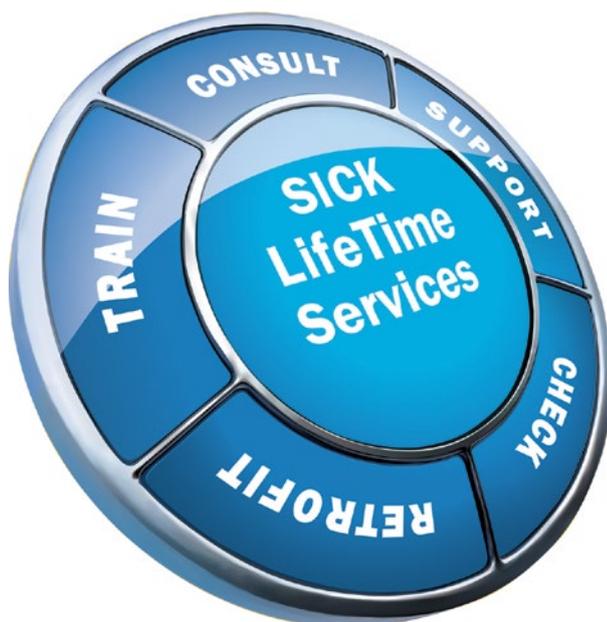
REGISTER AT WWW.SICK.COM TODAY AND ENJOY ALL THE BENEFITS

- ✔ Select products, accessories, documentation and software quickly and easily.
- ✔ Create, save and share personalized wish lists.
- ✔ View the net price and date of delivery for every product.
- ✔ Requests for quotation, ordering and delivery tracking made easy.
- ✔ Overview of all quotations and orders.
- ✔ Direct ordering: submit even very complex orders in moments.
- ✔ View the status of quotations and orders at any time.
- ✔ Receive e-mail notifications of status changes.
- ✔ Easily repeat previous orders.
- ✔ Conveniently export quotations and orders to work with your systems.



SERVICES FOR MACHINES AND SYSTEMS: SICK LifeTime Services

Our comprehensive and versatile LifeTime Services are the perfect addition to the comprehensive range of products from SICK. The services range from product-independent consulting to traditional product services.



- 
Consulting and design
 Safe and professional
- 
Product and system support
 Reliable, fast and on-site
- 
Verification and optimization
 Safe and regularly inspected
- 
Upgrade and retrofits
 Easy, safe and economical
- 
Training and education
 Practical, focused and professional

SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for industrial applications. With almost 7,000 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.

Comprehensive services round out 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:

Australia, Austria, Belgium, Brazil, Canada, Chile, China, Czech Republic, Denmark, Finland, France, Germany, Great Britain, Hungary, India, Israel, Italy, Japan, Malaysia, Mexico, Netherlands, New Zealand, Norway, Poland, Romania, Russia, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, United Arab Emirates, USA, Vietnam.

Detailed addresses and additional representatives → www.sick.com