FLOWSIC500
Ultrasonic Gas Meter

Custody transfer measurement in
natural gas distribution

SICK
Sensor Intelligence.

Ultimate measurement certainty.
For municipal gas suppliers and industrial consumers.

Local authorities purchase natural gas and sell it to users such as power stations, primary industries, and other industrial consumers. Because considerable volumes of gas are involved, the input and output measurement should be precise, but above all, reliable in the long term. Conventional mechanical gas meters are very difficult to monitor. It is impossible to monitor them appropriately. On top of that, they require costly maintenance and are not as easy to handle.

Now, the FLOWSIC500, the world's first ultrasonic gas meter for the natural gas distribution market, changes all that. FLOWSIC500 comes from SICK, one of the leading German sensor specialists.

High level of measurement certainty
FLOWSIC500 measures the gas flow with ultrasonic technology. It operates with no mechanical moving parts, and is not liable to wear. This provides stable measurement certainty in the long term. SICK developed ultrasonic transducers especially for the FLOWSIC500, which are not sensitive to interferences. FLOWSIC500: ideal for fiscal metering.

Increased measurement accuracy through self-diagnostics
The intelligent self-diagnostics immediately detects changes in measurement conditions that might prevent the gas meter from achieving the specified accuracy. FLOWSIC500 incorporates an early warning system that provides an unprecedented level of measurement accuracy and measurement certainty for natural gas distribution.

Easy handling
FLOWSIC500 is more straightforward than conventional gas meters. Due to its exceptional design, the recalibration procedure on-site is much easier and quicker. The measuring components are installed in a cartridge, which is replaced in only a few steps.

Compact design
FLOWSIC500 operates without straight inlet or outlet piping requirements. It can be equipped with an integrated volume corrector. Thus, the FLOWSIC500 requires considerably less space than conventional gas meters.

Suitable for demanding applications
With the FLOWSIC500, no part of the measurement device interferes with the gas flow. Therefore, it can be used in applications where a continuous gas supply is vital, for example in hospitals.

Power supply: No problem
FLOWSIC500 measures fail-safe in intrinsically safe network operation with battery back-up. Alternatively, the meter operates by battery as an energy self-sufficient configuration for a period of up to ten years.

Insensitive to overload
FLOWSIC500 does not get harmed by overloading. It processes dynamic load changes without any loss in accuracy.

Exact replacement fitting
FLOWSIC500 is designed to mount easily where a conventional gas meter has been in place.

Approved worldwide
FLOWSIC500 complies with all relevant standards and regulations for natural gas distribution. This also includes the international requirements for explosion-proof areas.

FLOWSIC500

Meter size 50 mm (2")

Meter size 80 mm (3")

Meter size 100 mm (4")

Meter size 150 mm (6")

- FLOWSIC500 is available in four meter sizes, all fitting to the common flange-to-flange dimensions used in natural gas distribution. Following meter sizes are available: DN50, DN80, DN100 and DN150 (2", 3", 4" and 6").

- The electrical connections for the transfer of measurement data and power supply are easily accessible and can be installed in just a few steps. Removing the cartridge requires just loosening of a few screws.

- It is possible to install the gas meter horizontally or vertically. The display can be rotated for easier reading of metering data.

- The most important functions of the measurement device can be accessed directly from the display using the key pad. User-friendly software supports the FLOWSIC500 via an optical interface.

Custody transfer measurement in natural gas distribution

Product description

The cutting-edge technology for ultimate measurement accuracy: The new FLOWSIC500 ultrasonic compact gas meter from SICK enables highly accurate metering in natural gas distribution. In absence of mechanical moving parts, the FLOWSIC500 is a robust, fail-safe and low-maintenance device – allowing for a significant reduction in operating costs. It is overload-proof, accurate and is monitored by an intelligent diagnostics system. Recalibration is simple and straightforward by replacing the cartridge. FLOWSIC500 can easily be integrated into existing measuring stations. The FLOWSIC500 operates either in an energy self-sufficient configuration or failsafe in network operation with battery back-up. It complies with all relevant standards and regulations. When utilized in transfer and measuring stations, FLOWSIC500 ensures the safety of a continuous and blockage-free gas supply.

At a glance

- Cutting-edge technology: ultrasound
- Diagnostics and permanent operational check
- Robust and reliable without moving parts
- Replacable cartridge
- Straight inlet/outlet piping not required
- Overload-proof
- Optional integrated volume correction/data registration
- Battery or intrinsically safe power supply

Your benefits

- Ultimate measurement certainty and safety of continuous gas supply
- Reduction of installation costs due to integrated volume correction
- Simple installation, compatible with conventional technologies (turbine and rotary displacement meters)
- Minimal operating costs as nearly maintenance-free
- Easy recalibration due to straightforward cartridge replacement
- Reliable under dynamic load changes
- Self-sufficient operation

Additional information

➜ **www.mysick.com/en/FLOWSIC500**

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.

Application

- Natural gas distribution in transfer and measuring stations for municipal and regional gas suppliers
- Applications where continuous gas supply must be ensured
- Measuring stations in industrial and commercial applications

Detailed technical data

System

Measured value	Volume a.c., volume flow a.c., gas velocity
Measuring principle	Ultrasonic transit time difference measurement
Measuring medium	Natural gas (dry, odorized)
Measuring ranges	
Volume flow a.c., DN 50 (2")	1.3 ... 160 m³/h (46 ... 5,650 cfh)
Volume flow a.c., DN 80 (3")	2.5 ... 400 m³/h (88 ... 14,125 cfh)
Volume flow a.c., DN 100 (4")	4 ... 650 m³/h (141 ... 22,955 cfh)
Volume flow a.c., DN 150 (6")	4 ... 1,000 m³/h (141 ... 35,314 cfh)
Reproducibility	≤ 0.1 %
Accuracy	Accuracy class 1; typical error limits: Q_{min} up to 0.1 Q_{max}: ≤ ± 1.0 % 0.1 Q_{max} up to Q_{max}: ≤ ± 0.5 %
	Accuracy class 1; maximum allowed error limits: Q_{min} up to 0.1 Q_{max}: ≤ ± 2 % 0.1 Q_{max} up to Q_{max}: ≤ ± 1 % After high pressure calibration (> 4 bar / 58 psi) for 0.1 Q_{max} up to Q_{max}: ≤ ± 0.2%
Diagnostics functions	Permanent monitoring of measured values
Gas temperature	–25 °C ... +60 °C (–13 °F ... 140 °F); optional: –40 °C ... +70 °C (–40 °F ... 158 °F)
Operating pressure	PN16 (EN 1092-1, GOST 12815-80): 0 bar (g) ... 16 bar (g) Class 150 (ASME B16.5): 0 bar (g) ... 20 bar (g)
Ambient temperature	–25 °C ... +60 °C (–13 °F ... 140 °F); optional: –40 °C ... +70 °C (–40 °F ... 158 °F)
Storage temperature	–40 °C ... +80 °C (–40 °F ... 176 °F)
Conformities	2004/22/EC MI-002 OIML R137 1&2, 2012
Ex-approvals	
IECEx	Ex ia [ia Ga] IIB T4 Gb
ATEX	II 2G Ex ia [ia Ga] IIB T4 Gb
NEC/CEC (US/CA)	CSA Class 1 Division 1 Group C, D T4
Enclosure rating	IP 65
Digital outputs	3 open collector outputs: not electrically isolated, f_{max} = 10 Hz or 1 output: according EN 60947-5-6 (NAMUR), f_{max} = 2 kHz, optically isolated
Interfaces	RS-485 alternative to the digital outputs (externally powered) Optical interface (according to IEC 62056-21)
Dimensions (W x H x D)	See dimensional drawings
Weight	See dimensional drawings
Material in contact with media	Aluminium AC-42100-S-T6
Mounting	Horizontal or vertical installation with 0 D straight inlet/outlet piping
Electrical connection	
Voltage	Intrinsically safe supply: 4.5 ... 16 V DC
	Incl. 3-months back-up battery
Options	Self-sufficient meter configuration (more than 5 years battery runtime)
Items supplied	The scope of delivery depends on application and customer specifications.

Custody transfer meauring ranges

| Nominal size	Meter size	Measuring range				Measuring span
		min. [m³/h]	max. [m³/h]	min. [cfh]	max. [cfh]	
DN 50 (2")	G 40	1.3	65	45.9	2,295.5	1 : 50
	G 65	2.0	100	70.6	3,531.5	1 : 50
	G 100	3.2	160	113.0	5,650.3	1 : 50
	G 100	1.6	160	56.5	5,650.3	1 : 100
DN 80 (3")	G 100	3.2	160	113.0	5,650	1 : 50
	G 160	5.0	250	176.6	8,828.7	1 : 50
	G 160	2.5	250	88.3	8,828.7	1 : 100
	G 250	8.0	400	282.5	14,125.9	1 : 50
	G 250	4.0	400	141.3	14,125.9	1 : 100
	G 250	2.5	400	88.3	14,125.9	1 : 160
DN 100 (4")	G 160	5.0	250	176.6	8,828.7	1 : 50
	G 250	8.0	400	282.5	14,125.9	1 : 50
	G 250	4.0	400	141.3	14,125.9	1 : 100
	G 400	13.0	650	459.1	22,954.5	1 : 50
	G 400	6.5	650	229.5	22,954.5	1 : 100
	G 400	4.0	650	141.3	22,954.5	1 : 160
DN 150 (6")	G 250	8.0	400	282.5	14,125.9	1 : 50
	G 250	4.0	400	141.3	14,125.9	1 : 100
	G 400	13.0	650	459.1	22,954.5	1 : 50
	G 400	6.5	650	229.5	22,954.5	1 : 100
	G 400	4.0	650	141.3	22,954.5	1 : 160
	G 650	20.0	1,000	706.3	35,314.7	1 : 50
	G 650	10.0	1,000	353.1	35,314.7	1 : 100
	G 650	6.2	1,000	219.0	35,314.7	1 : 160
	G 650	5.0	1,000	176.6	35,314.7	1 : 200

Ordering information

Our regional sales organization will help you to select the best fitting device configuration.
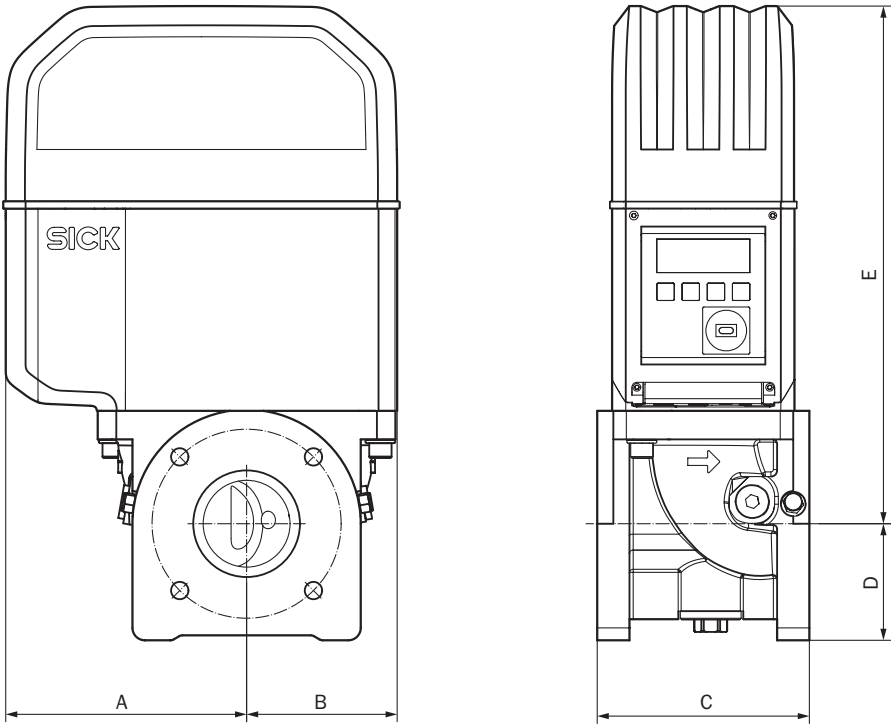
Dimensional drawings

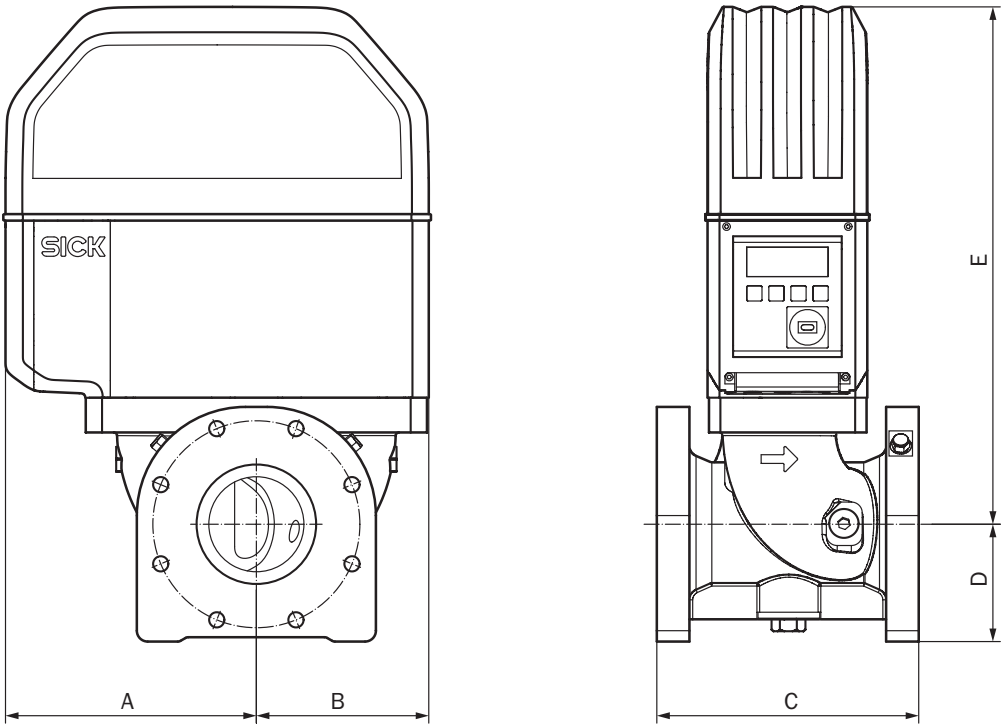dimensions in mm

FLOWSIC500, nominal size DN50 (2")
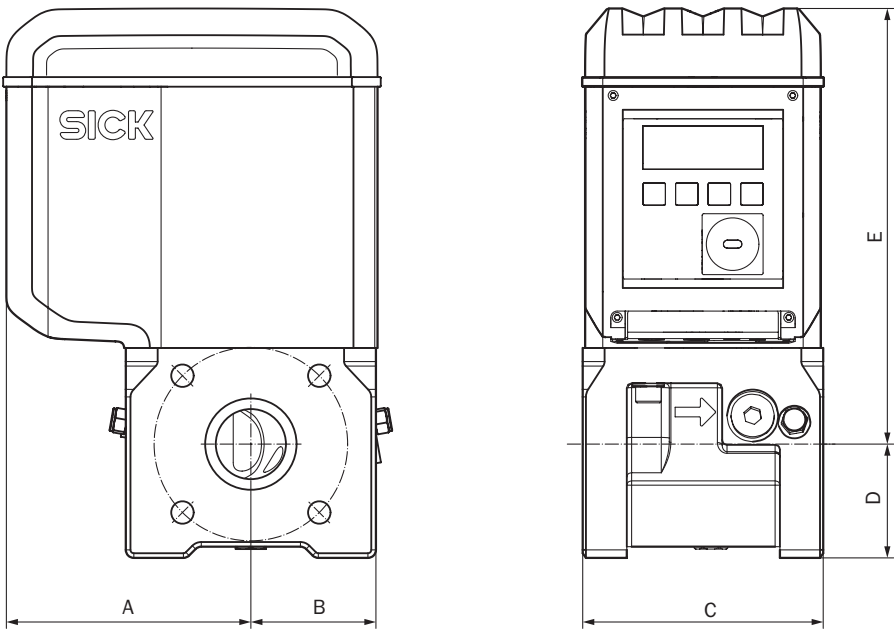
Nominal size	Weight	Dimensions				
		A	B	C	D	E
DN 50 (2")	10.6 (23.4)	153 (6.02)	78 (3.07)	150 (5.91) 171 (6.73)	71 (2.80)	272 (10.71)
All dimensions in mm (inch). All weights in kg (lb).						

FLOWSIC500, nominal size DN80 (3")

Nominal size	Weight	Dimensions				
		A	B	C	D	E
DN 80 (3")	18.3 (40.4)	194 (7.64)	121 (4.76)	171 (6.73)	94 (3.70)	417 (16.42)
	20.5 (45.2)			241 (9.49)		
All dimensions in mm (inch). All weights in kg (lb).						

FLOWSIC500, nominal size DN100 (4")

Nominal size	Weights	Dimensions				
		A	B	C	D	E
DN 100 (4")	27.2 (60)	231 (9.09)	159 (6.26)	241 (9.49)	108 (4.25)	476 (18.74)
	29.4 (64.8)			300 (11.81)		
All dimensions in mm (inch). All weights in kg (lb).						

FLOWSIC500, nominal size DN150 (6")
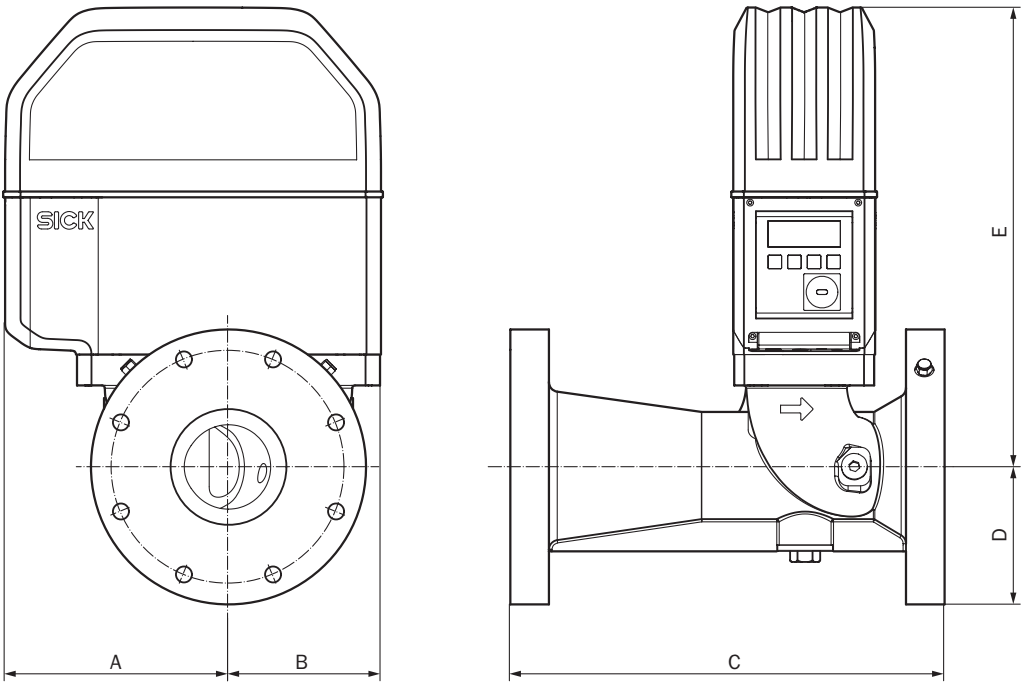
Nominal size	Weight	Dimensions				
		A	B	C	D	E
DN 150 (6")	35.0 (77.1)	232 (9.13)	158 (6.22)	450 (17.72)	143 (5.63)	476 (18.74)
	All dimensions in mm (inch). All weights in kg (lb).					

Characteristic curve pressure loss

Δp$_{natural gas}$ in mbar

Flow in m³/h

Meter size

— DN50
-- DN80
·· DN100
— DN150

Reference density natural gas: ρ = 0.83 kg/m³

Δp$_{natural gas}$ in inH$_2$O

Flow in cft/h

Meter size

— 2"
-- 3"
·· 4"
— 6"

Reference density natural gas: ρ = 0.052 lb/ft³
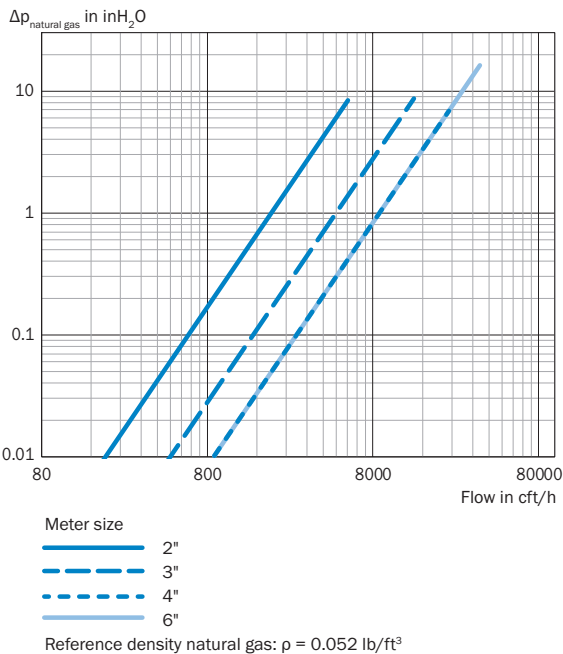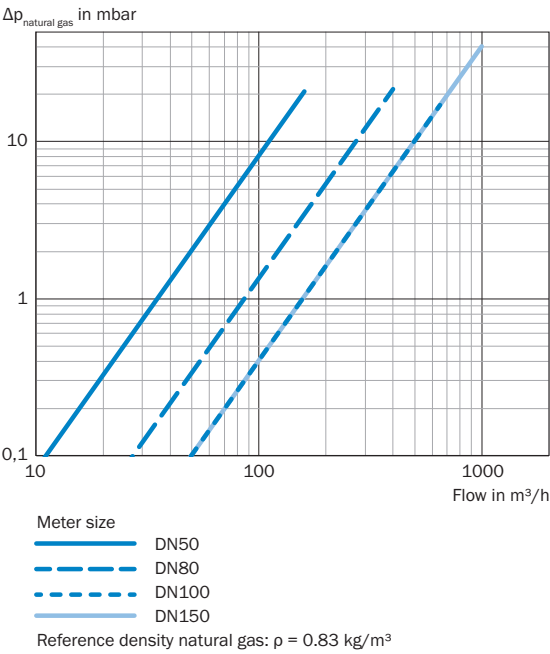
Search online quickly and safely with the SICK "Finders"

Product
Applications
Literature
Service
Connection diagram
Accessories
Spare part
Software
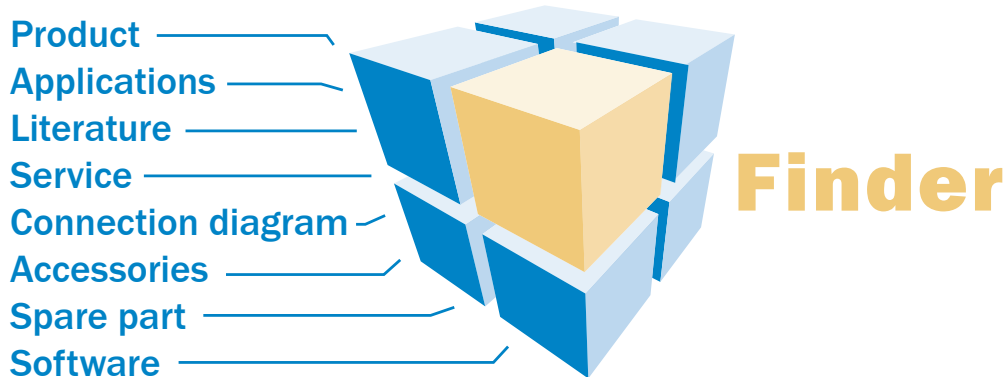
Finder

Product Finder: We can help you to quickly target the product that best matches your application.

Applications Finder: Select the application description on the basis of the challenge posed, industrial sector, or product group.

Literature Finder: Go directly to the operating instructions, technical information, and other literature on all aspects of SICK products.

These and other Finders at www.mysick.com

Efficiency – with SICK e-commerce tools

Partner Portal
www.mysick.com
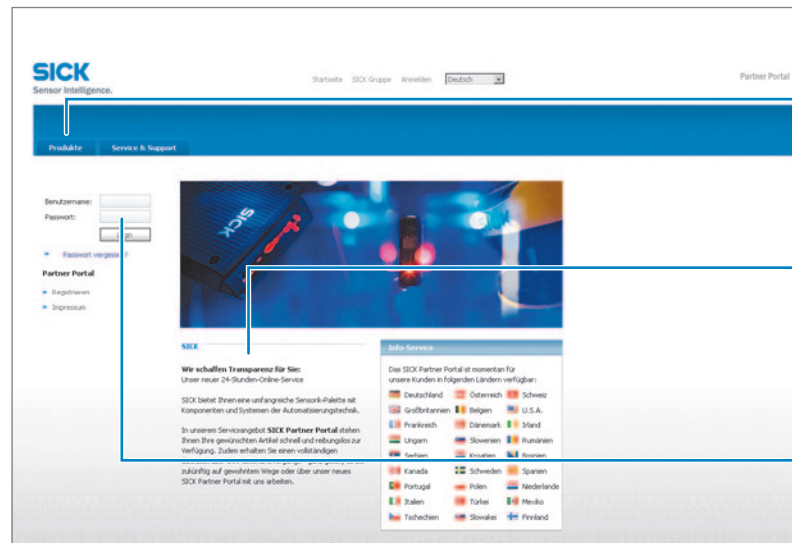
Clearly structured: You can find everything you need for your sensor planning under the menu items Products, Information, and My Account.

Available 24 hours a day: Regardless of where you are in the world or what you'd like to know – everything is just a click away at www.mysick.com.

Safe: Your data is password-protected and only visible to you. With the individual user management, you define who can see what data and who can execute what actions.

Find out prices and availability
Determine the price and possible delivery date of your desired product simply and quickly.
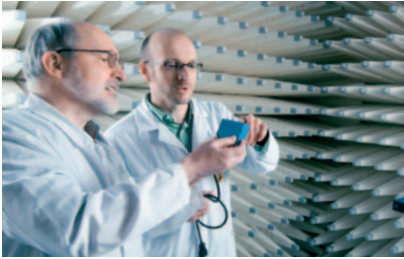
Request or view a quote
You can have a quote generated online here.
Every quote is confirmed to you via e-mail.

Order online
You can go through the ordering process in just a few steps.

SICK at a glance

Leading technologies

With a staff of more than 5,000 and over 50 subsidiaries and representations worldwide, SICK is one of the leading and most successful manufacturers of sensor technology. The power of innovation and solution competency have made SICK the global market leader. No matter what the project and industry may be, talking with an expert from SICK will provide you with an ideal basis for your plans – there is no need to settle for anything less than the best.

Unique product range

- Non-contact detecting, counting, classifying, positioning and measuring of any type of object or media
- Accident and operator protection with sensors, safety software and services
- Automatic identification with bar code and RFID readers
- Laser measurement technology for detecting the volume, position and contour of people and objects
- Complete system solutions for analysis and flow measurement of gases and liquids

Comprehensive services

- SICK LifeTime Services – for safety and productivity
- Application centers in Europe, Asia and North America for the development of system solutions under real-world conditions
- E-Business Partner Portal www.mysick.com – price and availability of products, requests for quotation and online orders

Worldwide presence with subsidiaries in the following countries:

Australia
Belgium/Luxembourg
Brasil
Ceská Republika
Canada
China
Danmark
Deutschland
España
France
Great Britain
India
Israel
Italia
Japan

México
Nederland
Norge
Österreich
Polska
România
Russia
Schweiz
Singapore
Slovenija
South Africa
South Korea
Suomi
Sverige
Taiwan
Türkiye
United Arab Emirates
USA

Please find detailed addresses and additional representatives and agencies in all major industrial nations at **www.sick.com**

SICK
Sensor Intelligence.