Product data sheet



FLOWSIC500

FLOW METERS

SICK
Sensor Intelligence.



Ordering information

Type	Part no.
FLOWSIC500	On request

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.

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

Other models and accessories ➜ www.sick.com/FLOWSIC500

Product description

The latest technology for the ultimate in measurement accuracy: The FLOWSIC500 ultrasonic compact gas meter from SICK enables extremely accurate natural gas distribution measurement. Thanks to its lack of mechanical moving parts, the FLOWSIC500 is rugged, reliable, and maintenance-free – allowing for a significant reduction in operating costs. It is overload-proof, accurate and is monitored by an intelligent diagnostics system. Recalibration is extremely straightforward, as it is simply a matter of exchanging the cartridge. The FLOWSIC500 can easily be integrated into existing measuring stations. It operates either in a self-sufficient energy configuration or in fail-safe network operation with battery back-up. It complies with all pertinent standards and directives. When used in transfer stations and measuring stations, the FLOWSIC500 provides the security of a continuous and blockage-free gas supply.

At a glance

- Cutting-edge technology: ultrasound
- Diagnostics and permanent operational check
- Rugged and reliable due to lack of moving parts
- Exchangeable cartridge
- Straight inlet/outlet zone not required
- Overload-proof
- Optional integrated flow conversion / date 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 flow conversion
- Simple installation, compatible with conventional technologies (turbine and rotary displacement meters)
- Minimal operating costs due to being nearly maintenance-free
- Simplified recalibration due to straightforward cartridge exchange
- Reliable under dynamic load changes
- Self-sufficient operation

Fields of application

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

Detailed technical data

System

Measured values	Volume a. c., volumetric flow a. c., gas velocity, volume s. c. (*), volume flow under s.c. (*) (*) additional function included with integrated volume correction
Measurement principle	Ultrasonic transit time difference measurement
Measuring medium	Natural gas (dry, odorized)
Measuring ranges	
Volumetric flow a. c., DN 50	1 ... 160 m³/h
Volumetric flow a. c., DN 80	2.5 ... 400 m³/h
Volumetric flow a. c., DN 100	4 ... 650 m³/h
Volumetric flow a. c., DN 150	4 ... 1,000 m³/h
Reproducibility	≤ 0.1 %
Accuracy	Accuracy class 1; typical error limits
Accuracy	
Q_{min} up to 0.1 Q_{max}:	≤ ± 1 %
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 flow calibration: ±0.2 % at test pressure; otherwise ±0.5 %
Diagnostics functions	Permanent monitoring of measured values
Gas temperature	
	–25 °C ... +60 °C
Optional:	–40 °C ... +70 °C
Operating pressure	
PN16 (EN 1092-1):	0 bar (g) ... 16 bar (g)
Class 150 (ASME B16.5):	0 bar (g) ... 20 bar (g)
Ambient temperature	
	–25 °C ... +60 °C
Optional:	–40 °C ... +70 °C
Storage temperature	–40 °C ... +80 °C
Conformities	MID: 2014/32/EU OIML R 137-1&2:2012 EN 12405: 2010 (for integrated flow conversion)
Ex-approvals	
IECEx	Ex ia [ia] IIC T4 Gb, Ex op is IIC T4 Gb
ATEX	II 2G Ex ia [ia] IIC T4 Gb, II 2G Ex op is IIC T4 Gb
NEC/CEC (US/CA)	CSA: I.S. for Class 1 Division 1 Groups C and D T4; Ex/AEx ia IIB T4 Ga

Enclosure rating	IP66
Digital outputs	Configurations: LF pulses + malfunction, electrically isolated (fmax = 100 Hz) HF pulses + malfunction, electrically isolated (fmax = 2 kHz) Encoder + LF pulses, electrically isolated (f_{max} = 100 Hz) Encoder + HF pulses, not electrically isolated (f_{max} = 2 kHz) 2x pulses, HF and LF, electrically isolated (f_{max} = 2 kHz / 100 Hz)
Modbus	✓
Type of fieldbus integration	RTU RS-485 (externally powered, alternative to digital outputs)
Optical interface	✓
Remark	According to EN 62056-21, section 4.3
Dimensions (W x H x D)	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 Inclusive 3-months back-up battery
Options	Self-sufficient meter configuration (more than 5 years battery runtime)

Volume correction

Accuracy	Accuracy class 0.5 Maximum allowed error limits of correction factor C
Accuracy	≤ ± 0.5 % At reference conditions
Correction method	PTZ or TZ
Compressibility	SGERG88 AGA 8 Gross method 1 AGA 8 Gross method 2 AGA NX-19 AGA NX-19 mod. GERG91 Fixed value
Data archives	Measurement period archive (6,000 entries) Daily archive (600 entries) Monthly archive (25 entries)
Logbooks	Event log book (1,000 entries) Parameter log book (250 entries) Metrology log book (100 entries)

Pressure sensor

Measuring ranges	
Absolute pressure	0.8 ... 5.2 bar (a) / 2 ... 10 bar (a) / 4 ... 20 bar (a)
Relative pressure	0 ... 4 bar (g) / 0 ... 10 bar (g) / 0 ... 20 bar (g)

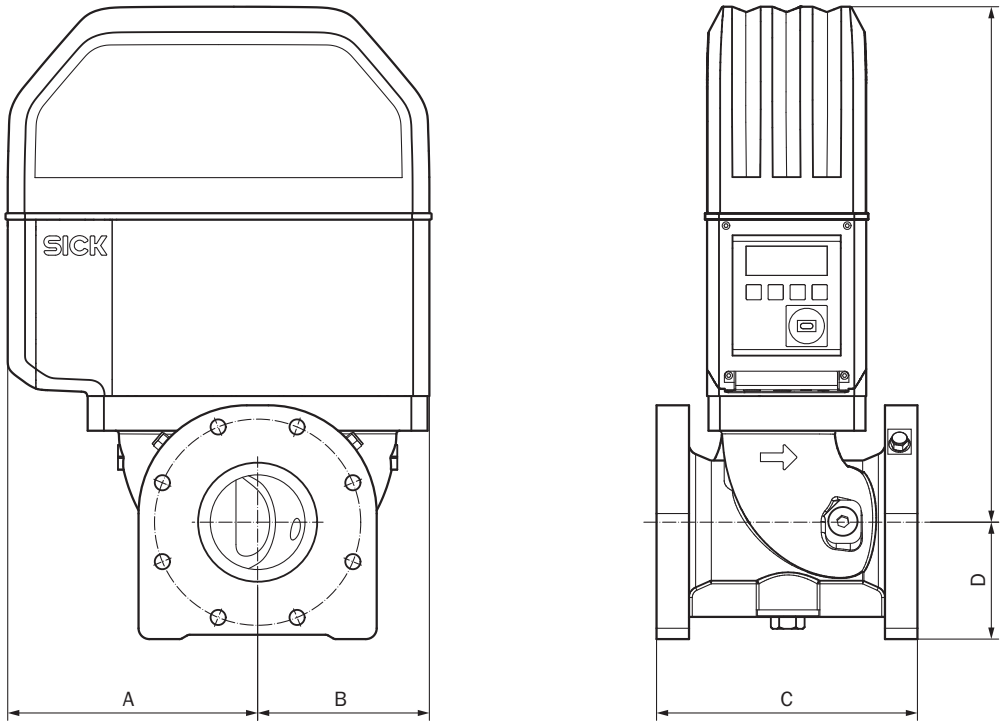
Temperature sensor

Description	Platinum resistance sensor PT1000, in stainless steel protective tube
Measuring ranges	
Temperature	–25 ... +60 °C / –40 ... +70 °C
Ambient temperature	

	–40 °C ... +85 °C

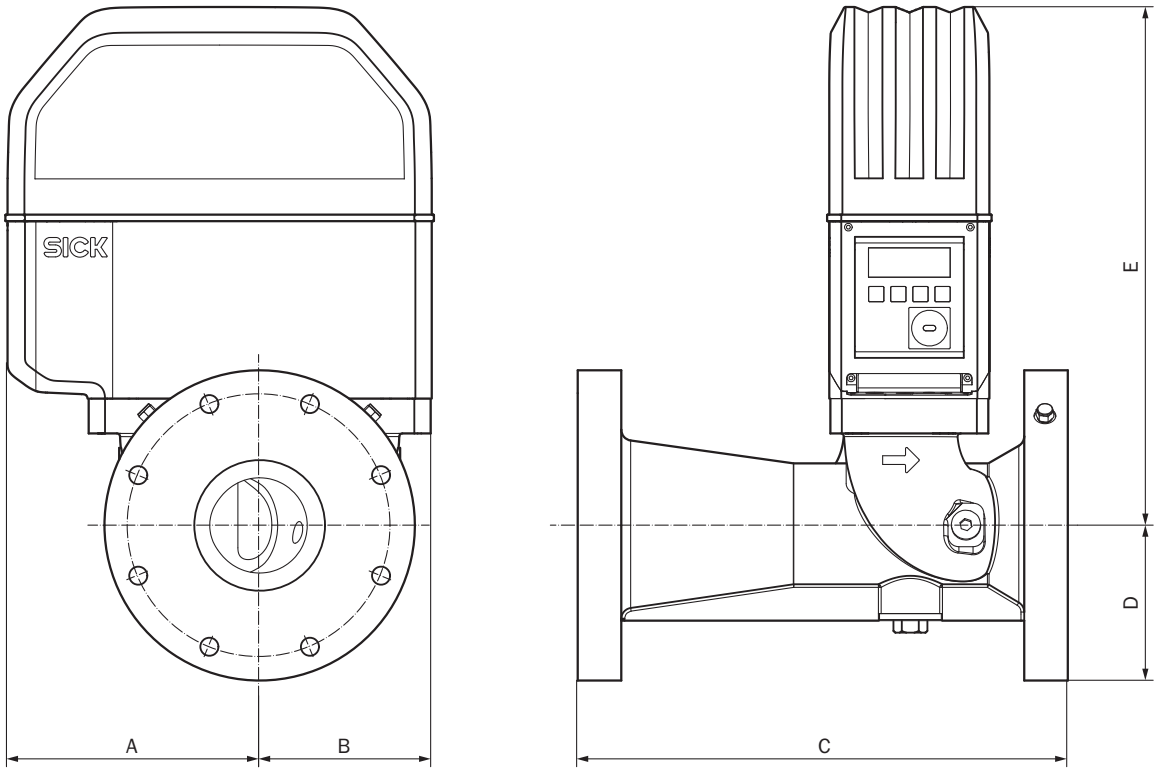
Dimensional drawings (Dimensions in mm (inch))

FLOWSIC500, nominal size DN100



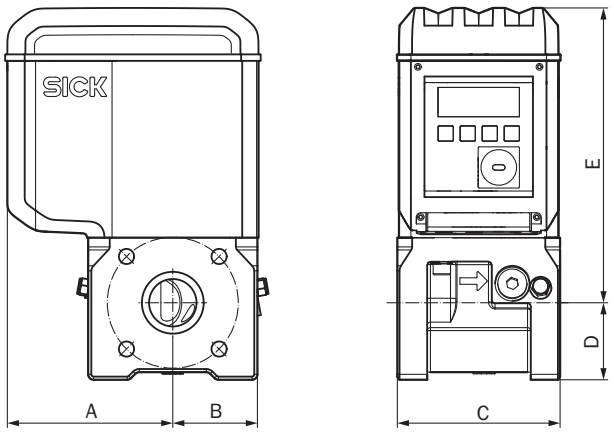
Nominal size	Weight	Dimensions				
		A	**B**	**C**	**D**	**E**
DN 100	27.2	231	159	241	108	476
	29.4			300		
All dimensions in mm. All weights in kg.						

FLOWSIC500, nominal size DN150



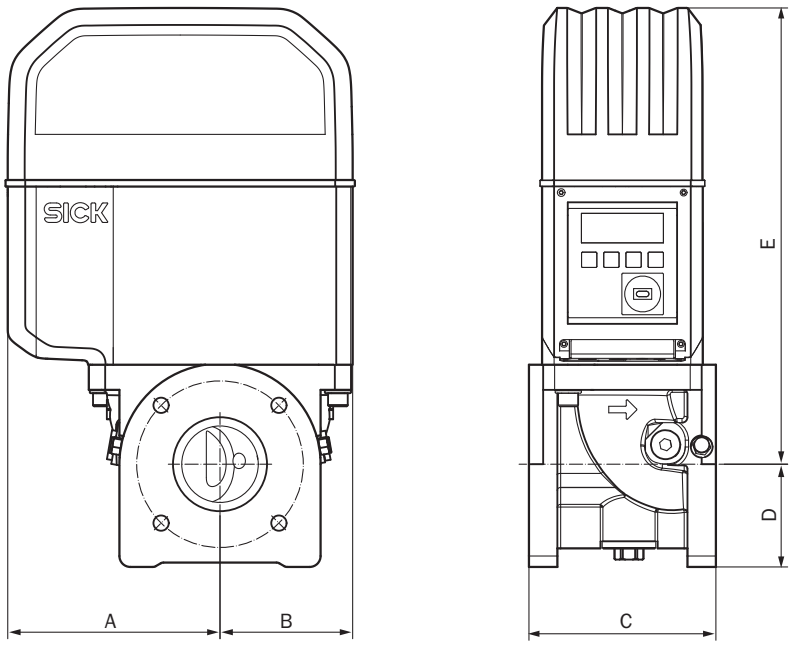
Nominal size	Weight	Dimensions				
		A	**B**	**C**	**D**	**E**
DN 150	35.0	232	158	450	143	476
All dimensions in mm. All weights in kg.						

FLOWSIC500, nominal size DN50



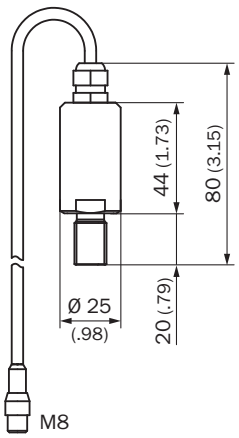
Nominal size	Weight	Dimensions				
		A	B	C	D	E
DN 50	10.6	153	78	150	71	272
	11.4			171		
All dimensions in mm. All weights in kg.						

FLOWSIC500, nominal size DN80

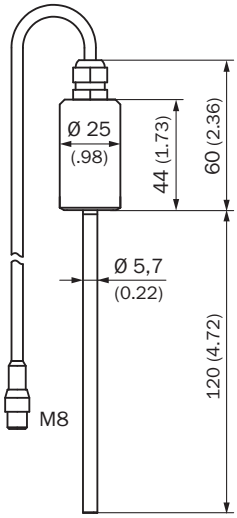


Nominal size	Weight	Dimensions				
		A	B	C	D	E
DN 80	18.3	194	121	171	94	417
	20.5			241		
All dimensions in mm. All weights in kg.						

Pressure sensor

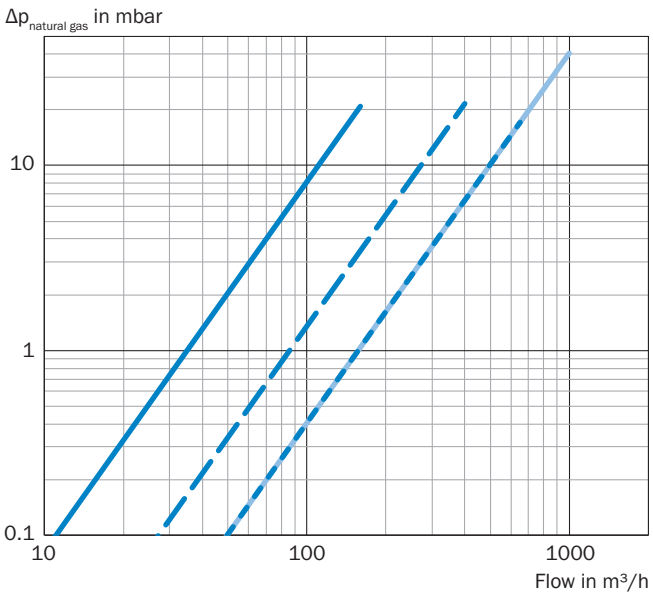


Temperature sensor



Characteristic curves

Pressure loss (typical)



Nominal size

- DN50
- DN80
- DN100
- DN150

Refence density natural gas: ρ = 0.83 kg/m³

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