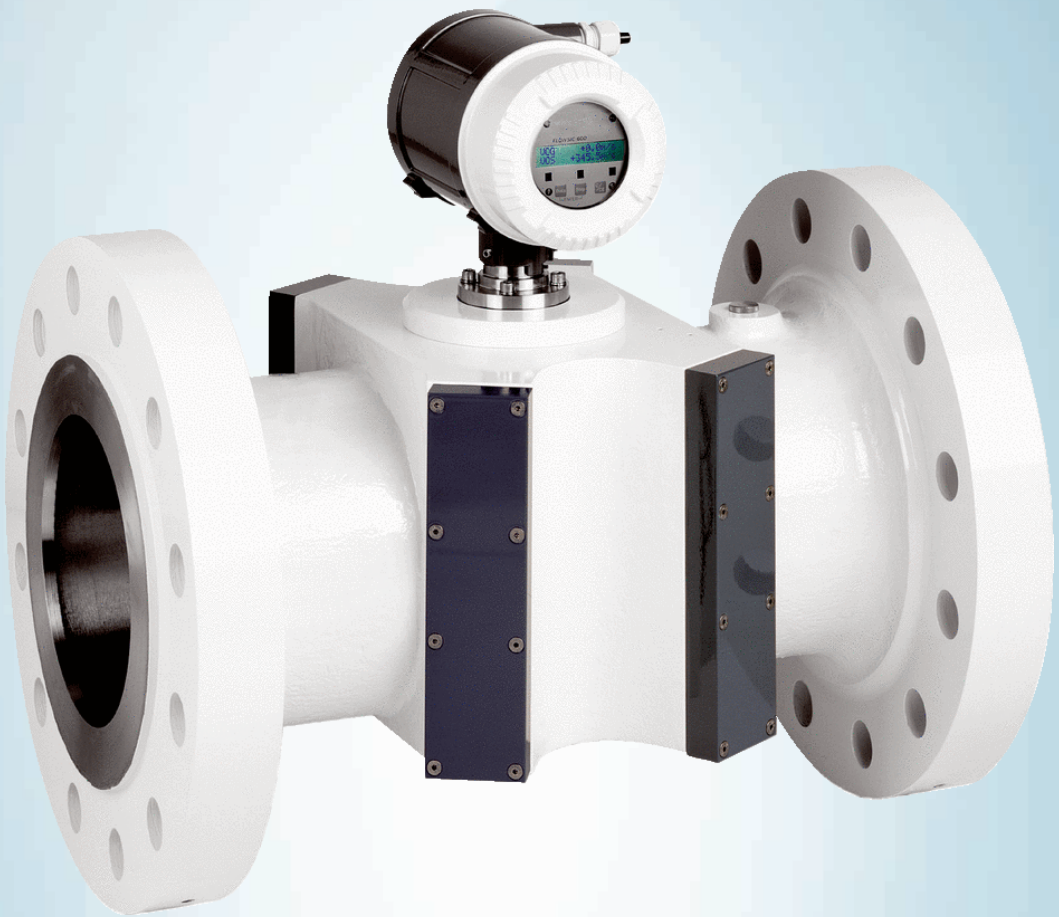
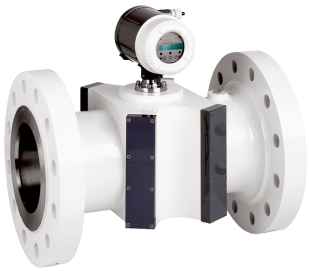
Product data sheet



FLOWSIC600

FLOW METERS

SICK
Sensor Intelligence.



Ordering information

Type	Part no.
FLOWSIC600	On request

In accordance with Article 2 (4), this product does not fall within the scope of RoHS directive 2011/65/EU and is also not designed for use in products which fall within the scope of this directive. You can find additional information in the product information.

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/FLOWSIC600

Product description

The FLOWSIC600 is an ultrasonic flow meter that sets the standard in its market segment. The design shows that it is geared towards the harsh conditions of the industry. Thanks to its compact design with integrated cable routing, the measuring system is durable, fail-safe, low-maintenance, and exhibits long-term stability. The FLOWSIC600 has extensive diagnostic options that allow faults to be detected before the measurement is affected and offers process monitoring based on the speed of sound.

At a glance

- Highly efficient ultrasonic transducer – up to gas temperatures of +105 °C and pressures up to 250 barg
- Direct path layout
- Intelligent self-diagnostics
- Compact, robust design
- Integrated log book and data logger
- Large measuring range 1:120
- Bidirectional measurement
- Low power consumption: <1 W

Your benefits

- Long-term stability, reliable measurement
- Low maintenance due to intelligent self-diagnostics
- Virtually immune to pressure regulator noise
- Ultrasonic transducers can be exchanged under operating pressure
- Wide application range

Fields of application

- Custody transfer applications (natural gas, N_2, O_2, air, ethylene)
- Onshore and offshore applications
- Steam flow measurement
- Underground gas storage facilities (bidirectional measurement possible)
- Cryogenic gas applications down to –194 °C
- Also for process gases
- For gas with high H_2S component such as sour gas or biogas

Detailed technical data

System

Measured values	Volumetric flow a. c., volume a. c., gas velocity, speed of sound
Number of measuring paths	2, 4
Measurement principle	Ultrasonic transit time difference measurement
Measuring medium	Natural gas, air, C_2H_4, steam, process gases
Measuring ranges	
Volumetric flow a. c.	4 … + 360 m³/h / 1,600 … 36,000 m³/h
	Measuring ranges depend on nominal pipe size
Repeatability	< 0.1 % of the measured value
Accuracy	
	Error limits
2-path version [1]:	≤ ± 1 %
4-path version [1]:	≤ ± 0.5 %
	[1] typical measurement accuracy, see application specific data for detailed information
Diagnostics functions	Integrated device diagnostics and extended diagnostics via FLOWgate software
Gas temperature	
ATEX:	–40 °C … +105 °C For T1, T2, T3
	–40 °C … +91 °C For T4
Other Ex certifications:	–40 °C … +180 °C
Operating pressure	
	0 bar (g) … 250 bar (g)
On request:	450 bar (g)
Nominal pipe size	
	2 ″ … 24 ″ (DN 50 … DN 600)
Ambient temperature	
ATEX, CSA:	–40 °C … +60 °C
IECEx:	–40 °C … +70 °C
IECEx:	–50 °C … +70 °C Optional
Storage temperature	–40 °C … +70 °C
Ambient humidity	≤ 95 % Relative humidity

Conformities	ISO 17089-2 MTBF: 15.4 years
Ex-approvals	
IECEx	Gb/Ga Ex db eb ib [ia Ga] IIA T4 Gb/Ga Ex db eb ib [ia Ga] IIC T4 Ultrasonic transducers intrinsically safe
ATEX	II 1/2 (1) G Ex ia/db eb ia [ia Ga] IIA/IIB/IIC T4...T1 Ga/Gb III 1/2 (1) G Ex ia/db eb ia [ia Ga] IIC T6 Ga/Gb Ultrasonic transducers intrinsically safe
NEC/CEC (US/CA)	Class I, Division 1, Groups B, C, D T4 Class I, Division 2, Groups A, B, C, D T4 Class I, Division 1, Group D T4 Class I, Division 2, Group D T4 Ultrasonic transducers intrinsically safe
Electrical safety	CE
Enclosure rating	IP65 / IP66 / IP67
Analog outputs	1 output: 4 ... 20 mA, + 200 Ω Active/passive, electrically isolated
Digital outputs	3 outputs: + 30 V, 10 mA Passive, electrically isolated, Open Collector or according to NAMUR (EN 50227), f_{max} = 6 kHz (scalable)
Modbus **Modbus**	✓, ✓
Type of fieldbus integration	ASCII RS-485, 2x
HART	✓
Operation	Via meter display and FLOWgate software
Dimensions (W x H x D)	See dimensional drawings
Weight	Depending on device version
Material in contact with media	Low temperature carbon steel, stainless steel, duplex steel, Titanium
Electrical connection	
Voltage	12 ... 28.8 V DC With active current output: 15 ... 28.8 V DC
Power consumption	≤ 1 W

Measuring ranges

Measuring ranges

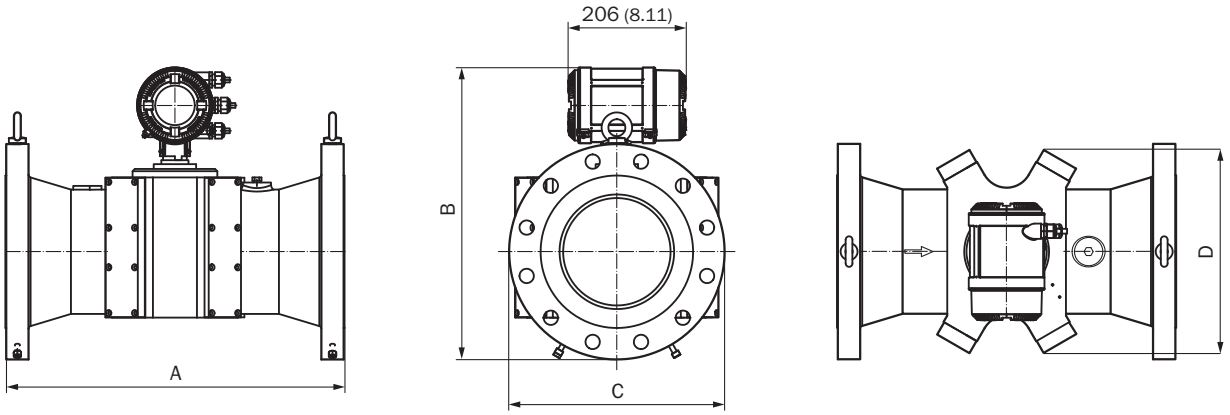
Nominal size		Flow rate m³/h		Ft³/h		Max. velocity * m/s	Ft/s
		Min.	Max.	Min	Max.		
DN 50	2"	4	400	140	14,000	65	213
DN 80	3"	8	1,000	280	35,000	65	213
DN 100	4"	13	1,600	460	56,000	60	197
DN 150	6"	20	3,000	710	106,000	50	164
DN 200	8"	32	4,500	1,130	159,000	45	148
DN 250	10"	50	7,000	1,770	247,000	40	131
DN 300	12"	65	8,000	2,300	282,000	33	108
DN 350	14"	80	10,000	2,830	353,000	33	108
DN 400	16"	120	14,000	4,240	494,000	33	108

Nominal size		Flow rate				Max. velocity *	
		m³/h		Ft³/h		m/s	Ft/s
		Min.	Max.	Min	Max.		
DN 450	18"	130	17,000	4,600	600,000	33	108
DN 500	20"	200	20,000	7,070	707,000	33	108
DN 550	22"	260	26,000	9,185	919,000	33	108
DN 600	24"	320	32,000	11,300	1,131,000	33	108
DN 650	26"	360	36,000	12,700	1,272,500	32	103
DN 700	28"	400	40,000	14,100	1,414,000	30	98
DN 750	30"	400	45,000	14,100	1,590,000	30	98
DN 800	32"	400	50,000	14,100	1,767,000	30	98
DN 850	34"	525	58,000	18,550	2,050,000	30	98
DN 900	36"	650	66,000	23,000	2,333,000	30	98
DN 950	38"	650	73,000	23,000	2,580,500	30	98
DN 1000	40"	650	80,000	23,000	2,828,000	30	98
DN 1050	42"	1,300	85,000	46,000	3,004,000	30	98
DN 1100	44"	1,400	90,000	49,500	3,181,000	28	92
DN 1150	46"	1,500	95,000	53,050	3,358,000	28	91
DN 1200	48"	1,600	100,000	56,600	3,535,000	27	89

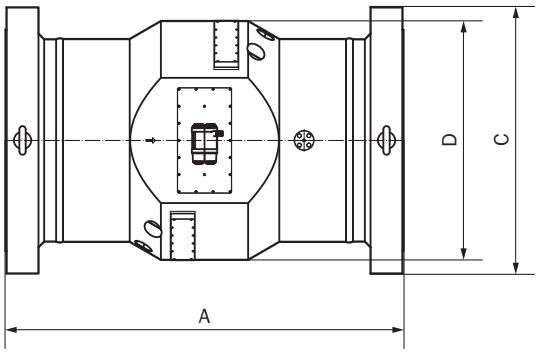
* When using installation configuration 2 (with flow conditioner) the maximum allowed gas velocity in the pipe is limited to 40 m/s (131 ft/s).

Dimensional drawings (Dimensions in mm (inch))

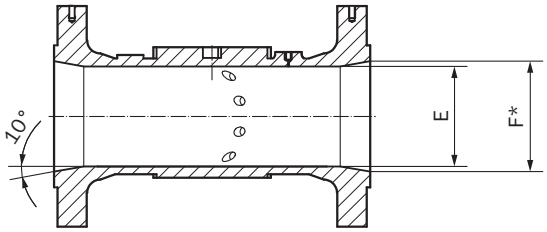
Versions with nominal sizes from 3″ up to and including 14″ (cast)



Versions for nominal sizes from 16″ (forged)



Longitudinal section for nominal widths up to 48″



Dimensions

Dimensions

Nominal pipe size	Connection flange	Standard	Weight *	Length (A)	Hight (B) **	Flange diameter (C)	Width of measuring section (D)	Internal diameter (E)
			[kg]	[mm]	[mm]	[mm]	[mm]	[mm]
3″	Cl. 150	ANSI B16.5	75	240	454	190	205	73
	Cl. 300		75		454	210		
	Cl. 600		75		454	210		
	Cl. 900		120	400	461	240		
DN 80	PN 16	DIN 2633	75	240	454	200		
	PN 63	DIN 2636	75		454	215		
	PN 100	DIN 2637	75		454	230		
4″	Cl. 150	ANSI B16.5	100	300	490	230	248	95
	Cl. 300		110		490	255		
	Cl. 600		120		490	275		
	Cl. 900		130	500	490	290		
DN 100	PN 16	DIN 2633	110	300	490	220		
	PN 63	DIN 2636	120		490	250		
	PN 100	DIN 2637	126		490	265		
6″	Cl. 150	ANSI B16.5	128	450	540	280	330	142
	Cl. 300		145		540	320		
	Cl. 600		170		540	355		
	Cl. 900		238	750	540	380		
DN 150	PN 16	DIN 2633	140	450	540	285		
	PN 63	DIN 2636	162		540	345		
	PN 100	DIN 2637	176		540	355		
8″	Cl. 150	ANSI B16.5	255	600	617	345	415	190

Nominal pipe size	Connection flange	Standard	Weight *	Length (A)	Hight (B) **	Flange diameter (C)	Width of measuring section (D)	Internal diameter (E)
			[kg]	[mm]	[mm]	[mm]	[mm]	[mm]
	Cl. 300		276		617	380		
	Cl. 600		316		617	420		
	Cl. 900		360		617	470		
DN 200	PN 16	DIN 2633	260		617	340		
	PN 63	DIN 2636	298		617	415		
	PN 100	DIN 2637	360		617	430		
10″	Cl. 150	ANSI B16.5	377	750	691	405	420	235
	Cl. 300		411		691	445		
	Cl. 600		485		691	510		
	Cl. 900		528		691	545		
DN 250	PN 16	DIN 2633	383		691	405		
	PN 63	DIN 2636	434		691	470		
	PN 100	DIN 2637	486		691	505		
12″	Cl. 150	ANSI B16.5	445	900	728	485	500	270
	Cl. 300		494		728	520		
	Cl. 600		560		728	560		
	Cl. 900		645		685	610		
DN 300	PN 16	DIN 2633	441		728	460		
	PN 63	DIN 2636	509		728	530		
	PN 100	DIN 2637	585		638	585		
14″	Cl. 150	ANSI B16.5	475	1,050	642	535	540	315
	Cl. 300		600		667	585		
	Cl. 600		675		677	605		
	Cl. 900		850		700	640		
DN 350	PN 16	DIN 2633	475		635	520		
	PN 63	DIN 2636	625		675	600		
	PN 100	DIN 2637	750		705	655		
Fore al meters ≥ 16″ an installation length of 3D is optionally available								
16″	Cl. 150	ANSI B16.5	672	762	844	595	610	360
	Cl. 300		760		844	650		
	Cl. 600		857		844	685		
	Cl. 900		926	800	755	705		
DN 400	PN 16	DIN 2633	658	762	844	580		
	PN 63	DIN 2636	794		844	670		
18″	Cl. 150	ANSI B16.5	660	820	754	635	620	405
	Cl. 300		760		792	710		
	Cl. 600		960		820	745		
	Cl. 900		1,300	900	830	785		
DN 450	PN 16	Data on request						
20″	Cl. 150	ANSI B16.5	750	902	815	700	670	450
	Cl. 300		930		853	775		
	Cl. 600		1,080		872	815		
	Cl. 900		1,500	1,000	892	855		
DN 500	PN 16	DIN 2633	700	902	823	715		
22″	Cl. 150	Data on request						
	Cl. 300							
	Cl. 600							
	Cl. 900							
DN 550	PN 16							
24″	Cl. 150	ANSI B16.5	1,090	991	927	815	760	540
	Cl. 300		1,390		978	915		
	Cl. 600		1,615		990	940		
	Cl. 900		2,100	1,200	1,040	1,040		
DN 600	PN 16	DIN 2633	1,015	991	940	840		
26″	Cl. 150	ASME	1,475	1,050	965	870	828	585
	Cl. 300	B16.47	1,825		1,016	972		

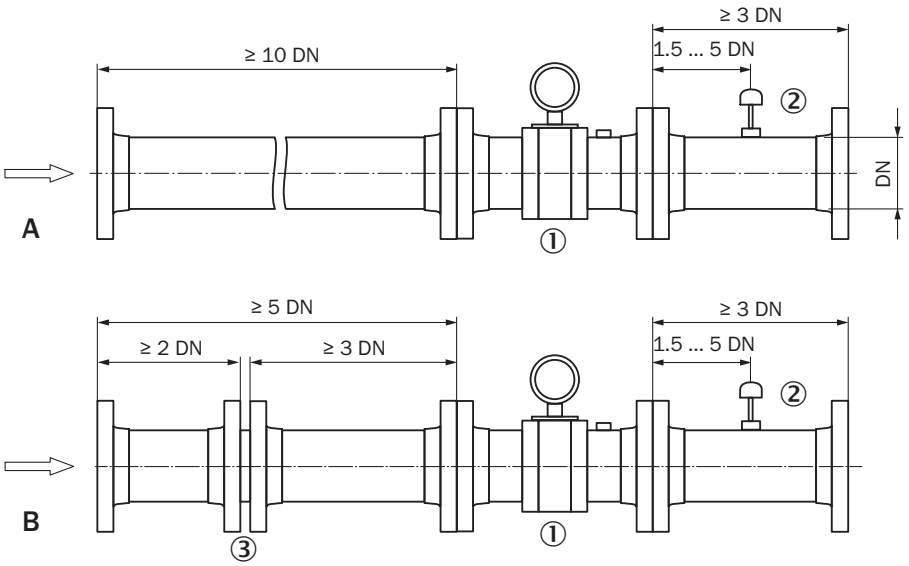
Nominal pipe size	Connection flange	Standard	Weight *	Length (A)	Hight (B) **	Flange diameter (C)	Width of measuring section (D)	Internal diameter (E)
			[kg]	[mm]	[mm]	[mm]	[mm]	[mm]
	Cl. 600		2,100		1,038	1,016		
	Cl. 900		2,500	1,250	1,073	1,086		
DN 650	PN16	Data on request						
28“	Cl. 150	ASME	1,950	1,100	1,027	927	862	630
	Cl. 300	B16.47	2,225		1,080	1,035		
	Cl. 600		2,450		1,100	1,073		
	Cl. 900		3,000	1,300	1,150	1,169		
DN 700	PN16	Data on request						
30″	Cl. 150	ASME	2,195	1,150	1,080	985	902	675
	Cl. 300	B16.47	2,545		1,135	1,092		
	Cl. 600		2,820		1,154	1,130		
	Cl. 900		3,350	1,350	1,205	1,232		
DN 750	PN16	Data on request						
32″	Cl. 150	ASME	2,485	1,200	1,145	1,061	979	720
	Cl. 300	B16.47	2,835		1,190	1,150		
	Cl. 600		3,110		1,212	1,194		
	Cl. 900		3,800	1,400	1,272	1,315		
DN 800	PN 16	Data on request						
34″	Cl. 150	Data on request						
	Cl. 300							
	Cl. 600							
	Cl. 900							
DN 850	PN 16							
36″	Cl. 150	ASME	3,125	1,250	1,250	1,169	1,082	810
	Cl. 300	B16.47	3,525		1,300	1,270		
	Cl. 600		3,850		1,323	1,315		
	Cl. 900		5,225	1,450	1,396	1,461		
DN 900	PN 16	Data on request						
38″	Cl. 150	ASME	3,800	1,300	1,310	1,238	1,160	855
	Cl. 300	B16.47	3,725		1,275	1,169		
	Cl. 600		4,300		1,325	1,270		
	Cl. 900		Data on request		1,421	1,461		
DN 950	PN 16	Data on request						
40″	Cl. 150	ASME	3,825	1,350	1,359	1,289	1,213	900
	Cl. 300	B16.47	4,125		1,334	1,239		
	Cl. 600		4,675		1,375	1,321		
	Cl. 900		Data on request		1,470	1,512		
DN 1000	PN 16	Data on request						
42″	Cl. 150	ASME	4,675	1,450	1,415	1,346	1,261	945
	Cl. 300	B16.47	4,650		1,386	1,289		
	Cl. 600		5,450		1,444	1,404		
	Cl. 900		Data on request		1,523	1,562		
DN 1050	PN 16	Data on request						
44″	Cl. 150	Data on request						
	Cl. 300							
	Cl. 600							
	Cl. 900							
DN 1100	PN 16							
46″	Cl. 150	Data on request						
	Cl. 300							
	Cl. 600							
	Cl. 900							
DN 1150	PN 16							
48″	Cl. 150	ASME	6,400	1,600	1,574	1,511	1,416	1,080
	Cl. 300	B16.47	6,475		1,552	1,467		
	Cl. 600		7,850		1,615	1,594		

Nominal pipe size	Connection flange	Standard	Weight *	Length (A)	Hight (B) **	Flange diameter (C)	Width of measuring section (D)	Internal diameter (E)
			[kg]	[mm]	[mm]	[mm]	[mm]	[mm]
	Cl. 900		12,100	1,900	1,711	1,785		
DN 1200	PN 16	Data on request						

* Devices with single SPU; devices with double SPU: weight + 7 kg
** Optional neck extension: B + 195 mm

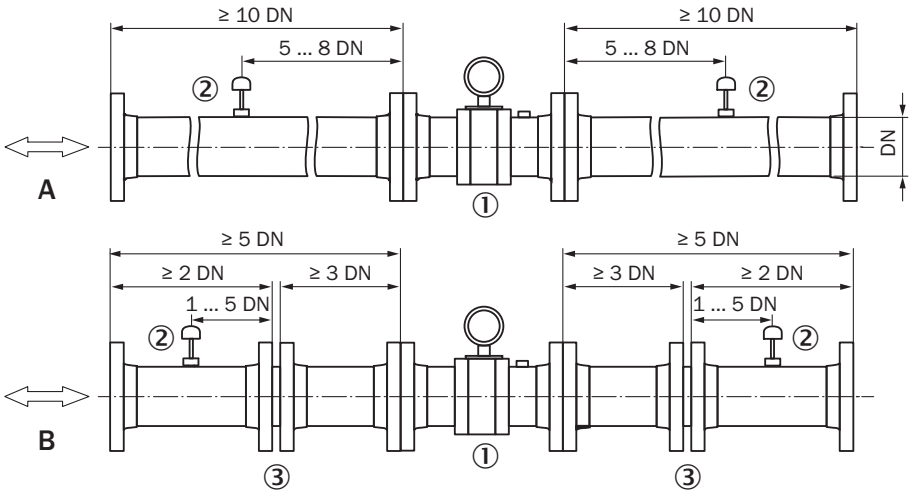
Instruction for installation

FLOWSIC600 integration into the pipeline for unidirectional use in configuration 1 (A) and configuration 2 (B)



① FLOWSIC600
② Temperature measuring point
③ Flow conditioner

FLOWSIC600 integration into the pipeline for bidirectional use in configuration 1 (A) and configuration 2 (B)



① FLOWSIC600
② Temperature measuring point
③ Flow conditioner

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