



GM32

In-situ gas analyzers

Efficient measurement of SO_2 , NO , NO_2 , NH_3
as well as TRS components in the Kraft pulp
process

In-situ gas analyzer GM32: For emissions and process gases

The tried-and-tested in-situ GM32 analyzer from SICK – optimized for non-contact measurement in emissions plants as well as for process gases – is available in several versions: a standard version, an Atex version and with optimized analysis technology for TRS measurement in the Kraft pulp industry.

Direct in-situ measurement

With the GM32 in-situ gas analyzer, your control technology systems are able to work with actual values in "real time". This is because it measures reactive gases including pressure and temperature in-situ, in other words, directly in the gas duct. Moreover, this is achieved quickly and without the need for complicated gas sampling or transportation, therefore avoiding the risk of changing or falsifying the gas composition.

Thanks to automatic self-monitoring, you can rely on the measured values and you receive prior warning in the event of deviations.

Combinable for simultaneous or individual measurement

Depending on requirements, the GM32 can be configured simultaneously for measured components SO_2 , NO , NO_2 and NH_3 , individually or in respective combinations thereof. For applications in the Kraft pulp industry, as GM32 TRS-PE (PE = Pulp Emission) version with measuring probe, also for TRS measuring components H_2S , CH_3SH , $(\text{CH}_3)_2\text{S}$ and $(\text{CH}_3)_2\text{S}_2$. Temperature and pressure reference values are measured and calculated automatically.

Simple and cost-effective

SICK's in-situ measuring devices have been characterized by their minimal operating costs for many years. Thanks to

this technology, complex maintenance and problems related to gas transportation and gas conditioning have become a thing of the past. The measured values are taken directly in the measuring path in the gas duct. Adjustment with test gases is not necessary.

In addition, the automatic QAL3 monitoring without test gases results in lower operating costs.

Convenient through remote diagnostics

Easier and faster access for remote data acquisition, remote diagnostics and maintenance thanks to comprehensive networking capability e.g. via Ethernet or OPC server connection.

Optimized evaluation processes

SICK has perfected the DOAS evaluation process (DOAS = Differential Optical Absorption Spectroscopy) as well as chemometrics in the GM32. It offers an equal level of measurement accuracy in both the high and low measuring ranges.

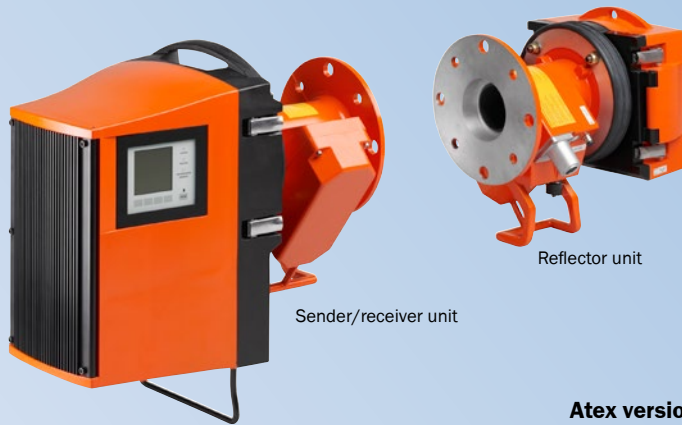
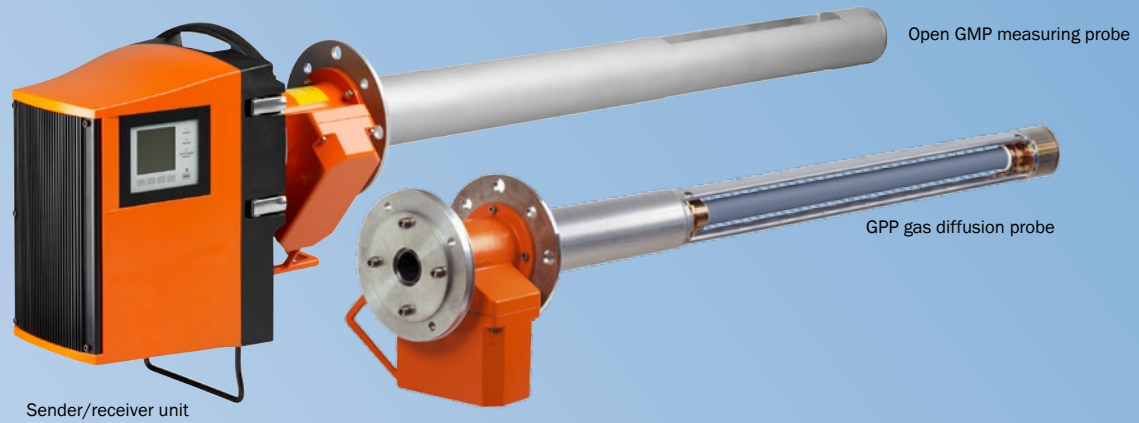
The signal evaluation is undertaken in the UV spectrum over an extremely broad range. GM32 evaluates the optimal spectral range for measuring range and measuring components in each case. This enables an extremely high level of accuracy to be achieved. Cross sensitivity

to foreign gases, dust and humidity is also ruled out. This means that flue gas purification systems can be efficiently controlled even under high dust loads. Thanks to automatic beam tracking, the GM32 measures just as efficiently even in the event of severe vibrations.

Measuring probe version

GM32 is available with two measuring probe types:

- GMP measuring probe with open measuring path
- GPP gas diffusion probe

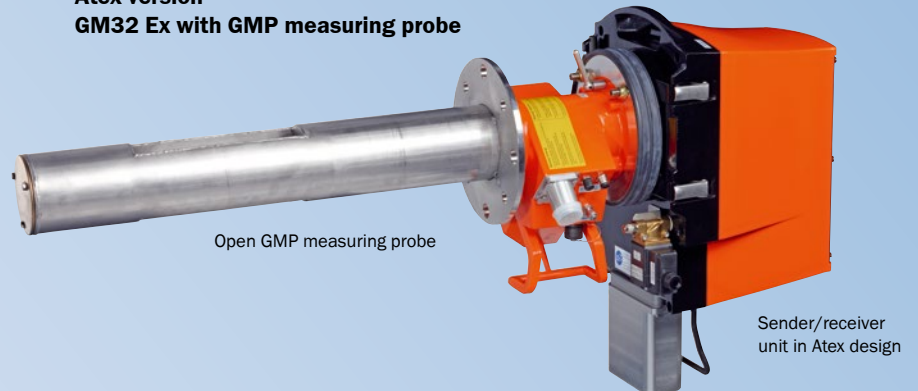


Cross-duct version

The sender/receiver and reflector units in the GM32 are installed adjacently to each other at the measuring site.

Atex version

GM32 Ex with GMP measuring probe



Measuring probe version

This version proves its strengths:

- Due to installation on a single side
- Under extremely high gas or dust concentrations
- With overpressure
- In wet gases
- As GMP measuring probe with open measuring gap
- With various measuring paths
- With integrated zero point path
- As GPP gas diffusion probe:
 - For turbulent gas flows
 - Gas testing according to U.S EPA possible

Cross-duct version

The cross-duct version is suitable for the following applications:

- Ideal for aggressive or extremely hot gases – without duct installation
- With minimal measuring ranges over large-scale duct diameters
- Representative measurement result even with extremely large duct diameters up to 12 m
- Insensitive to orientation thanks to automatic self-alignment

Designed for ATEX zones

With comprehensive safety functions and sophisticated system technology such as:

- ATEX category conform:
3G (ATEX Zone 2), 2G (ATEX Zone 1)
- Overpressure encapsulated device components

In-situ measurement in ATEX zones: a new solution for familiar tasks

GM32 gas analyzers with in-situ measuring technology have a long track record both in emissions monitoring as well as in process control applications. Now the rugged GM32 is also available in an ATEX version as the GM32 Ex, with cross-duct and measuring probe versions for gas temperatures up to 650 °C, for example, for use in the chemicals industry or refineries, but also for measuring tasks in the natural gas or crude oil industry as well as emissions monitoring supporting sulfur recovery plants or FCC plants.

A wide scope of safety functions for Ex-ranges

The in-situ GM32 Ex gas analyzer corresponds to both ATEX category 3G (ATEX Zone 2) and ATEX category 2G (ATEX Zone 1) in the measuring probe as well as the cross duct version. The sender/receiver unit (SR unit) and the connection unit are overpressure encapsulated to ensure that no explosive gases can penetrate into the units. The required permanent overpressure in the housing is ensured by protective gases with a corresponding control system.

Sophisticated system technology

The overpressure encapsulated GM32 component's sender/receiver and connection unit are connected to each other via a pressurized hose which contains the electrical connection cable. The Ex-p controller is attached to the connection unit. All of the other device components are non-electronic and therefore intrinsically safe. The protective gas is fed to the sender/receiver unit via an Ex-p valve. In order to protect against contamination or aggressive gases, the sender/receiver unit and, depending on version, the reflector unit is flushed by an ATEX approved air purge unit.

The advantages remain

The tried-and-tested advantages of SICK's in-situ measuring technology remain in the GM32 Ex, such as direct, rapid measurement without the need for gas transport, without gas conditioning, and especially, its automatic self-testing system without test gases. Installation directly at site of measurement



GM32, ATEX versions

- Version with measuring probe (shown)
- Cross-duct version

Sender/receiver unit in overpressure encapsulated version



Simple, precise, cost-effective:
TRS emissions safely under control

The first and only direct TRS measurement in the Kraft pulp process:
GM32 TRS-PE (PE = Pulp Emission)
from SICK.



TRS measurement success in the Kraft pulp industry
Lime kilns and black liquor recovery boiler for the source for TRS components in Kraft pulp plants. The limit values for these emissions are strictly regulated by the authorities and are typically set between 5 ... 30 mg/m³ (3 ... 20 ppm). Depending on restriction, hydrogen sulfide (H₂S) must be monitored alone or as part of the sum TRS parameter.

UV spectroscopy – the optimal measuring technology

The GM32 TRS-PE with GPP measuring probe is the optimal solution for continuous measurement of primary TRS components such as hydrogen sulfide (H₂S) and methyl mercaptan (CH₃SH). In addition, primary TRS components dimethyl sulfide ((CH₃)₂S) and dimethyl disulfide (CH₃)₂S₂) can also be measured. This means extremely efficient process control can be achieved at minimum cost and without expensive auxiliary materials. Of course, TRS measurement with the GM32 TRS-PE also enables simultaneous measurement of SO₂, NO and NH₃ – all with a single analyzer.

**GM32 TRS-PE (PE = Pulp Emission):
version with GPP gas diffusion probe**



Sender/receiver unit with integrated,
TRS optimized, spectroscopic evaluation
procedure

GPP gas diffusion probe

Monitoring and control of flue gas in purification plants

The in-situ GM32 analyzer with its optimized measuring technology is suitable for nitrogen oxide measurement for controlling catalytic processes in flue gas denitrification and desulfurization plants. The GM32 is the best choice, especially in situations where rapid measurement is required directly in the gas duct, even under high dust loads or where saturated sample gas is expected.

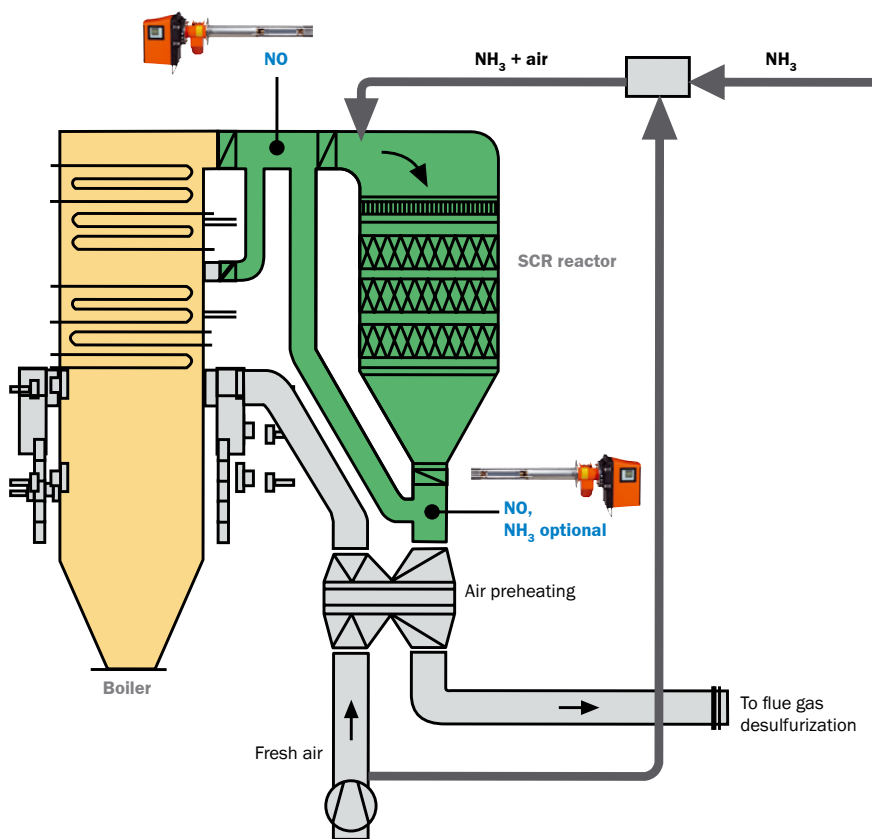
Flue gas denitrification plants – fast, unaltered measurement

Environment protection laws demand reduction of nitrogen oxide (NO_x) content in flue gases. The reduction of the NO_x content is typically achieved with flue gas denitrification plants (De NO_x) using selective catalytic reduction (SCR) or selective non-catalytic reduction (SCNR). The addition of ammonia (NH_3) to the flue gas – at temperatures of approx. 400 °C – causes the nitrogen oxide to be converted to water and nitrogen. In order to determine and monitor the required NH_3 volume, it is necessary to measure NO concentrations at the inlet to the denitrification plant. In order to determine the effectiveness of the catalytic denitrification process, at the output of the De NO_x plant NO and additionally the NH_3 concentration (slip) is again measured. This measurement serves to provide additional monitoring and maintenance of environmental standards.

GM32 delivers the best solution

The key factor for efficient monitoring and control in flue gas denitrification plants is the extremely short response time for measurement. They can significantly increase the effectiveness and service life of the plant and simultaneously prevent fouling of the catalytic converter as well as avoid ammonia

pollutants in the flue ash. The GM32 from SICK delivers reliable measurement results without delay for monitoring NO concentrations, both in raw gas as well as clean gas ducts, also for NH_3 slip measurement downstream of the catalytic converter.



Desulphurization plants and emissions measurement

Desulphurization plants (DeSO_x) use, among other things, wet scrubber systems in order to spray the flue gas with a calcareous solution after the dust has been removed. This process causes the sulfur oxides in the flue gas to react and be converted to calcium sulfite or sulfate. These products are then removed from the process by dehydration. Alternatively, compressed air can be added to the sulfite sludge causing the calcium sulfite to oxidize into gypsum.

The GM32 from SICK has also proven itself in such process control applications as well as in continuous emissions monitoring, regardless of whether the measured gases are saturated (wet) or dry.



Product Benefits

The fast GM32 with direct, delay-free in-situ measurement of SO₂, NO, NO₂ and NH₃ is the ideal analyzer for efficient monitoring and control of flue gas denitrification plants.

For denitrification:

- Optimization of ammonia spraying in order to minimize NH₃ slip.
- Continuous monitoring of catalytic converter effectiveness.
- Reduction of bound ammonia in flue ash.
- Contamination of catalytic converter and other system components due to ammonium salts avoided.

- Increase of catalytic converter service life and minimization of system downtime

For flue gas desulfurization:

- SO₂ measurement for regulating lime spraying
- Monitoring of desulfurization effectiveness
- Continuous emissions monitoring

Measure aggressive gases directly and quickly – even in ATEX zones



Product description

The GM32 in-situ gas analyzer measures SO_2 , NO, NO_2 and NH_3 , as well as TRS components in Kraft pulp processes including pressure and temperature in the gas duct. Direct, fast and without gas sampling and transport. This means control systems are able to work with actual values in real time. Due to self-monitoring, the measured values are reliable. In case of deviations an early warning will be shown.

For emission measurement of SO_2 and NO, GM32 is tested for suitability according to European standard EN 15267-3.

An ATEX version with comprehensive safety functions and sophisticated system technology is also available, as well as the GM32 TRS-PE (PE = Pulp Emission) for TRS measurement in Kraft pulp processes.

At a glance

- Direct, fast in-situ measurement
- No gas sampling, no gas transport, no gas conditioning
- Up to eight measuring components at the same time, plus process temperature and pressure
- DOAS and CDE evaluation process
- Numerous independent measuring ranges with consistent accuracy
- Automatic self-test function (QAL3) without test gases
- Overpressure encapsulated version for ATEX Zones 1 and 2

Benefits

- Unaltered measured values in real time without altering the gas composition
- Short-term process deviations are detected
- Representative measurement by selection of cross-duct or measuring probe versions
- Fast on-site service due to modular design
- Long maintenance-free intervals
- Cost-effective in-situ gas analyzer – also in ATEX version
- Low cost of installation and operation, no test gases required
- Complete emissions measurement in Kraft pulp process by way of simultaneous measurement of TRS components plus SO_2 , NO, NH_3



Additional information

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→ www.mysick.com/en/GM32

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

- For monitoring and control in flue gas purification, such as denitrification plants, desulfurization plants and converters.
- Emissions monitoring according to EU directives or local regulations
- Monitoring of landfill gases
- Monitoring tasks, for example, in nitric acid and ammonia production processes
- TRS emissions monitoring in the Kraft pulp industry

Detailed technical data

System

System: standard and Atex version

Description	Approved in-situ gas analyzers for emissions monitoring	
Measured value	NO, NO ₂ , NH ₃ , SO ₂	
TÜV-approved measured values	NO, SO ₂	
Maximum number of measured values	4 (plus process temperature and pressure) 4	
Measurement principle	Differential optical absorption spectroscopy (DOAS)	
Measuring ranges	<div> <div>NH₃</div> <div>0 ... 30 ppm / 0 ... 2.600 ppm</div> </div> <div> <div>NO</div> <div>0 ... 40 ppm / 0 ... 1.900 ppm</div> </div> <div> <div>NO₂</div> <div>0 ... 50 ppm / 0 ... 1.000 ppm</div> </div> <div> <div>SO₂</div> <div>0 ... 15 ppm / 0 ... 7.000 ppm</div> </div> <p>Measuring ranges refer to 1 m measuring path Measuring ranges depend on application and device type</p>	
Certified measuring ranges	<div> <div>NO</div> <div>0 ... 70 mg/m³ / 0 ... 700 mg/m³</div> </div> <div> <div>SO₂</div> <div>0 ... 75 mg/m³ / 0 ... 1.000 mg/m³</div> </div> <p>With an active measured path length of 1.86 m (cross duct) or 1.25 m (open measuring probe) The gas testable measuring probe (GPP) has not been suitability tested by TÜV</p>	
Response time	<p>Open measuring probe (GMP): ≥ 5 s Configurable</p> <p>Gas testable measuring probe (GPP): ≥ 120 s Configurable</p> <p>Cross duct version: ≥ 30 s Configurable</p> <p>TÜV suitability test: ≥ 30 s configurable</p>	
Accuracy	<p>NH₃: ≥ ± 0.7 ppm</p> <p>NO: ≥ ± 0.8 ppm</p> <p>NO₂: ≥ ± 2.5 ppm</p> <p>SO₂: ≥ ± 0.3 ppm</p> <p>Related to the lowest measuring range</p>	
Ambient temperature	<p>-20 °C ... +55 °C</p> <p>temperature change max. ±10 °C/h</p>	
Storage temperature	<p>-20 °C ... +55 °C</p> <p>temperature change max. ±10 °C/h</p>	
Ambient humidity	<p>≤ 96 %</p> <p>relative humidity; bedewing of optical surfaces not permitted</p>	
Conformities	<p>Approved for system requiring permission</p> <p>2001/80/EC (13. BImSchV)</p> <p>2000/76/EC (17. BImSchV)</p> <p>27. BImSchV</p> <p>EN 15267-3</p> <p>EN 14181</p>	

ATEX approvals	ATEX	II 2G Ex px [op is Gc] IIC T3 Gb II 3G Ex pz op is IIC T3 Gc
Electrical safety		CE
Enclosure rating		Standard: IP 65, IP 69K Atex version: IP 65
Operation		Via integrated operating unit or SOPAS ET software
Corrective functions		Internal correction of contamination
Test functions		Internal zero point check Control cycle for zero and reference point acc. QAL3
Options		SCU operating unit
Scope of Delivery		The scope of delivery depends on application and customer specifications

System: TRS-PE

Description	In-situ gas analyzers for TRS monitoring in Kraft pulp processes	
Measured value	NO, NH ₃ , SO ₂ , CH ₃ SH, (CH ₃) ₂ S, (CH ₃) ₂ S ₂ , H ₂ S, TRS	
Maximum number of measured values	8 (plus process temperature and pressure) 8	
Measurement principle	Chemometric data analysis	
Measuring ranges		<div> <div>NH₃</div> <div>0 ... 30 ppm / 0 ... 50 ppm</div> </div> <div> <div>NO</div> <div>0 ... 40 ppm / 0 ... 150 ppm</div> </div> <div> <div>SO₂</div> <div>0 ... 15 ppm / 0 ... 21 ppm</div> </div> <div> <div>H₂S</div> <div>0 ... 16 ppm / 0 ... 33 ppm</div> </div> <div> <div>CH₃SH</div> <div>0 ... 7 ppm / 0 ... 23 ppm</div> </div> <div> <div>(CH₃)₂S</div> <div>0 ... 5 ppm / 0 ... 18 ppm</div> </div> <div> <div>(CH₃)₂S₂</div> <div>0 ... 6 ppm / 0 ... 12 ppm</div> </div> <div> <div>TRS</div> <div>0 ... 26 ppm / 0 ... 65 ppm</div> </div> <div>Measuring ranges refer to 1 m measuring path</div> <div>Measuring ranges depend on application and device type</div> <div>TRS = H₂S + CH₃SH (as H₂S-equivalent)</div> <div>For device version 7: TRS = H₂S + CH₃SH + (CH₃)₂S + 2x (CH₃)₂S₂</div>
Response time	Gas testable measuring probe (GPP): ≥ 120 s Configurable	
Accuracy	<div>NH₃: ≥ ± 0.7 ppm</div> <div>NO: ≥ ± 0.8 ppm</div> <div>SO₂: ≥ ± 0.3 ppm</div> <div>H₂S: ≥ ± 0.7 ppm</div> <div>CH₃SH: ≥ ± 0.5 ppm</div> <div>(CH₃)₂S: ≥ ± 0.4 ppm</div> <div>(CH₃)₂S₂: ≥ ± 0.3 ppm</div> <div>TRS: ≥ ± 1.4 ppm</div>	
Ambient temperature	-20 °C to +55 °C Temperature change max. ±10 °C/h For device version 7: +20 °C ... +30 °C	
Storage temperature	-20 °C to +55 °C Temperature change max. ±10 °C/h	
Ambient humidity	≤ 96 % Relative humidity; bedewing of optical surfaces not permitted	
Electrical safety	CE	
Enclosure rating	IP 65, IP 69K	
Operation	Via integrated operating unit or SOPAS ET software	

Corrective functions	Internal correction of contamination
Test functions	Internal zero and reference point check
Options	SCU operating unit
Scope of Delivery	The scope of delivery depends on application and customer specifications

Sender/receiver unit

Sender/receiver unit: standard version

Description	Measurement system analyzer unit
Interfaces	Ethernet (service and OPC interface)
Operation	Via integrated operating unit
Dimensions (W x H x D)	315 mm x 580 mm x 359 mm
Weight	≤ ± 20 kg

Sender/receiver unit: ATEX version

Description	Measurement system analyzer unit
Interfaces	Ethernet (service and OPC interface)
Operation	Via integrated operating unit
Dimensions (W x H x D)	315 mm x 910 mm x 410 mm
Weight	≤ 20 kg

Measuring probe

Open measuring probe (GMP)

Description	Measuring probe in open version with integrated purge air control system
Process temperature	≤ +550 Versions for higher temperatures available on request
Process pressure	–60 hPa ... 60 hPa Relative
Dimensions (W x H x D)	See dimensional drawings
Weight	Measuring probe: ≤ ± 25 kg Purge air fixture: ≤ ± 7 kg
Material in contact with media	Stainless steel 1.4571, stainless steel 1.4539
Auxiliary connections	Purge air
Integrated components	Pressure sensor (not in ATEX version) Temperature sensor PT1000 (not in ATEX version) Flow detector (monitor for purge air supply; not in ATEX version)

Gas-testable measuring probe (GPP)

Description	Measuring probe with gas permeable filter element, for adjustment with test gas
Process temperature	With ceramic filter: ≤ +430 °C With Teflon filter: ≤ +200 °C
Process pressure	–60 hPa ... 200 hPa Relative
Bus protocol	CAN (internal system bus)
Dimensions (W x H x D)	See dimensional drawings
Weight	Measuring probe: ≤ ± 45 kg Purge air fixture: ≤ ± 7 kg
Material in contact with media	Stainless steel 1.4571, stainless steel 1.4539, ceramic, PTFE

Electrical connection	Voltage	115 V / 230 V
	Frequency	50 Hz / 60 Hz
	Power consumption	≤ 150 W
Auxiliary connections	Test gas Purge air	
Integrated components	Pressure sensor PT1000 temperature sensor	

Reflector unit

Description	Reflector unit with glass triple reflector
Process temperature	≤ +550 Versions for higher temperatures available on request
Process pressure	-60 hPa ... 200 hPa
Dimensions (W x H x D)	291 mm x 280 mm x 161 mm
Weight	≤ 9 kg

Purge air attachment

Purge air attachment: sender/receiver unit

Description	Fixture to flanges with connections for purge air and external cabling (only cross duct version)
Dimensions (W x H x D)	320.9 mm x 360 mm x 220 mm (for details see dimensional drawing)
Weight	≤ ± 7 kg
Auxiliary connections	Purge air
Integrated components	Temperature sensor PT1000 (not in ATEX version) Flow detector (monitor for purge air supply; not in ATEX version)

Purge air attachment: reflector unit

Description	Fixture to flanges with connections for purge air and external cabling (only cross duct version)
Bus protocol	CAN (internal system bus)
Dimensions (W x H x D)	320.9 mm x 360 mm x 220 mm (for details see dimensional drawing)
Weight	≤ 7 kg
Auxiliary connections	Purge air
Integrated components	Flow detector (monitor for purge air supply; not in ATEX version)

I/O module

Connection unit: standard version

Description	Serves for connection of power supply, data and signal cabling provided by the customer
Analog outputs	2 outputs: 0/4 - 22 mA, 500 Ω Per module, modules can be selected and expanded according to requirements
Analog inputs	2 inputs: 0/4 - 22 mA, 100 Ω Per module, modules can be selected and expanded according to requirements
Digital outputs	4 outputs: 48 V AC/DC, 0.5 A, 25 W Per module, modules can be selected and expanded according to requirements
Digital inputs	4 inputs: 3.9 V, 4.5 mA, 0.55 W Per module, modules can be selected and expanded according to requirements

Interfaces	Ethernet Expandable via external operating unit (option)
Bus protocol	OPC Ethernet TCP/IP
Dimensions (W x H x D)	450 mm x 424 mm x 158 mm
Weight	≤ ± 16 kg
Electrical connection	
Voltage	100 ... 250 V
Frequency	50 Hz / 60 Hz
Power consumption	≤ 260 W

Connection unit: Atex version

Description	Serves for connection of power supply, data and signal cabling provided by the customer
Analog outputs	2 outputs: 0/4 ... 22 mA, 500 Ω Per module, modules can be selected and expanded according to requirements
Analog inputs	2 inputs: 0/4 ... 22 mA, 100 Ω Per module, modules can be selected and expanded according to requirements
Digital outputs	4 outputs: 48 V AC/DC, 0.5 A, 25 W Per module, modules can be selected and expanded according to requirements
Digital inputs	4 inputs: 3.9 V, 4.5 mA, 0.55 W Per module, modules can be selected and expanded according to requirements
Interfaces	Ethernet Expandable via external operating unit (option)
Bus protocol	OPC Ethernet TCP/IP
Dimensions (W x H x D)	679 mm x 630 mm x 158 mm
Weight	≤ ± 16 kg
Electrical connection	
Voltage	100 V / 230 V
Frequency	50 Hz / 60 Hz
Power consumption	≤ 260 W

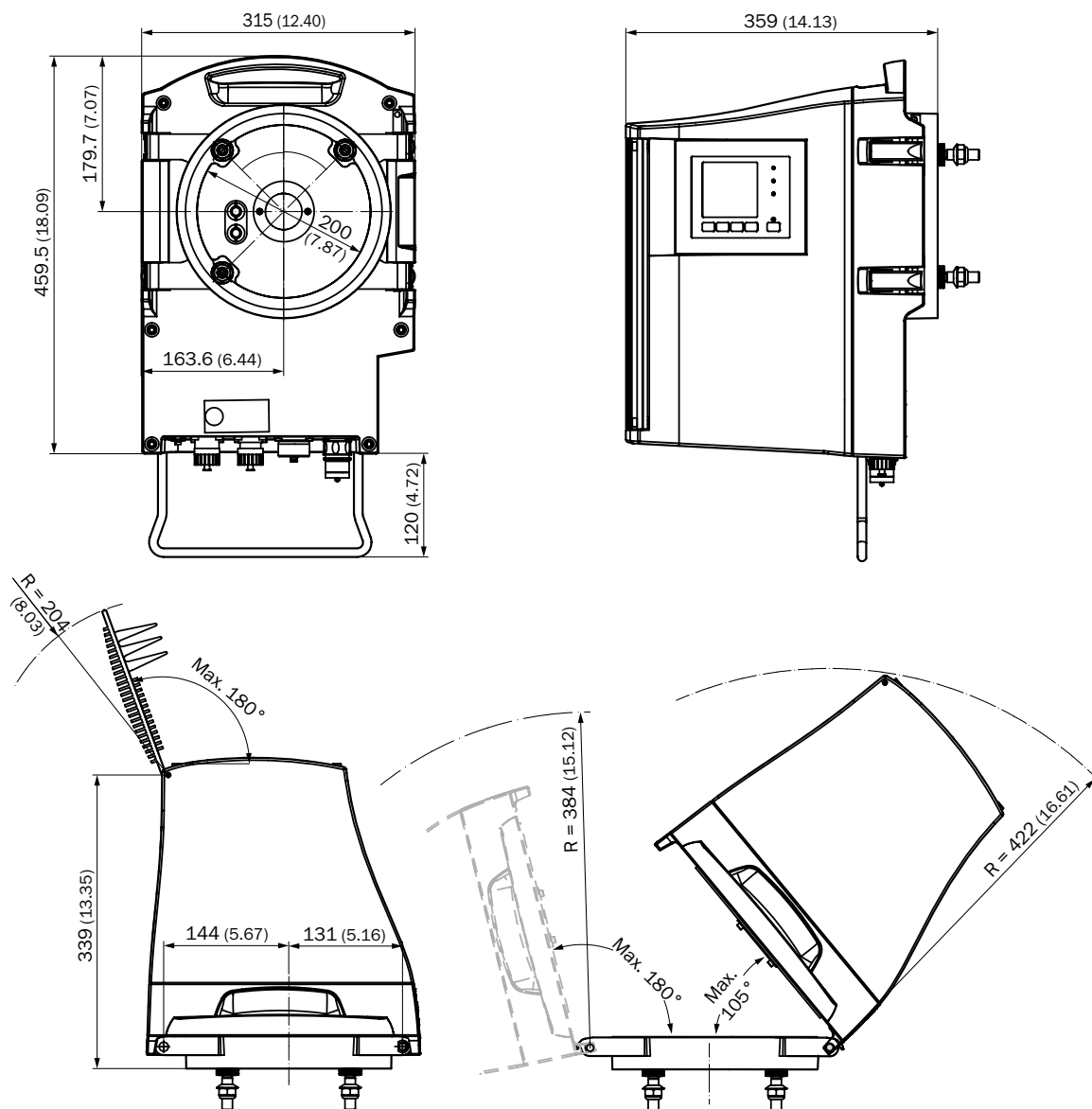
Ordering information

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

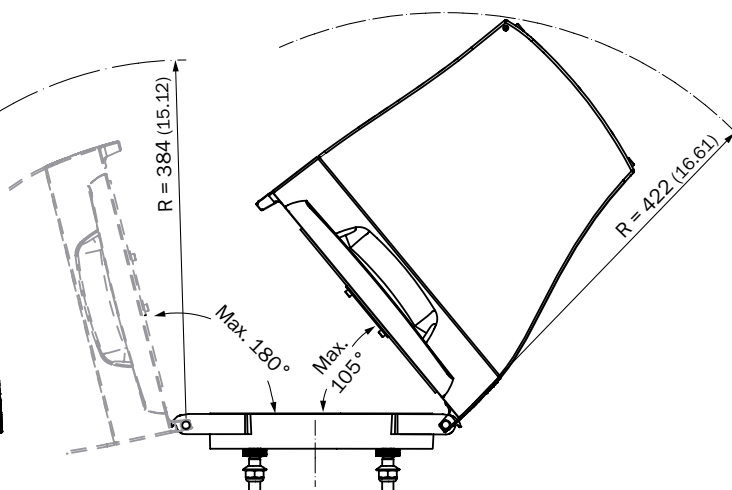
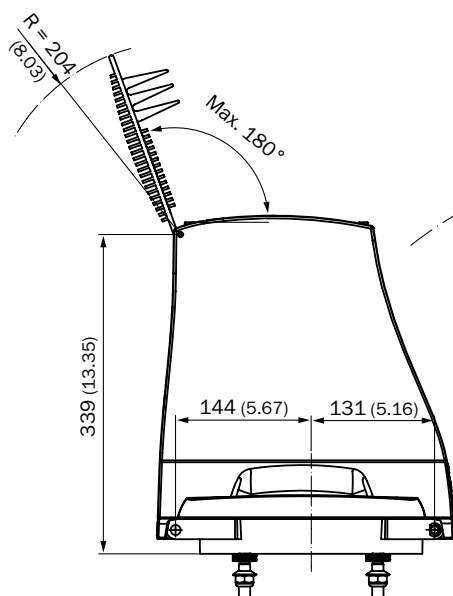
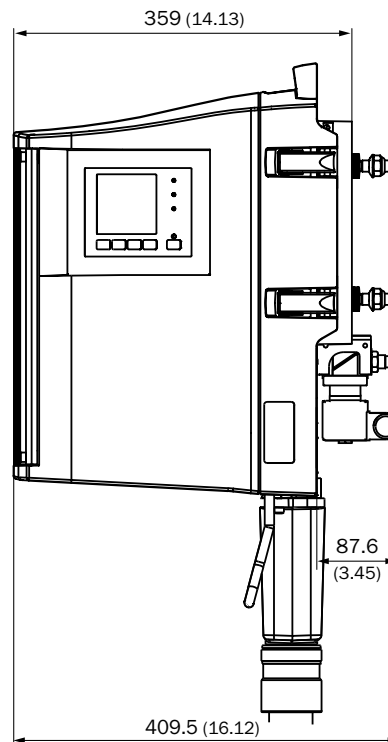
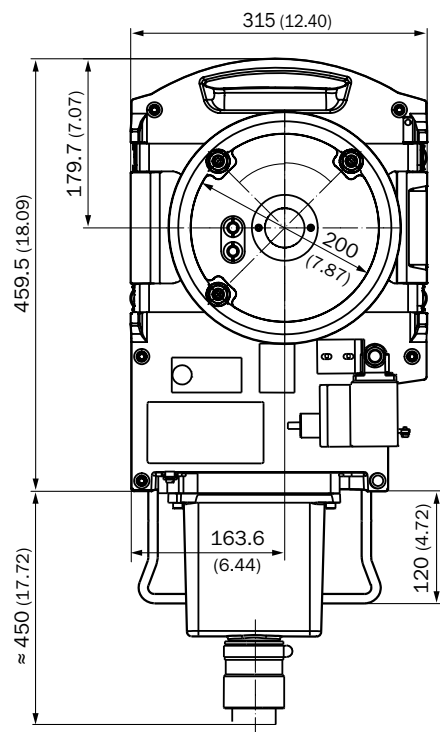
Dimensional drawings

Dimensions in mm

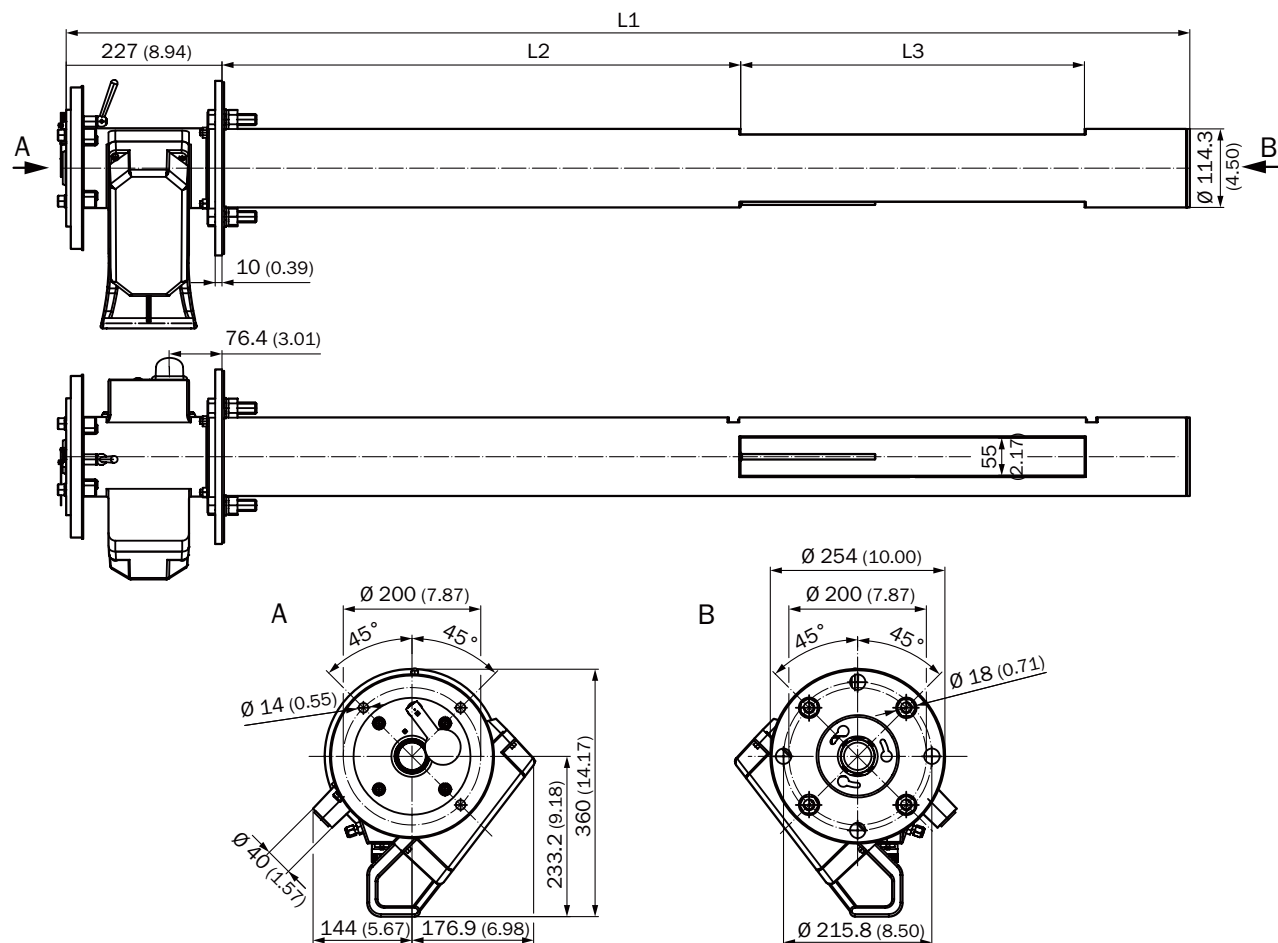
Sender/receiver unit: standard version



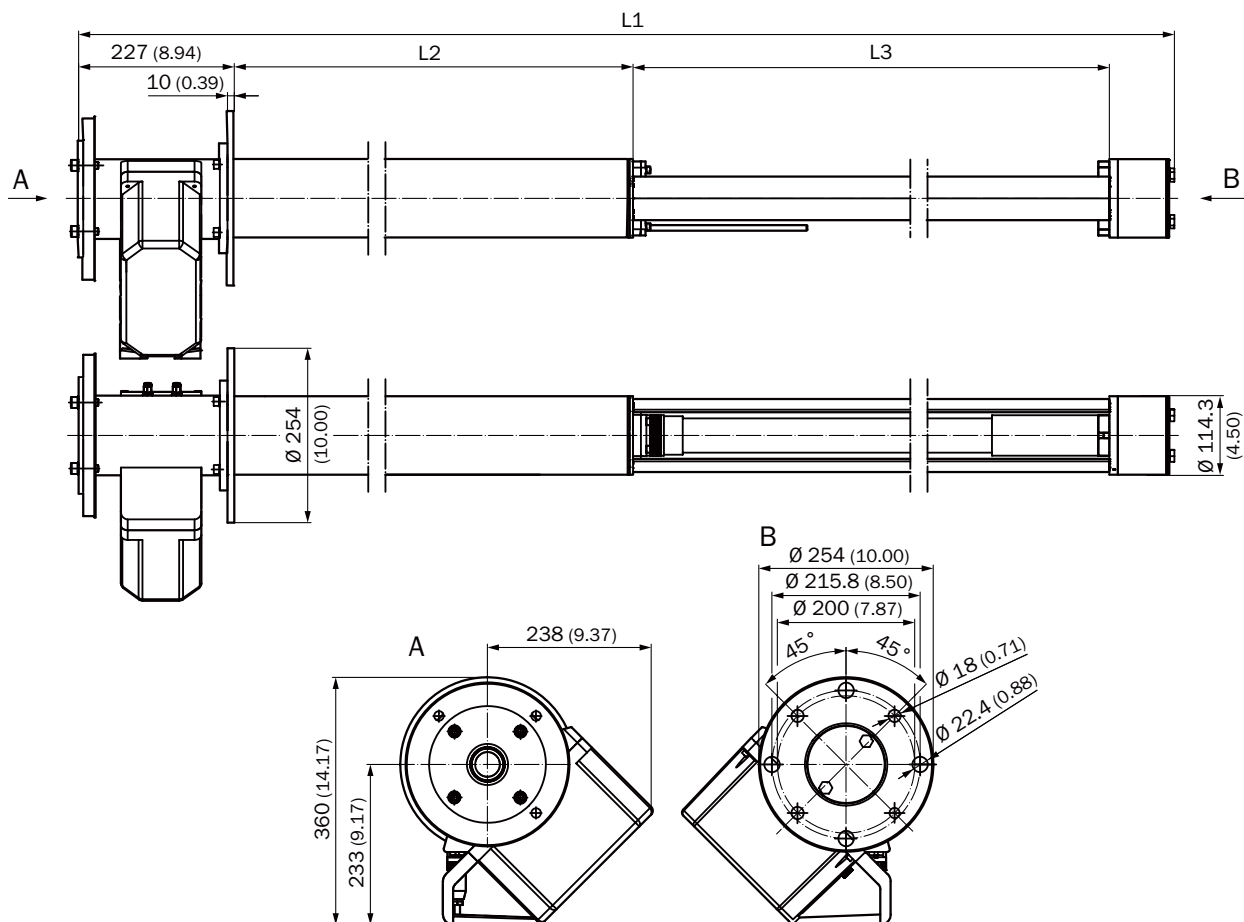
Sender/receiver unit: ATEX version



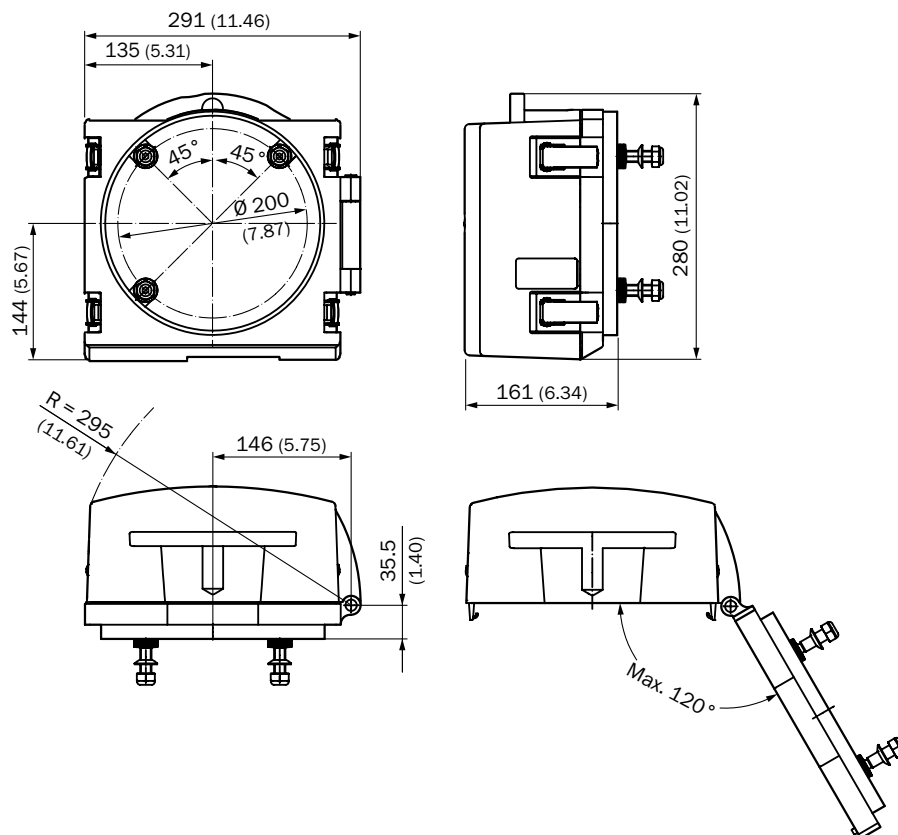
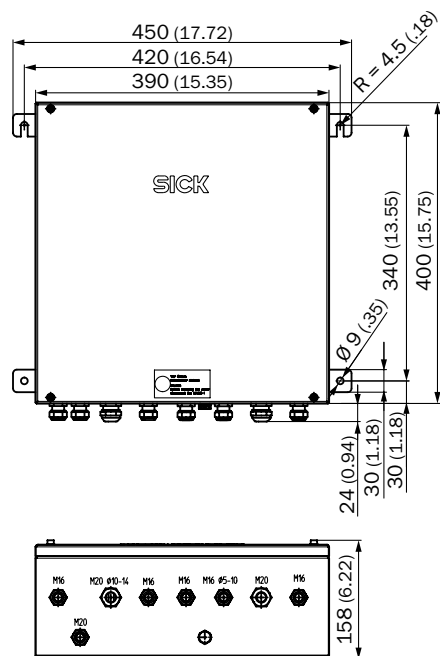
Open measuring probe (GMP)



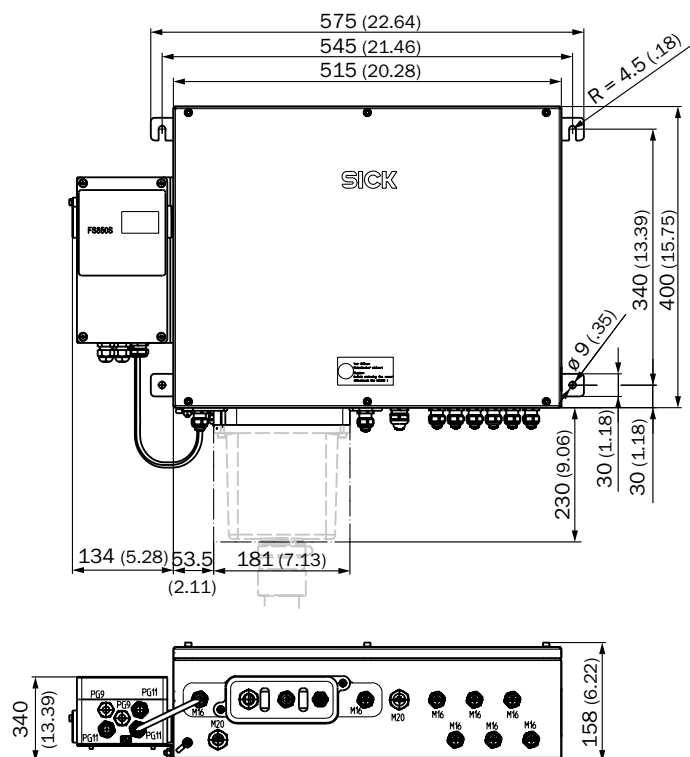
GMP measuring probes		Measuring gap L3 (active measuring path)						
		250	500	750	1,000	1,250	1,500	1,750
Probe length, nominal	L1	L2						
900	935	296	---	---	---	---	---	---
1,500	1,644	1,004.5	754.5	504.5	254.5	---	---	---
2,000	2,128	1,489	1,239	989	739	489	239	---
2,500	2,628	1,988	1,738	1,488	1,238	988	738	488
All dimensions in mm								
Application-specific lengths available on request								

Gas testable measuring probe (GPP) not approved for ATEX applications


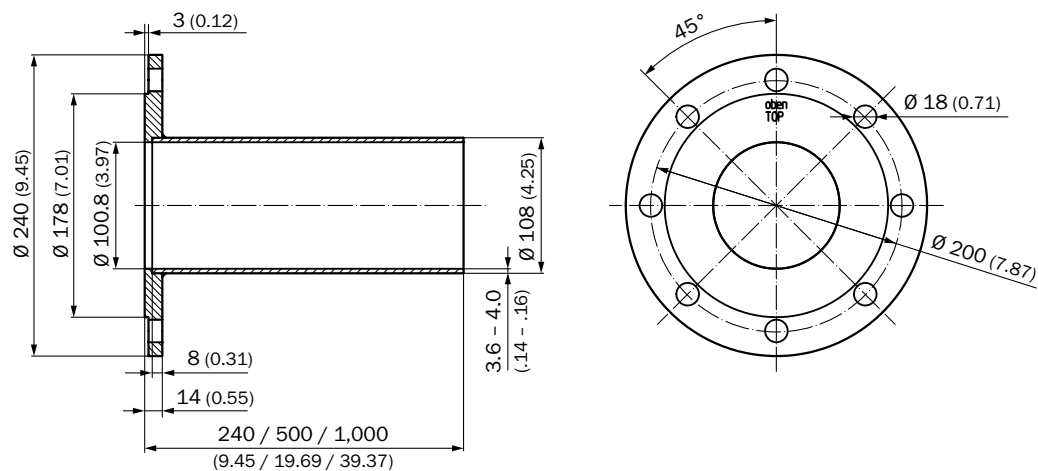
GPP measuring probes		Measuring gap L3 (active measuring path)			
		227	477	727	977
Probe length, nominal	L1	L2			
1,000	904	353	103	---	---
1,500	1,614	1,063	813	563	313
2,000	2,098	1,547	1,297	1,047	797
2,500	2,598	2,047	1,797	1,547	1,297
All dimensions in mm					
Application-specific lengths available on request					

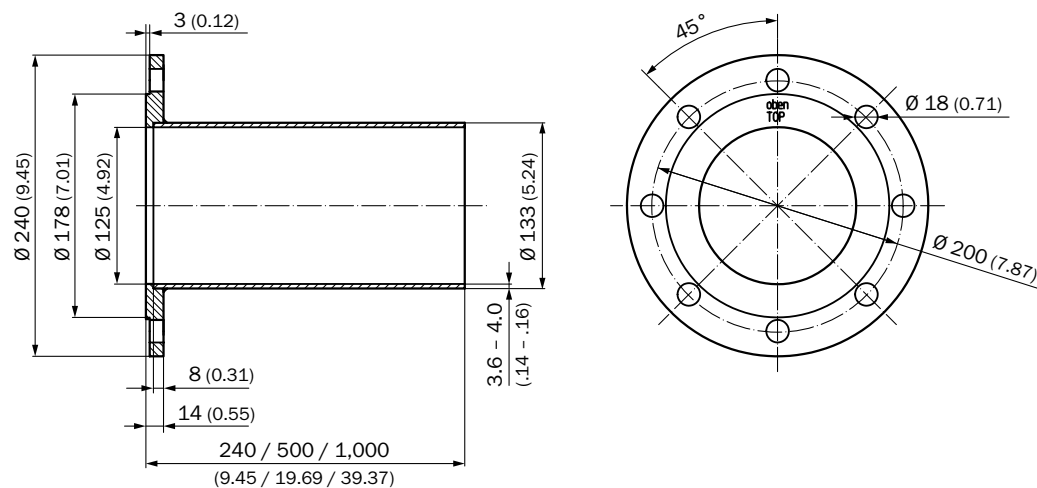
Reflector unit**Connection unit: standard version**

Connection unit: Atex version



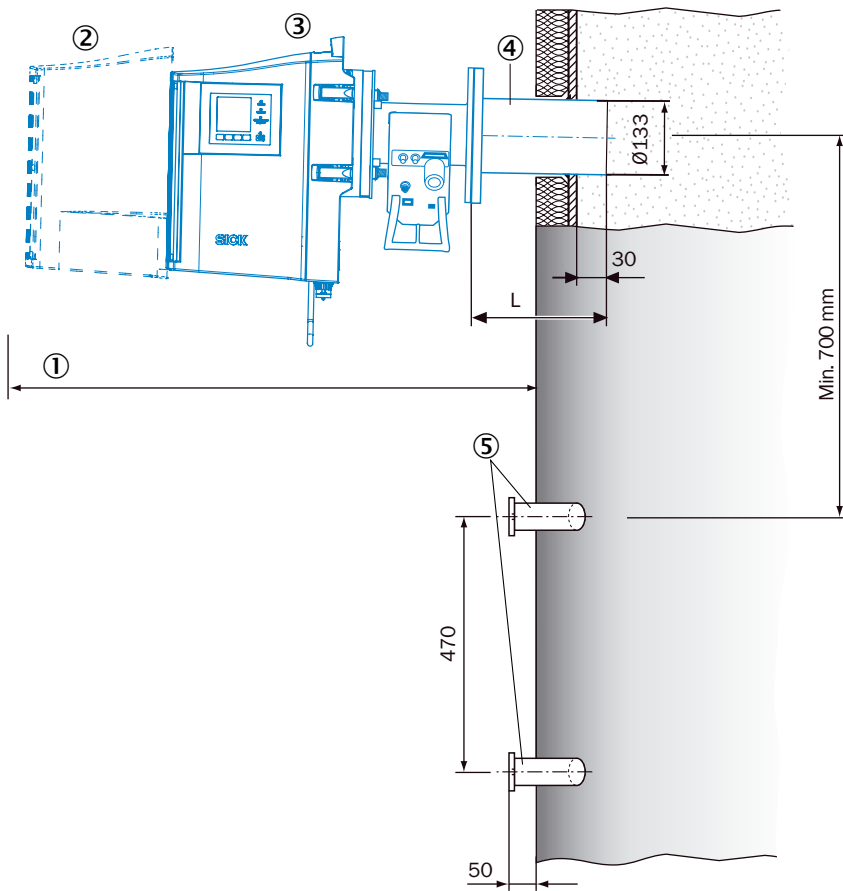
Mounting flange, nominal width: 100 mm



Mounting flange, nominal width: 125 mm

Mounting notes

Measuring probe version: installation example on a vertical duct or stack

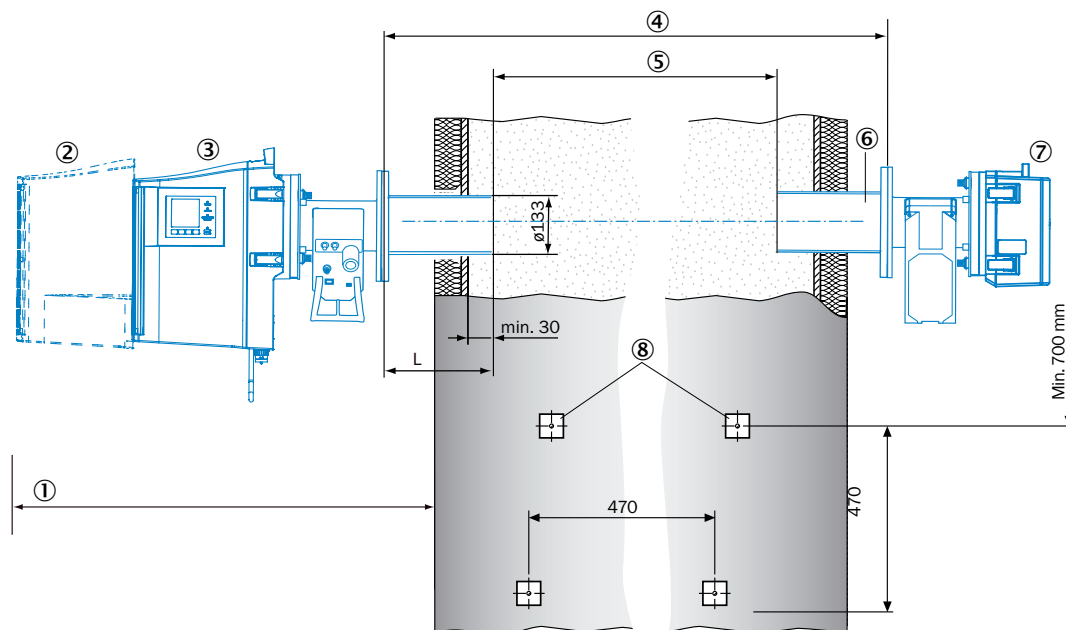


- ① Recommended clearance: approx. 1.5 m (min. 1 m)
- ② Weatherproof cover (option)
- ③ Sender/receiver unit
- ④ Mounting flange: L = 240 mm/500 mm/1000 mm; pipe inclination: approx. 1° in direction of duct, in order to allow for condensate drainage
- ⑤ Mounting of purge air unit (by customer): e.g. 4 steel pipes, 50 x 5 mm

Project planning is extremely important for trouble-free mounting and commissioning of the measuring device. The most important requirements and preparations at the site of installation for determining the measuring site for the GM32 measuring probe version are described as follows:

- Project planning is extremely important for trouble-free mounting and commissioning of the measuring device. The most important requirements and preparations at the site of installation for determining the measuring site for the GM32 measuring probe version are described as follows:
- Unimpeded inlet and outlet sections taken into consideration
 - Plan suitable free space for mounting and maintenance activities, for example, for tilting the sender/receiver unit and extending the probe
 - Arrange for sufficient weatherproofing for the device components, if mounting outdoors
 - The site of installation must be sufficient for the weight of the sender/receiver unit including the measuring probe
 - Arrange clearance of minimum 0.5 m in direction of flow upstream from the device for the calibration supports, in order that the measuring device and calibration probe cannot interfere with each other.

Cross-duct version: installation example on a vertical duct or flue



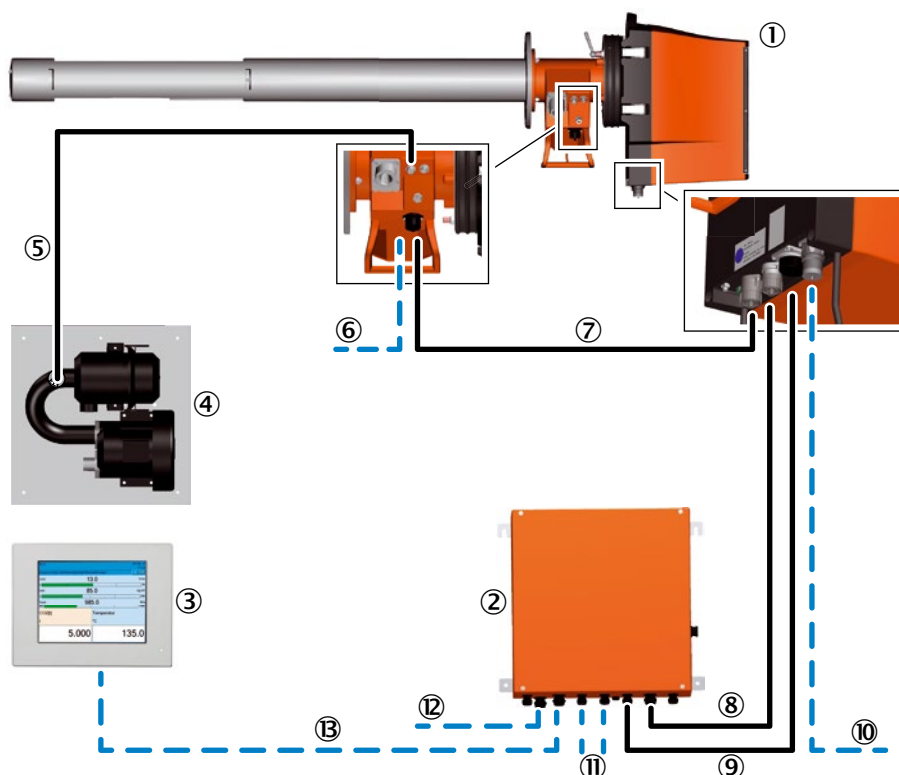
- ① Recommended clearance: approx. 1.5 m (min. 1 m)
- ② Weatherproof cover (option)
- ③ Sender/receiver unit
- ④ Distance flange – flange
- ⑤ Active measuring path
- ⑥ Mounting flange: length = 240 mm/500 mm/1,000 mm
- ⑦ Reflector unit
- ⑧ Mounting of purge air unit (by customer): e.g. 4 steel pipes, 50 x 5 mm

Project planning is extremely important for trouble-free mounting and commissioning of the measuring device. The most important requirements and preparations at the site of installation for determining the measuring site for the GM32-Cross Duct Version are described as follows:

- Unimpeded inlet and outlet sections taken into consideration
- Always ensure "distance flange – flange" and "active measuring path" values are maintained!
- Plan suitable free space for mounting and maintenance activities, for example, for tilting the sender/receiver unit
- Arrange for sufficient weatherproofing for the device components, if mounting outdoors
- The site of installation must be sufficient for the weight of the sender/receiver unit and reflector
- Arrange clearance of minimum 0.5 m in direction of flow upstream from the device for the calibration supports, in order that the measuring device and calibration probe cannot interfere with each other.

Connection diagram

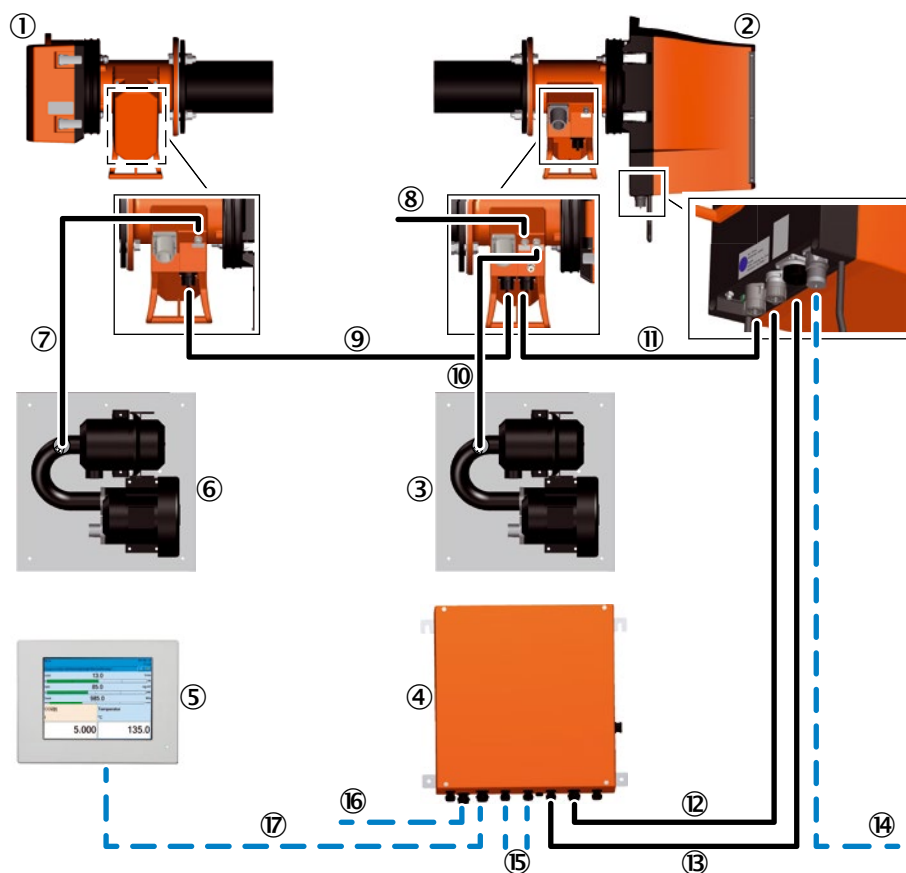
Measuring probe version



- ① Sender/receiver unit with measuring probe (shown: GMP measuring probe)
- ② Connection unit
- ③ Controller SCU-P100 (option)
- ④ Purge air unit (only for GMP measuring probe)

No.	Cable	Length	Remarks	Part no.
5	Filter monitoring SLV4	5 m	Included in measuring probe purge air attachment	2032143
6	Power supply for GPP measuring probe	10 m	Contained in measuring probe purge air attachment; from customer: 115 / 230 V AC, 50 / 60 Hz	2017519
7	Sender/receiver unit – purge air attachment (CAN cable)	0.8 m	Included in measuring probe purge air attachment	2023704
8	Sender/receiver unit – connection unit (CAN cable)	10 m 20 m	Order separately	2028786 2045422
9	Power supply sender/receiver unit	10 m 20 m	Order separately	2046548 2046549
10	Ethernet cable – PC/network		From customer	—
11	Inputs/outputs		From customer: terminal connections	—
12	Power supply connection unit		From customer: 100 ... 240 V AC; 50/60 Hz Provided by customer	—
13	Connection unit – SCU-P100 (CAN cable)		From customer	—

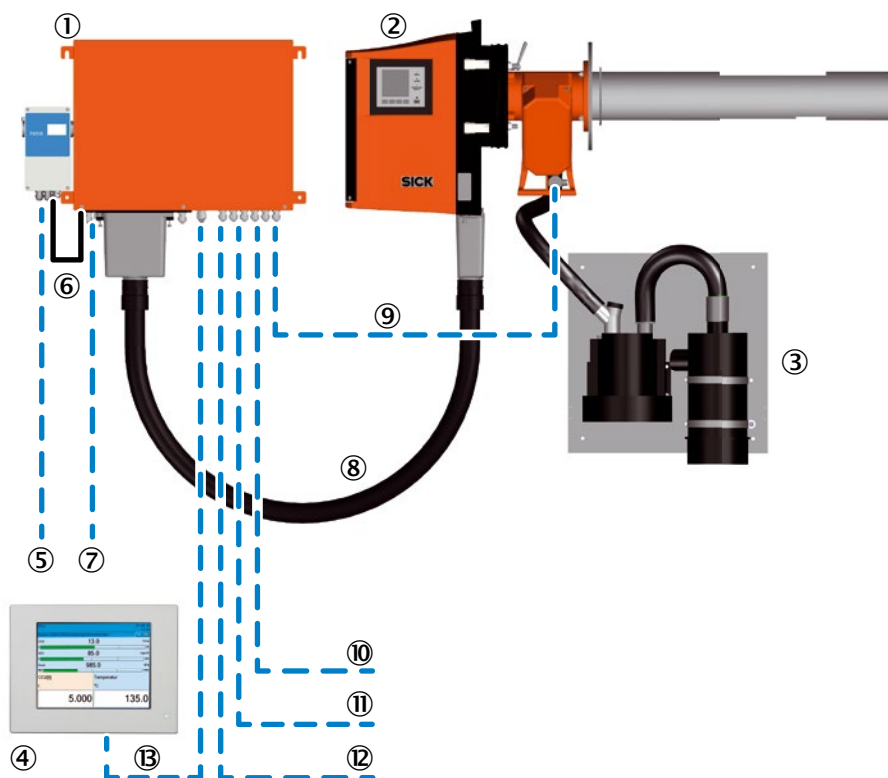
Cross-duct version



- ① Reflector unit
- ② Sender/receiver unit
- ③ Purge air unit (for sender/receiver unit)
- ④ Connection unit
- ⑤ Controller SCU-P100 (option)
- ⑥ Purge air unit (for reflector unit)

No.	Cable	Length	Remarks	Part no.
7	Filter monitoring SLV4 (reflector unit)	5 m	Included in reflector unit purge air attachment	2032143
8	PT1000 temperature sensor		Available as option or provided by customer	—
9	Sender/receiver unit – reflector unit (CAN cable)	12 m 24 m	Order separately	2020861 2027031
10	Filter monitoring SLV4 (sender/receiver unit)	5 m	Included in sender/receiver unit purge air attachment	2032143
11	Sender/receiver unit – purge air attachment (CAN cable)	0.8 m	Included in sender/receiver unit purge air attachment	2023704
12	Sender/receiver unit – connection unit (CAN cable)	10 m 20 m	Order separately	2028786 2045422
13	Power supply sender/receiver unit	10 m 20 m	Order separately	2046548 2046549
14	Ethernet cable – PC/network		From customer	—
15	Inputs/outputs		From customer: terminal connections	—
16	Power supply connection unit		From customer: 100 ... 240 V AC; 50/60 Hz	—
17	Connection unit – SCU-P100		From customer	—

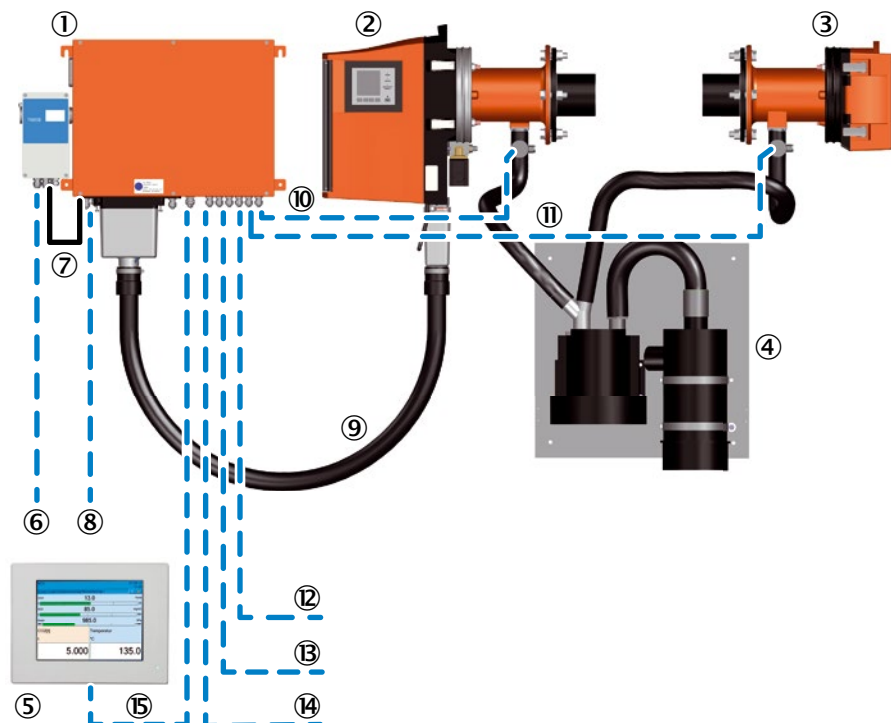
Measuring probe version: Atex version



- ① Connection unit with Ex-p controller for Zone 1 (2G) and Zone 2 (3G)
- ② Sender/receiver unit with measuring probe (shown: GMP measuring probe)
- ③ Purge air unit
- ④ Controller SCU-P100 (option)

No.	Cable	Length	Remarks	Part no.
5	Power supply (versions 2G and 3G)		From customer: 115 / 240 V AC, 50 / 60 Hz	—
6	Ex-p controller – connection unit (only 2G version)		Included in connection unit	—
7	Power supply (only 3G version)		From customer: 115 / 240 V AC, 50 / 60 Hz	—
8	Connection unit – sender/receiver unit	5 m 10 m	Order separately	2057666 2057667
9	Differential pressure switch – connection unit		From customer	—
10	Input pressure/temperature		From customer	—
11	Ethernet PC/network (glass fiber cable)		From customer	—
12	Inputs/outputs		From customer: terminal connections	—
13	Connection unit – SCU-P100 (CAN cable)		From customer	—

Cross-duct-version: ATEX version

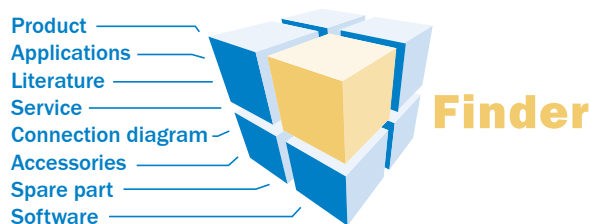


- ① Connection unit with Ex-p controller for Zone 1 (2G) and Zone 2 (3G)
- ② Sender/receiver unit
- ③ Reflector unit
- ④ Purge air unit
- ⑤ Controller SCU-P100 (option)

No.	Cable	Length	Remarks	Part no.
6	Power supply (versions 2G and 3G)		From customer: 115 / 240 V AC, 50 / 60 Hz	—
7	Ex-p controller– connection unit (only 2G version)		Included in connection unit	—
8	Power supply (only 3G version)		From customer: 115 / 240 V AC, 50 / 60 Hz	—
9	Connection unit – sender/receiver unit	5 m 10 m	Order separately	2057666 2057667
10	Differential pressure switch – connection unit		From customer	—
11	Differential pressure switch – connection unit		From customer	—
12	Input pressure/temperature		From customer	—
13	Ethernet PC/network (glass fiber cable)		From customer	—
14	Inputs/outputs		From customer: terminal connections	—
15	Connection unit – SCU-P100 (CAN cable)		From customer	—

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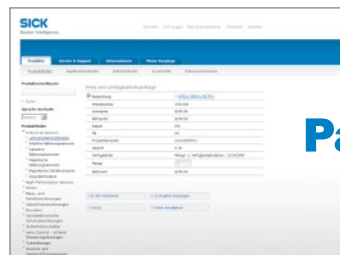


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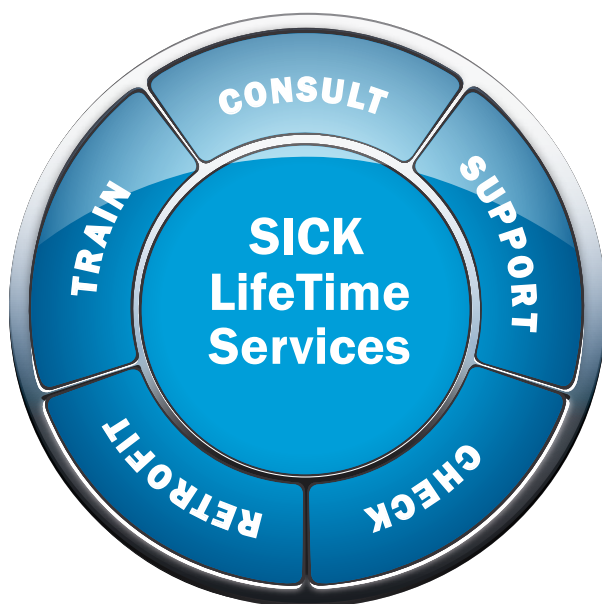
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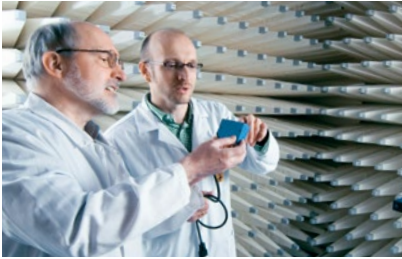
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