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Technical alterations are reserved to us without prior announcement.

Flow Sensors

Technique & Application

Ex area

Use in hazardous areas

The Ex measurement probes of the series 400 and the Ex-amplifiers SZAb... meet the basic health and safety requirements of Directive 2014/30/EC. Electrical boundary data, permissible temperature ranges as well as installation and connection instructions are specified in the operating instructions of Ex equipment. The permissible process pressure for the safe use of this devices in Ex atmospheres is 0.8...1.1 bar. The use of the measuring probes under different process pressures is the responsibility of the user. The specifications of the device must be observed. The permissible ambient temperature range is determined for each temperature class in the technical data. If there are additional regulations for the particular design regarding the installation, they must be observed as well.

Zone classification and categories

The frequency and duration of the occurrence of a hazardous atmosphere determines the zone classification.

Zone 0 / Category 1 (Gas)

Zone 0 is an area in which a potentially explosive atmosphere in the form of a mixture of air, combustible gases, vapours or fog continuously, for longer periods or frequently exists.

Zone 1 / Category 2 (Gas)

Zone 1 is an area in which a potentially explosive atmosphere as a mixture of air, combustible gases, vapours or fog can occasionally form in normal operation.

Zone 2 / Category 3 (Gas)

Zone 2 is an area in which a potentially explosive atmosphere as a mixture of air, combustible gases, vapours or fog can occur in normal operation.

Zone 20 / Category 1 (Dust)

Zone 20 is an area in which a potentially explosive atmosphere in the form of combustible particles suspended in air continuously, for longer periods or frequently exists.

Zone 21 / Category 2 (Dust)

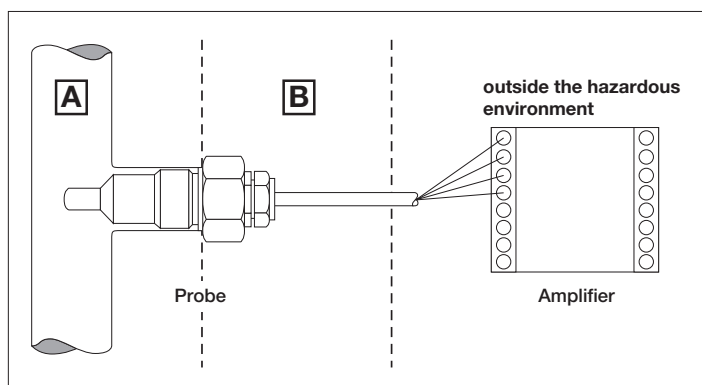
Zone 21 is an area in which a potentially explosive atmosphere in the form of combustible particles suspended in air can occasionally form in normal operation.

Zone 22 / Category 3 (Dust)

Zone 22 is an area in which a potentially explosive atmosphere in the form of combustible particles suspended in air normally does not exist or only exists for a short period in normal operation.

Ex marking

	A	B
II 1 G...	Zone 0	Zone 0
II 1/2 G...	Zone 0	Zone 1
II 2 G...	Zone 1	Zone 1
II 3 G...	Zone 2	Zone 2
II 1 D...	Zone 20	Zone 20
II 2 D...	Zone 21	Zone 21
II 3 D...	Zone 22	Zone 22



Specific conditions for use of flow sensor probes STS...

- Metallic process connection parts must be included in the local equipotential bonding.
- For equipment in the titanium housing, it must be ensured that there are no particles in the media flow that could cause an ignition hazard due to impact or friction.
- For EPL Ga/Gb applications and at risks by pendulum or vibration the respective parts of the flow sensor type STS... have to be secured effectively against these dangers.
- For EPL Ga/Gb applications the medium tangent materials of the flow sensor type STS have to be resistant to the media.

- For EPL Ga/Gb applications the whole device flow sensor type STS... shall be mounted in a way that allows an installation that results in a sufficient tight joint (IP 66 or IP 67) or a flameproof joint (IEC 60079-1) in the direction of the less endangered area.

A measurement probe may only be used in dust or gas protected hazardous areas, even when there are approvals for both areas. For use in hazardous areas for dusts the maximum surface temperature of the sensor is specified. For the hazardous area for gases the ambient temperatures of the temperature classes are given. On request, EGE delivers sensors with special dimensions and special materials as well as longer connection cables.



Probes
Compact models
Amplifiers





Ex-Probe | Device category 1G, 1G/2G and 1D

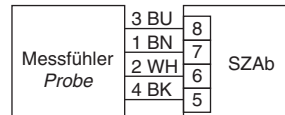
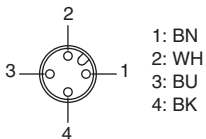
Ex-Device category 1G
Installation in Zone 0 (gas)

Ex-Device category 1G/2G
Installation in partition wall
Zone 0 / Zone 1 (gas)

Ex-Device category 1D
Installation in Zone 20 (dust)



Design	G1/2	
Dimensions		
Detection range [m/s]	air 2...25	
Sensor length [mm]	65	
Connection	fixed cable	plug
ID-No.	P11152	P11206
Type	STS 212 K	
Ex area of use	Gas: Zone 0, Partition wall Zone 0 / Zone 1 / Dust: Zone 20	
Certificate No.	TÜV 98 ATEX 1298 X	
Ex marking	Gas: Ex II 1 G Ex ia IIC T4...T3 Ga Ex II 1/2 G Ex ia IIC T4...T3 Ga/Gb Dust: Ex II 1 D Ex ia IIIC T145 °C Da	
Ambient temperature and medium temperature [°C]	Gas: T4: -20 ≤ Ta ≤ +70 T3: -20 ≤ Ta ≤ +85 Dust: -20 ≤ Ta ≤ +85	
Maximum values	Ui = 13.65 V / li = 200 mA / Pi = 0.69 W / Ci = 0.27 nF / Li = 1.30 µH	
Start-up time typ. [s]	10...40	
Reaction time typ. [s]	5 (2...30)	
Compressive strength [bar]	10	
Housing material	AISI 316 Ti • different materials on request	
Protection [EN 60529]	IP 67	
Connection	2 m PUR-cable 4x0.25 mm ²	M12 connector
Note:	Observe specific conditions for use in section "Technique and application" on page 1.13 for the connection to amplifier SZAb..., page 1.104-1.105	





Ex-Probe | Device category 1G, 1G/2G and 1D

Ex-Device category 1G
Installation in Zone 0 (gas)

Ex-Device category 1G/2G
Installation in partition wall
Zone 0 / Zone 1 (gas)

Ex-Device category 1D
Installation in Zone 20 (dust)



Design	G1/2	
Dimensions		
Detection range [m/s]	air 2...25	
Sensor length [mm]	48	
Connection	fixed cable	plug
ID-No.	P11153	P11207
Type	STS 215 K	
Ex area of use	Gas: Zone 0, Partition wall Zone 0 / Zone 1 / Dust: Zone 20	
Certificate No.	TÜV 98 ATEX 1298 X	
Ex marking	Gas: Ex II 1 G Ex ia IIC T6...T3 Ga Ex II 1/2 G Ex ia IIC T6...T3 Ga/Gb Dust: Ex II 1 D Ex ia IIIC T130 °C Da	
Ambient temperature [°C] and medium temperature	Gas: T6: $-20 \leq T_a \leq +35$ T5: $-20 \leq T_a \leq +50$ T4: $-20 \leq T_a \leq +85$ T3: $-20 \leq T_a \leq +85$ Dust: $-20 \leq T_a \leq +85$	
Maximum values	$U_i = 13.65 \text{ V}$ / $I_i = 200 \text{ mA}$ / $P_i = 0.69 \text{ W}$ / $C_i = 0.27 \text{ nF}$ / $L_i = 1.30 \text{ }\mu\text{H}$	
Start-up time typ. [s]	5...20	
Reaction time typ. [s]	3 (2...30)	
Compressive strength [bar]	10	
Housing material	AISI 316 Ti • different materials on request	
Protection [EN 60529]	IP 67	
Connection	2 m PUR-cable 4x0.25 mm ²	M12 connector
Note:	Observe specific conditions for use in section "Technique and application" on page 1.13 for the connection to amplifier SZAb..., page 1.104-1.105	



Ex-Probe | Device category 1G, 1G/2G and 1D

Ex-Device category 1G
Installation in Zone 0 (gas)

Ex-Device category 1G/2G
Installation in partition wall
Zone 0 / Zone 1 (gas)

Ex-Device category 1D
Installation in Zone 20 (dust)



Extended temperature range up to 120 °C

Design	G1/2	
Dimensions		
Detection range [m/s]	air 2...25	
Sensor length [mm]	48	
Connection	fixed cable	
ID-No.	P11212	
Type	STS 215 KH	
Ex area of use	Gas: Zone 0, Partition wall Zone 0 / Zone 1 / Dust: Zone 20	
Certificate No.	TÜV 98 ATEX 1298 X	
Ex marking	Gas: Ex II 1 G Ex ia IIC T6...T3 Ga Ex II 1/2 G Ex ia IIC T6...T3 Ga/Gb Dust: Ex II 1 D Ex ia IIIC T130 °C Da	
Ambient temperature and medium temperature [°C]	Gas: T6: - 20 ≤ Ta ≤ +35 T5: - 20 ≤ Ta ≤ +50 T4: - 20 ≤ Ta ≤ +85 T3: - 20 ≤ Ta ≤ +120 Dust: - 20 ≤ Ta ≤ +85	
Maximum values	U _i = 13.65 V / I _i = 200 mA / P _i = 0.69 W / C _i = 0.27 nF / L _i = 1.30 μH	
Start-up time typ. [s]	5...20	
Reaction time typ. [s]	3 (2...30)	
Compressive strength [bar]	10	
Housing material	AISI 316 Ti • different materials on request	
Protection [EN 60529]	IP 67	
Connection	2 m FEP-cable 4x0.25 mm ²	
Note:	Observe specific conditions for use in section "Technique and application" on page 1.13 for the connection to amplifier SZAb..., page 1.104-1.105	



Ex-Amplifiers AC/DC | Relay

Ex II (1) G [Ex ia Ga] IIC
 Ex II (1) D [Ex ia Da] IIIC

AC 230 V • AC 115 V • DC 24 V

Relay output

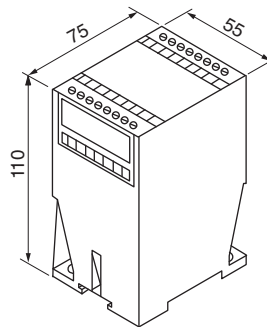
Cable break and short circuit monitoring

Turn off delay



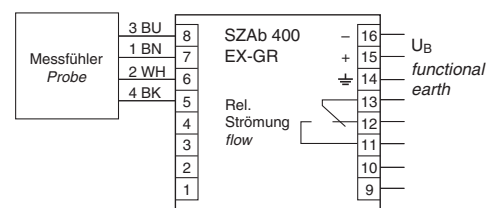
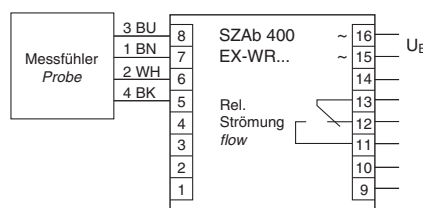
Design **SZAb 400 EX...**

Dimensions



ID-No.	P11400	P11399	P11398
Type	SZAb 400 EX-WR230	SZAb 400 EX-WR115	SZAb 400 EX-GR
Output			
Supply voltage [V]	230 AC ±10%	115 AC ±10%	24 DC ±15%
Ex marking	Gas: Ex II (1) G [Ex ia Ga] IIC		Dust: Ex II (1) D [Ex ia Da] IIIC
Certificate No.	EPS 19 ATEX 1 009		IECEx EPS 19.0001
Maximum values	U _o = 13.65 V I _o = 200 mA P _o = 683 mW IIC: C _o = 0.35 µF; L _o = 1.1 mH IIB: C _o = 1.8 µF; L _o = 6.2 mH IIA: C _o = 5.7 µF; L _o = 11.0 mH		
Turn off delay [s]	0...25		
Output	relay / change-over		
Switching voltage [V]	250 AC / 60 DC / 24 DC		
Switching current [A]	4 AC / 0.8 DC / 4 DC		
Switching power	cos φ >0,7 / L/R <200 ms		
Ambient temperature [°C]	-20 ≤ T _a ≤ +60		
Protection [EN 60529]	IP 20		
Connection	terminal screws		

Note:
 The Ex-amplifier must be mounted outside hazardous areas (gas or dust).





Ex -Amplifier DC | Analog

Ex II (1) G [Ex ia Ga] IIC
 Ex II (1) D [Ex ia Da] IIIC

DC 24 V

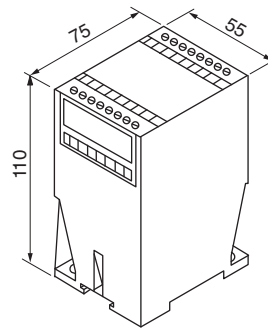
Analog output

Cable break and short circuit monitoring



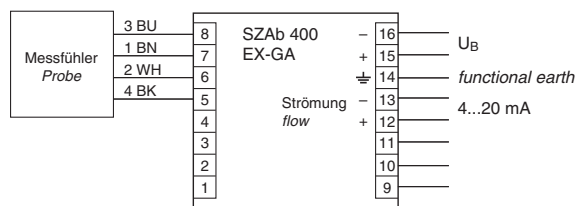
Design SZAb 400 EX-GA

Dimensions



ID-No.	P11401	
Type	SZAb 400 EX-GA	
Output	 4...20 mA	
Supply voltage [V]	24 DC ±15%	
Ex marking	Gas: Ex II (1) G [Ex ia Ga] IIC	Staub: Ex II (1) D [Ex ia Da] IIIC
Certificate No.	EPS 19 ATEX 1 009	IECEx EPS 19.0001
Maximum values	U _o = 13.65 V I _o = 200 mA P _o = 683 mW IIC: C _o = 0.35 µF; L _o = 1.1 mH IIB: C _o = 1.8 µF; L _o = 6.2 mH IIA: C _o = 5.7 µF; L _o = 11.0 mH	
Output	analog, non linear	
Current output [mA]	4...20	
Load R _L [Ω]	0...500	
Ambient temperature [°C]	-20 ≤ T _a ≤ +60	
Protection [EN 60529]	IP 20	
Connection	terminal screws	

Note:
 The Ex-amplifier must be mounted outside hazardous areas (gas or dust).





Ex-Compact model | Device category 3G and 3D

Ex-Device category 3G
Installation in Zone 2 (gas)

Ex-Device category 3D
Installation in Zone 22 (dust)

DC 24 V

PNP output



Design	M18x1	
Dimensions		
Detection range	[m/s]	gaseous media 0.5...20
Sensor length L	[mm]	80
Output		 PNP
ID-No.		P11404
Type		LC 518 GSP-Ex22
Ex area of use		Gas: Zone 2 / Dust: Zone 22
Certificate of conformity		EGE 20.0010 X
Ex marking	Gas:	Ex II 3 G Ex ic mc IIC T4...T3 Gc
	Dust:	Ex II 3 D Ex ic mc IIIC T135 °C Dc
Ambient temperature and medium temperature	Gas:	T3, T4: $-10 \leq T_a \leq +60$
	Dust:	$-10 \leq T_a \leq +60$
Supply voltage	[V]	24 DC $\pm 10\%$
Current consumption	[mA]	≤ 35
Switching current	[mA]	≤ 200
Start-up time typ.	[s]	20
Reaction time typ.	[s]	< 5
Compressive strength	[bar]	1
Housing material		AISI 316 Ti, PBT-GF30, PUR, ceramic Al_2O_3
Display flow		three-colour-illuminated dot red/yellow/green
Protection	[EN 60529]	IP 67
Connection		2 m PUR-cable 3x0.5 mm ²



Ex-Compact model | Device category 3G and 3D

Ex-Device category 3G
Installation in Zone 2 (gas)

Ex-Device category 3D
Installation in Zone 22 (dust)

DC 24 V

Analog output



Design	M18x1
Dimensions	
Detection range [m/s]	gaseous media 0.5...20
Sensor length L [mm]	80
Output	 4...20 mA
ID-No.	P11421
Type	LC 518 GA-Ex22
Ex area of use	Gas: Zone 2 / Dust: Zone 22
Certificate of conformity	EGE 20.0010 X
Ex marking	Gas: Ex II 3 G Ex ic mc IIC T4...T3 Gc Dust: Ex II 3 D Ex ic mc IIIC T135 °C Dc
Ambient temperature and medium temperature [°C]	Gas: T3, T4: -10 ≤ Ta ≤ +60 Dust: -10 ≤ Ta ≤ +60
Supply voltage [V]	24 DC ±10%
Current consumption [mA]	≤ 35
Current output [mA]	4...20
Start-up time typ. [s]	20
Reaction time typ. [s]	< 5
Compressive strength [bar]	1
Housing material	AISI 316 Ti, PBT-GF30, PUR, ceramic Al ₂ O ₃
Display flow	two-colour-illuminated dot red/green
Protection [EN 60529]	IP 67
Connection	2 m PUR-cable 3x0.5 mm ²



Ex-Compact model | Device category 3G and 3D

Ex-Device category 3G
Installation in Zone 2 (gas)

Ex-Device category 3D
Installation in Zone 22 (dust)

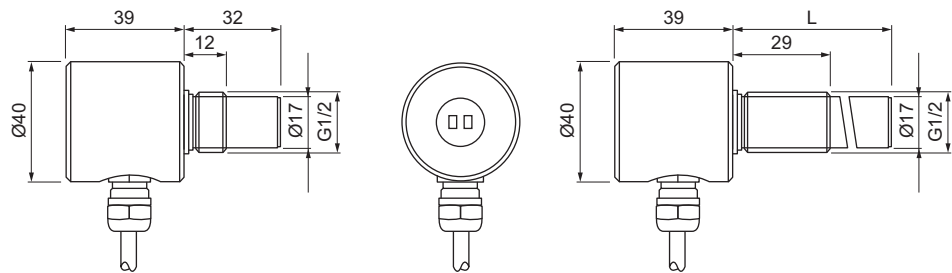
DC 24 V

PNP output

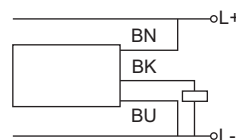


Design **G1/2**

Dimensions



Detection range	[m/s]	gaseous media 0.5...20			
Sensor length L	[mm]	32	49	101	151
Output		 PNP			
ID-No.		P11405	P11406	P11407	P11408
Type		LC 521 GSP-Ex22	LC 521/1 GSP-Ex22	LC 521/2 GSP-Ex22	LC 521/3 GSP-Ex22
Ex area of use		Gas: Zone 2 / Dust: Zone 22			
Certificate of conformity		EGE 20.0010 X			
Ex marking		Gas:	II 3 G Ex ic mc IIC T4...T3 Gc		
		Dust:	II 3 D Ex ic mc IIIC T135 °C Dc		
Ambient temperature and medium temperature	[°C]	Gas:	T3, T4: -10 ≤ Ta ≤ +60		
		Dust:	-10 ≤ Ta ≤ +60		
Supply voltage	[V]	24 DC ±10%			
Current consumption	[mA]	≤ 35			
Switching current	[mA]	≤ 200			
Start-up time typ.	[s]	20			
Reaction time typ.	[s]	< 5			
Compressive strength	[bar]	1			
Housing material		AISI 316 Ti, PBT-GF30, PUR, ceramic AL ₂ O ₃			
Display flow		three-colour-illuminated dot red/yellow/green			
Protection	[EN 60529]	IP 67			
Connection		2 m PUR-cable 3x0.5 mm ²			





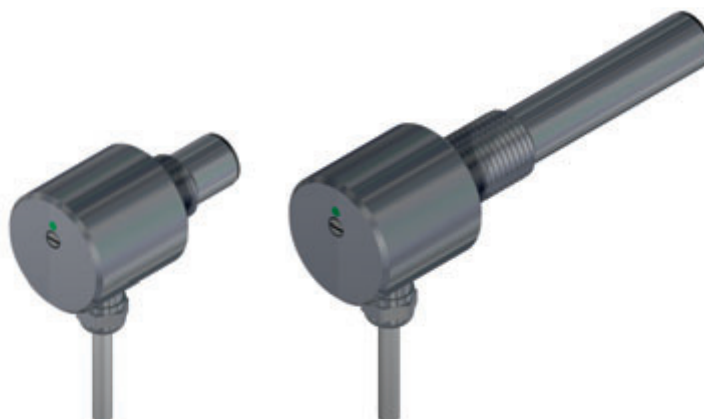
Ex-Compact model | Device category 3G and 3D

Ex-Device category 3G
Installation in Zone 2 (gas)

Ex-Device category 3D
Installation in Zone 22 (dust)

DC 24 V

Analog output



Design	G1/2			
Dimensions				
Detection range [m/s]	gaseous media 0.5...20			
Sensor length L [mm]	32	49	101	151
Output	 4...20 mA			
ID-No.	P11422	P11423	P11424	P11425
Type	LC 521 GA-Ex22	LC 521/1 GA-Ex22	LC 521/2 GA-Ex22	LC 521/3 GA-Ex22
Ex area of use	Gas: Zone 2 / Dust: Zone 22			
Certificate of conformity	EGE 20.0010 X			
Ex marking	Gas:	Ex II 3 G Ex ic mc IIC T4...T3 Gc		
	Dust:	Ex II 3 D Ex ic mc IIIC T135 °C Dc		
Ambient temperature and medium temperature [°C]	Gas:	T3, T4: -10 ≤ Ta ≤ +60		
	Dust:	-10 ≤ Ta ≤ +60		
Supply voltage [V]	24 DC ±10%			
Current consumption [mA]	≤ 35			
Current output [mA]	4...20			
Start-up time typ. [s]	20			
Reaction time typ. [s]	< 5			
Compressive strength [bar]	1			
Housing material	AISI 316 Ti, PBT-GF30, PUR, ceramic Al ₂ O ₃			
Display flow	two-colour-illuminated dot red/green			
Protection [EN 60529]	IP 67			
Connection	2 m PUR-cable 3x0.5 mm ²			