Gas Detector

SmArtGas 4

Product code: PW-044-SG4-X

Reliability

Innovations

Remote sensor calibration

Basic information about the product

The SmArtGas 4 gas detector is specifically designed for critical functions such as measuring, monitoring and detecting hazardous gases in industrial installations. It is intended for operation in areas with potentially explosive atmospheres. It can operate under harsh industrial conditions where environmental parameters may vary widely (high temperatures, mist and dust). It can be installed in a variety of ways: either integrated into the Gas Safety System Sigma Gas or installed as a stand-alone detector or independently integrated with supervisory systems (e.g. by means of its 4..20 mA output signal or its RS-485 interface).

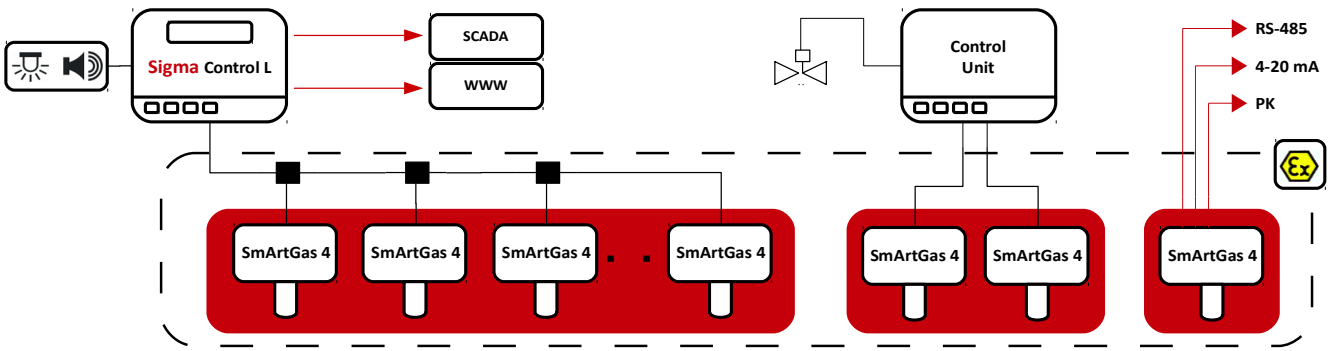
The SmArtGas 4 detector has a new measuring head (either 'FL' or 'FH') which is the fruit of a three year development process. This new product offers greatly improved detection capabilities. A SmArtGas 4 detector equipped with a pellistor sensor now offers a halved response time (T_{90})* and is rated among the fastest devices available on the market.

Further improvements include greater protection of the detector's measurement head against environmental effects, including moisture and dust. This is achieved by means of a PTFE membrane, which enables levels of protection up to **IP66/67**. In order to prevent the condensation of moisture and its harmful effects on the sensor, the inside of the gas measuring head 'FH', including the sensor, is maintained at a controlled temperature of 10°C above ambient.

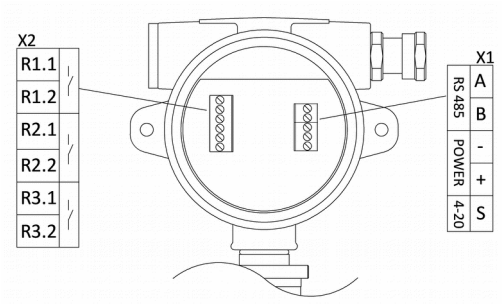
Other enhancements incorporated into the SmArtGas 4 detector include: **non-invasive calibration and configuration (Bluetooth)**, advanced interface for external connections, power voltage range up to 50 V, mitigation of the long-term drift of catalytic sensors.

* Detector with the HL head with a pellistor sensor.

Location and role of the device in Gas Safety System

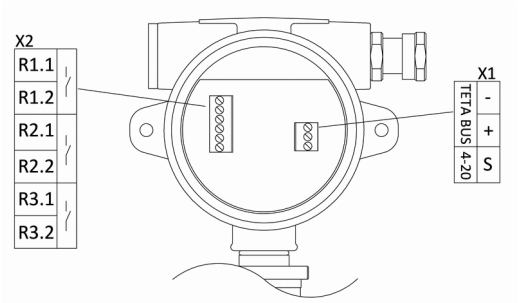


Electrical interface



1. Digital port RS-485

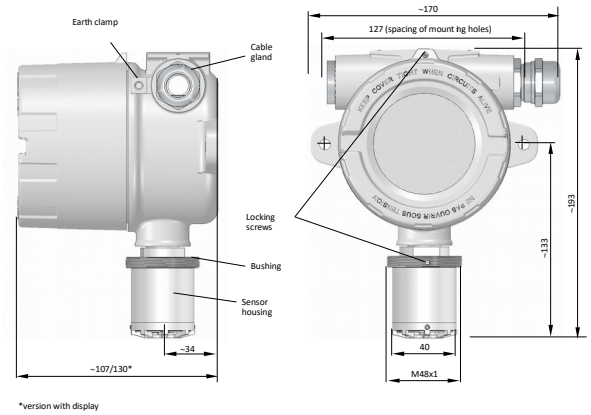
Symbol	Name	Pin	Description
X1	RS-485	A, B	Signal line RS-485 port
	POWER	-, +	Supply
	4-20	S	Current output 4 – 20 mA
X2	R1.1 – R3.2	—\—	Relays terminals



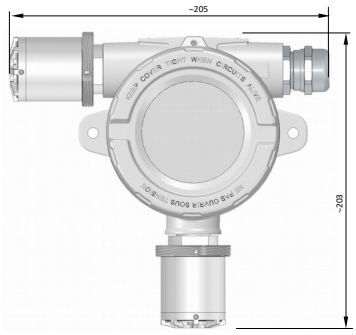
2. Digital port Teta Bus (option not available)

Symbol	Name	Pin	Description
X1	TETA BUS	-, +	Signal and supply line Teta Bus port
	4-20	S	Current output 4 – 20 mA
X2	R1.1 – R3.2	—\—	Relays terminals

Dimension



With display



With acoustic signaller

Technical specification

<table>
<tr><td>Power supply
• Voltage V_{cc}
• Power</td><td colspan="3">15 – 50 V ⎓
0.1 – 4 W (depends on the configuration)</td></tr>
<tr><td>Environment
• Ambient temperatures Ta
• Humidity
• Pressure</td><td>In operation
Specified depending on:
• the temperature class of the device (see line ATEX / IECEx below),
• device configuration, including the sensor used
10 – 90% long term
0 – 99% short term
Without condensation
1013 ± 10% hPa</td><td colspan="2">Storage
0 – 40°C
30 – 90% long term</td></tr>
<tr><td>ATEX / IECEx
• Certificate No.</td><td colspan="3">FTZU 19 ATEX 0028X / IECEx FTZU 20.0007X

The temperature range, temperature class and power consumption depends on the gas detector configuration:

D = 0
II 2G Ex db IIC T6...T5 Gb
II 2D Ex tb IIIC T80°C...T95°C Db

D = FLED / FLED.A / LCD
II 2G Ex db IIC T6 Gb
II 2D Ex tb IIIC T80°C Db</td></tr>
<tr><td></td><td>H \ D</td><td>0</td><td>FLED, FLED.A, LCD</td></tr>
<tr><td></td><td>HL, HH</td><td>T6 (T80°C): -40 < Ta < 65°C
T5 (T95°C): -40 < Ta < 80°C</td><td>T6 (T80°C): -40 < Ta < 65°C</td></tr>
<tr><td></td><td>FL, FL.M, FL.C, FH, FH.M</td><td>T6 (T80°C): -40 < Ta < 50°C
T5 (T95°C): -40 < Ta < 60°C</td><td>T6 (T80°C): -40 < Ta < 50°C</td></tr>
<tr><td>Additional requirements related to the ATEX / IECEx certificate
• Thermal resistance required for cable glands
• Thermal resistance required for cables</td><td colspan="3">For class T6: -40 < $T_{service}$ < 80°C
For class T5: -40 < $T_{service}$ < 100°C

For class T6: -40 < $T_{service}$ < 85°C
For class T5: -40 < $T_{service}$ < 95°C</td></tr>
<tr><td>Requirements to tripping time</td><td colspan="3">For catalytic sensor:
• Hydrogen T90 ≤ 9 s T_{Alarm}(T20) ≤ 3 s
• Methane T90 ≤ 13 s T_{Alarm}(T20) ≤ 4 s
• Propane T90 ≤ 17 s T_{Alarm}(T20) ≤ 4 s
• Ethanol T90 ≤ 18 s T_{Alarm}(T20) ≤ 5 s</td></tr>
<tr><td>IP</td><td colspan="3">• IP66/IP67 (measuring head with membrane FL.M, FH.M)
• IP 63 (other)</td></tr>
<tr><td>Analog output 4 – 20 mA
• Output type
• R_{load_MAX} (source mode)
• U_{S_MAX} (sink mode)</td><td colspan="3">Sink / source
300 Ω
30 V (max. voltage between pins „S” and „-”)</td></tr>
<tr><td>Digital output parameters
• Relays</td><td colspan="3">3 x Floating contacts, NO/NC
24 V / 0.3 A
Not protected against overloading</td></tr>
</table>

Digital communication parameters • RS-485 • Teta	 • RS-485, Modbus ASCII, Sigma Bus, od 19200 Bd 7E1 • Teta Bus
Parameters of wireless communication	Bluetooth 4.2
Integrated signalling equipment (optical)	• D=LCD: alphanumeric display 2x8 of the LCD type with LED indicators • D=FLED: multicolour status display LED
Integrated signalling equipment (acoustic)	D=FLED.A: 70 dB 1 m distance
Protection class	III
Cable glands • Cable diameter range • External thread	 See User Manual M20 x 1.5
Acceptable cables	0.5 – 2.5 mm^2 (cable lugs 2 x 1 mm^2 or 2 x 0.75 mm^2 should be used for double wires)
Parameters of the hose coupling to the FL.C head	6 / 4 mm
Enclosure material	• Aluminium spray epoxy • Aluminium creodur epoxy • SS316L
Measuring head material	SS316L
Weight	3.5 kg
Mandatory periodic inspection	Every 12 months (Calibration Certificate validity) – time can be shortened due to difficult working conditions
Lifetime of consumables	See User Manual
Mounting	• To the supporting structure, 2 screw holes 4 mm, hole spacing 127 mm • We recommend using mounting brackets – see User Manual

Product marking

Product code	Device
PW-044-SG4-X	SmArtGas 4 Gas Detector

Gas Detector SmArtGas 4

PW-044-SG4- [M] - [D] - [H] - [E] - [T] - [DI] - [AI] - [WI] - [MC] - [G]

[M] **Converter module**	**X**	Selected by the manufacturer depending on the chosen [MC] – field value does not matter when ordering the product (when ordering, please specify X, available EC, PEL, IR, PID options show the used sensor type – see DOK-6073-ENG)
[D] **Display**	⚠	Gas detector operating temperature with display can also be narrowed due to Ta temperature limits due to ATEX / IECEx certificate – see table Technical Specification.
	0	Without
	LCD	LCD display and LED controls **(Ta: -20 – 50°C)** Note: a decrease in contrast may occur at -20°C – difficult reading
	FLED	Bright, multi-colour display **(Ta: -40 – 60°C)**
	FLED.A	Bright, multi-colour display equipped with an acoustic signaller **(Ta: -40 – 60°C)**
[H] **Measuring head**	⚠	Gas detector operating temperature with measuring head can also be narrowed due to Ta temperature limits due to ATEX / IECEx certificate – see table Technical Specification.
	Type of the measuring head installed in the detector is associated with the [MC] – the head specification is determined by gas to be detected and its parameters	
	FL	With sinter (fast – reduced T90), made of stainless steel
	FL.C	With sinter (fast – reduced T90), made of stainless steel, with remote test gas supply and calibration
	FL.M	With sinter (fast – reduced T90) and membrane, made of stainless steel
	FH	With sinter (fast – reduced T90), made of stainless steel, warmed
	FH.M	With sinter (fast – reduced T90) and membrane, made of stainless steel, warmed
	HL	With sinter, made of stainless steel
	HH	With sinter, made of stainless steel, warmed
[E] **Enclosure**	**ALB**	Aluminium, spray epoxy – white
	ALZ	Aluminium, spray epoxy – yellow (the version is available only for authorized distributors)
	SS	Stainless steel
	C	Aluminium, creodur coating – natural aluminium
[T] **Temperature**	**0**	Standard **(Ta: -30 – 50°C)**
	T	Extended temperature range for gas detector **(Ta: -40 – 85°C)**
[DI] **Digital interface**	**485**	RS-485
	Teta	Teta Bus – *under development*
[AI] **Analog interface**	**0-0**	Without
	420-PK	4 – 20 mA (sink/source) + 3 x relay
[WI] **Wireless interface**	**0**	Without
	BT	Wireless interface allowing remote sensor calibration
[MC] **Measurement parameters configuration**	**-**	See details and **Ta** in DOK-6073-ENG „Measurement parameters configuration”
[G] **Cable gland**	**0**	Without
	X	See details in POD-066-ENG „ Cable glands used in offered devices”

SmArtGas 4 configurator →

ATEST GAZ
Reliable and Innovative Gas Safety Systems

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