G015506

Gas detector
ST650 EX

Part no. 5150151-5150222

System: CGD50/500, CGS50/500

General description

- Combustible gas detector
- ATEX / IECEx approved
- Graphic display
- Touch screen experience, control without additional tools
- Self-diagnostics
- Reliable sensor technology
- Splashguard included

The ST650 EX is an all-round gas detector which functions well under the most difficult circumstances. The sensor is available in various versions, such as a catalytic flammable gas sensor, Infrared (NDIR) and a Thermal Conductivity sensor (TCD). The sensor has a long life-span, which achieves an optimal cost of ownership.

The ST650 EX is available with or without a graphic display. The graphic display shows the measured value and various status notifications locally. The capacitive key control gives you an experience similar to a touchscreen and does not require any additional tools, such as magnetic wands for instance. The user menu is secured with a password; unauthorized users cannot access the gas detector. The control of the user/calibration menu does not require additional tools. Simple, easy, and user friendly!

The user menu provides different features, such as a zero and span calibration, adjusting alarm set points (local alarm indication through notifications on the display and bright colored LED), showing set points, diagnostic information and simulation of the output signal (4–20 mA) for loop testing.

Remote applications

A remote application allows the user to mount the sensor separately from the transmitter. Remote sensors are ideal for applications where the gases present ascend, i.e. gases lighter than air. Detection areas located high above ground makes it difficult to reach the detector for maintenance etc. When using a remote sensor, the sensor itself will be mounted in the high location and the transmitter will be mounted within close reach. This makes maintenance quick and easy and therefore cost effective. Cable lengths up to 150 meters are supported between the transmitter and the sensor (depending on the type).

Applications

- Chemical industry
- Refineries
- Wastewater plants
- Boiler rooms
- Marine
- Storage of packed dangerous substances
- Food industry

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Data

Gas type	Combustible gases and vapours
Calibration	Standard: Methane Also available for Propane, Butane, Hydrogen, Methanol, Ethanol, Kerosene, Gasoline, Toluene, Hexane, Ammonia, Acetic acid, and more (calibration to be specified when ordered)
Sensor type	Catalytic bead sensor Infrared (NDIR) Thermal conductivity sensor (TCD)
Range	0-100 %LEL, 0-10 %LEL, 0-100 Vol.% (depending on gas type, sensor type, and calibration)
Display (optional)	Digital graphic display with backlight
Status LED	Green: OK Red: Alarm Yellow: System failure
Power supply	17.5-24 V DC (max. 120 mA)
Outputs	4-20 mA, RS485 Modbus RTU (half-duplex) 2 mA system failure, >20 mA over range
Signal cable	3-wire shielded, 0.75 - 2.5 mm^2
Cable gland	Aluminium housing: Brass / SS housing SS (thread M20x1.5)
Cable dimension	Ø max. 16 mm (incl. shielding)
Load impedance	Max. 400 Ω at 24 V DC
Operating temperature	Standard: -20 °C to +60 °C IR versions: -20 °C to +50 °C Remote HT: -20 °C to +120 °C
Ingress protection	Enclosure: IP66[1] Sensor: IP6X
Relative humidity	15-95% RH (non-condensing)
Pressure range	700 to 1300 hPa
Enclosure	Aluminium with coating, optional SS
Dimensions (H × W × D)	179 × 189 × 107 mm

Weight	1.5 kg ± 5% (Al) 2.6 kg ± 5% (SS)
Enclosure gas sensor	SS 316
Specific conditions of use	Refer to ATEX certificate
Certification	CE 0344 ATEX - Ex (Directive 2014/34/EU) Electromagnetic Compatibility (Directive 2014/30/EU)
ATEX approvals	Compact/remote: II 2G Ex d IIC T6 Gb II 2D Ex tb IIIC T85°C Db Remote HT: II 2G Ex d IIC T3 Gb II 2D Ex tb IIIC T200°C Db
IECEx approvals	Compact/remote: Ex d IIC T6 Gb Ex tb IIIC T85°C Db Remote HT: Ex d IIC T3 Gb Ex tb IIIC T200°C Db

NOTE!
More information can be found in the sensor datasheets.

1) IP ratings do not imply that the equipment will detect gas during and after exposure to those conditions.

The specifications described herein are subject to change without notice.   Data sheet no. 5150151-5150222_ST650 EX_M_EN_2021_J

Ordering Information

Gas detector							
Application	**Sensor type**	**Range**	**Part no.**				
			Version	**Standard**	**Remote**	**LCD**	**LCD + Remote**
Standard	Catalytic	0-100 %LEL CH_4*	Aluminium:	5150151-00A	5150155-00A	5150153-00A	5150157-00A
			SS 316:	5150152-00A	5150156-00A	5150154-00A	5150158-00A
High Temp.	Catalytic	0-100 %LEL CH_4*	Aluminium:	N/A	5150159-00A	N/A	5150161-00A
			SS 316:	N/A	5150160-00A	N/A	5150162-00A
Vapours	Catalytic	0-100 %LEL VCM C_2H_3Cl	Aluminium:	5150163-00A	5150167-00A	5150165-00A	5150169-00A
			SS 316:	5150164-00A	5150168-00A	5150166-00A	5150170-00A
Kerosene	Catalytic	0-100 %LEL Kerosene	Aluminium:	5150179-00A	5150183-00A	5150181-00A	5150185-00A
			SS 316:	5150180-00A	5150184-00A	5150182-00A	5150186-00A
Gasoline / Petrol	Catalytic	0-100 %LEL Gasoline / Petrol	Aluminium:	5150187-00A	5150191-00A	5150189-00A	5150193-00A
			SS 316:	5150188-00A	5150192-00A	5150190-00A	5150194-00A
Diesel	Catalytic	0-100 %LEL Diesel	Aluminium:	5150195-00A	5150199-00A	5150197-00A	5150201-00A
			SS 316:	5150196-00A	5150200-00A	5150198-00A	5150202-00A
Ammonia	Catalytic	0-10 %LEL NH_3	Aluminium:	5150171-00A	5150175-00A	5150173-00A	5150177-00A
			SS 316:	5150172-00A	5150176-00A	5150174-00A	5150178-00A
Methane	TCD	0-100 Vol.% CH_4*	Aluminium:	5150203-00A	N/A	5150205-00A	N/A
			SS 316:	5150204-00A	N/A	5150206-00A	N/A
Methane	NDIR	0-100 %LEL CH_4*	Aluminium:	5150207-00A	5150211-00A	5150209-00A	5150213-00A
			SS 316:	5150208-00A	5150212-00A	5150210-00A	5150214-00A
Propane	NDIR	0-100 %LEL C_3H_8*	Aluminium:	5150215-00A	5150219-00A	5150217-00A	5150221-00A
			SS 316:	5150216-00A	5150220-00A	5150218-00A	5150222-00A

* Standard calibration. Other calibrations to be specified when ordered.

NOTE!
Special care should be taken when selecting sensors for certain environments. If you are uncertain, consult your local Consilium representative.

Standard   With LCD   Remote with LCD

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Differences in sensor types	Catalytic	TCD	NDIR
Measuring range	up to 100 %LEL	up to 100 Vol.%	up to 100 %LEL
Resistance to silicone poisoning	no	limited	yes
Detects hydrogen	up to 100 %LEL	up to 100 Vol.%	no
Affected by hazardous chemical environments	yes	limited	no
Detection in anaerobic / inert conditions	no	yes	yes
No sensor burn-out at high concentrations	no	yes	yes
Sensor lifetime	3 years	3 years	4–6 years

Accessories		
Type	**Part no.**	**Description**
Splash guard	5150227-00A	Sensor protection against splash water
Inline flow adapter	5150228-00A	Inline flow adapter for sample applications, connection 2×6mm, SS
Protective hood	5150226-00A	Protective hood SS, for optimal protection in "wet" protection areas, dimensions 315×300×138 mm
Isolation set EMC/RFI	5150231-00A	Isolation board, 160×160 mm
Protective bracket	5150225-00A	SS bracket, extra protection for use in warehouses
Conical collector hood	5150230-00A	Conical hood for ascending gases

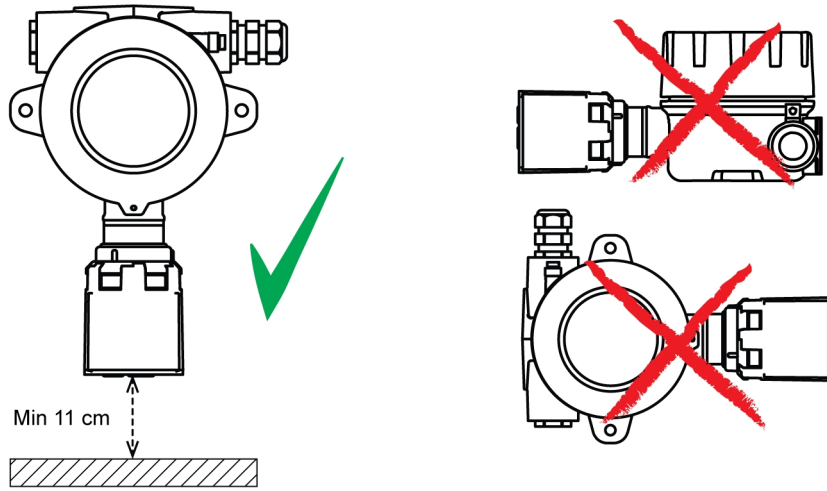| Spare parts / consumables			
Spare gas sensor	**Part no.**	**Range**	**Description**
ST650 EX, Sensor	5150240-00A	0-100 %LEL CH_4	Gas sensor for standard applications
ST650 EX, Sensor	5150247-00A	0-100 %LEL CH_4	High temperature, applications up to 120 °C ambient temperature
ST650 EX, Sensor	5150241-00A	0-100 %LEL	Gas sensor for combustible vapours containing halogens
ST650 EX, Sensor	5150242-00A	0-100 %LEL Gasoline 0-100 %LEL Kerosene 0-10 %LEL NH_3	Kerosene and Gasoline applications, range 0-100% LEL Ammonia applications, range 0-10% LEL
ST650 EX, Sensor	5150243-00A	0-100 Vol.% CH_4	Thermal Conductivity sensor, measurements up to 0-100 Vol.% CH_4
ST650 EX, Sensor	5150245-00A	0-100 %LEL CH_4	Infrared sensor (NDIR), Methane
ST650 EX, Sensor	5150246-00A	0-100 %LEL C_3H_8	Infrared sensor (NDIR), Propane

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Mounting

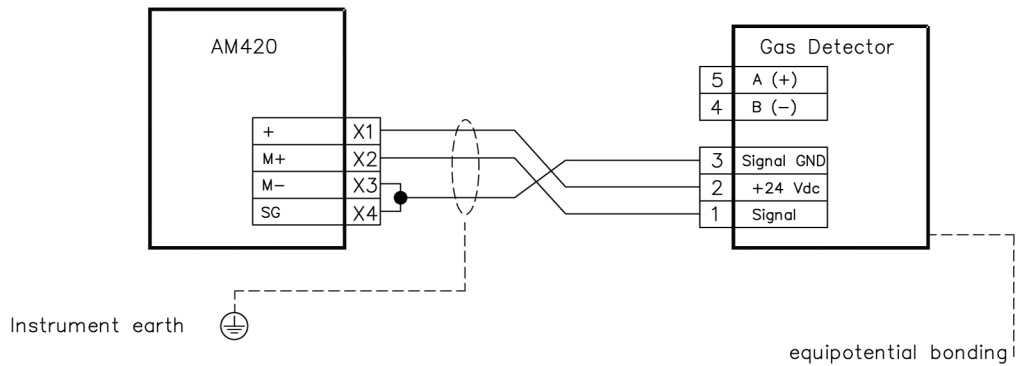Mount the detector in a vertical position, with the sensor pointing downwards.
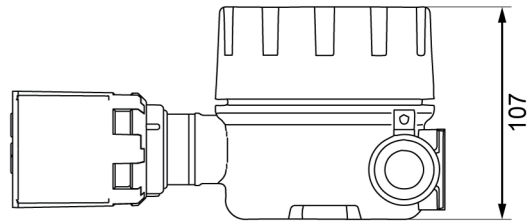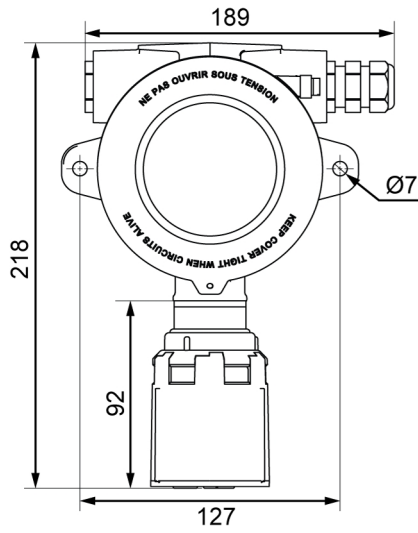
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NOTE!
Leave at least 11 cm free space below the sensor head to ensure that the splashguard can be removed during sensor exchange. This also allows connection of a hose for bump tests.

Connections

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Dimensions (mm)

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