



# GAS DETECTOR

## ST480xi

PART.NO. 1229000-1229025

DETECTION OF TOXIC GASES, OXYGEN AND HYDROGEN

SYSTEM CGD50, CGD500 Touch

### GENERAL DESCRIPTION

- Detection of toxic gases, Oxygen and Hydrogen
- ATEX / IECEx approved
- Zone 1/21 without barrier
- Sensor hot swappable in Ex Zone
- Touch screen control, without additional tools
- Reliable sensor technology

The **ST480xi** is a stationary gas detector which is developed to detect a numerous of toxic gasses, Oxygen and Hydrogen with a high reliability. This all-round gas detector can be applied at virtually every type of industrial application. Functionality and maintenance of this new generation of gas detector meets today's essential demands for reliability, accuracy and cost reduction.

The **ST480xi** comes standard with a high-quality electrochemical sensor. This type of sensor is available for many different gasses and is perfectly suitable for the detection of the target gas with high precision. This proven sensor technology has demonstrated to function perfectly under the toughest conditions.

The ST480xi relies on a specially developed intrinsic safe sensor connection, allowing an easy and quick sensor replacement within an Ex-zone.

The **ST480xi** is equipped a graphic display. The display shows the measured value and various status notifications locally. The capacitive key control gives you an experience similar to a touchscreen and enables easy navigation through the user/calibration menu. 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 (4-20mA) for loop testing.

The **ST480xi** is Ex d, and Ex t approved (ATEX / IECEx). This makes the sensor an all-round gas detector and useful in GAS and DUST zones. The gas detector can be used in Ex applications (zone 1 and 21) without needing an external zener barrier, directly reducing investment costs.

### HEIGHTS AREAS / 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: High located detection areas are often difficult to reach for example during maintenance. When using a remote sensor, the sensor itself will be mounted high 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 remote sensor (depending on the type).

### APPLICATIONS:

- + Water Industry
- + Refineries
- + Oil & Gas Industry
- + Food Industry
- + Marine
- + Pharmaceutical Industry
- + Steel Industry
- + Laboratory / Universities

### WE OFFER MORE THAN A PRODUCT!

- + Tailored advice
- + Project advice
- + Technical support
- + Training and education
- + Commissioning
- + Onsite service / maintenance / calibration

ORDERING INFORMATION INTERNATIONAL MODELS

GAS DETECTOR						
TYPE	RANGE	PART NO.			OPERATING TEMPERATURE	RELATIVE HUMIDITY (N.C.)
		STANDARD	REMOTE	STAINLESS		
ST480xi-O <sub>2</sub>	0-25 Vol.%	1229000/25	+ /R	+ /SS	-20 to +55 °C	5-95%
ST480xi-O <sub>2</sub> LL3	0-25 Vol.%	1229000/25/LL3			-20 to +55 °C	5-95%
ST480xi-H <sub>2</sub> S	0-20 ppm	1229001/20			-20 to +50 °C	15-90%
ST480xi-H <sub>2</sub> S	0-30 ppm	1229001/30			-20 to +50 °C	15-90%
ST480xi-H <sub>2</sub> S	0-50 ppm	12290701/50			-20 to +50 °C	15-90%
ST480xi-H <sub>2</sub> S	0-100 ppm	1229001/100			-20 to +50 °C	15-90%
ST480xi-CO	0-250 ppm	1229004/250			-20 to +50 °C	15-90%
ST480xi-CO	0-500 ppm	1229004/500			-20 to +50 °C	15-90%
ST480xi-CO	0-2000 ppm	1229004/2000			-20 to +50 °C	15-90%
ST480xi-CO (LHS)	0-250 ppm	1229004/250/LHS			-20 to +50 °C	15-90%
ST480xi-H <sub>2</sub>	0-1000 ppm	1229005/1000			-20 to +50 °C	15-95%
ST480xi-H <sub>2</sub>	0-100 %LEL	1229005/40000			-20 to +50 °C	15-95%
ST480xi-NH <sub>3</sub>	0-100 ppm	1229006/100			-20 to +50 °C	15-90%
ST480xi-NH <sub>3</sub>	0-1000 ppm	1229006/1000			-20 to +50 °C	15-90%
ST480xi-NH <sub>3</sub> (LL)	0-100 ppm	1229006/100/LL			-20 to +40 °C	15-95%
ST480xi-NH <sub>3</sub> (LL)	0-1000 ppm	1229006/1000/LL			-20 to +40 °C	15-95%
ST480xi-Cl <sub>2</sub>	0-5 ppm	1229007/5			-20 to +40 °C	15-90%
ST480xi-Cl <sub>2</sub>	0-50 ppm	1229007/50			-20 to +40 °C	15-90%
ST480xi-ClO <sub>2</sub>	0-2 ppm	1229008/2			-20 tot +50 °C	15-95%
ST480xi-COCl <sub>2</sub>	0-1 ppm	1229009/1			-20 to +40 °C	15-90%
ST480xi-HCN	0-30 ppm	1229010/30			-20 to +50 °C	15-90%
ST480xi-HCl	0-20 ppm	1229011/20			-20 to +50 °C	15-90%
ST480xi-HF	0-10 ppm	1229012/10			-20 to +50 °C	15-90%
ST480xi-H <sub>2</sub> O <sub>2</sub>	0-50 ppm	1229013/50			-20 to +45 °C	15-90%
ST480xi-NO	0-25 ppm	1229014/25			-20 to +50 °C	15-90%
ST480xi-NO	0-100 ppm	1229014/100			-20 to +50 °C	15-90%
ST480xi-NO <sub>2</sub>	0-20 ppm	1229015/20			-20 to +50 °C	15-90%
ST480xi-SO <sub>2</sub>	0-10 ppm	1229016/10			-20 to +50 °C	15-90%
ST480xi-CH <sub>4</sub> S	0-20 ppm	1229017/20			-20 tot +50 °C	15-95%
ST480xi-SiH <sub>4</sub>	0-50 ppm	1229018/50			-20 to +40 °C	10-95%
ST480xi-O <sub>3</sub>	0-1 ppm	1229019/1			-20 to +40 °C	15-90%
ST480xi-CH <sub>2</sub> O	0-10 ppm	1229020/10			-20 tot +50 °C	15-90%
ST480xi-F <sub>2</sub>	0-1 ppm	1229021/1			-20 tot +40 °C	15-90%
ST480xi-N <sub>2</sub> H <sub>4</sub>	0-1 ppm	1229022/1	-20 tot +40 °C	15-90%		
ST480xi-C <sub>2</sub> H <sub>4</sub> O (ETO)	0-20 ppm	1229024/20	-10 tot +50 °C	15-90%		
ST480xi-PH <sub>3</sub>	0-5 ppm	1229025/5	-20 tot +50 °C	15-90%		
ST480xi-Alcohols	0-200 ppm	1229026/200	-20 tot +40 °C	15-90%		

\*The standard CO sensor is cross sensitive to H<sub>2</sub>. The LHS version (Low Hydrogen Sensitivity), offers a highly improved selectivity relative to H<sub>2</sub>.

\*\*The standard NH<sub>3</sub> sensor is not suited for applications where continuous (low) concentrations of NH<sub>3</sub> are present. The LL version (Long Life) is more resistant against above-average exposure to NH<sub>3</sub> and offers an extended life-time.

**ORDERING INFORMATION NORTH AMERICAN MODELS**











GAS DETECTOR							
TYPE	RANGE	PART NO.				OPERATING TEMPERATURE	RH, %
		ATEX / IECEx / UKEX	cCSAus (NORTH AMERICA)	REMOTE	STAINLESS		
ST480xi-O <sub>2</sub>	0-25 Vol.%	1229000/25	8229000/25	+ /R	+ /SS	-20 to +55 °C	5-95%
ST480xi-O <sub>2</sub> LL3	0-25 Vol.%	1229000/25/LL3	8229000/25/LL3			-20 to +55 °C	5-95%
ST480xi-H <sub>2</sub> S	0-20 ppm	1229001/20	8229001/20			-20 to +50 °C	15-90%
ST480xi-H <sub>2</sub> S	0-30 ppm	1229001/30	8229001/30			-20 to +50 °C	15-90%
ST480xi-H <sub>2</sub> S	0-50 ppm	12290701/50	82290701/50			-20 to +50 °C	15-90%
ST480xi-H <sub>2</sub> S	0-100 ppm	1229001/100	8229001/100			-20 to +50 °C	15-90%
ST480xi-CO	0-250 ppm	1229004/250	8229004/250			-20 to +50 °C	15-90%
ST480xi-CO	0-500 ppm	1229004/500	8229004/500			-20 to +50 °C	15-90%
ST480xi-CO	0-2000 ppm	1229004/2000	8229004/2000			-20 to + 50 °C	15-90%
ST480xi-CO (LHS)	0-250 ppm	1229004/250/LHS	8229004/250/LHS			-20 to +50 °C	15-90%
ST480xi-H <sub>2</sub>	0-1000 ppm	1229005/1000	8229005/1000			-20 to +50 °C	15-95%
ST480xi-H <sub>2</sub>	0-100 %LEL	1229005/40000	8229005/40000			-20 to +50 °C	15-95%
ST480xi-NH <sub>3</sub>	0-100 ppm	1229006/100	8229006/100			-20 to +50 °C	15-90%
ST480xi-NH <sub>3</sub>	0-1000 ppm	1229006/1000	8229006/1000			-20 to +50 °C	15-90%
ST480xi-NH <sub>3</sub> (LL)	0-100 ppm	1229006/100/LL	8229006/100/LL			-20 to +40 °C	15-95%
ST480xi-NH <sub>3</sub> (LL)	0-1000 ppm	1229006/1000/LL	8229006/1000/LL			-20 to +40 °C	15-95%
ST480xi-Cl <sub>2</sub>	0-5 ppm	1229007/5	8229007/5			-20 to +40 °C	15-90%
ST480xi-Cl <sub>2</sub>	0-50 ppm	1229007/50	8229007/50			-20 to +40 °C	15-90%
ST480xi-ClO <sub>2</sub>	0-2 ppm	1229008/2	8229008/2			-20 tot +50 °C	15-95%
ST480xi-COCl <sub>2</sub>	0-1 ppm	1229009/1	8229009/1			-20 to +40 °C	15-90%
ST480xi-HCN	0-30 ppm	1229010/30	8229010/30			-20 to +50 °C	15-90%
ST480xi-HCl	0-20 ppm	1229011/20	8229011/20			-20 to +50 °C	15-90%
ST480xi-HF	0-10 ppm	1229012/10	8229012/10			-20 to +50 °C	15-90%
ST480xi-H <sub>2</sub> O <sub>2</sub>	0-50 ppm	1229013/50	8229013/50			-20 to +45 °C	15-90%
ST480xi-NO	0-25 ppm	1229014/25	8229014/25			-20 to +50 °C	15-90%
ST480xi-NO	0-100 ppm	1229014/100	8229014/100			-20 to +50 °C	15-90%
ST480xi-NO <sub>2</sub>	0-20 ppm	1229015/20	8229015/20			-20 to +50 °C	15-90%
ST480xi-SO <sub>2</sub>	0-10 ppm	1229016/10	8229016/10			-20 to +50 °C	15-90%
ST480xi-CH <sub>4</sub> S	0-20 ppm	1229017/20	8229017/20			-20 tot +50 °C	15-95%
ST480xi-SiH <sub>4</sub>	0-50 ppm	1229018/50	8229018/50			-20 to +40 °C	10-95%
ST480xi-O <sub>3</sub>	0-1 ppm	1229019/1	8229019/1			-20 to +40 °C	15-90%
ST480xi-CH <sub>2</sub> O	0-10 ppm	1229020/10	8229020/10			-20 tot +50 °C	15-90%
ST480xi-F <sub>2</sub>	0-1 ppm	1229021/1	8229021/1			-20 tot +40 °C	15-90%
ST480xi-N <sub>2</sub> H <sub>4</sub>	0-1 ppm	1229022/1	8229022/1			-20 tot +40 °C	15-90%
ST480xi-C <sub>2</sub> H <sub>4</sub> O (ETO)	0-20 ppm	1229024/20	8229024/20			-10 tot +50 °C	15-90%
ST480xi-PH <sub>3</sub>	0-5 ppm	1229025/5	8229025/5			-20 tot +50 °C	15-90%
ST480xi-Alcohols	0-200 ppm	1229026/200	8229026/200			-20 tot +40 °C	15-90%

\*The standard CO sensor is cross sensitive to H<sub>2</sub>. The LHS version (Low Hydrogen Sensitivity), offers a highly improved selectivity relative to H<sub>2</sub>.  
 \*\*The standard NH<sub>3</sub> sensor is not suited for applications where continuous (low) concentrations of NH<sub>3</sub> are present. The LL version (Long Life) is more resistant against above-average exposure to NH<sub>3</sub> and offers an extended life-time.

## ORDERING INFORMATION

SPARE PARTS / CONSUMABLES			
SPARE GAS SENSOR	PART NO.	RANGE	DESCRIPTION
Type O <sub>2</sub>	I229700	0-25 Vol.% O <sub>2</sub>	Oxygen Vol.% sensor
Type H <sub>2</sub> S	I229701	20 / 30 / 50 / 100 ppm H <sub>2</sub> S	Hydrogen sulfide ppm sensor
Type CO	I229704	100/250/500/2000 ppm CO	Carbon monoxide ppm sensor
Type CO (LHS)	I229704/LHS	250 / 500 ppm CO	Carbon monoxide ppm sensor (LHS) Low H <sub>2</sub> Sensitivity
Type H <sub>2</sub>	I229705/1000	0-1000 ppm H <sub>2</sub>	Hydrogen ppm sensor
Type H <sub>2</sub>	I229705/40000	0-100 %LEL H <sub>2</sub>	Hydrogen LEL sensor
Type NH <sub>3</sub>	I229706/100	0-100 ppm NH <sub>3</sub>	Ammonia ppm sensor
Type NH <sub>3</sub>	I229706/1000	0-1000 ppm NH <sub>3</sub>	Ammonia ppm sensor
Type NH <sub>3</sub> (LL)	I229706/100/LL	0-100 ppm NH <sub>3</sub>	Ammonia ppm sensor (LL) Long Life
Type NH <sub>3</sub> (LL)	I229706/1000/LL	0-1000 ppm NH <sub>3</sub>	Ammonia ppm sensor (LL) Long Life
Type Cl <sub>2</sub>	I229707	5 / 50 ppm Cl <sub>2</sub>	Chlorine ppm sensor
Type ClO <sub>2</sub>	I229708	2 ppm ClO <sub>2</sub>	Chlorine dioxide ppm sensor
Type COCl <sub>2</sub>	I229709	1 ppm COCl <sub>2</sub>	Fosgeen ppm sensor
Type HCN	I229710	0-30 ppm HCN	Hydrogen cyanide ppm sensor
Type HCl	I229711	0-20 ppm HCl	Hydrogen chloride ppm sensor
Type HF	I229712	0-10 ppm HF	Hydrogen fluoride ppm sensor
Type H <sub>2</sub> O <sub>2</sub>	I229713	0-50 ppm H <sub>2</sub> O <sub>2</sub>	Hydrogen peroxide ppm sensor
Type NO	I229714	25 / 100 ppm NO	Nitrogen monoxide ppm sensor
Type NO <sub>2</sub>	I229715	0-20 ppm NO <sub>2</sub>	Nitrogen dioxide ppm sensor
Type SO <sub>2</sub>	I229716	0-10 ppm SO <sub>2</sub>	Sulfur dioxide ppm sensor
Type CH <sub>3</sub> S	I229717	0-20 ppm CH <sub>3</sub> S	Methyl Mercaptan ppm sensor
Type SiH <sub>4</sub>	I229718	0-50 ppm SiH <sub>4</sub>	Silane ppm sensor
Type O <sub>3</sub>	I229719	0-1 ppm O <sub>3</sub>	Ozone ppm sensor
Type CH <sub>2</sub> O	I229720	0-10 ppm CH <sub>2</sub> O	Formaldehyde ppm sensor
Type F <sub>2</sub>	I229721	0-1 ppm F <sub>2</sub>	Fluoride ppm sensor
Type N <sub>2</sub> H <sub>4</sub>	I229722	0-1 ppm N <sub>2</sub> H <sub>4</sub>	Hydrazine ppm sensor
Type C <sub>2</sub> H <sub>4</sub> O	I229724	0-10 ppm C <sub>2</sub> H <sub>4</sub> O	Ethylene Oxide sensor
Type PH <sub>3</sub>	I229725	0-5 ppm PH <sub>3</sub>	Phosphine sensor

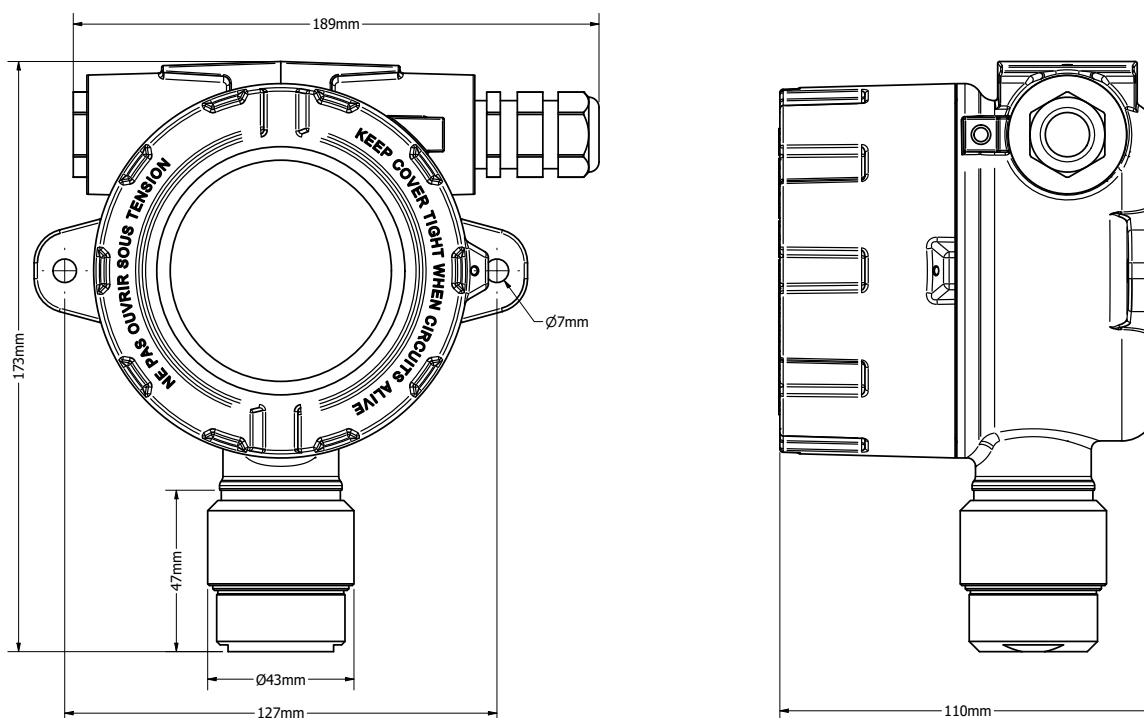
## ORDERING INFORMATION

ACCESSORIES			
TYPE	IMAGE	PART NO.	DESCRIPTION
Signal cable		4002427	mesh shielded cable, 3+1 x 0,75 mm <sup>2</sup> (flexible cores), per meter.
Duct mounting set JIS		Duct kit for JIS ducts (Stainless steel)	
		5101101-00A	100A (Ø 200mm)
		5101102-00A	125A (Ø 235mm)
		5101103-00A	150A (Ø 265mm)
		5101104-00A	200A (Ø 320mm)
		5101105-00A	250A (Ø 385mm)
Duct mounting set DIN		Duct kit for DIN (Stainless steel)	
		5101731-00A	DIN 100 (Ø 220mm)
		5101732-00A	DIN 125 (Ø 250mm)
		5101733-00A	DIN 150 (Ø 285mm)
		5101734-00A	DIN 200 (Ø 340mm)
		5101735-00A	DIN 250 (Ø 385mm)
Duct mounting set		4002722	Duct mounting set for mounting in ventilation ducts. (250x200x1,5 mm). 4002722 for brass. 4002723 for Stainless steel.
		4002723	
Splash Guard for ST480xi and ST150xi		4002702	Splash Guard ST480xi / ST150xi, for enviromental sensor protection, incl. splash water.
Inline flow adapter for ST480xi		1229262	Inline flow adapter ST480xi / ST150xi, for sample applications, SS.
Protective hood		4002714	Protective hood SS, for optimal protection in "wet" production areas, dim. 315 x 300 x 138 mm.
Isolation set EMC/RFI		4002440	Isolation plate EMC/RFI, 160 x 160 x 7,5mm.
Protective bracket		4002713	SS bracket, extra protection for use in e.g. warehouses.
Calibration adapter for ST480xi and ST150xi		1229261	Stainless Steel calibration flow adapter, for ST480xi / ST150xi.

TEST GASES AND ACCESSORIES		
TYPE	PART NO.	DESCRIPTION
BUGAS, 100Vol.% N <sub>2</sub>	9990524	Nitrogen, 100 Vol.%, 110 gas liters
BUGAS, 20,9% O <sub>2</sub> / N <sub>2</sub>	9990537	Synthetic air, 20,9% O <sub>2</sub> / 79% N <sub>2</sub> , 110 gas liters
BUGAS, 23,5% O <sub>2</sub> / N <sub>2</sub>	9990564	Synthetic air, 23,5% O <sub>2</sub> in N <sub>2</sub> , 110 gas liters
BUGAS, 50 ppm CO	9990505	Carbon monoxide, 50 ppm in air; 110 gas liters
BUGAS, 500 ppm CO	9990534	Carbon monoxide, 500 ppm in air; 110 gas liters
BUGAS, 10 ppm H <sub>2</sub> S	9990540	Hydrogen sulfide, 10 ppm in air; 58 gas liters
BUGAS, 5 ppm Cl <sub>2</sub>	9990503	Dichloor, 5 ppm in nitrogen, 58 gas liters
BUGAS, 25 ppm H <sub>2</sub> S	9990507	Hydrogen sulfide, 25 ppm in air; 58 gas liters
BUGAS, 5 ppm HCN	9990529	Hydrogen cyanide, 5 ppm in air; 58 gas liters
BUGAS, 25ppm NH <sub>3</sub>	9990510	Ammonia, 25 ppm in air; 58 gas liters
BUGAS, 25 ppm NO	9990511	Nitrogen oxide, 25 ppm in air; 58 gas liters
BUGAS, 5 ppm NO <sub>2</sub>	9990512	Nitrogen dioxide, 5 ppm in air; 58 gas liters
BUGAS, 0,5 ppm PH <sub>3</sub>	9990526	Phosphine, 0,5 ppm in Nitrogen, 58 gasliters
BUGAS, 5 ppm SiH <sub>4</sub>	9990514	Silane, 5 ppm in Nitrogen, 110 gasliters
BUGAS, 10 ppm SO <sub>2</sub>	9990515	Sulphur dioxide, 10 ppm in air; 110 gasliters
Gas hose	1225819	Flexible gas hose, Ø 4x6mm, suitable for non corrosive gasses 1 meter.
Gas hose	1910204	Flexibele gas hose, Ø 4x6mm, suitable for corrosive gasses 1 meter.
Flow regulator brass	9990600	Flow regulator Chrome / brass nickleplated (applicable for 58/110 gas liters), fixed flow 0,5 l/min
Flow regulator SS	9990601	Fixed Flow regulator SS (applicable for 58/110 gas liters), fixed flow 0,5 l/min

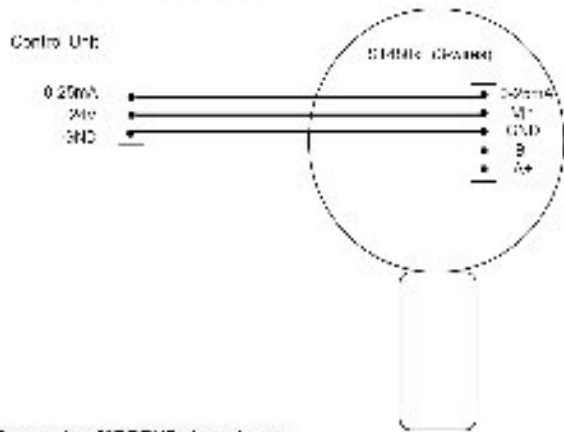
Consilium offers a wide range of test gases, if the required test gas is not listed, please contact us.

## DIMENSIONS

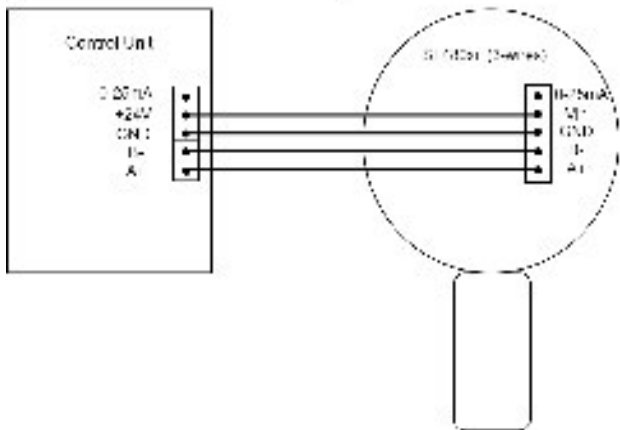


## CONNECTION DIAGRAM GAS DETECTOR

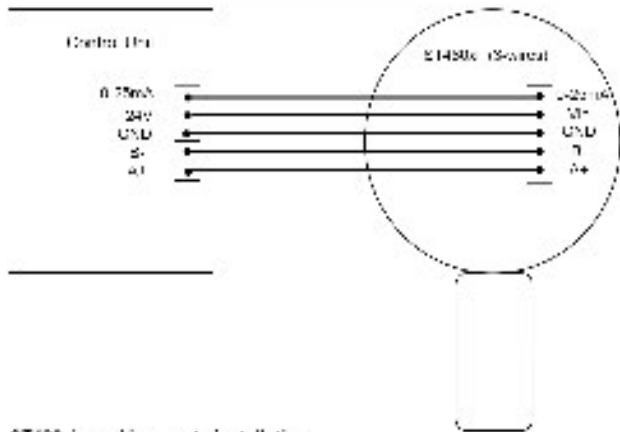
**ST480xi used as 4-20mA transmitter:**



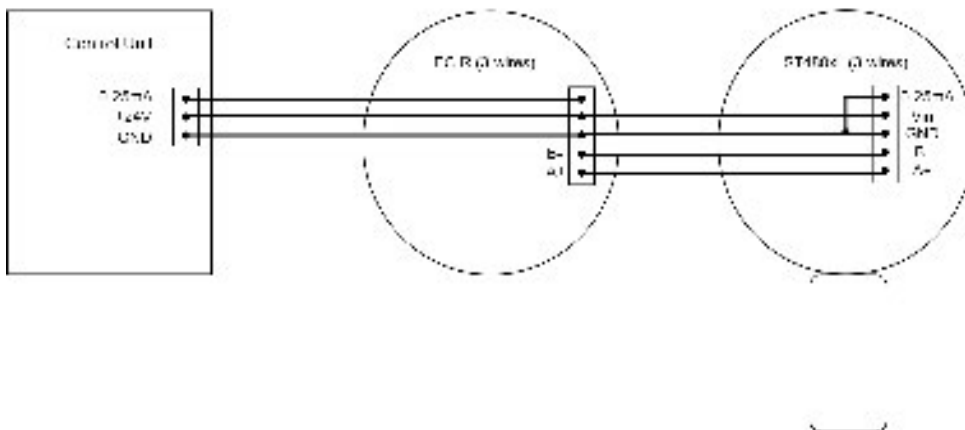
**ST480xi used as MODBUS slave device:**



**ST480xi used as MODBUS slave device and 4-20 mA transmitter:**



**ST480xi used in remote installation:**



The specifications described herein are subject to change without notice.

## SPECIFICATIONS

PRODUCT	ST480xi	
Gas type	Oxygen, Hydrogen and Toxic gases	
Sensor type	Electrochemical sensor	
Range	See table "Order information" for ranges	
Display	Digital graphic display with backlight	
Status LED display	Green: OK, Red: Alarm, Yellow: SF (System Failure), Blue: User menu active	
Power supply	18-30VDC (Max. 120 mA)	
Outputs	Analogue: 4-20 mA (<2.4 mA system failure, >20 mA overrange)	
Signal cable	Standard version: 3-wire shielded, 0.75 mm <sup>2</sup> (excluding earth shield connection and Modbus) Remote version: 4-wire shielded, 0.75 mm <sup>2</sup> (excluding earth shield connection and Modbus)	
Cable gland	Standard Brass, optional SS (thread M20 x 1.5)	
Load impedance	max. 300 Ω at 24VDC	
Operating temperature	See table "Order information"	
Relative humidity	See table "Order information"	
Pressure range	Toxic: Atmospheric ± 10%, Oxygen: 80 to 120 kPa	
Enclosure	Aluminum with coating, optional SS	
Dimensions	173 x 189 x 110 mm (HxWxD)	
Weight	2.0 kg (Alu), 3.35 kg (SS)	
Ingress Protection	IP 66 (Sensor IP 6x)	
Enclosure gas sensor	SS 316	
CE marking	ATEX (Directive 2014/34/EU) Electromagnetic Compatibility (Directive 2014/30/EU)	
Approvals (international models)	ATEX	II 2G Ex db ia IICT4 Gb II 2D Ex ia tb IIICT1 35°C Db
	IECEX	Ex db ia IICT4 Gb Ex ia tb IIICT1 35°C Db (Tamb: -20°C to +60°C)
Approvals (North American models)	cCSAus	Ex db ia IICT4 Gb Ex ia tb IIICT1 35°C Db Class I, Zone I, AEx db ia IICT4 Gb Zone 2I, AEx ia tb IIICT1 35°C Db Class I, Division I, Groups A, B, C, and DT4 Class II, Division I, Groups E, F, and GT1 35°C
Compliance with: (North American models)	CSA	C22.2 No. 60079-0:19, 60079-1:16, 60079-11:14, 60079-31:15, 25:17, 30:20
	CAN/CSA	C22.2 No. 61010-1-12
	UL	61010-1, 60079-0:19, 60079-1:15, 60079-11:13, 60079-31
	FM	3600:2022, 3615:2022, 3616:2022
Manufacturer	Consilium Safety Netherlands B.V.	

