

DrägerSensor® CatEx 125 PR-Gas

Order no. 68 13 080

Used in	Plug & Play	Replaceable	Guaranty	Expected sensor life
Dräger X-am 2500/5000	no	yes	3 years	> 4 years
Dräger X-am 8000	no	yes	3 years	> 4 years

MARKET SEGMENTS

Mining, telecommunications, shipping, sewage, gas supply companies, refineries, chemical industry, landfills, biogas plants, sewage treatment plants, tunneling.

TECHNICAL SPECIFICATIONS

Detection limit:	2 % LEL (at calibration with methane)
Resolution:	1.0% LEL for measuring range 0 to 100% LEL, 1.0 Vol.-% for measuring range 0 to 100 Vol.-% CH ₄ (methane)
Measurement range:	0 to 100% LEL or 0 to 100 Vol.-% CH ₄ (methane) in Dräger X-am 5000, x-am 8000
Ambient conditions	
Temperature:	-20 to 55 °C (-4 to 131 °F)
Humidity:	10 to 95 % RH
Pressure:	700 to 1300 hPa
Warm-up time:	≤ 3 minutes

TYPICAL MEASURING PROPERTIES FOR THE MEASUREMENT RANGE 0 TO 100 % LEL WHEN CALIBRATED WITH METHANE IN AIR*:

Response time:	X-am 2500/5000	X-am 8000
Diffusion mode (t ₅₀)	≤ 6 seconds	≤ 8 seconds
Diffusion mode (t ₉₀)	≤ 8 seconds	≤ 15 seconds
Pump mode (t ₅₀)		≤ 8 seconds
Pump mode (t ₉₀)		≤ 10 seconds
Precision		
Zero point:	≤ ± 1 % LEL	
Sensitivity:	≤ ± 1 % LEL at 50 % LEL	
Linearity error:	≤ ± 2 % LEL at 70 % LEL	
Influence of temperature		
Zero point:	≤ ± 0.05 % LEL/K	
Sensitivity:	≤ ± 0.05 % LEL/K at 50 % LEL	
Influence of humidity (at 40°C)		
Zero point:	≤ ± 0.03 % LEL/% RH	
Sensitivity:	≤ ± 0.03 % LEL/% RH at 50 % LEL	
Influence of pressure	X-am 2500/5000	X-am 8000
Zero point:	≤ ± 0.30 %LEL/kPa	≤ ± 0.03 % LEL/kPa
Sensitivity:	≤ ± 0.30 % LEL/kPa at 50 % LEL	≤ ± 0.10 % LEL/kPa at 50 % LEL
Long-term drift		
Zero point:	≤ ± 1 % LEL/month	
Sensitivity:	≤ ± 1 % LEL/month at 50 % LEL	

TYPICAL MEASURING PROPERTIES FOR THE MEASUREMENT RANGE 0 TO 100 % LEL WHEN CALIBRATED WITH PROPANE IN AIR*:

Response time:	X-am 2500/5000		X-am 8000
	Diffusion mode (t ₅₀)	≤ 9 seconds	≤ 12 seconds
	Diffusion mode (t ₉₀)	≤ 18 seconds	≤ 29 seconds
	Pump mode (t ₅₀)		≤ 10 seconds
	Pump mode (t ₉₀)		≤ 13 seconds
Precision			
Zero point:	≤ ± 1 % LEL		
Sensitivity:	≤ ± 1 % LEL at 50 % LEL		
Linearity error:	≤ ± 2 % LEL at 70 % LEL		
Influence of temperature			
Zero point:	≤ ± 0.15 % LEL/K		
Sensitivity:	≤ ± 0.15 % LEL/K at 50 % LEL		
Influence of humidity (at 40°C)			
Zero point:	≤ ± 0.03 % LEL/% RH		
Sensitivity:	≤ ± 0.03 % LEL/% RH at 50 % LEL		
Influence of pressure	X-am 2500/5000	X-am 8000	
Zero point:	≤ ± 0.50 %LEL/kPa	≤ ± 0.10 % UEG/kPa	
Sensitivity:	≤ ± 0.50 % LEL/kPa at 50 % LEL	≤ ± 0.10 % LEL/kPa at 50 % LEL	
Long-term drift			
Zero point:	≤ ± 3 % LEL/month		
Sensitivity:	≤ ± 3 % LEL/month at 50 % LEL		

* s. a. Notes on Approval 9033890 (X-am 2500/5000), 9033655 (X-am 8000)

TYPICAL MEASURING PROPERTIES FOR THE MEASUREMENT RANGE 0 TO 100 Vol.-% CH₄:

Response time:	≤ 35 seconds (t_{90})
Precision:	$\leq \pm 1$ Vol.-%
Linearity error:	$\leq \pm 5$ Vol.-% at 0 to 50 Vol.-% $\leq 10\%$ of measured value at 50 to 100 Vol.-%
Long-term drift	
Zero point:	$\leq \pm 3$ Vol.-%/month
Precision:	$\leq \pm 3$ Vol.-%/month at 50 Vol.-%
Influence of temperature:	$\leq \pm 0.3$ Vol.-%/K
Influence of humidity:	$\leq \pm 0.2$ Vol.-%/% RH at 40 °C

NOTICE: Monitoring explosive mixtures in the range from 0 to 100% LEL in the measuring range up to 100 Vol% is only possible for devices that have an automatic range switchover. Heat conduction measurements are possible in the absence of oxygen, but the accuracy specifications in the range 0 to 5 Vol% here do not apply in this case.

This setting is not suitable for the monitoring of explosive mixtures in the measuring range of 0 to 100% LEL.

Test gas:	approx. 2 Vol.-% CH ₄ or 50 Vol.-% CH ₄
Effect of sensor poisons:	Halogenated hydrocarbons or volatile silicon, sulphur, heavy metal compounds may damage the CatEx Sensor. Hydrogen sulphide H ₂ S 1000 ppmh $\leq \pm 2\%$ of measured value Hexamethyldisiloxane HMDS 10 ppmh $\leq \pm 10\%$ of measured value Hexamethyldisiloxane HMDS 30 ppmh $\leq \pm 20\%$ of measured value After an exposure to 10 ppm HMDS in air for 3 hours the loss of sensitivity is less than 40%.

SPECIAL CHARACTERISTICS

This sensor is optimized for the detection of methane. It has a response time (t_{90}) of less than 10 seconds. Due to the additional shock absorption of the pellistors, it is particularly resistant to shock. Provided with all the necessary approvals, this is a very robust sensor that can be used in both industrial and mining applications.

DETECTING OTHER GASES AND VAPORS

The detection of other gasea through the use of cross sensitivities for the measurement range of 0 to 100 % LEL. The values given are typical values when calibrated with methane (CH_4) and apply to new sensors without additional diffusion barriers. For methane, the LEL according to ISO/IEC 80079-20-1:2017 was used. The table does not claim to be complete. The sensor may also be sensitive to other gases.

RELEVANT CROSS-SENSITIVITIES

Gas/vapor	Chemical symbol	CAS No.	Test gas concentration in Vol.-%	Reading displayed in % LEL
Acetylene (MTG)	C_2H_2	74-86-2	1.15	32
n-Butane (MTG)	C_4H_{10}	106-97-8	0.70	22
i-Butene (MTG)	C_4H_8	115-11-7	0.80	23
Ethane (MTG)	C_2H_6	74-84-0	1.20	33
Ethene (MTG)	C_2H_4	74-85-1	1.20	30
Hydrogen (MTG)	H_2	1333-74-0	2.00	44
Liquid petroleum gas**	LPG		0.70	22
Methane (MTG)	CH_4	74-82-8	2.20	50
Methane***	CH_4	74-82-8	2.20	50
n-Pentane	C_5H_{12}	109-66-0	0.75	22
Propane (MTG)	C_3H_8	74-98-6	0.85	28
Propene (MTG)	C_3H_6	115-07-1	1.00	32

** The values in the table are based on 50% propane and 50% butane. In practice, the composition of LPG can fluctuate, which may lead to increased measuring errors.

*** The measuring gas « CH_4L » provides a higher resolution and is used for leak detection. It is recommended to re-calibrate the zero point in fresh air at the operating site. The settings are optimized for the X-am 8000. With the unit [ppm], high gas concentrations cannot be shown on the X-am 5000-s display; the unit should be changed to [Vol%] or [%UEG].

MTG = German abbreviation for measurement performance certificate.

A metrological report is a verification and certification of the measuring function of a gas measuring device.



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