

DrägerSensor® CatEx 125 PR

Order no. 68 12 950

Used in	Plug & Play	Replaceable	Guaranty	Expected sensor life	Selective filter
Dräger X-am 2500/5000	no	yes	3 years	> 4 years	–
Dräger X-am 3500/8000	no	yes	3 years	> 4 years	–

MARKET SEGMENTS

Telecommunications, shipping, sewage, gas supply companies, refineries, chemical industry, mining, landfills, biogas plants, sewage treatment plants, tunneling.

TECHNICAL SPECIFICATIONS

Detection limit:	2% LEL (at calibration with methane)
Resolution:	1 % LEL for measurement range 0 to 100 % LEL, 1 Vol.-% for measurement range 0 to 100 Vol.-% CH ₄ (methane)
Measurement range:	0 to 100 % LEL 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 1,300 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 3500/8000
Diffusion mode (t ₅₀)	≤ 7 seconds	≤ 9 seconds
Diffusion mode (t ₉₀)	≤ 17 seconds	≤ 20 seconds
Pump mode (t ₅₀)		≤ 9 seconds
Pump mode (t ₉₀)		≤ 12 seconds
Precision		
Zero point:	≤ ± 1 % LEL	
Sensitivity:	≤ ± 1 % LEL at 50 % LEL	
Linearity error:	≤ ± 2 % LEL at 70 % LEL	
Influence of temperature		
Zero point:	≤ ± 0.03 % LEL/K	
Sensitivity:	≤ ± 0.05 % LEL/K at 50 % LEL	
Influence of humidity (at 40°C)		
Zero point:	≤ ± 0.01 % LEL/% RH	
Sensitivity:	≤ ± 0.03 % LEL/% RH at 50 % LEL	
Influence of pressure	X-am 2500/5000	X-am 3500/8000
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:	≤ ± 2 % 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 3500/8000
Diffusion mode (t ₅₀)	≤ 10 seconds	≤ 12 seconds
Diffusion mode (t ₉₀)	≤ 25 seconds	≤ 30 seconds
Pump mode (t ₅₀)		≤ 11 seconds
Pump mode (t ₉₀)		≤ 15 seconds
Precision		
Zero point:	≤ ± 1 % LEL	
Sensitivity:	≤ ± 1 % LEL at 50 % LEL	
Linearity error:	≤ ± 3 % 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 3500/8000
Zero point:	≤ ± 0.30 %LEL/kPa	≤ ± 0.03 % UEG/kPa
Sensitivity:	≤ ± 0.30 % LEL/kPa at 50 % LEL	≤ ± 0.10 % LEL/kPa at 50 % LEL
Long-term drift		
Zero point:	≤ ± 2 % LEL/month	
Sensitivity:	≤ ± 3 % LEL/month at 50 % LEL	

* s. a. Notes on Approval 9033890 (X-am 2500/5000), 9033655 (X-am 3500/8000)

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

Response time:	≤ 30 seconds (t ₉₀)
Precision:	≤ ± 1 Vol.-%
Linearity error:	≤ ± 5 Vol.-% at 0 to 50 Vol.-% ≤ ± 10% of measured value at 50 to 100 Vol.-%
Long-term drift	
Zero point:	≤ ± 3 Vol.-%/month
Precision:	≤ ± 3 Vol.-%/month at 50 Vol.-%
Influence of temperature:	≤ ± 0.15 Vol.-%/K
Influence of humidity:	≤ ± 0.15 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 ≤ ± 2 % of measured value Hexamethyldisiloxane HMDS 10 ppmh ≤ ± 5 % of measured value Hexamethyldisiloxane HMDS 30 ppmh ≤ ± 25 % of measured value After an exposure to 10 ppm HMDS in air for 5 hours the loss of sensitivity is less than 50%.

SPECIAL CHARACTERISTICS

The DrägerSensor® CatEx 125 PR (Poison Resistant) is used to detect flammable gases and vapors. The detection of hydrocarbons from methane to nonane is certified for the use in the devices Dräger X-am 2500/5000 and from methane to octane for the devices Dräger X-am 3500/8000 in accordance with EN 60079-29-1 and EN 50271. In addition, the sensor has very good long-term stability, hardly any influence of humidity and an excellent poisoning resistance to sensor poisons such as hydrogen sulfide and siloxanes.

DETECTING OTHER GASES AND VAPORS

The detection of other gases and vapors 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 (CH₄) 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 and vapors.

RELEVANT CROSS-SENSITIVITIES

Gas/vapor	Chemical symbol	CAS No.	Test gas concentration in Vol.-%	Reading displayed in % LEL
Acetone	C ₃ H ₆ O	67-64-1	1.25	31
Acetic acid	C ₂ H ₄ O ₂	64-19-7	3.00	23
Acetylene	C ₂ H ₂	74-86-2	1.15	36
Ammonia	NH ₃	7664-41-7	7.70	57
Benzene	C ₆ H ₆	71-43-2	0.60	25
Butadiene -1,3	C ₄ H ₆	106-99-0	0.70	27
n-Butane	C ₄ H ₁₀	106-97-8	0.70	26
n-Butanol	C ₄ H ₁₀ O	71-36-3	0.70	20
2-Butanone	C ₄ H ₈ O	78-93-3	0.75	22
n-Butyl acetate	C ₈ H ₁₂ O ₂	123-86-4	0.60	17
Carbon monoxide	CO	630-08-0	5.45	32
Cyclohexane	C ₆ H ₁₂	110-82-7	0.50	20
Cyclopentane	C ₅ H ₁₀	287-92-3	0.70	27
Diethylamine	C ₄ H ₁₁ N	109-89-7	0.85	28
Diethyl ether	(C ₂ H ₅) ₂ O	60-29-7	0.85	27
Ethane	C ₂ H ₆	74-84-0	1.20	35
Ethanol	C ₂ H ₆ O	64-17-5	1.55	33
Ethene	C ₂ H ₄	74-85-1	1.20	36
Ethyl acetate	C ₄ H ₈ O ₂	141-78-6	1.00	25
n-Heptane	C ₇ H ₁₆	142-82-5	0.40	17
n-Hexane	C ₆ H ₁₄	110-54-3	0.50	20
Hydrogen	H ₂	1333-74-0	2.00	49
Liquid petroleum gas**	LPG		0.70	22
Methane	CH ₄	74-82-8	2.20	50

Gas/vapor	Chemical symbol	CAS No.	Test gas concentration in Vol.-%	Reading displayed in % LEL
Methanol	CH_4O	67-56-1	3.00	40
1-Methoxy-2-Propanol	$\text{C}_4\text{H}_{10}\text{O}_2$	107-98-2	0.90	21
Methyl tert-butyl ether (MTBE)	$\text{C}_5\text{H}_{12}\text{O}$	1634-04-4	0.80	25
n-Nonane	C_9H_{20}	111-84-2	0.35	14
n-Octane	C_8H_{18}	111-65-9	0.40	17
n-Pentane	C_5H_{12}	109-66-0	0.55	21
3-Pentanol	$\text{C}_5\text{H}_{12}\text{O}$	584-02-1	0.60	19
Propane	C_3H_8	74-98-6	0.85	29
2-Propanol	$\text{C}_3\text{H}_8\text{O}$	67-63-0	1.00	27
Propene	C_3H_6	115-07-1	1.00	35
Propylene oxide	$\text{C}_3\text{H}_6\text{O}$	75-56-9	0.95	25
Styrene	C_8H_8	100-42-5	0.50	11
Toluene	C_7H_8	108-88-3	0.50	20
o-Xylene	C_8H_{10}	95-47-6	0.55	19

** 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 given values may fluctuate by $\pm 30\%$ %.

The table does not claim to be complete. The sensor may also be sensitive to other gases and vapours. Poisoning of the sensor may also alter the relative sensitivities for certain gases and vapours. After overstepping the measuring range there could be increased readings in the measuring range 0 to 100 %LEL. Calibrate the sensor, if necessary. The given test gas concentrations correspond to 50% of the lower explosion limit of each test gas (source: E. Brandes, W. Möller: Technical safety data, PTB, ISBN 978-3-86509-811-5, edition 2008).



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