

DrägerSensor® XS EC H₂S

DrägerSensor® XS 2 H₂S

DrägerSensor® XS R H₂S

Order no. 68 09 110

68 10 370

68 10 260

Used in	Plug & Play	Replaceable	Guaranty	Expected sensor life	Selective filter
Dräger X-am 7000	yes	yes	XS EC: 3 years XS 2: 2 years XS R: 5 years	> 5 years > 3 years = 5 years (limited operation time)	–

MARKET SEGMENTS

Waste disposal, petrochemical, fertilizer production, sewage, mining and tunneling, shipping, inorganic chemicals, steel industry, pulp and paper, organic chemicals, oil and gas, hazmat, biogas.

TECHNICAL SPECIFICATIONS

Detection limit:	1 ppm for XS EC / XS 2 / XS R
Resolution:	0.1 ppm for XS EC / XS 2 / XS R
Measurement range:	0 to 100 ppm H ₂ S (hydrogen sulfide)
Response time:	≤ 20 seconds (T ₉₀) - XS R ≤ 25 seconds (T ₉₀) - XS EC ≤ 30 seconds (T ₉₀) - XS 2
Measurement accuracy	
Sensitivity:	≤ ± 2% of measured value - XS EC / XS R ≤ ± 1% of measured value - XS 2
Long-term drift, at 20°C (68°F)	
Zero point:	≤ ± 1 ppm/year - XS EC / XS R ≤ ± 1 ppm/month - XS 2
Sensitivity:	≤ ± 1% of measured value/month
Warm-up time:	≤ 12 hours - XS EC / XS 2 / XS R
Ambient conditions	
Temperature*:	(–20 to 50)°C (–4 to 122)°F - XS EC (–40 to 50)°C (–40 to 122)°F - XS 2 / XS R
Humidity*:	(10 to 90)% RH
Pressure:	(700 to 1,300) hPa
Influence of temperature	
Zero point:	≤ ± 5 ppm - XS EC / ≤ ± 2 ppm - XS 2 / XS R
Sensitivity:	≤ ± 5% of measured value - XS EC / XS 2 / XS R
Influence of humidity	
Zero point:	≤ ± 0.02 ppm/% RH - XS EC / XS 2, no effect - XS R
Sensitivity:	≤ ± 0.05% of measured value/% RH - XS EC / XS 2 / XS R
Test gas:	approx. 5 to 100 ppm H ₂ S test gas

*Sudden temperature or humidity changes lead to dynamic effects (fluctuations).
These dynamic effects decrease within 2 to 3 minutes.

SPECIAL CHARACTERISTICS

These sensor's advantages include fast response times and excellent linearity. At concentrations up to 20 ppm, sulfur dioxide only has a minor effect on hydrogen sulfide readings. This, therefore, enables the selective measurement of hydrogen sulfide alongside sulfur dioxide.

The values shown in the following table are standard and apply to new sensors. The values may fluctuate by $\pm 30\%$. The sensor may also be sensitive to additional gases (for more information, please contact Dräger). Gas mixtures may be displayed as the sum of all components. Gases with a negative cross sensitivity may displace an existing concentration of H_2S . To be sure, please check if gas mixtures are present.

RELEVANT CROSS-SENSITIVITIES DrägerSensor® XS EC H_2S

Gas/vapor	Chem. symbol	Concentration	Display in ppm H_2S
Acetone	CH_3COCH_3	1,000 ppm	≤ 4
Ammonia	NH_3	500 ppm	≤ 1
Benzene	C_6H_6	0.6 Vol. %	≤ 1
Carbon dioxide	CO_2	1.5 Vol. %	$\leq 1^{(-)}$
Carbon disulfide	CS_2	15 ppm	≤ 1
Carbon monoxide	CO	125 ppm	≤ 3
Chlorine	Cl_2	20 ppm	$\leq 2^{(-)}$
Dimethyldisulfide	CH_3SSCH_3	20 ppm	≤ 13
Dimethylsulfide	$(\text{CH}_3)_2\text{S}$	20 ppm	≤ 6
Ethanol	$\text{C}_2\text{H}_5\text{OH}$	200 ppm	≤ 2
Ethanethiol	$\text{C}_2\text{H}_5\text{SH}$	20 ppm	≤ 5
Ethene	C_2H_4	1,000 ppm	≤ 10
Ethine	C_2H_2	0.6 Vol. %	≤ 10
FAM regular gasoline (DIN 51635, DIN 51557)	–	0.55 Vol. %	≤ 1
Hexane	C_6H_{14}	0.6 Vol. %	≤ 1
Hydrogen	H_2	1 Vol. %	≤ 10
Hydrogen chloride	HCl	40 ppm	≤ 1
Hydrogen cyanide	HCN	50 ppm	≤ 1
Methane	CH_4	5 Vol. %	≤ 1
Methanol	CH_3OH	200 ppm	≤ 10
Methylmercaptane	CH_3SH	20 ppm	≤ 15
Nitrogen dioxide	NO_2	20 ppm	≤ 1
Nitrogen monoxide	NO	20 ppm	≤ 10
Octane	C_8H_{18}	0.4 Vol. %	≤ 1
Phosphine	PH_3	5 ppm	≤ 5
Propane	C_3H_8	1 Vol. %	≤ 1
Propene	C_3H_6	0.5 Vol. %	≤ 1
Sulfur dioxide	SO_2	20 ppm	≤ 4
sec-Butylmercaptan	$\text{C}_4\text{H}_{10}\text{SH}$	20 ppm	≤ 7 ppm
Tetrahydrothiophene	$\text{C}_4\text{H}_5\text{S}$	20 ppm	≤ 4
Toluene	$\text{C}_2\text{H}_5\text{CH}_3$	0.6 Vol. %	≤ 1
tert-Butylmercaptane	$(\text{CH}_3)_3\text{CSH}$	20 ppm	≤ 10 ppm
Trichloroethylene	CHClCCl_2	1,000 ppm	≤ 1
Xylol	$\text{C}_6\text{H}_4(\text{CH}_3)_2$	0.5 Vol. %	≤ 4

(–) Indicates negative deviation

RELEVANT CROSS-SENSITIVITIES DrägerSensor® XS 2 H₂S

Gas/vapor	Chem. symbol	Concentration	Display in ppm H ₂ S
Acetone	CH ₃ COCH ₃	1,000 ppm	≤4
Ammonia	NH ₃	500 ppm	No effect
Carbon dioxide	CO ₂	1.5 Vol. %	No effect
Carbon disulfide	CS ₂	15 ppm	No effect
Carbon monoxide	CO	125 ppm	≤3
Chlorine	Cl ₂	20 ppm	≤2(-)
Ethane	C ₂ H ₆	0.2 Vol. %	No effect
Ethanol	C ₂ H ₅ OH	200 ppm	≤2
Ethanethiol	C ₂ H ₅ SH	10 ppm	≤5
Ethene	C ₂ H ₄	1,000 ppm	≤10
Ethine	C ₂ H ₂	0.6 Vol. %	≤10
Hexane	C ₆ H ₁₄	0.6 Vol. %	No effect
Hydrogen	H ₂	1 Vol. %	≤10
Hydrogen chloride	HCl	40 ppm	No effect
Hydrogen cyanide	HCN	50 ppm	No effect
Methane	CH ₄	5 Vol. %	No effect
Methanol	CH ₃ OH	200 ppm	≤10
Nitrogen dioxide	NO ₂	20 ppm	No effect
Nitrogen monoxide	NO	20 ppm	≤10
Phosgene	COCL ₂	50 ppm	No effect
Phosphine	PH ₃	5 ppm	≤5
Propane	C ₃ H ₈	1 Vol. %	No effect
Sulfur dioxide	SO ₂	20 ppm	≤4
Tetrahydrothiophene	C ₄ H ₅ S	10 ppm	≤4
Toluene	C ₂ H ₅ CH ₃	0.6 Vol. %	No effect
Xylene	C ₆ H ₄ (CH ₃) ₂	0.5 Vol. %	≤4

(-) Indicates negative deviation

RELEVANT CROSS-SENSITIVITIES DrägerSensor® XS R H₂S

Gas/vapor	Chem. symbol	Concentration	Display in ppm H ₂ S
Acetone	CH ₃ COCH ₃	1,000 ppm	≤ 4
Ammonia	NH ₃	500 ppm	No effect
Benzene	C ₆ H ₆	0.6 Vol. %	No effect
Carbon dioxide	CO ₂	1.5 Vol. %	No effect
Carbon disulfide	CS ₂	15 ppm	No effect
Carbon monoxide	CO	125 ppm	No effect
Chlorine	Cl ₂	8 ppm	≤ 2 ⁽⁻⁾
Ethanol	C ₂ H ₅ OH	200 ppm	≤ 2
Ethanethiol	C ₂ H ₅ SH	10 ppm	≤ 5
Ethene	C ₂ H ₄	1,000 ppm	≤ 10
Ethine	C ₂ H ₂	0.6 Vol. %	≤ 10
FAM regular gasoline (DIN 51635, DIN 51557)	-	0.55 Vol. %	No effect
Hexane	C ₆ H ₁₄	0.6 Vol. %	No effect
Hydrogen	H ₂	1 Vol. %	≤ 10
Hydrogen chloride	HCl	40 ppm	No effect
Hydrogen cyanide	HCN	50 ppm	No effect
Methane	CH ₄	5 Vol. %	No effect
Methanol	CH ₃ OH	200 ppm	≤ 10
Nitrogen dioxide	NO ₂	20 ppm	No effect
Nitrogen monoxide	NO	20 ppm	≤ 10
Octane	C ₈ H ₁₈	0.4 Vol. %	No effect
Phosgene	COCl ₂	50 ppm	No effect
Phosphine	PH ₃	5 ppm	≤ 5
Propane	C ₃ H ₈	1 Vol. %	No effect
Propene	C ₃ H ₆	0.5 Vol. %	No effect
Sulfur dioxide	SO ₂	20 ppm	≤ 4
Tetrahydrothiophene	C ₄ H ₅ S	10 ppm	≤ 4
Toluene	C ₂ H ₅ CH ₃	0.6 Vol. %	No effect
Xylene	C ₆ H ₄ (CH ₃) ₂	0.5 Vol. %	≤ 4