

# DrägerSensor® XS EC H<sub>2</sub>S

## DrägerSensor® XS 2 H<sub>2</sub>S

### DrägerSensor® XS R H<sub>2</sub>S

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

<b>Detection limit:</b>	1 ppm for XS EC / XS 2 / XS R
<b>Resolution:</b>	0.1 ppm for XS EC / XS 2 / XS R
<b>Measurement range:</b>	0 to 100 ppm H <sub>2</sub> S (hydrogen sulfide)
<b>Response time:</b>	≤ 20 seconds (T <sub>90</sub> ) - XS R ≤ 25 seconds (T <sub>90</sub> ) - XS EC ≤ 30 seconds (T <sub>90</sub> ) - XS 2
<b>Measurement accuracy</b>	
Sensitivity:	≤ ± 2% of measured value - XS EC / XS R ≤ ± 1% of measured value - XS 2
<b>Long-term drift, at 20°C (68°F)</b>	
Zero point:	≤ ± 1 ppm/year - XS EC / XS R ≤ ± 1 ppm/month - XS 2
Sensitivity:	≤ ± 1% of measured value/month
<b>Warm-up time:</b>	≤ 12 hours - XS EC / XS 2 / XS R
<b>Ambient conditions</b>	
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
<b>Influence of temperature</b>	
Zero point:	≤ ± 5 ppm - XS EC / XS microPac, ≤ ± 2 ppm - XS 2 / XS R
Sensitivity:	≤ ± 5% of measured value - XS EC / XS 2 / XS R
<b>Influence of humidity</b>	
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
<b>Test gas:</b>	approx. 5 to 100 ppm H <sub>2</sub> 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  $\text{H}_2\text{S}$ . To be sure, please check if gas mixtures are present.

### RELEVANT CROSS-SENSITIVITIES DrägerSensor® XS EC $\text{H}_2\text{S}$

Gas/vapor	Chem. symbol	Concentration	Display in ppm $\text{H}_2\text{S}$
Acetone	$\text{CH}_3\text{COCH}_3$	1,000 ppm	$\leq 4$
Acetylene	$\text{C}_2\text{H}_2$	0.6 Vol. %	$\leq 10$
Ammonia	$\text{NH}_3$	500 ppm	No effect
Benzene	$\text{C}_6\text{H}_6$	0.6 Vol. %	No effect
Carbon dioxide	$\text{CO}_2$	1.5 Vol. %	$\leq 1^{(-)}$
Carbon disulfide	$\text{CS}_2$	15 ppm	No effect
Carbon monoxide	$\text{CO}$	125 ppm	$\leq 3$
Chlorine	$\text{Cl}_2$	20 ppm	$\leq 2^{(-)}$
Dimethyldisulfide	$\text{CH}_3\text{SSCH}_3$	20 ppm	$\leq 13$
Dimethylsulfide	$(\text{CH}_3)_2\text{S}$	20 ppm	$\leq 6$
Ethanol	$\text{C}_2\text{H}_5\text{OH}$	200 ppm	$\leq 2$
Ethanethiol	$\text{C}_2\text{H}_5\text{SH}$	20 ppm	$\leq 5$
Ethene	$\text{C}_2\text{H}_4$	1,000 ppm	$\leq 10$
FAM regular gasoline (DIN 51635, DIN 51557)	-	0.55 Vol. %	No effect
Hexane	$\text{C}_6\text{H}_{14}$	0.6 Vol. %	No effect
Hydrogen	$\text{H}_2$	1 Vol. %	$\leq 10$
Hydrogen chloride	$\text{HCl}$	40 ppm	No effect
Hydrogen cyanide	$\text{HCN}$	50 ppm	No effect
Methane	$\text{CH}_4$	5 Vol. %	No effect
Methanol	$\text{CH}_3\text{OH}$	200 ppm	$\leq 10$
Methylmercaptane	$\text{CH}_3\text{SH}$	20 ppm	$\leq 15$
Nitrogen dioxide	$\text{NO}_2$	20 ppm	No effect
Nitrogen monoxide	$\text{NO}$	20 ppm	$\leq 10$
Octane	$\text{C}_8\text{H}_{18}$	0.4 Vol. %	No effect
Phosphine	$\text{PH}_3$	5 ppm	$\leq 5$
Propane	$\text{C}_3\text{H}_8$	1 Vol. %	No effect
Propene	$\text{C}_3\text{H}_6$	0.5 Vol. %	No effect
Sulfur dioxide	$\text{SO}_2$	20 ppm	$\leq 4$
sec-Butylmercaptan	$\text{C}_4\text{H}_{10}\text{SH}$	20 ppm	$\leq 7$
Tetrahydrothiophene	$\text{C}_4\text{H}_8\text{S}$	20 ppm	$\leq 4$
Toluene	$\text{C}_7\text{H}_8$	0.6 Vol. %	No effect
tert-Butylmercaptane	$(\text{CH}_3)_3\text{CSH}$	20 ppm	$\leq 10$
Trichloroethylene	$\text{CHClCCl}_2$	1,000 ppm	No effect
Xylol	$\text{C}_6\text{H}_4(\text{CH}_3)_2$	0.5 Vol. %	$\leq 4$

(-) Indicates negative deviation

**RELEVANT CROSS-SENSITIVITIES DrägerSensor® XS 2 H<sub>2</sub>S**

<b>Gas/vapor</b>	<b>Chem. symbol</b>	<b>Concentration</b>	<b>Display in ppm H<sub>2</sub>S</b>
Acetone	CH <sub>3</sub> COCH <sub>3</sub>	1,000 ppm	≤4
Acetylene	C <sub>2</sub> H <sub>2</sub>	0.6 Vol. %	≤10
Ammonia	NH <sub>3</sub>	500 ppm	No effect
Carbon dioxide	CO <sub>2</sub>	1.5 Vol. %	No effect
Carbon disulfide	CS <sub>2</sub>	15 ppm	No effect
Carbon monoxide	CO	125 ppm	≤3
Chlorine	Cl <sub>2</sub>	20 ppm	≤2 <sup>(-)</sup>
Ethane	C <sub>2</sub> H <sub>6</sub>	0.2 Vol. %	No effect
Ethanol	C <sub>2</sub> H <sub>5</sub> OH	200 ppm	≤2
Ethanethiol	C <sub>2</sub> H <sub>5</sub> SH	10 ppm	≤5
Ethene	C <sub>2</sub> H <sub>4</sub>	1,000 ppm	≤10
Hexane	C <sub>6</sub> H <sub>14</sub>	0.6 Vol. %	No effect
Hydrogen	H <sub>2</sub>	1 Vol. %	≤10
Hydrogen chloride	HCl	40 ppm	No effect
Hydrogen cyanide	HCN	50 ppm	No effect
Methane	CH <sub>4</sub>	5 Vol. %	No effect
Methanol	CH <sub>3</sub> OH	200 ppm	≤10
Nitrogen dioxide	NO <sub>2</sub>	20 ppm	No effect
Nitrogen monoxide	NO	20 ppm	≤10
Phosgene	COCL <sub>2</sub>	50 ppm	No effect
Phosphine	PH <sub>3</sub>	5 ppm	≤5
Propane	C <sub>3</sub> H <sub>8</sub>	1 Vol. %	No effect
Sulfur dioxide	SO <sub>2</sub>	20 ppm	≤4
Tetrahydrothiophene	C <sub>4</sub> H <sub>8</sub> S	10 ppm	≤4
Toluene	C <sub>7</sub> H <sub>8</sub>	0.6 Vol. %	No effect
Xylene	C <sub>6</sub> H <sub>4</sub> (CH <sub>3</sub> ) <sub>2</sub>	0.5 Vol. %	≤4

## RELEVANT CROSS-SENSITIVITIES DrägerSensor® XS R H<sub>2</sub>S

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