

# DrägerSensor® XS EC CO

## DrägerSensor® XS 2 CO

## DrägerSensor® XS R CO

Order no. 68 09 105

68 10 365

68 10 258

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

### Selective filter

D3T, 68 09 022 – replaceable for XS EC + XS R

A2T, 68 10 378 – replaceable for XS-2

Cross sensitivity of alcohols and acid gases (H<sub>2</sub>S, SO<sub>2</sub>) are eliminated.

The filter's service life can be calculated as follows: 5,000 ppm x hours of contaminant gas. Example: Given constant concentration of 10 ppm H<sub>2</sub>S will be: Service life = 5,000 ppm x hours / 10 ppm = 500 hours. The measurement value response time increases after the installation of the filter.

### MARKET SEGMENTS

Waste disposal, metal processing, petrochemicals, fertilizer production, mining and tunneling, shipping, inorganic chemicals, steel, organic chemicals, oil and gas, hazmat, biogas.

### TECHNICAL SPECIFICATIONS

<b>Detection limit:</b>	2 ppm for XS EC/XS 2/XS R
<b>Resolution:</b>	1 ppm
<b>Measurement range:</b>	0 to 2,000 ppm CO (carbon monoxide)
<b>Response time:</b>	≤ 35 seconds (t <sub>90</sub> ) – XS EC
	≤ 20 seconds (t <sub>90</sub> ) – XS 2
	≤ 30 seconds (t <sub>90</sub> ) – XS R
<b>Precision</b>	
Sensitivity:	≤ ± 1% of measured value – XS EC/XS 2/XS R
<b>Long-term drift, at 20°C (68°F)</b>	
Zero point:	≤ ± 1 ppm/month – XS EC/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
Sensitivity:	≤ ± 0.4% of measured value/K
<b>Influence of humidity</b>	
Zero point:	≤ ± 0.02 ppm/% RH – XS EC
	No effect – XS 2/XS R
Sensitivity:	≤ ± 0.1% of measured value/% RH – XS EC/XS 2
	≤ ± 0.05% of measured value/% RH – XS R
<b>Test gas:</b>	approx. 10 to 2,000 ppm CO test gas

## SPECIAL CHARACTERISTICS

In addition to an outstanding linearity and a quick response time, these CO sensors are highly selective. Internal selective filters, some of which are replaceable, filter out the majority of accompanying gases such as alcohol and acidic gases like H<sub>2</sub>S, SO<sub>2</sub>.

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 carbon monoxide. To be sure, please check if gas mixtures are present.

## RELEVANT CROSS-SENSITIVITIES DrägerSensor® XS EC CO – 68 09 105

Gas/vapor	Chem. symbol	Concentration	Display in ppm CO without selective filter	Display in ppm CO with selective filter
Acetone	CH <sub>3</sub> COCH <sub>3</sub>	1,000 ppm	≤ 20	No effect
Acetylene	C <sub>2</sub> H <sub>2</sub>	200 ppm	≤ 500	≤ 300
Ammonia	NH <sub>3</sub>	200 ppm	No effect	No effect
Carbon dioxide	CO <sub>2</sub>	30 Vol. %	≤ 35	≤ 35
Chlorine	Cl <sub>2</sub>	20 ppm	≤ 1 <sup>(-)</sup>	No effect
Dichloromethane	CH <sub>2</sub> Cl <sub>2</sub>	1,000 ppm	No effect	No effect
Ethane	C <sub>2</sub> H <sub>6</sub>	0.2 Vol. %	No effect	No effect
Ethanol	C <sub>2</sub> H <sub>5</sub> OH	200 ppm	≤ 400	No effect
Ethene	C <sub>2</sub> H <sub>4</sub>	10 ppm	≤ 25	≤ 25
Ethyl acetate	CH <sub>3</sub> COOC <sub>2</sub> H <sub>4</sub>	1,000 ppm	≤ 150	No effect
Formaldehyde	HCHO	20 ppm	≤ 30	No effect
Hydrogen	H <sub>2</sub>	0.1 Vol. %	≤ 90	≤ 90
Hydrogen chloride	HCl	40 ppm	≤ 6	No effect
Hydrogen cyanide	HCN	50 ppm	≤ 10	≤ 1 <sup>(-)</sup>
Hydrogen sulfide	H <sub>2</sub> S	30 ppm	≤ 120	No effect
Methane	CH <sub>4</sub>	5 Vol. %	No effect	No effect
Methanol	CH <sub>3</sub> OH	175 ppm	≤ 150	≤ 2
Nitrogen dioxide	NO <sub>2</sub>	20 ppm	No effect	No effect
Nitrogen monoxide	NO	25 ppm	≤ 50	≤ 12
Phosgene	COCl <sub>2</sub>	50 ppm	No effect	No effect
Phosphine	PH <sub>3</sub>	5 ppm	≤ 20	≤ 3
Propane	C <sub>3</sub> H <sub>8</sub>	1 Vol. %	No effect	No effect
Sulfur dioxide	SO <sub>2</sub>	25 ppm	≤ 25	No effect
Tetrachloroethylene	CCl <sub>2</sub> CCl <sub>2</sub>	1,000 ppm	No effect	No effect
Toluene	C <sub>6</sub> H <sub>5</sub> CH <sub>3</sub>	1,000 ppm	No effect	No effect
Trichloroethylene	CHClCCl <sub>2</sub>	1,000 ppm	No effect	No effect

**RELEVANT CROSS-SENSITIVITIES DrägerSensor® XS R CO – 68 10 258**

Gas/vapor	Chem. symbol	Concentration	Display in ppm CO without selective filter	Display in ppm CO with selective filter
Acetone	$\text{CH}_3\text{COCH}_3$	1,000 ppm	≤ 20	No effect
Acetylene	$\text{C}_2\text{H}_2$	200 ppm	≤ 500	≤ 300
Ammonia	$\text{NH}_3$	200 ppm	No effect	No effect
Carbon dioxide	$\text{CO}_2$	30 Vol. %	No effect	No effect
Chlorine	$\text{Cl}_2$	20 ppm	No effect	No effect
Dichloromethane	$\text{CH}_2\text{Cl}_2$	1,000 ppm	No effect	No effect
Ethane	$\text{C}_2\text{H}_6$	0.2 Vol. %	No effect	No effect
Ethanol	$\text{C}_2\text{H}_5\text{OH}$	200 ppm	≤ 400	No effect
Ethene	$\text{C}_2\text{H}_4$	10 ppm	≤ 25	≤ 25
Ethyl acetate	$\text{CH}_3\text{COOC}_2\text{H}_5$	1,000 ppm	≤ 150	No effect
Formaldehyde	$\text{HCHO}$	20 ppm	≤ 30	No effect
Hydrogen	$\text{H}_2$	0.1 Vol. %	≤ 90	≤ 90
Hydrogen chloride	$\text{HCl}$	40 ppm	≤ 6	No effect
Hydrogen cyanide	$\text{HCN}$	50 ppm	≤ 10	No effect
Hydrogen sulfide	$\text{H}_2\text{S}$	30 ppm	≤ 120	No effect
Methane	$\text{CH}_4$	5 Vol. %	No effect	No effect
Methanol	$\text{CH}_3\text{OH}$	175 ppm	≤ 150	≤ 2
Nitrogen dioxide	$\text{NO}_2$	20 ppm	No effect	No effect
Nitrogen monoxide	$\text{NO}$	25 ppm	≤ 50	≤ 6
Phosgene	$\text{COCl}_2$	50 ppm	No effect	No effect
Phosphine	$\text{PH}_3$	5 ppm	≤ 20	≤ 3
Propane	$\text{C}_3\text{H}_8$	1 Vol. %	No effect	No effect
Sulfur dioxide	$\text{SO}_2$	25 ppm	≤ 25	No effect
Tetrachloroethylene	$\text{CCl}_2\text{CCl}_2$	1,000 ppm	No effect	No effect
Toluene	$\text{C}_6\text{H}_5\text{CH}_3$	1,000 ppm	No effect	No effect
Trichloroethylene	$\text{CHClCCl}_2$	1,000 ppm	No effect	No effect

## RELEVANT CROSS-SENSITIVITIES DrägerSensor® XS 2 CO – 68 10 365

Gas/vapor	Chem. symbol	Concentration	Display in ppm CO without selective filter	Display in ppm CO with selective filter
Acetone	$\text{CH}_3\text{COCH}_3$	1,000 ppm	≤ 20	No effect
Acetylene	$\text{C}_2\text{H}_2$	200 ppm	≤ 500	≤ 50
Ammonia	$\text{NH}_3$	200 ppm	No effect	No effect
Carbon dioxide	$\text{CO}_2$	30 Vol. %	No effect	No effect
Chlorine	$\text{Cl}_2$	20 ppm	No effect	No effect
Dichloromethane	$\text{CH}_2\text{Cl}_2$	1,000 ppm	No effect	No effect
Ethane	$\text{C}_2\text{H}_6$	0.2 Vol. %	No effect	No effect
Ethanol	$\text{C}_2\text{H}_5\text{OH}$	200 ppm	≤ 400	No effect
Ethene	$\text{C}_2\text{H}_4$	50 ppm	≤ 25	≤ 10
Ethyl acetate	$\text{CH}_3\text{COOC}_2\text{H}_5$	1,000 ppm	≤ 150	No effect
Formaldehyde	$\text{HCHO}$	20 ppm	≤ 30	No effect
Hydrogen	$\text{H}_2$	0.1 Vol. %	≤ 90	≤ 90
Hydrogen chloride	$\text{HCl}$	40 ppm	≤ 6	No effect
Hydrogen cyanide	$\text{HCN}$	50 ppm	≤ 10	No effect
Hydrogen sulfide	$\text{H}_2\text{S}$	30 ppm	≤ 120	No effect
Methane	$\text{CH}_4$	5 Vol. %	No effect	No effect
Methanol	$\text{CH}_3\text{OH}$	175 ppm	≤ 150	≤ 2
Nitrogen dioxide	$\text{NO}_2$	20 ppm	No effect	No effect
Nitrogen monoxide	$\text{NO}$	25 ppm	≤ 50	No effect
Phosgene	$\text{COCl}_2$	50 ppm	No effect	No effect
Phosphine	$\text{PH}_3$	5 ppm	≤ 20	No effect
Propane	$\text{C}_3\text{H}_8$	1 Vol. %	No effect	No effect
Sulfur dioxide	$\text{SO}_2$	25 ppm	≤ 25	No effect
Tetrachloroethylene	$\text{CCl}_2\text{CCl}_2$	1,000 ppm	No effect	No effect
Tetrahydrothiophene	$\text{C}_4\text{H}_8\text{S}$	5 ppm	No effect	No effect
Toluene	$\text{C}_6\text{H}_5\text{CH}_3$	1,000 ppm	No effect	No effect
Trichloroethylene	$\text{CHClCCl}_2$	1,000 ppm	No effect	No effect