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 years	> 5 years
			XS 2: 2 years	> 3 years
			XS R: 5 years	= 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_2S, SO_2) are eleminated.

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_2S 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

Detection limit:	2 ppm for XS EC / XS 2 / XS R
Resolution:	1 ppm
Measurement range:	0 to 2,000 ppm CO (carbon monoxide)
Response time:	≤ 35 seconds T_{90}) – XS EC
	≤ 20 seconds (T_{90}) – XS 2
	≤ 30 seconds (T_{90}) – XS R
Measurement accuracy	
Sensitivity:	≤ ± 1% of measured value – XS EC / XS 2 / XS R
Long-term drift, at 20°C (68°F)	
Zero point:	≤ ± 1 ppm/month – XS EC / 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
Sensitivity:	≤ ± 0.4% of measured value/K
Influence of humidity	
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
Test gas:	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_2S, SO_2.

The values shown in the following table are standard and apply to new sensors. The values maybe fluctuate by ± 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_3COCH_3	1,000 ppm	≤ 20	≤ 1
Ammonia	NH_3	200 ppm	≤ 1	≤ 1
Carbon dioxide	CO_2	30 Vol. %	≤ 35	≤ 35
Chlorine	Cl2	20 ppm	≤ 1(–)	≤ 1
Dichloromethane	CH_2CL_2	1,000 ppm	≤ 1	≤ 1
Ethane	C_2H_6	0.2 Vol. %	≤ 1	≤ 1
Ethanol	C_2H_5OH	200 ppm	≤ 400	≤ 1
Ethene	C_2H_4	10 ppm	≤ 25	≤ 25
Ethyl acetate	$CH_2COOC_2H_4$	1,000 ppm	≤ 150	≤ 1
Ethine	C_2H2	200 ppm	≤ 500	≤ 300
Formaldehyde	HCHO	20 ppm	≤ 30	≤ 1
Hydrogen	H_2	0.1 Vol. %	≤ 90	≤ 90
Hydrogen chloride	HCl	40 ppm	≤ 6	≤ 1
Hydrogen cyanide	HCN	50 ppm	≤ 10	≤ 1(–)
Hydrogen sulfide	H_2S	30 ppm	≤ 120	≤ 1
Methane	CH_4	5 Vol. %	≤ 1	≤ 1
Methanol	CH_3OH	175 ppm	≤ 150	≤ 2
Nitrogen dioxide	NO_2	20 ppm	≤ 1	≤ 1
Nitrogen monoxide	NO	25 ppm	≤ 50	≤ 12
Phosgene	$COCL_2$	50 ppm	≤ 1	≤ 1
Phosphine	PH_3	5 ppm	≤ 20	≤ 3
Propane	C_3H_8	1 Vol. %	≤ 1	≤ 1
Sulfur dioxide	SO_2	25 ppm	≤ 25	≤ 1
Tetrachloroethylene	CCl_2 CCl_2	1,000 ppm	≤ 1	≤ 1
Toluene	$C_6H_5CH_3$	1,000 ppm	≤ 1	≤ 1
Trichloroethylene	$CHClCCl_2$	1,000 ppm	≤ 1	≤ 1

(–) Indicates negative deviation

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	CH_3COCH_3	1,000 ppm	≤ 20	No effect
Ammonia	NH_3	200 ppm	No effect	No effect
Carbon dioxide	CO_2	30 Vol. %	No effect	No effect
Chlorine	Cl_2	20 ppm	No effect	No effect
Dichloromethane	CH_2CL_2	1,000 ppm	No effect	No effect
Ethane	C_2H_6	0.2 Vol. %	No effect	No effect
Ethanol	C_2H_6OH	200 ppm	≤ 400	No effect
Ethene	C_2H_4	10 ppm	≤ 25	≤ 25
Ethyl acetate	$CH_2COOC_2H_4$	1,000 ppm	≤ 150	No effect
Ethyne	C_2H_2	200 ppm	≤ 500	≤ 300
Formaldehyde	HCHO	20 ppm	≤ 30	No effect
Hydrogen	H_2	0.1 Vol. %	≤ 90	≤ 90
Hydrogen chloride	HCl	40 ppm	≤ 6	No effect
Hydrogen cyanide	HCN	50 ppm	≤ 10	No effect
Hydrogen sulfide	H_2S	30 ppm	≤ 120	No effect
Methane	CH_4	5 Vol. %	No effect	No effect
Methanol	CH_3OH	175 ppm	≤ 150	≤ 2
Nitrogen dioxide	NO_2	20 ppm	No effect	No effect
Nitrogen monoxide	NO	25 ppm	≤ 50	≤ 6
Phosgene	$COCL_2$	50 ppm	No effect	No effect
Phosphine	PH_3	5 ppm	≤ 20	≤ 3
Propane	C_3H_8	1 Vol. %	No effect	No effect
Sulfur dioxide	SO_2	25 ppm	≤ 25	No effect
Tetrachloroethylene	CCl_2 CCl_2	1,000 ppm	No effect	No effect
Toluene	$C_2H_5CH_3$	1,000 ppm	No effect	No effect
Trichloroethylene	$CHClCCl_2$	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	CH_3COCH_3	1,000 ppm	≤ 20	No effect
Ammonia	NH_3	200 ppm	No effect	No effect
Carbon dioxide	CO_2	30 Vol. %	No effect	No effect
Chlorine	Cl_2	20 ppm	No effect	No effect
Dichloromethane	CH_2CL_2	1,000 ppm	No effect	No effect
Ethane	C_2H6	0.2 Vol. %	No effect	No effect
Ethanol	C_2H_5OH	200 ppm	≤ 400	No effect
Ethene	C_2H_4	50 ppm	≤ 25	≤ 10
Ethyl acetate	$CH_2COOC_2H_4$	1,000 ppm	≤ 150	No effect
Ethine	C_2H_2	200 ppm	≤ 500	≤ 50
Formaldehyde	HCHO	20 ppm	≤ 30	No effect
Hydrogen	H_2	0.1 Vol. %	≤ 90	≤ 90
Hydrogen chloride	HCl	40 ppm	≤ 6	No effect
Hydrogen cyanide	HCN	50 ppm	≤10	No effect
Hydrogen sulfide	H_2S	30 ppm	≤ 120	No effect
Methane	CH_4	5 Vol. %	No effect	No effect
Methanol	CH_3OH	175 ppm	≤ 150	≤ 2
Nitrogen dioxide	NO_2	20 ppm	No effect	No effect
Nitrogen monoxide	NO	25 ppm	≤ 50	No effect
Phosgene	$COCL_2$	50 ppm	No effect	No effect
Phosphine	PH_3	5 ppm	≤ 20	No effect
Propane	C_3H_8	1 Vol. %	No effect	No effect
Sulfur dioxide	SO_2	25 ppm	≤ 25	No effect
Tetrachloroethylene	CCl_2 CCl_2	1,000 ppm	No effect	No effect
Tetrahydrothiophene	C_4H_8S	5 ppm	No effect	No effect
Toluene	$C_2H_5CH_3$	1,000 ppm	No effect	No effect
Trichloroethylene	$CHClCCl_2$	1,000 ppm	No effect	No effect