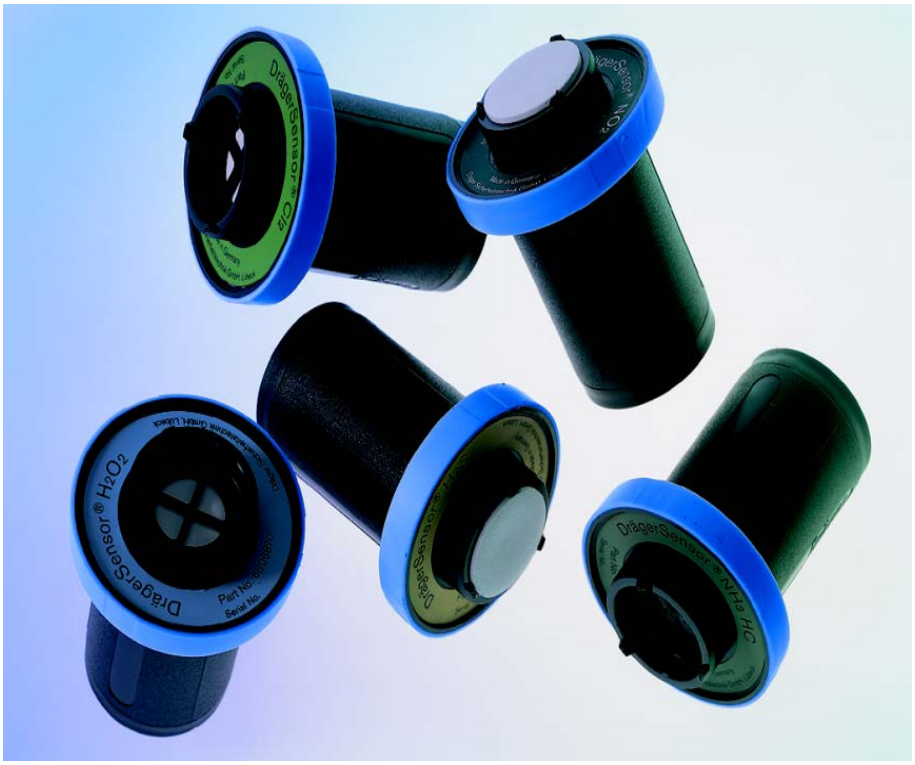
Technical Manual for stationary electrochemical DrägerSensor®



Content

General

This manual is intended to be a reference for the users of electrochemical sensors in fixed gas detection.

However, each individual case of application must be considered more closely. The information has been compiled to the best of our knowledge. However, the Dräger organization is not responsible for any consequence or accident which may occur as the result of misuse or misinterpretation of the information contained in this manual.

The instructions for use may not always correspond to the data given in this manual. For a full understanding of the performance characteristics of the measurement devices and for the use of Dräger products, only the instructions of use enclosed with the product shall apply and any inconsistencies between this manual and the instructions for use shall be resolved in favor of the instructions for use. The user should carefully read and fully understand the instructions for use prior to the use of the measurement devices.

The use of descriptive names, trade names, trademarks, etc., even if not explicitly marked, does not justify the assumption that such names are exempt from trademark and brand protection and therefore may be used freely by anyone.

Technical data is subject to modifications.

Meaning of the ending in the sensor name

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LH = Low Hydrogen sensitivity
LS = Long Stability
LC = Low Concentration
HC = High Concentration
S = Special Edition
SC = Semi-Conductor
TL = Three electrodes Low Concentration
TH = Three electrodes High Concentration
FL = Four electrodes Low Concentration

CAS Number

CAS Registry Number®: a unique numerical identifier created and assigned to a chemical substance by CAS: www.cas.org.

Cross-calibration and surrogate gas

Dräger recommends calibrating the devices using the gas to be detected during actual operation. The method of target gas calibration is more accurate than calibrating with a surrogate gas. Surrogate calibration may only be used as an alternative if target gas calibration is not possible. Surrogate calibration is based on the comparison against typical substance-specific sensitivities. These typical substance-specific sensitivities have been determined with new sensors by Dräger. Since the individual, substance-specific sensitivities may change during the service life of the sensors, an additional measuring error must be considered during surrogate calibration.

With intelligent transmitters, a cross-calibration is only supported between gases of the same calibration-group. For certain gases the target gas must be applied for calibration.

Cross sensitivities

The table per sensor shows the response of the sensors to other gases besides the target gas. The tested gas concentrations are as displayed. The values are typical and apply to new sensors at 20 °C (68 °F), 1013 hPa (29.2" Hg at 32 °F), 50 % r.h. The values have an uncertainty of ± 30% due to statistical and individual variances.
The table does not claim to be complete. Gas mixtures can be displayed as the sum of all components. Gases with negative cross sensitivity may displace a positive reading of the sensor.

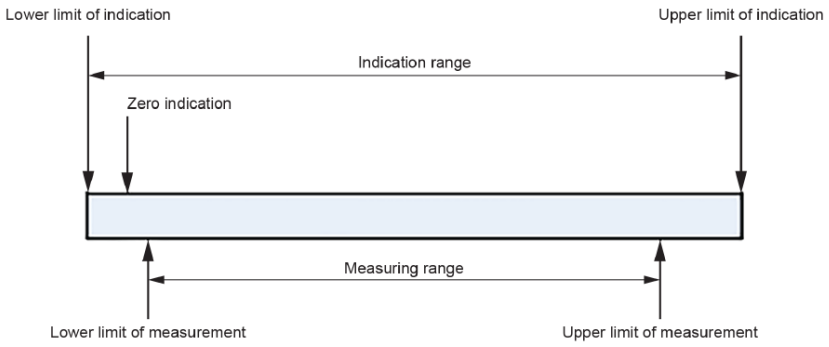
Clamping / capture range

To suppress or hide noisy readings around zero, a clamping range is often been applied. Inside the clamping range measurements will be displayed as zero and trigger no action. For most EC sensor we apply a default clamping of twice the display resolution. We allow showing values smaller than the LDL to give users the chance to evaluate these values. A clamping range can be set in the transmitter if desired. For calibration the clamping will automatically be switched off.
The configuration/switch-off function of the capture range is transmitter-dependent (only possible with Polytron 8100, 7000 and 6100).

Display resolution
The display resolution somehow is like a clamping. Due to the digital resolution of displays the resolution is limited by the step-width between numbers.

Example DS H2S 6810435:

Indicating range: 100 ppm
Default measuring range: 50 ppm
Lower detection limit: 0.5 ppm
Clamping range: ±0.2 ppm
Resolution: 0.1 ppm



DrägerSensor AC 6810595

Intended Use

Electrochemical diffusion sensor for suitable Dräger transmitters. To detect hydrogen fluoride (HF), hydrogen chloride (HCl), hydrogen bromide (HBr), boron trifluoride (BF3), silicon tetrafluoride (SiF4), germanium tetrafluoride (GeF4), tungsten hexafluoride (WF6), boron trichloride (BCl3), silicon tetrachloride (TeCS), Dichlorosilane (DCS), phosphorus oxychloride (POC), phosphorus trichloride (PCl3) and chlorine trifluoride (ClF3) in the ambient air. Suitable to detect leakages. Aerosol formation of the target substance can influence the detection strongly.

Technical Data

Electrode reactions	
Measuring electrode	$3\ Br_2 + 6\ e^- \rightarrow 6\ Br^-$
Counter electrode	$6\ Br^- \rightarrow 3\ Br_2 + 6\ e^-$
Measuring Gas	Acid compounds
Repeatability / Accuracy	
Zero	≤ ± 0.3 ppm (-40°C to +30°C / -40°F to 90°F), ≤ ± 1 ppm (+30°C to +40°C / 90°F to 105°F)
sensitivity	≤ ± 20 % of measured value
Linearity tolerance	
Effect of temperature	
Temperature conditions	-40°C to +50°C (-40°F to 120°F)
zero	± 0.5 ppm over temperature range
sensitivity	≤ ± 10% over temperature range
Effect of humidity	
Humidity conditions	5% to 95% relative humidity
zero	no effect
sensitivity	≤ ± 5 % of measured value / % r.h.
Effect of pressure	
zero	no effect
sensitivity	≤ ± 0.1 % of measured value / hPa
Effect of flow between 0 and 6 m/s	
zero	no effect
sensitivity	Acidic gases are easily adsorbed on surfaces. To minimize the adsorption effects and to ensure a high degree of detectability, the sensor is designed without membrane. The gas to be detected has direct access to the electrode. Due to the open design, the signal is dependent on the sample flow.
Drift during a month period	
zero	± 0.3 ppm
sensitivity	≤ ± 5 % of measured value
Ranges	
Max. measuring range	30 ppm
Default measuring range	10 ppm
Min. measuring range	3 ppm
Lower detection limit (LDL)	0.5 ppm
Display resolution	0.1 ppm
Zero clamping - capture range	± 0.1 ppm
Under range warning	-0.5 ppm
Under range fault	-1 ppm
Alarm Thresholds	
A1 Alarm default	2.5 ppm (for HCl)
A2 Alarm default	5 ppm (for HCl)

Alarm response time	
on gas exposure with 5x alarm threshold, t0...20	≤ 30 sec.
on gas exposure with 1.6x alarm threshold, t0...63	≤ 60 sec.
Warm-up-time	
ready for operation after max.	10 minutes
ready for calibration after max.	60 minutes
Operation	
Periodical Sensor Self-Test	Polytron 5100 / 6100 and Polytron 7000 / 8100 with respective Dongle every 10 minutes
Orientation	downwards, tilted by max ± 30°
Gas doses limitation	electrolyte to be replaced after severe exposure; electrolyte to be renewed periodically in dry environment
Special considerations	not suitable for permanent gas exposure, exposure to base substances (NH3 e.g.) can buffer acid reactions
Design	
Sensor Design	electrochemical, pH shifting reaction, 2-electrodes, amperometric
Electrolyte	diluted aqueous salt solution (see MSDS)
Material	
black sensor housing	polyvinylchloride (PVC)
gasket/ blue gasket	silicone rubber
membrane	NA
label	polyester
Filter	
Factory installed filter	none
Optional Filter	none
Useful life	
Expected service life, in ambient air	> 3 years
Guarantee	1 year

Cross-calibration and surrogate gas

The DrägerSensor AC can be used for detection of the gases and vapors listed in the table below. For some gases, the relevant data is not stored in the sensor data memory. The display message "Acid" should be chosen.

Displayed name[1]	Gas / Vapor	Chemical formula	CAS[2] number	calibration group	Relative Sensitivity
HF	Hydrogen fluoride [4]	HF	7664-39-3	A	1.0
HCl	Hydrogen chloride	HCl	7647-01-0	A	1.0
HBr	Hydrogen bromide	HBr	10035-10-6	A	1.0
BF3	Boron trifluoride [4]	BF_3	7637-07-2	A	1.0
SiF4	Silicon tetrafluoride [4]	SiF_4	7783-61-1	A	1.0
GeF4	Germanium tetrafluoride [4]	GeF_4	7783-58-6	A	1.0
WF6	Tungsten hexafluoride [4]	WF_6	7783-82-6	A	1.0
BCl3	Boron trichloride	BCl_3	10294-34-5	A	1.0
TeCS	Silicon tetrachloride [4]	$SiCl_4$	10026-04-7	A	1.0
DCS	Dichlorosilane [4]	SiH_2Cl_2	4109-96-0	A	1.0
POC	Phosphorous trichloride oxide	$POCl_3$	10026-87-3	A	1.0
PCl3	Phosphorous trichloride	PCl_3	7719-12-2	A	1.0
ClF3	Chlorine trifluoride [4]	ClF_3	7790-91-2	B [3]	3.0
Acid	Antimony pentachloride	$SbCl_5$	7647-18-9	A	1.0
Acid	Thionyl chloride	$SOCl_2$	7719-09-7	A	1.0
Acid	Titanium tetrachloride	$TiCl_4$	7550-45-0	A	1.0
Acid	Trichloro silane	$SiHCl_3$	10025-78-2	A	1.0
Acid	Tin tetrachloride	$SnCl_4$	7646-78-8	A	1.0
Acid	Hydrogen iodide	HI	10034-85-2	A	1.0
Acid	Acetic acid	CH_3COOH	64-19-7	A	1.0
Acid	Formic acid	HCOOH	64-18-6	A	1.0
Acid	Boron tribromide	BBr_3	10294-33-4	A	1.0
Acid	Chlorosulfonic acid	HSO_3Cl	7790-94-5	A	1.0
Acid	Germanium tetrachloride	$GeCl_4$	10038-98-9	A	1.0

[1]only in respective transmitter.
[3]Example: HCl can be used as surrogate gas for group “A”; ClF3 to be calibrated with Cl_2.
[4]Exposure to silicon or fluorinated compounds may lead to coatings on the electrode and loss of sensitivity.

Cross sensitivities

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm HCL
Chlorine	Cl_2	7782-50-5	5 ppm	10
Hydrogen cyanide	HCN	74-90-8	20 ppm	9
Hydrogen peroxide	H_2O_2	7722-84-1	20 ppm	3
Hydrogen sulfide	H_2S	7783-06-4	30 ppm	2
Nitrogen dioxide	NO_2	10102-44-0	20 ppm	0,8
Nitrogen monoxide	NO	10102-43-9	20 ppm	5
Ozone	O_3	10028-15-6	20 ppm	4
Sulfur dioxide	SO_2	7746-09-5	20 ppm	21

Aerosol from fuming acids	Chemical formula	CAS number	Applied mass concentration*	Displayed value in ppm HCL
Hydrochloric acid	HCl_{aq}	7647-01-0	15,1 mg/m^3	10
Nitric acid	HNO_3	7697-37-2	26,1 mg/m^3	10
Phosphoric acid	H_3PO_4	7664-38-2	40,7 mg/m^3	10
Sulphuric acid	H_2SO_4	7664-93-9	20,4 mg/m^3	10
Oleum	Fuming Sulfuric acid	7446-11-9	20,4 mg/m^3	10

* at 20 °C (68 °F), 1013 hPa (29.2" Hg at 32 °F), 50 % r.h.

The following table shows gases and vapors where the effect of the applied concentration on the sensors is below the Lower Detection Limit or gases which will have no effect on the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm HCl
Ammonia	NH_3	7664-41-7	500 ppm	no effect*
Carbon dioxide	CO_2	124-38-9	5 % by vol.	no effect
Carbon monoxide	CO	630-08-0	150 ppm	no effect
Hydrogen	H_2	1333-74-0	1,5 Vol%	no effect
iso-Propanol	$(CH_3)_2CHOH$	67-63-0	500 ppm	no effect
Methane	CH_4	74-82-8	2 % by vol	no effect
Hydrocarbons	C_nH_m			no effect

*exposure to bases can inhibit immediate reaction to acid exposure

DrägerSensor Cl_2 6809665

Intended Use

Electrochemical diffusion sensor for suitable Dräger transmitters. For monitoring the chlorine (Cl2), fluorine (F2), bromine (Br2) and chlorine dioxide (ClO2) concentration in the ambient air.

Technical Data

Electrode reactions	
Measuring electrode	$Cl_2 + 2\ e^- \rightarrow 2\ Cl^-$
Counter electrode	H_2O —> ½ O_2 – Ad + 2 H^+ + 2 e^- (shown for Cl_2)
Measuring Gas	Cl_2
Repeatability / Accuracy	
Zero	≤ ± 0.03 ppm
sensitivity	≤± 3 % of measured value
Linearity tolerance	≤ ± 5 % of measured value
Effect of temperature	
Temperature conditions	-40°C to +65°C (-40°F to 150°F)
zero	± 0.001 ppm / K
sensitivity	≤ ± 0.5 % of measured value / K
Effect of humidity	
Humidity conditions	5% to 95% relative humidity
zero	± 0.001 ppm / % r.h.
sensitivity	≤ ± 0.1 % of measured value / % r.h.
Effect of pressure	
zero	no effect
sensitivity	≤ ± 0.1 % of measured value / hPa
Effect of flow between 0 and 6 m/s	
zero	no effect
sensitivity	± 10 % of measured value per 1 m/s change
Drift during a month period	
zero	± 0.01 ppm
sensitivity	≤ ± 5 % of measured value
Ranges	
Max. measuring range	100 ppm
Default measuring range	10 ppm
Min. measuring range	1 ppm
Lower detection limit (LDL)	0.05 ppm
Display resolution	0.01 ppm
Zero clamping - capture range	± 0.003 ppm
Under range warning	-0.5 ppm
Under range fault	-1 ppm
Alarm thresholds	
A1 Alarm default	0.5 ppm (for Cl_2)
A2 Alarm default	1 ppm (for Cl_2)

Alarm response time	
on gas exposure with 5x alarm threshold, t0...20	≤ 10 sec.
on gas exposure with 1.6x alarm threshold, t0...63	≤ 30 sec.
Warm-up-time	
ready for operation after max.	15 minutes
ready for calibration after max.	45 minutes
Operation	
Periodical Sensor Self-Test	Polytron 5100 / 6100 and Polytron 7000 / 8100 with respective Dongle every 5 minutes
Orientation	NA
Gas doses limitation	50000 ppm hours chlorine
Special considerations	NA
Design	
Sensor Design	electrochemical, 3-electrodes, amperometric, scavenger electrode
Electrolyte	sealed aqueous salt solution
Material	
black sensor housing	polypropylene (PP)
gasket/ blue gasket	thermoplastic vulcanizate (TPV)
membrane	polytetrafluoroethylene (PTFE)
label	polyester
Filter	
Factory installed filter	No filters allowed
Optional Filter	No filters allowed
Useful life	
Expected service life, in ambient air	> 3 years
Guarantee	3 year

Cross-calibration and surrogate gas

Displayed name[1]	Gas / Vapor	Chemical formula	CAS[2] number	Relative Sensitivity
Cl_2	Chlorine	Cl_2	7782-50-5	1.0
Br_2	bromine	Br_2	7726-95-6	1.0
F_2	Fluorine	F_2	7782-41-4	1.0
ClO_2	Chlorine dioxide	ClO_2	10049-04-4	0.45*

*The relative sensitivity has a tolerance of ±20 %.

Cross sensitivities

Gases with positive cross sensitivity

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm Cl_2
Carbon dioxide	CO_2	124-38-9	5 % by vol	≤ 0.6
Hydrogen chloride	HCl	7647-01-0	20 ppm	≤ 0.5
Hydrogen cyanide	HCN	74-90-8	50 ppm	≤ 0.2
Hydrogen peroxide	H_2O_2	7722-84-1	5 ppm	≤ 0.5
Nitrogen dioxide	NO_2	10102-44-0	50 ppm	≤ 0.7
Sulfur dioxide	SO_2	7446-09-5	20 ppm	≤ 0.5

Gases with negative cross sensitivity

Gases with negative cross sensitivity may displace a positive reading of the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Negative displayed value in ppm Cl_2
Acetaldehyde	CH_3CHO	75-07-0	55 ppm	≤ 0.15
Acrylonitrile	CH_2CHCN	107-13-1	80 ppm	≤ 0.1
Ammonia	NH_3	7664-41-7	200 ppm	≤ 2.5
tert-Butyl mercaptan	$(CH_3)_3CSH$	75-66-1	5 ppm	≤ 0.4
Diethyl amine	$(C_2H_5)_2NH$	124-40-3	100 ppm	≤ 1.5
Epichlorohydrin	$C_2H_3OCH_2Cl$	106-89-8	30 ppm	≤ 0.1
Ethine (Acetylene)	C_2H_2	74-86-2	200 ppm	≤ 0.1
Hydrogen	H_2	1333-74-0	40.000 ppm	≤ 12
Hydrogen selenide	H_2Se	7783-07-5	5 ppm	≤ 1
Hydrogen sulfide	H_2S	7783-06-4	100 ppm	≤ 0.6
Methanol	CH_3OH	67-56-1	500 ppm	≤ 0.3
Methylamine	CH_3NH_2	74-89-5	100 ppm	≤ 2.2
Methyl methacrylate	$CH_2CH(CH_3)COOCH_3$	80-62-6	60 ppm	≤ 0.05
Ozone	O_3	10028-15-6	1 ppm	≤ 0.1
Phosphine	PH_3	7803-51-2	10 ppm	≤ 0.03
i-Propanol	$(CH_3)_2CHOH$	67-63-0	500 ppm	≤ 0.5
n-Propyl mercaptan	$CH_3CH_2CH_2SH$	107-03-9	10ppm	≤ 0.04
Styrene	$C_6H_5CHCH_2$	100-42-5	30 ppm	≤ 0.3
Tetrahydrothiophene	C_4H_8S	110-01-0	5 ppm	≤ 0.04
Vinyl acetate	$CH_3COOCHCH_2$	108-05-4	30 ppm	≤ 0.04
Vinyl chloride	C_2H_3Cl	75-01-4	50 ppm	≤ 0.25

The following table shows gases and vapors where the effect of the applied concentration on the sensors is below the Lower Detection Limit or gases which will have no effect on the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm Cl_2
Acetone	CH_3COCH_3	67-64-1	1000 ppm	no effect
Arsine	AsH_3	7784-42-1	5 ppm	no effect
Boron trifluoride	BF_3	7637-07-2	15 ppm	no effect
Butadiene	$CH_2CHCHCH_2$	106-99-0	50 ppm	no effect
Benzene	C_6H_6	71-43-2	0.6 % by vol	no effect
Carbon monoxide	CO	630-08-0	100 ppm	no effect
1,1 Dichloroethane	$C_2H_4Cl_2$	75-34-3	50 ppm	no effect
Diethylether	$(C_2H_5)_2O$	60-29-7	400 ppm	no effect
Disilane	Si_2H_6	1590-87-0	10 ppm	no effect
Ethanol	C_2H_5OH	64-17-5	250 ppm	no effect
Ethane	C_2H_6	74-84-0	2 % by vol	no effect
Ethene	C_2H_4	74-85-1	1000 ppm	no effect
Ethylene oxide	C_2H_4O	75-21-8	20 ppm	no effect
Formaldehyde	HCHO	50-00-0	45 ppm	no effect
Hydrogen	H_2	1333-74-0	1000 ppm	no effect
Hydrogen bromide	HBr	10035-10-6	15 ppm	no effect
Hydrogen fluoride	HF	7664-39-3	15 ppm	no effect
Hexane	C_6H_{16}	110-54-3	0.6 % by vol	no effect
Methane	CH_4	74-82-8	2 % by vol	no effect
Nitrogen monoxide	NO	10102-43-9	30 ppm	no effect
Octane	C_8H_{18}	111-65-9	0.4 % by vol	no effect
Phosgene	$COCl_2$	75-44-5	10 ppm	no effect
Propane	C_3H_8	74-98-6	1 % by Vol	no effect
Propene	CH_2CHCH_3	115-07-1	50 ppm	no effect
Tetrahydrofuran	C_4H_8O	109-99-9	60 ppm	no effect
Toluene	$C_6H_5CH_3$	108-88-3	0.6 % by vol	no effect
Xylene	$C_6H_4(CH_3)_2$	1330-20-7	1000 ppm	no effect

DrägerSensor CO 6809605

Intended Use

Electrochemical diffusion sensor for suitable Dräger transmitters. For monitoring the carbon monoxide (CO) concentration in ambient air.

Technical Data

Electrode reactions	
Measuring electrode	$CO + H_2O \rightarrow CO_2 + 2\,H^+ + 2e^-$
Counter electrode	$O_2 + 4\,H^+ + 4e^- \rightarrow 2\,H_2O$
Measuring Gas	CO
Repeatability / Accuracy	
Zero	≤ ± 2 ppm
sensitivity	≤ ± 1 % of measured value
Linearity tolerance	≤ ± 3 % of measured value
Effect of temperature	
Temperature conditions	-40°C to +65°C (-40°F to 150°F)
zero	0.1 ppm / K (-40°C to +40°C / -40°F to 105°F) 0.5 ppm / K (40°C to +65°C / 105°F to 150°F)
sensitivity	1.0 % of measured value / K (-40°C to 0°C / -40°F to 30°F) 0.4 % of measured value / K (0°C to +65°C / 30°F to 150°F)
Effect of humidity	
Humidity conditions	5% to 95% relative humidity
zero	no effect
sensitivity	≤ ± 0.02 % of measured value / % r.h.
Effect of pressure	
zero	no effect
sensitivity	≤ ± 0.05 % of measured value / hPa
Effect of flow between 0 and 6 m/s	
zero	no effect
sensitivity	± 3 % of measured value per 1 m/s change
Drift during a month period	
zero	± 1 ppm
sensitivity	≤ ± 5 % of measured value
Ranges	
Max. measuring range	1000 ppm
Default measuring range	300 ppm
Min. measuring range	50 ppm
Lower detection limit (LDL)	5 ppm
Display resolution	1 ppm
Zero clamping - capture range	± 2 ppm
Under range warning	-4.5 ppm
Under range fault	-9 ppm
Alarm thresholds	
A1 Alarm default	30 ppm
A2 Alarm default	100 ppm

Alarm response time	
on gas exposure with 5x alarm threshold, t0...20	≤ 5 sec.
on gas exposure with 1.6x alarm threshold, t0...63	≤ 15 sec.
Warm-up-time	
ready for operation after max.	30 minutes
ready for calibration after max.	600 minutes
Operation	
Periodical Sensor Self-Test	Polytron 5100 / 6100 and Polytron 7000 / 8100 with respective Dongle every 20 minutes
Orientation	NA
Gas doses limitation	NA
Special considerations	NA
Design	
Sensor Design	electrochemical, 3-electrodes, amperometric
Electrolyte	sealed aqueous acid
Material	
black sensor housing	polypropylene (PP)
gasket/ blue gasket	thermoplastic vulcanizate (TPV)
membrane	polytetrafluoroethylene (PTFE)
label	polyester
Filter	
Factory installed filter	Dust Filter 6809595
Optional Filter	Selective Filter A2F 6809684 Selective Filter D3F 6812435
Useful life	
Expected service life, in ambient air	> 3 years
Guarantee	3 year

Cross sensitivities

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm CO with dust filter	Displayed value in ppm CO with selective filter A2F
Acetaldehyde	CH_3CHO	75-07-0	50 ppm	≤ 45	no effect
Acetone	CH_3COCH_3	67-64-1	1000 ppm	≤ 20	no effect
Arsine	AsH_3	7784-42-1	5 ppm	≤ 20	no effect
Butadiene	$CH_2CHCHCH_2$	106-99-0	50 ppm	≤ 130	no effect
Carbon Disulfide	CS_2	75-15-0	30 ppm	≤ 20	not tested
Diborane	B_2H_6	19287-45-7	5 ppm	≤ 30	≤ 30
Disilane	Si_2H_6	1590-87-0	10 ppm	≤ 50	no effect
Ethanol	C_2H_5OH	64-17-5	200 ppm	≤ 400	no effect
Ethene	C_2H_4	74-85-1	1000 ppm	≤ 1300	≤ 15
Ethine (Acetylene)	C_2H_2	74-86-2	200 ppm	≤ 550	≤ 40
Ethyl acetate	$CH_3COOC_2H_5$	141-78-6	1000 ppm	≤ 150	no effect
Ethylene oxide	C_2H_4O	75-21-8	20 ppm	≤ 20	no effect
Formaldehyde	HCHO	50-00-0	20 ppm	≤ 30	no effect
Hydrogen	H_2	1333-74-0	1000 ppm	≤ 90	≤ 90
Hydrogen cyanide	HCN	74-90-8	25 ppm	≤ 30	no effect
Hydrogen selenide	SeH_2	7783-07-5	5 ppm	≤ 12	no effect
Hydrogen sulfide	H_2S	7783-06-4	20 ppm	≤ 90	no effect
Methanol	CH_3OH	67-56-1	200 ppm	≤ 300	no effect
Methyl iodide	CH_3I	74-88-4	10 ppm	≤ 10	not tested
Methyl methacrylate	$CH_2C(CH_3)COOCH_3$	80-62-6	60 ppm	≤ 60	no effect
Nitrogen monoxide	NO	10102-43-9	20 ppm	≤ 30	no effect
Phosphine	PH_3	7803-51-2	10 ppm	≤ 50	no effect
i-Propanol	$(CH_3)_2CHOH$	67-63-0	500 ppm	≤ 300	no effect
Silane	SiH_4	7803-62-5	5 ppm	≤ 20	no effect
Styrene	$C_6H_5CH_3$	100-42-5	30 ppm	≤ 50	no effect
Sulfur dioxide	SO_2	7446-09-5	20 ppm	≤ 16	no effect
TEOS	$Si(OC_2H_5)_4$	78-10-4	100 ppm	≤ 160	not tested
Tetrahydrofuran	C_4H_8O	109-99-9	60 ppm	≤ 90	no effect
Tetrahydrothiophene	C_4H_8S	110-01-0	10 ppm	≤ 10	no effect
o-Xylene	$C_6H_4(CH_3)_2$	95-47-6	50 ppm	≤ 7	not tested
Vinyl chloride	C_2H_3Cl	75-01-4	50 ppm	≤ 50	no effect

The following table shows gases and vapors where the effect of the applied concentration on the sensors is below the Lower Detection Limit or gases which will have no effect on the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm CO with dust filter	Displayed value in ppm CO with selective filter A2F
Ammonia	NH_3	7664-41-7	60 ppm	no effect	no effect
Boron trifluoride	BF_3	7637-07-2	15 ppm	no effect	no effect
Benzene	C_6H_6	71-43-2	50 ppm	no effect	no effect
Carbon dioxide	CO_2	124-38-9	1.5 % by vol	no effect	no effect
Chlorine	Cl_2	7782-50-5	5 ppm	no effect	no effect
Dichloromethane	CH_2Cl_2	75-09-2	1000 ppm	no effect	no effect
Ethane	C_2H_6	74-84-0	2000 ppm	no effect	no effect
Hydrogen chloride	HCl	7647-01-0	40 ppm	no effect	no effect
Hydrogen fluoride	HF	7664-39-3	15 ppm	no effect	no effect
Methane	CH_4	74-82-8	2 % by vol	no effect	no effect
Methyl bromide	CH_3Br	74-83-9	5000 ppm	no effect	no effect
Nitrogen dioxide	NO2	10102-44-0	20 ppm	no effect	no effect
Phosgene	$COCl_2$	75-44-5	5 ppm	no effect	no effect
Propane	C_3H_8	74-98-6	1 % by Vol	no effect	no effect
Toluene	$C_6H_5CH_3$	108-88-3	1000 ppm	no effect	no effect

DrägerSensor CO LS 6809620

Intended Use

Electrochemical diffusion sensor for suitable Dräger transmitters. For monitoring the carbon monoxide (CO) concentration in ambient air.

Technical Data

Electrode reactions	
Measuring electrode	$CO + H_2O \rightarrow CO_2 + 2\,H^+ + 2e^-$
Counter electrode	$O_2 + 4\,H^+ + 4e^- \rightarrow 2\,H_2O$
Measuring Gas	CO
Repeatability / Accuracy	
Zero	≤ ± 4 ppm
sensitivity	≤ ± 1 % of measured value
Linearity tolerance	≤ ± 4 % of measured value
Effect of temperature	
Temperature conditions	-40°C to +65°C (-40°F to 150°F)
zero	≤ ± 0.4 ppm / K
sensitivity	≤ ± 0.3 % of measured value / K
Effect of humidity	
Humidity conditions	5% to 95% relative humidity
zero	no effect
sensitivity	≤ ± 0.02 % of measured value / % r.h.
Effect of pressure	
zero	no effect
sensitivity	≤ ± 0.1 % of measured value / hPa
Effect of flow between 0 and 6 m/s	
zero	no effect
sensitivity	± 3 % of measured value per 1 m/s change
Drift during a month period	
zero	± 2 ppm
sensitivity	≤ ± 2 % of measured value
Range	
Max. measuring range	5000 ppm
Default measuring range	1000 ppm
Min. measuring range	200 ppm
Lower detection limit (LDL)	10 ppm
Display resolution	1 ppm
Zero clamping - capture range	± 3 ppm
Under range warning	-25 ppm
Under range fault	-50 ppm
Alarm thresholds	
A1 Alarm default	200 ppm
A2 Alarm default	400 ppm
Alarm response time	
on gas exposure with 5x alarm threshold, t0...20	≤ 10 sec.
on gas exposure with 1.6x alarm threshold, t0...63	≤ 20 sec.

Warm-up-time	
ready for operation after max.	15 minutes
ready for calibration after max.	30 minutes
Operation	
Periodical Sensor Self-Test	Polytron 5100 / 6100 and Polytron 7000 / 8100 with respective Dongle every 20 minutes
Orientation	NA
Gas doses limitation	NA
Special considerations	NA
Design	
Sensor Design	electrochemical, 3-electrodes, amperometric
Electrolyte	sealed aqueous acid
Material	
black sensor housing	polypropylene (PP)
gasket/ blue gasket	thermoplastic vulcanizate (TPV)
membrane	polytetrafluoroethylene (PTFE)
label	polyester
Filter	
Factory installed filter	Dust Filter 6809595
Optional Filter	Selective Filter A2F 6809684 Selective Filter D3F 6812435
Useful life	
Expected service life, in ambient air	> 3 years
Guarantee	3 year

Cross sensitivities

Gases with positive cross sensitivity

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm CO with dust filter	Displayed value in ppm CO with selective filter A2F
Acetaldehyde	CH_3CHO	75-07-0	50 ppm	≤ 45	no effect
Acetone	CH_3COCH_3	67-64-1	1000 ppm	≤ 10	no effect
Acryl nitrile	H2C=CH–CN	107-13-1	80 ppm	≤ 40	no effect
Ammonia	NH_3	7664-41-7	50 ppm	≤ 1	no effect
Arsine	AsH_3	7784-42-1	5 ppm	≤ 15	no effect
Benzene	C_6H_6	71-43-2	0.6 % by vol.	≤ 1	no effect
Butadiene	$CH_2CHCHCH_2$	106-99-0	50 ppm	≤ 75	no effect
Carbon dioxide	CO_2	124-38-9	30 % by vol	≤ 1	no effect
Diborane	B_2H_6	19287-45-7	5 ppm	≤ 25	≤ 25
Dichloromethane	CH_2Cl_2	75-09-2	1000 ppm	≤ 1	no effect
Disilane	Si_2H_6	1590-87-0	10 ppm	≤ 30	no effect
Epichlorohydrin	$C_2H_3OCH_2Cl$	106-89-8	35 ppm	≤ 5	no effect
Ethane	C_2H_6	74-84-0	1.2 % by vol	≤ 1	no effect
Ethanol	C_2H_5OH	64-17-5	200 ppm	≤ 400	no effect
Ethene	C_2H_4	74-85-1	10 ppm	≤ 10	no effect
Ethine (Acetylene)	C_2H_2	74-86-2	10 ppm	≤ 20	no effect
Ethylene oxide	C_2H_4O	75-21-8	20 ppm	≤ 8	no effect
Formaldehyde	HCHO	50-00-0	40 ppm	≤ 40	no effect
Hydrogen	H_2	1333-74-0	1000 ppm	≤ 600	≤ 600
Hydrogen chloride	HCl	7647-01-0	40 ppm	≤ 5	no effect
Hydrogen cyanide	HCN	74-90-8	20 ppm	≤ 5	no effect
Hydrogen peroxide	H_2O_2	7722-84-1	5 ppm	≤ 5	no effect
Hydrogen sulfide	H_2S	7783-06-4	20 ppm	≤ 80	no effect
Methane	CH_4	74-82-8	2 % by vol	≤ 1	no effect
Methanol	CH_3OH	67-56-1	200 ppm	≤ 300	no effect
Methylmethacrylate	$CH_2C(CH_3)COOCH_3$	80-62-6	60 ppm	≤ 50	no effect
Nitrogen monoxide	NO	10102-43-9	25 ppm	≤ 25	no effect
Phosgene	$COCl_2$	75-44-5	5 ppm	≤ 1	no effect
Phosphine	PH_3	7803-51-2	10 ppm	≤ 30	no effect
Propane	C_3H_8	74-98-6	1 % by vol	≤ 3	≤ 3
i-Propanol	$(CH_3)_2CHOH$	67-63-0	500 ppm	≤ 300	no effect
Propene	C_3H_6	115-07-1	50 ppm	≤ 40	no effect
Silane	SiH_4	7803-62-5	5 ppm	≤ 20	no effect
Styrene	$C_6H_5CH_3$	100-42-5	30 ppm	≤ 30	no effect
Sulfur dioxide	SO_2	7446-09-5	500 ppm	≤ 300	no effect
Tetrachlorethene	CCl_2CCl_2	127-18-4	1000 ppm	≤ 1	no effect
Tetrahydrofurane	C_4H_8O	109-99-9	60 ppm	≤ 80	no effect
Tetrahydrothiophene	C_4H_8S	110-01-0	5 ppm	≤ 3	no effect
Trichlorethene	$CHClCCl_2$	79-01-6	1000 ppm	≤ 1	no effect
Vinyl chloride	C_2H_3Cl	75-01-4	50 ppm	≤ 40	no effect

Gases with negative cross sensitivity

Gases with negative cross sensitivity may displace a positive reading of the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Negative displayed value in ppm CO with dust filter	Displayed value in ppm CO with selective filter A2F
Chlorine	Cl_2	7782-50-5	20 ppm	≤ 1	no effect
Nitrogen dioxide	NO_2	10102-44-0	20 ppm	≤ 15	no effect

The following table shows gases and vapors where the effect of the applied concentration on the sensors is below the Lower Detection Limit or gases which will have no effect on the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm CO with dust filter	Displayed value in ppm CO with selective filter A2F
Boron trifluoride	BF_3	7637-07-2	15 ppm	no effect	no effect
Diethylamine	$(C_2H_5)_2NH$	109-89-7	100 ppm	no effect	no effect
Hydrogen fluoride	HF	7664-39-3	15 ppm	no effect	no effect
Hydrogen selenide	SeH_2	7783-07-5	5 ppm	no effect	no effect
Methylamine	CH_3NH_2	74-89-5	100 ppm	no effect	no effect
n-Propyl mercaptan	$CH_3CH_2CH_2SH$	107-03-9	5 ppm	no effect	no effect
Toluene	$C_6H_5CH_3$	108-88-3	1000 ppm	no effect	no effect

DrägerSensor CO LH 6812570

Intended Use

Electrochemical diffusion sensor for suitable Dräger transmitters. For monitoring the carbon monoxide (CO) concentration in the ambient air. The sensor is optimized for a low H2 cross sensitivity. 1000 ppm H2 cause an indication of ≤ 15 ppm CO. The sensor is not suitable for permanent gassing with H2.

Technical Data

Electrode reactions	
Measuring electrode	$CO + H_2O \rightarrow CO_2 + 2\,H^+ + 2e^-$
Counter electrode	$O_2 + 4\,H^+ + 4e^- \rightarrow 2\,H_2O$
Measuring Gas	CO
Repeatability / Accuracy	
Zero	≤ ± 15 ppm
sensitivity	≤ ± 10 % of measured value
Linearity tolerance	≤ ± 4 % of measured value
Effect of temperature	
Temperature conditions	-40°C to +50°C (-40°F to 120°F)
zero	
sensitivity	
Effect of humidity	
Humidity conditions	5% to 95% relative humidity
zero	no effect
sensitivity	
Effect of pressure	
zero	no effect
sensitivity	
Effect of flow between 0 and 6 m/s	
zero	no effect
sensitivity	
Drift during a month period	
zero	
sensitivity	
Range	
Max. measuring range	300 ppm
Default measuring range	300 ppm
Min. measuring range	50 ppm
Lower detection limit (LDL)	15 ppm
Display resolution	0.5 ppm
Zero clamping - capture range	± 15 ppm
Under range warning	-15 ppm
Under range fault	-30 ppm
Alarm thresholds	
A1 Alarm default	30 ppm
A2 Alarm default	100 ppm

Alarm response time	
on gas exposure with 5x alarm threshold, t0...20	≤ 10 sec.
on gas exposure with 1.6x alarm threshold, t0...63	≤ 30 sec.
Warm-up-time	
ready for operation after max.	60 minutes
ready for calibration after max.	90 minutes
Operation	
Periodical Sensor Self-Test	Polytron 5100 / 6100 and Polytron 7000 / 8100 with respective Dongle every 20 minutes
Orientation	NA
Gas doses limitation	NA
Special considerations	NA
Design	
Sensor Design	electrochemical, 3-electrodes, amperometric
Electrolyte	sealed aqueous acid
Material	
black sensor housing	polypropylene (PP)
gasket/ blue gasket	thermoplastic vulcanizate (TPV)
membrane	polytetrafluoroethylene (PTFE)
label	polyester
Filter	
Factory installed filter	Selective Filter D3F 6812435
Optional Filter	
Useful life	
Expected service life, in ambient air	> 2 years
Guarantee	1 year

Cross sensitivities

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm CO with selective filter D3F
Hydrogen	H_2	1333-74-0	1000 ppm	≤ 15
Ammonia	NH_3	7664-41-7	60 ppm	no effect
Acetaldehyde	CH_3CHO	75-07-0	50 ppm	no effect
Acetone	CH_3COCH_3	67-64-1	1000 ppm	no effect
Arsine	AsH_3	7784-42-1	5 ppm	no effect
Benzene	C_6H_6	71-43-2	50 ppm	no effect
Boron trifluoride	BF_3	7637-07-2	15 ppm	no effect
Butadiene	$CH_2CHCHCH_2$	106-99-0	50 ppm	no effect
Carbon dioxide	CO_2	124-38-9	1.5 % by vol	no effect
Chlorine	Cl_2	7782-50-5	5 ppm	no effect
Dichloromethane	CH_2Cl_2	75-09-2	1000 ppm	no effect
Disilane	Si_2H_6	1590-87-0	10 ppm	no effect
Ethane	C_2H_6	74-84-0	2000 ppm	no effect
Ethanol	C_2H_5OH	64-17-5	200 ppm	no effect
Ethyl acetate	$CH_3COOC_2H_5$	141-78-6	1000 ppm	no effect
Ethylene oxide	C_2H_4O	75-21-8	20 ppm	no effect
Formaldehyde	HCHO	50-00-0	20 ppm	no effect
Hydrogen chloride	HCl	7647-01-0	40 ppm	no effect
Hydrogen cyanide	HCN	74-90-8	25 ppm	no effect
Hydrogen fluoride [4]	HF	7664-39-3	15 ppm	no effect
Hydrogen selenide	SeH_2	7783-07-5	5 ppm	no effect
Hydrogen sulfide	H_2S	7783-06-4	20 ppm	no effect
i-Propanol	$(CH_3)_2CHOH$	67-63-0	500 ppm	no effect
Methane	CH_4	74-82-8	2 % by vol	no effect
Methanol	CH_3OH	67-56-1	200 ppm	no effect
Methyl bromide	CH_3Br	74-83-9	5000 ppm	no effect
Methyl methacrylate	$CH_2C(CH_3)COOCH_3$	80-62-6	60 ppm	no effect
Nitrogen dioxide	NO_2	10102-44-0	20 ppm	no effect
Nitrogen monoxide	NO	10102-43-9	20 ppm	no effect
Phosgene	$COCl_2$	75-44-5	5 ppm	no effect
Phosphine	PH_3	7803-51-2	10 ppm	no effect
Propane	C_3H_8	74-98-6	1 % by vol	no effect
Silane	SiH_4	7803-62-5	5 ppm	no effect
Styrene	$C_6H_5CH_3$	100-42-5	30 ppm	no effect
Sulfur dioxide	SO_2	7446-09-5	20 ppm	no effect
Tetrahydrofuran	C_4H_8O	109-99-9	60 ppm	no effect
Tetrahydrothiophene	C_4H_8S	110-01-0	10 ppm	no effect
Toluene	$C_6H_5CH_3$	108-88-3	1000 ppm	no effect
Vinyl chloride	C_2H_3Cl	75-01-4	50 ppm	no effect

DrägerSensor $COCl_2$ 6809930

Intended Use

Electrochemical diffusion sensor for suitable Dräger transmitters. For monitoring the concentration of phosgene (COCl2) in the ambient air. For the operation with and without selective filter.

Technical Data

Electrode reactions	
Measuring electrode	$COCl_2 + H_2O \rightarrow CO2 + 2\ H^+ + 2\ MeCl + 2\ e^-$
Counter electrode	$O_2 + 4\ H^+ + 4e^- \rightarrow 2\ H_2O$
Measuring Gas	$COCl_2$
Repeatability / Accuracy	
Zero	≤ ± 20 ppb
sensitivity	≤ ± 10 % of measured value
Linearity tolerance	≤ ± 20 % of measured value
Effect of temperature	
Temperature conditions	-40°C to +65°C (-40°F to 150°F)
zero	± 2 ppb / K
sensitivity	≤ ± 0.5 % of measured value / K
Effect of humidity	
Humidity conditions	5% to 95% relative humidity
zero	± 0.5 ppb / % r.h.
sensitivity	≤ ± 0.3 % of measured value / % r.h.
Effect of pressure	
zero	no effect
sensitivity	≤ ± 0.1 % of measured value / hPa
Effect of flow between 0 and 6 m/s	
zero	no effect
sensitivity	± 20 % of measured value
Drift during a month period	
zero	± 10 ppb
sensitivity	≤ ± 5 % of measured value
Range	
Max. measuring range	20 ppm
Default measuring range	1 ppm
Min. measuring range	0.1 ppm
Lower detection limit (LDL)	0.05 ppm
Display resolution	0.005 ppm
Zero clamping - capture range	± 20 ppb
Under range warning	-0.5 ppm
Under range fault	-1 ppm
Alarm thresholds	
A1 Alarm default	0.1 ppm
A2 Alarm default	0.2 ppm

Alarm response time	
on gas exposure without filter with 5x alarm threshold, t0...20	≤ 10 sec.
on gas exposure without filter with 1.6x alarm threshold, t0...63	≤ 30 sec.
Warm-up-time	
ready for operation after max.	15 minutes
ready for calibration after max.	30 minutes
Operation	
Periodical Sensor Self-Test	Polytron 5100 / 6100 and Polytron 7000 / 8100 with respective Dongle every 20 minutes
Orientation	downwards, tilted by max ± 30°
Gas doses limitation	150 ppm * h $COCl_2$
Special considerations	NA
Design	
Sensor Design	electrochemical, 3-electrodes, amperometric
Electrolyte	organic, liquid polycarbonate
Material	
black sensor housing	polypropylene (PP)
gasket/ blue gasket	thermoplastic vulcanizate (TPV)
membrane	polytetrafluoroethylene (PTFE)
label	polyester
Filter	
Factory installed filter	none
Optional Filter	Selective Filter K2F 6809933
Useful life	
Expected service life, in ambient air	> 1 year
Guarantee	0.5 year

Operation with selective filter K2F

The sensor is calibrated and shipped without a selective filter. If a filter is been installed afterwards this influences the stored calibration and response time. The sensitivity is reduced, and the gas response slowed down.
While adding a selective filter the sensor would have to be recalibrated for best accuracy. We recommend calibrating the sensor in the used manner.
To circumvent a recalibration Dräger provides a second gas list for operation with an afterwards installed filter. The change of sensitivity gets compensated by an internally stored factor. Switching without performing a calibration using to the stored gas-list, can lead to an additional measuring error of about 20%.
Switching the gas list may only be used as an alternative if a new calibration is not possible. The compensation is based on typical effects determined with new sensors and filters by Dräger.

displayed name *	Gas / Vapor	Chemical formula	CAS number	rel. sensitivity	rel. response time	Filter
Phsg ($COCl_2$)	Phosgene	$COCl_2$	75-44-5	1.0	1.0	Without
Ph-F ($COCl_2$ F)	Phosgene	$COCl_2$	75-44-5	0.7	1.5	With

Cross sensitivities

Gases with positive cross sensitivity

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm $COCl_2$	Displayed value in ppm $COCl_2$ with filter
Chlorine	Cl2	7782-50-5	0.1 ppm	≤ 0.05	≤ 0.05
Diethyl amine	$(CH_3CH_2)_2NH$	109-89-7	10 ppm	≤ 0.35	not tested
Ethyl chloroformate	$ClCO\text{-}OC_2H_5$	541-41-3	50 ppm	≤ 0.1	not tested
Hydrogen chloride	HCl	7647-01-0	1 ppm	≤ 0.5	no effect
Hydrogen cyanide	HCN	74-90-8	1 ppm	≤ 0.2	≤ 0.2
Hydrogen sulfide	H2S	7783-06-4	1 ppm	≤ 1.0	no effect
Methyl chloroformate	$ClOC\text{-}O\text{-}CH_3$	79-22-1	50 ppm	≤ 0,1	not tested
Phosphine	PH3	7803-51-2	0.5 ppm	≤ 0.1	≤ 0.1
Sulfur dioxide	SO2	7446-09-5	50 ppm	≤ 0.25	not tested

Gases with negative cross sensitivity

Gases with negative cross sensitivity may displace a positive reading of the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Negative displayed value in ppm $COCl_2$	Negative displayed value in ppm $COCl_2$ with filter
Nitrogen dioxide	NO_2	10102-44-0	1 ppm	≤ 0.02	≤ 0.02

The following table shows gases and vapors where the effect of the applied concentration on the sensors is below the Lower Detection Limit or gases which will have no effect on the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm $COCl_2$	Displayed value in ppm $COCl_2$ with filter
Ammonia	NH_3	7664-41-7	500 ppm	(dynamic 0.3 for 3 min) no effect	
Alkanes	– – –		% by vol. range	no effect	
Carbon dioxide	CO_2	124-38-9	5 % by vol.	no effect	
Carbon disulfide	CS_2	75-15-0	50 ppm	no effect	
Carbon monoxide	CO	630-08-0	1000 ppm	no effect	
Chlorobenzene	C_6H_5Cl	108-90-7	50 ppm	no effect	
Chlorobenzene	C_6H_5Cl	108-90-7	2000 ppm	no effect	
Dichloromethane	CH_2Cl_2	75-09-2	50 ppm	no effect	
Ethanol	C2H5OH	64-17-5	5.8 % by vol	no effect	
Hydrogen	H2	1333-74-0	1 000 ppm	no effect	
Hydrogen peroxide	H2O2	7722-84-1	1 ppm	no effect	
Iron pentacarbonyl	$Fe(CO)_5$	13463-40-6	50 ppm	no effect	
Oxaly chloride	$C_2Cl_2O_2$	79-37-8	1 ppm	no effect	
Ozone	O3	10028-15-6	1 ppm	no effect	
i-Propanol IPA	(CH3)2CHOH	67-63-0	4.5 % by vol	no effect	

DrägerSensor H_2 6809685

Intended Use

Electrochemical diffusion sensor for suitable Dräger transmitters. For monitoring the hydrogen (H2) concentration in ambient air.

Technical Data

Electrode reactions	
Measuring electrode	$H_2 \dashrightarrow 2\ H^+ + 2\ e^-$
Counter electrode	$½\ O_2 + 2\ H^+ + 2e^- \rightarrow H_2O$
Measuring Gas	H_2
Repeatability / Accuracy	
Zero	≤ ± 10 ppm
sensitivity	≤ ± 3 % of measured value
Linearity tolerance	≤ ± 3 % of measured value
Effect of temperature	
Temperature conditions	-40°C to +65°C (-40°F to 150°F)
zero	± 0.2 ppm / K
sensitivity	≤ ± 0.5 % of measured value / K
Effect of humidity	
Humidity conditions	5% to 95% relative humidity
zero	≤ ± 0.02 ppm / % r.h.
sensitivity	≤ ± 0.1 % of measured value / % r.h.
Effect of pressure	
zero	≤ ± 0.05 ppm / hPa
sensitivity	≤ ± 0.1 % of measured value / hPa
Effect of flow between 0 and 6 m/s	
zero	no effect
sensitivity	± 3 % of measured value
Drift during a month period	
zero	± 4 ppm
sensitivity	≤ ± 4 % of measured value
Range	
Max. measuring range	3000 ppm
Default measuring range	1000 ppm
Min. measuring range	500 ppm
Lower detection limit (LDL)	15 ppm
Display resolution	0.5 ppm
Zero clamping - capture range	± 5 ppm
Under range warning	-25 ppm
Under range fault	-50 ppm
Alarm thresholds	
A1 Alarm default	200 ppm
A2 Alarm default	400 ppm

Alarm response time	
on gas exposure with 5x alarm threshold, t0...20	≤ 5 sec.
on gas exposure with 1.6x alarm threshold, t0...63	≤ 15 sec.
Warm-up-time	
ready for operation after max.	15 minutes
ready for calibration after max.	60 minutes
Operation	
Periodical Sensor Self-Test	Polytron 5100 / 6100 and Polytron 7000 / 8100 with respective Dongle every 20 minutes
Orientation	NA
Gas doses limitation	NA
Special considerations	NA
Design	
Sensor Design	electrochemical, 3-electrodes, amperometric
Electrolyte	sealed aqueous acid
Material	
black sensor housing	polypropylene (PP)
gasket/ blue gasket	thermoplastic vulcanizate (TPV)
membrane	polytetrafluoroethylene (PTFE)
label	polyester
Filter	
Factory installed filter	Selective Filter A2F 6809684
Optional Filter	none
Useful life	
Expected service life, in ambient air	> 3 years
Guarantee	1 year

Cross sensitivities

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm H_2 without selective filter A2F	Displayed value in ppm H_2 with selective filter A2F
Acetone	CH3COCH3	67-64-1	1000 ppm	≤ 160	no effect
Butane	C4H10	106-97-8	1 % by vol	≤ 1	no effect
Carbon dioxide	CO2	124-38-9	30 % by vol	≤ 1	no effect
Carbon monoxide	CO	630-08-0	1000 ppm	≤ 600	≤ 600
Chlorine	Cl2	7782-50-5	20 ppm	≤ 1 (-)*	no effect
Dichloromethane	CH2Cl2	75-09-2	1000 ppm	≤ 1	no effect
Ethane	C2H6	74-84-0	0.2 % by vol	≤ 1	no effect
Ethanol	C2H5OH	64-17-5	200 ppm	≤ 1200	no effect
Ethene	C2H4	74-85-1	10 ppm	≤ 100	no effect
Ethine (Acetylene)	C2H2	74-86-2	10 ppm	≤ 200	≤ 3
Formaldehyde	HCHO	50-00-0	20 ppm	≤ 250	no effect
Hydrogen chloride	HCl	7647-01-0	40 ppm	≤ 50	no effect
Hydrogen cyanide	HCN	74-90-8	20 ppm	≤ 120	no effect
Hydrogen sulfide	H2S	7783-06-4	20 ppm	≤ 30	no effect
Methane	CH4	74-82-8	2 % by vol	≤ 1	no effect
Methanol	CH3OH	67-56-1	300 ppm	≤ 1000	no effect
Nitrogen dioxide	NO2	10102-44-0	20 ppm	≤ 10	no effect
Nitrogen monoxide	NO	10102-43-9	50 ppm	≤ 10	no effect
Phosgene	COCl2	75-44-5	5 ppm	≤ 1	no effect
Propane	C3H8	74-98-6	1 % by vol	≤ 25	no effect
Sulfur dioxide	SO2	7446-09-5	50 ppm	≤ 15	no effect
Tetrachloroethene	CCl2CCl2	127-18-4	1000 ppm	≤ 1	no effect
Toluene	C6H5CH3	108-88-3	1000 ppm	≤ 50	no effect
Trichloroethene	CHClCCl2	79-01-6	1000 ppm	≤ 1	no effect

DrägerSensor H_2O_2 HC 6809675

Intended Use

Electrochemical diffusion sensor for suitable Dräger transmitters. For monitoring the hydrogen peroxide (H2O2) concentration in ambient air.

Technical Data

Electrode reactions	
Measuring electrode	$H_2O_2 \rightarrow O_2 + 2\ H^+ + 2\ e^-$
Counter electrode	$½\ O_2 + 2\ H^+ + 2e^- \rightarrow H_2O$
Measuring Gas	H_2O_2
Repeatability / Accuracy	
Zero	≤ ± 10 ppm
sensitivity	≤ ± 5 % of measured value
Linearity tolerance	≤ ± 1 % of measured value
Effect of temperature	
Temperature conditions	0°C to +55°C (32°F to 130°F)
zero	no effect
sensitivity	no effect
Effect of humidity	
Humidity conditions	10% to 95% relative humidity
zero	
sensitivity	
Effect of pressure	
zero	no effect
sensitivity	
Effect of flow between 0 and 6 m/s	
zero	no effect
sensitivity	± 5 % of measured value
Drift during a month period	
zero	
sensitivity	≤ ± 3 % of measured value / year
Range	
Max. measuring range	7000 ppm
Default measuring range	4000 ppm
Min. measuring range	1000 ppm
Lower detection limit (LDL)	100 ppm
Display resolution	5 ppm
Zero clamping - capture range	± 10 ppm
Under range warning	-200 ppm
Under range fault	-400 ppm
Alarm thresholds	
A1 Alarm default	2000 ppm
A2 Alarm default	2800 ppm

Alarm response time	
on gas exposure with 5x alarm threshold, t0...20	≤ 10 sec.
on gas exposure with 1.6x alarm threshold, t0...63	≤ 20 sec.
Warm-up-time	
ready for operation after max.	30 minutes
ready for calibration after max.	720 minutes
Operation	
Periodical Sensor Self-Test	Polytron 6100 and Polytron 7000 / 8100 with respective Dongle every 20 minutes
Orientation	NA
Gas doses limitation	NA
Special considerations	NA
Design	
Sensor Design	electrochemical, 3-electrodes, amperometric
Electrolyte	sealed aqueous acid
Material	
black sensor housing	polypropylene (PP)
gasket/ blue gasket	thermoplastic vulcanizate (TPV)
membrane	polytetrafluoroethylene (PTFE)
label	polyester
Filter	
Factory installed filter	no filters allowed
Optional Filter	no filters allowed
Useful life	
Expected service life, in ambient air	> 2 years
Guarantee	1 year

DrägerSensor H_2O_2 LC 6809705

Intended Use

Electrochemical diffusion sensor for suitable Dräger transmitters. For monitoring the hydrogen peroxide (H2O2) concentration in ambient air.

Technical Data

Electrode reactions	
Measuring electrode	$H_2O_2 \rightarrow O_2 + 2\ H^+ + 2\ e^-$
Counter electrode	$½\ O_2 + 2\ H^+ + 2e^- \rightarrow H_2O$
Measuring Gas	H_2O_2
Repeatability / Accuracy	
Zero	≤ ± 0.05 ppm
sensitivity	≤ ± 5 % of measured value
Linearity tolerance	≤ ± 1 % of measured value
Effect of temperature	
Temperature conditions	0°C to +65°C (32°F to 150°F)
zero	≤ ± 0.05 ppm / K
sensitivity	≤ ± 0.5 % of measured value / K
Effect of humidity	
Humidity conditions	5% to 95% relative humidity
zero	≤ ± 0.001 ppm / % r.h.
sensitivity	≤ ± 0.01 % of measured value / % r.h.
Effect of pressure	
zero	no effect
sensitivity	≤ ± 0.1 % of measured value / hPa
Effect of flow between 0 and 6 m/s	
zero	no effect
sensitivity	≤ ± 10 % of measured value
Drift during a month period	
zero	≤ ± 0.005 ppm
sensitivity	≤ ± 6 % of measured value / year
Range	
Max. measuring range	300 ppm
Default measuring range	5 ppm
Min. measuring range	1 ppm
Lower detection limit (LDL)	0.1 ppm
Display resolution	0.1 ppm
Zero clamping - capture range	± 0,1 ppm
Under range warning	-0.25 ppm
Under range fault	-0.5 ppm
Alarm thresholds	
A1 Alarm default	1 ppm
A2 Alarm default	2 ppm

Alarm response time	
on gas exposure with 5x alarm threshold, t0...20	≤ 5 sec.
on gas exposure with 1.6x alarm threshold, t0...63	≤ 15 sec.
Warm-up-time	
ready for operation after max.	30 minutes
ready for calibration after max.	720 minutes
Operation	
Periodical Sensor Self-Test	Polytron 5100 / 6100 and Polytron 7000 / 8100 with respective Dongle every 20 minutes
Orientation	NA
Gas doses limitation	NA
Special considerations	NA
Design	
Sensor Design	electrochemical, 3-electrodes, amperometric
Electrolyte	sealed aqueous acid
Material	
black sensor housing	polypropylene (PP)
gasket/ blue gasket	thermoplastic vulcanizate (TPV)
membrane	polytetrafluoroethylene (PTFE)
label	polyester
Filter	
Factory installed filter	no filters allowed
Optional Filter	no filters allowed
Useful life	
Expected service life, in ambient air	> 3 years
Guarantee	1 year

Gases with positive cross sensitivity

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm H_2O_2
Acetic acid	CH_3COOH	64-19-7	5 % aqueous solution	0,25 ppm strong drift
Acetone	CH_3COCH_3	67-64-1	1000 ppm	≤ 1.5
Arsine	AsH_3	7784-42-1	5 ppm	≤ 20
Boron trifluoride	BF_3	7637-07-2	15 ppm	≤ 0.2
Butadiene	$CH_2CHCHCH_2$	106-99-0	50 ppm	≤ 30
Carbon monoxide	CO	630-08-0	100 ppm	≤ 1.5
Disilane	Si_2H_6	1590-87-0	10 ppm	≤ 40
Ethanol	C_2H_5OH	64-17-5	250 ppm	≤ 0.1
Ethene	C_2H_4	74-85-1	50 ppm	≤ 1
Ethine (Acetylene)	C_2H_2	74-86-2	200 ppm	≤ 400
Formaldehyde	HCHO	50-00-0	High doses affect the catalyst by polymerization	
Hydrogen	H_2	1333-74-0	1000 ppm	≤ 2
Hydrogen chloride	HCl	7647-01-0	15 ppm	≤ 3
Hydrogen cyanide	HCN	74-90-8	25 ppm	≤ 10
Hydrogen sulfide	H_2S	7783-06-4	20 ppm	≤ 60
Methane	CH_4	74-82-8	2 % by vol	≤ 0.1
3-(methylthio)propionaldehyde MMP	$CH_3SCH_2CH_2CHO$	3268-49-3	100 ppm	≤ 30
Nitrogen monoxide	NO	10102-43-9	20 ppm	≤ 25
Phosgene	$COCl_2$	75-44-5	3 ppm	≤ 0.3
Phosphine	PH3	7803-51-2	10 ppm	≤ 33
Propane	C_3H_8	74-98-6	1 % by vol	≤ 1
i-Propanol IPA	(CH3)2CHOH	67-63-0	500 ppm	≤ 0.1
Silane	SiH_4	7803-62-5	5 ppm	≤ 20
Styrene	$C_6H_5CH_3$	100-42-5	30 ppm	≤ 1
Sulfur dioxide	SO_2	7446-09-5	10 ppm	7

Gases with negative cross sensitivity

Gases with negative cross sensitivity may displace a positive reading of the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Negative displayed value in ppm H_2O_2
Chlorine	Cl_2	7782-50-5	5 ppm	≤ 1
Chlordioxide	ClO_2	10049-04-4		Negative
Nitrogen dioxide	NO_2	10102-44-0	20 ppm	≤ 20
Ozone	O_3	10028-15-6	1 ppm	≤ 0,5
Peracetic acid PAA	CH_3COOOH	79-21-0	0,04 % aqueous solution	Negative reading strong drift

The following table shows gases and vapors where the effect of the applied concentration on the sensors is below the Lower Detection Limit or gases which will have no effect on the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm H_2O_2
Alcohol	R-OH		500 ppm	no effect
Ammonia	NH_4	7664-41-8	50 ppm	no effect
Carbon dioxide	CO_2	124-38-9	5 % by vol	no effect
Ethylene oxide	C_2H_4O	75-21-8	30 ppm	no effect

DrägerSensor H_2S 6810435

Intended Use

Electrochemical diffusion sensor for suitable Dräger transmitters. For monitoring the hydrogen sulfide (H_2S) concentration in the ambient air.

Technical Data

Electrode reactions	
Measuring electrode	$H_2S + 4\,H_2O \rightarrow H_2SO_4 + 8\,H^+ + 8\,e^-$
Counter electrode	$2\,O_2 + 8\,H^+ + 8\,e^- \rightarrow 4\,H_2O$
Measuring Gas	H_2S
Repeatability / Accuracy	
Zero	≤ ± 0.5 ppm
sensitivity	≤ ± 3 % of measured value
Linearity tolerance	≤ ± 4 % of measured value
Effect of temperature	
Temperature conditions	-40°C to +65°C (-40°F to 150°F)
zero	≤ ± 0.1 ppm / K
sensitivity	≤ ± 0.2 % of measured value / K
Effect of humidity	
Humidity conditions	5% to 95% relative humidity
zero	no effect
sensitivity	≤ ± 0.1 % of measured value / % r.h.
Effect of pressure	
zero	no effect
sensitivity	≤ ± 0.1 % of measured value / hPa
Effect of flow between 0 and 6 m/s	
zero	no effect
sensitivity	± 5 % of measured value
Drift during a month period	
zero	± 1 ppm
sensitivity	≤ 3 % of measured value
Range	
Max. measuring range	100 ppm
Default measuring range	50 ppm
Min. measuring range	5 ppm
Lower detection limit (LDL)	0.5 ppm
Display resolution	0.1 ppm
Zero clamping - capture range	± 0,2 ppm
Under range warning	-2.5 ppm
Under range fault	-5 ppm
Alarm thresholds	
A1 Alarm default	10 ppm
A2 Alarm default	20 ppm

Alarm response time	
on gas exposure with 5x alarm threshold, t0...20	≤ 10 sec.
on gas exposure with 1.6x alarm threshold, t0...63	≤ 20 sec.
Warm-up-time	
ready for operation after max.	10 minutes
ready for calibration after max.	30 minutes
Operation	
Periodical Sensor Self-Test	Polytron 5100 / 6100 and Polytron 7000 / 8100 with respective Dongle every 20 minutes
Orientation	NA
Gas doses limitation	NA
Special considerations	NA
Design	
Sensor Design	electrochemical, 3-electrodes, amperometric
Electrolyte	sealed aqueous acid
Material	
black sensor housing	polypropylene (PP)
gasket/ blue gasket	thermoplastic vulcanizate (TPV)
membrane	polytetrafluoroethylene (PTFE)
label	polyester
Filter	
Factory installed filter	Dust Filter 6809595
Optional Filter	none
Useful life	
Expected service life, in ambient air	> 3 years
Guarantee	3 year

Cross sensitivities

Gases with positive cross sensitivity

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm H_2S
Acetaldehyde	CH_3CHO	75-07-0	50 ppm	≤ 8
Acetone	CH_3COCH_3	67-64-1	1.25 % by vol	≤ 5
Carbon monoxide	CO	630-08-0	1000 ppm	≤ 7
Dimethyl sulfide	$(CH_3)_2S$	75-18-3	10 ppm	≤ 5
Dimethyl disulfide	$(CH_3)_2S_2$	624-92-0	10 ppm	≤ 7
Ethanol	C_2H_5OH	64-17-5	200 ppm	≤ 2
Ethine (Acetylene)	C_2H_2	74-86-2	1.25 % by vol	≤ 10
Ethyl mercaptan	C_2H_5SH	75-08-1	10 ppm	≤ 7
Formaldehyde	HCHO	50-00-0	50 ppm	≤ 15
Hydrogen	H_2	1333-74-0	1.6 % by vol	≤ 11
Hydrogen cyanide	HCN	74-90-8	25 ppm	≤ 4
Hydrogen peroxide	H_2O_2	7722-84-1	40 ppm	≤ 8
i-Propanol	$(CH_3)_2CHOH$	67-63-0	500 ppm	≤ 7
iso-Propyl mercaptan	$(CH_3)_2CHSH$	75-33-2	10 ppm	≤ 7
Methanol	CH_3OH	67-56-1	2000 ppm	≤ 5
Methyl mercaptan	CH_3SH	74-93-1	10 ppm	≤ 8
n-Propyl mercaptan	C_3H_7SH	107-03-9	10 ppm	≤ 5
Nitrogen monoxide	NO	10102-43-9	30 ppm	≤ 3
Phosphine	PH_3	7803-51-2	5 ppm	≤ 5
Sulfur dioxide	SO_2	7446-09-5	20 ppm	≤ 4
tert-Butyl mercaptan	$(CH_3)_3CSH$	75-66-1	10 ppm	≤ 7
Tetrahydrofuran	C_4H_8O	109-99-9	60 ppm	≤ 10
Tetrahydrothiophene	C_4H_8S	110-01-0	10 ppm	≤ 5

Gases with negative cross sensitivity

Gases with negative cross sensitivity may displace a positive reading of the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Negative displayed value in ppm H_2S
Nitrogen Dioxide	NO_2	10102-44-0	20 ppm	≤ 3

The following table shows gases and vapors where the effect of the applied concentration on the sensors is below the Lower Detection Limit or gases which will have no effect on the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm H_2S
Ammonia	NH_3	7664-41-7	1200 ppm	no effect
Benzene	C_6H_6	71-43-2	0.6 % by vol	no effect
Carbon dioxide	CO_2	124-38-9	30 % by vol	no effect
Ethene	C_2H_4	74-85-1	2.4 % by vol	no effect
Ethane	C_2H_6	74-84-0	2000 ppm	no effect
Hexane	C_6H_{16}		0.6 % by vol	no effect
Hydrogen chloride	HCl	7647-01-0	40 ppm	no effect
Methane	CH_4	74-82-8	2 % by vol	no effect
Octane	C_8H_{18}		0.4 % by vol	no effect
Propane	C_3H_8	74-98-6	1 % by vol	no effect
Propene	CH_2CHCH_3	115-07-1	2.3 % by vol	no effect
Toluene	$C_6H_5CH_3$	108-88-3	0.6 % by vol	no effect
Xylene	$C_6H_4(CH_3)_2$		0.5 % by vol	no effect

DrägerSensor H_2S HC 6809710

Intended Use

Electrochemical diffusion sensor for suitable Dräger transmitters. For monitoring the hydrogen sulfide (H_2S) concentration in the ambient air.

Technical Data

Electrode reactions	
Measuring electrode	$H_2S + 4\,H_2O \rightarrow H_2SO_4 + 8\,H^+ + 8\,e^-$
Counter electrode	$2\,O_2 + 8\,H^+ + 8\,e^- \rightarrow 4\,H_2O$
Measuring Gas	H_2S
Repeatability / Accuracy	
Zero	≤ ± 4 ppm
Sensitivity	≤ ± 3 % of measured value
Linearity tolerance	≤ ± 4 % of measured value
Effect of temperature	
Temperature conditions	-40°C to +65°C (-40°F to 150°F)
zero	≤ ± 0.2 ppm / K
sensitivity	≤ ± 0.2 % of measured value / K
Effect of humidity	
Humidity conditions	5% to 95% relative humidity
zero	no effect
sensitivity	≤ ± 0.1 % of measured value / % r.h.
Effect of pressure	
zero	no effect
sensitivity	≤ ± 0.1 % of measured value / hPa
Effect of flow between 0 and 6 m/s	
zero	no effect
sensitivity	± 5 % of measured value
Drift during a month period	
zero	± 2 ppm
sensitivity	≤ 3 % of measured value
Range	
Max. measuring range	1000 ppm
Default measuring range	500 ppm
Min. measuring range	100 ppm
Lower detection limit (LDL)	10 ppm
Display resolution	1 ppm
Zero clamping - capture range	± 2 ppm
Under range warning	-12.5 ppm
Under range fault	-25 ppm
Alarm thresholds	
A1 Alarm default	100 ppm
A2 Alarm default	200 ppm

Alarm response time	
on gas exposure with 5x alarm threshold, t0...20	≤ 15 sec.
on gas exposure with 1.6x alarm threshold, t0...63	≤ 30 sec.
Warm-up-time	
ready for operation after max.	30 minutes
ready for calibration after max.	480 minutes
Operation	
Periodical Sensor Self-Test	Polytron 5100 / 6100 and Polytron 7000 / 8100 with respective Dongle every 20 minutes
Orientation	NA
Gas doses limitation	NA
Special considerations	NA
Design	
Sensor Design	electrochemical, 3-electrodes, amperometric
Electrolyte	sealed aqueous acid
Material	
black sensor housing	polypropylene (PP)
gasket/ blue gasket	thermoplastic vulcanizate (TPV)
membrane	polytetrafluoroethylene (PTFE)
label	polyester
Filter	
Factory installed filter	Dust Filter 6809595
Optional Filter	none
Useful life	
Expected service life, in ambient air	> 3 years
Guarantee	3 year

Cross sensitivities

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm H_2S
Carbon monoxide	CO	630-08-0	10000 ppm	≤ 10
Ethanol	C_2H_5OH	64-17-5	2000 ppm	≤ 10
Ethene	C_2H_4	74-85-1	10000 ppm	≤ 10
Ethine (Acetylene)	C_2H_2	74-86-2	10000 ppm	≤ 10
Hydrogen	H_2	1333-74-0	10000 ppm	≤ 10
Hydrogen cyanide	HCN	74-90-8	250 ppm	≤ 10
Nitrogen monoxide	NO	10102-43-9	100 ppm	≤ 10
i-Propanol	$(CH_3)_2CHOH$	67-63-0	5000 ppm	≤ 10
Sulfur dioxide	SO_2	7446-09-5	200 ppm	≤ 10

The following table shows gases and vapors where the effect of the applied concentration on the sensors is below the Lower Detection Limit or gases which will have no effect on the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm H_2S
Acetone	CH_3COCH_3	67-64-1	950 ppm	no effect
Ammonia	NH_3	7664-41-7	50 ppm	no effect
Carbon dioxide	CO_2	124-38-9	30 % by vol	no effect
Chlorine	Cl2	7782-50-5	5 ppm	no effect
Ethane	C_2H_6	74-84-0	1.2 % by vol	no effect
Ethylene oxide	C_2H_4O	75-21-8	30 ppm	no effect
Hydrogen selenide	SeH2	7783-07-05	5 ppm	no effect
Methane	CH_4	74-82-8	2 % by vol	no effect
Nitrogen dioxide	NO_2	10102-44-0	20 ppm	no effect
Propane	C_3H_8	74-98-6	1 % by Vol	no effect

DrägerSensor H_2S LC 6809610

Intended Use

Electrochemical diffusion sensor for suitable Dräger transmitters. For monitoring the hydrogen sulfide (H2S), tetrahydrothiophene (THT), methyl mercaptan (MeM), ethyl mercaptan (EtM), npropyl mercaptan (nPM), i-propyl mercaptan (iPM), t-butyl mercaptan (tBM), dimethyl sulfide (DMS) and dimethyl disulfide (DMDS) concentration in the ambient air.

Technical Data

Electrode reactions	
Measuring electrode	$H_2S + 4\,H_2O \rightarrow H_2SO_4 + 8\,H^+ + 8\,e^-$ (shown for H_2S)
Counter electrode	$2\,O_2 + 8\,H^+ + 8\,e^- \rightarrow 4\,H_2O$
Measuring Gas	H_2S
Repeatability / Accuracy	
Zero	≤ ± 0.5 ppm
sensitivity	≤ ± 3 % of measured value
Linearity tolerance	≤ ± 4 % of measured value
Effect of temperature	
Temperature conditions	-40°C to +65°C (-40°F to 150°F)
zero	≤ ± 0.1 ppm / K
sensitivity	≤ ± 0.2 % of measured value / K
Effect of humidity	
Humidity conditions	5% to 95% relative humidity
zero	± 0.05 ppm / % r.h.
sensitivity	≤ ± 0.1 % of measured value / % r.h.
Effect of pressure	
zero	no effect
sensitivity	≤ ± 0.1 % of measured value / hPa
Effect of flow between 0 and 6 m/s	
zero	no effect
sensitivity	± 5 % of measured value
Drift during a month period	
zero	± 0.5 ppm
sensitivity	≤ 3 % of measured value
Range	
Max. measuring range	100 ppm
Default measuring range	50 ppm
Min. measuring range	10 ppm
Lower detection limit (LDL)	1 ppm
Display resolution	0.1 ppm
Zero clamping - capture range	± 0.2 ppm
Under range warning	-2.5 ppm
Under range fault	-5 ppm
Alarm thresholds	
A1 Alarm default	10 ppm
A2 Alarm default	20 ppm

Alarm response time	
on gas exposure with 5x alarm threshold, t0...20	≤ 5 sec.
on gas exposure with 1.6x alarm threshold, t0...63	≤ 15 sec.
Warm-up-time	
ready for operation after max.	15 minutes
ready for calibration after max.	520 minutes
Operation	
Periodical Sensor Self-Test	Polytron 5100 / 6100 and Polytron 7000 / 8100 with respective Dongle every 20 minutes
Orientation	NA
Gas doses limitation	NA
Special considerations	NA
Design	
Sensor Design	electrochemical, 3-electrodes, amperometric
Electrolyte	sealed aqueous acid
Material	
black sensor housing	polypropylene (PP)
gasket/ blue gasket	thermoplastic vulcanizate (TPV)
membrane	polytetrafluoroethylene (PTFE)
label	polyester
Filter	
Factory installed filter	Dust Filter 6809595
Optional Filter	none
Useful life	
Expected service life, in ambient air	> 3 years
Guarantee	3 year

Cross-calibration and surrogate gas

The DrägerSensor H_2S LC can be used for detection of the gases and vapors listed in the table below.

Displayed name[1]	Gas / Vapor	Chemical formula	CAS[2] number	calibration group	Relative Sensitivity
H2S	Hydrogen sulfide	H_2S	7783-06-4	A	1.0
THT	Tetrahydrothiophene	C_4H_8S	110-01-0	A	0.3
MeM	Methyl mercaptan	CH_3SH	74-93-1	A	0.6
EtM	Ethyl mercaptan	C_2H_5SH	75-08-1	A	0.5
nPM	n-Propyl mercaptan	C_3H_7SH	107-03-9	A	0.3
iPM	iso-Propyl mercaptan	$(CH_3)_2CHSH$	75-33-2	A	0.5
tBM	tert-Butyl mercaptan	$(CH_3)_3CSH$	75-66-1	A	0.5
DMS	Dimethyl sulfide	$(CH_3)_2S$	75-18-3	A	0.3
DMDS	Dimethyl disulfide	$(CH_3)_2S_2$	624-92-0	A	0.5

Cross sensitivities

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm H_2S
Acetaldehyde	CH_3CHO	75-07-0	50 ppm	≤ 8
Acetone	CH_3COCH_3	67-64-1	1.25 % by vol	≤ 5
Butadiene	$CH_2CHCHCH_2$	106-99-0	50 ppm	≤ 20
Carbon monoxide	CO	630-08-0	1000 ppm	≤ 7
1,2-Ethanedithiol	$C_2H_6S_2$	540-63-6	100 ppm	≤ 57
Ethanol	C_2H_5OH	64-17-5	200 ppm	≤ 2
Formaldehyde	HCHO	50-00-0	50 ppm	≤ 15
Hydrogen	H_2	1333-74-0	1 % by vol	≤ 10
Hydrogen cyanide	HCN	74-90-8	25 ppm	≤ 4
Hydrogen peroxide	H_2O_2	7722-84-1	40 ppm	≤ 8
Hydrogen selenide	SeH2	7783-07-5	5 ppm	≤ 3
Methanol	CH_3OH	67-56-1	200 ppm	≤ 10
Nitrogen monoxide	NO	10102-43-9	20 ppm	≤ 10
1-Pentanethiol	$C_5H_{12}S$	110-66-7	15 ppm	≤ 3
Phosphine	PH_3	7803-51-2	5 ppm	≤ 5
1-Propanethiol	C_3H_8S	107-03-9	15 ppm	≤ 4,5
2-Propanethiol	C_3H_8S	75-33-2	15 ppm	≤ 7,5
i-Propanol	$(CH_3)_2CHOH$	67-63-0	500 ppm	≤ 7
Sulfur dioxide	SO_2	7446-09-5	20 ppm	≤ 4
Tetrahydrofuran	C_4H_8O	109-99-9	60 ppm	≤ 10
Vinyl acetate	CH3COOCHCH2	108-05-4	30 ppm	≤ 6

The following table shows gases and vapors where the effect of the applied concentration on the sensors is below the Lower Detection Limit or gases which will have no effect on the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm H_2S
Ammonia	NH_3	7664-41-7	500 ppm	no effect
Benzene	C_6H_6	71-43-2	0.6 % by vol	no effect
Carbon dioxide	CO_2	124-38-9	30 % by vol	no effect
Chlorine	Cl2	7782-50-5	5 ppm	no effect
Diethylamine	$(C_2H_5)_2NH$	124-40-3	100 ppm	no effect
Ethane	C_2H_6	74-84-0	200 ppm	no effect
Ethene	C_2H_4	74-85-1	0.3 % by vol	no effect
Ethine (Acetylene)	C_2H_2	74-86-2	100 ppm	no effect
Ethylene oxide	C_2H_4O	75-21-8	30 ppm	no effect
Hexane	C_6H_{16}	110-54-3	0.6 % by vol	no effect
Hydrogen chloride	HCl	7647-01-0	40 ppm	no effect
Methane	CH_4	74-82-8	2 % by vol	no effect
Methyl methacrylate	$CH_2CH(CH_3)COOCH_3$	80-62-6	60 ppm	no effect
Nitrogen dioxide	NO_2	10102-44-0	20 ppm	no effect
Octane	C_8H_{18}	111-65-9	0.4 % by vol	no effect
Phosgene	$COCl_2$	75-44-5	5 ppm	no effect
Propane	C_3H_8	74-98-6	1 % by Vol	no effect
Propene	CH_2CHCH_3	115-07-1	200 ppm	no effect
Toluene	$C_6H_5CH_3$	108-88-3	0.6 % by vol	no effect
Xylene	$C_6H_4(CH_3)_2$	1330-20-7	1000 ppm	no effect

DrägerSensor HCl 6809640

Intended Use

Electrochemical diffusion sensor for suitable Dräger transmitters. For monitoring the hydrogen chloride (HCl), antimony pentachloride (AnPC), boron trichloride (BCl3), hydrogen bromide (HBr), di-chlorosilane (DCS), phosphorous oxide trichloride (POC), phosphorous trichloride (PCl3), silicon tetrachloride (TeCS), thionyl chloride (SOC), titanium tetrachloride (TiTC), trichlorosilane (TrCS) and tin tetrachloride (TTC) concentration in indoor ambient air..

Technical Data

Electrode reactions	
Measuring electrode	$4\ HCl + Au \rightarrow HAuCl_4 + 3\ H^+ + 3\ e^-$
Counter electrode	$½\ O_2 + 2\ H^+ + 2\ e^- \rightarrow H_2O$
Measuring Gas	HCl
Repeatability / Accuracy	
Zero	≤ ± 1 ppm
sensitivity	≤ ± 5 % of measured value
Linearity tolerance	≤ ± 5 % of measured value
Effect of temperature	
Temperature conditions	-20°C to +65°C (-4°F to 150°F)
zero	≤ ± 0.05 ppm / K
sensitivity	≤ ± 0.2 % of measured value / K
Effect of humidity	
Humidity conditions	5% to 95% relative humidity
zero	± 0.03 ppm / % r.h.
sensitivity	≤ ± 0.1 % of measured value / % r.h.
Effect of pressure	
zero	no effect
sensitivity	≤ ± 0.1 % of measured value / hPa
Effect of flow between 0 and 6 m/s	
zero	no effect
sensitivity	≤ ± 10 % of measured value
Drift during a month period	
zero	± 0.5 ppm
sensitivity	≤ ± 5 % of measured value
Range	
Max. measuring range	100 ppm
Default measuring range	30 ppm
Min. measuring range	20 ppm
Lower detection limit (LDL)	1 ppm
Display resolution	0.1 ppm
Zero clamping - capture range	± 0.5 ppm
Under range warning	-1.5 ppm
Under range fault	-3 ppm
Alarm thresholds	
A1 Alarm default	5 ppm (for HCl)
A2 Alarm default	10 ppm (for HCl)

Alarm response time	
on gas exposure with 5x alarm threshold, t0...20	≤ 10 sec.
on gas exposure with 1.6x alarm threshold, t0...63	≤ 20 sec.
Warm-up-time	
ready for operation after max.	180 minutes
ready for calibration after max.	600 minutes
Operation	
Periodical Sensor Self-Test	Polytron 6100 and Polytron 7000 / 8100 with respective Dongle every 20 minutes
Orientation	NA
Gas doses limitation	maximal total exposure to HCl 2500 ppm x h
Special considerations	NA
Design	
Sensor Design	electrochemical, 3-electrodes, amperometric
Electrolyte	sealed aqueous acid
Material	
black sensor housing	polypropylene (PP)
gasket/ blue gasket	thermoplastic vulcanizate (TPV)
membrane	polytetrafluoroethylene (PTFE)
label	polyester
Filter	
Factory installed filter	none
Optional Filter	Filter NF 6809643
Useful life	
Expected service life, in ambient air	> 1.5 years
Guarantee	1 year

Cross-calibration and surrogate gas

The DrägerSensor AC can be used for detection of the gases and vapors listed in the table below.

Gas / Vapor	Chemical formula	CAS number	Default measuring range [ppm]	minimum measuring range [ppm]	maximum measuring range [ppm]	lower detection limit [ppm]	relative sensitivity
Antimony pentachloride	$SbCl_5$	7647-18-9	10	5	20	0,2	5.0
Boron trichloride	BCl_3	10294-34-5	10	5	20	0,2	3.0
Dichlorosilane [4]	SiH_2Cl_2	4109-96-0	10	5	20	0,2	3.0
Hydrogen bromide	HBr	10035-10-6	30	20	100	1	1.0
Hydrogen chloride	HCl	7647-01-0	30	20	100	1	1.0
Phosphorous trichloride oxide	$POCl_3$	10026-87-3	30	20	100	1,5	0,9
Phosphorous trichloride	PCl_3	7719-12-2	10	20	20	0,2	3.0
Silicon tetrachloride	SiCl4	10026-04-7	10	5	20	0,2	5.0
Sulfur dioxide	SO_2	7446-09-5	-	-	-	0,2	2,5
Thionyl chloride	$SOCl_2$	7719-09-7	10	5	20	0,2	4.0
Tin tetrachloride	$SnCl_4$	7646-78-8	10	5	20	0,2	3.0
Titanium tetrachloride	$TiCl_4$	7550-45-0	10	5	20	0,2	5.0
Trichloro silane	$SiHCl_3$	10025-78-2	10	5	20	0,2	3.0

Cross sensitivities

Gases with positive cross sensitivity

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm HCl without dust filter
Acetone	CH_3COCH_3	67-64-1	1.25 % by vol.	≤ 1
Arsine	AsH_3	7784-42-1	3 ppm	≤ 20
Butadiene	$CH_2CHCHCH_2$	106-99-0	50 ppm	≤ 80
tert-Butyl mercaptan	$(CH_3)_3CSH$	75-66-1	5 ppm	≤ 5
Carbon monoxide	CO	630-08-0	100 ppm	≤ 1
Diborane	B_2H_6	19287-45-7	10 ppm	≤ 40
Ethanol	C_2H_5OH	64-17-5	250 ppm	≤ 2
Ethene	C_2H_4	74-85-1	1000 ppm	≤ 5
Ethine (Acetylene)	C_2H_2	74-86-2	200 ppm	≤ 400
Gemanium tetrachloride	$GeCl_4$	10038-98-9	1 ppm	≤ 5
Hydrogen	H_2	1333-74-0	1000 ppm	≤ 3
Hydrogen cyanide	HCN	74-90-8	20 ppm	≤ 20
Hydrogen fluoride	HF	7664-39-3	15 ppm	≤ 1
Hydrogen peroxide	H2O2	7722-84-1	10 ppm	≤ 40
Hydrogen selenide	SeH_2	7783-07-5	5 ppm	≤ 5
Hydrogen sulfide	H_2S	7783-06-4	20 ppm	≤ 100
Methane	CH_4	74-82-8	2 % by vol.	≤ 1
Nitrogen monoxide	NO	10102-43-9	20 ppm	≤ 1
Phosphine	PH3	7803-51-2	10 ppm	≤ 80
Propane	C_3H_8	74-98-6	0.8 % by vol.	≤ 1
Propylene	CH_3CHCH_2	115-07-1	50 ppm	≤ 1
n-Propyl mercaptan	$CH_3CH_2CH_2SH$	107-03-9	5 ppm	≤ 5
Silane	SiH_4	7803-62-5	10 ppm	≤ 80
Styrene	$C_6H_5CHCH_2$	100-42-5	30 ppm	≤ 30
Toluene	$C_6H_5CH_3$	108-88-3	1 % by vol.	≤ 1
Vinyl acetate	$CH_3COOCHCH_2$	108-05-4	30 ppm	≤ 1

Gases with negative cross sensitivity

Gases with negative cross sensitivity may displace a positive reading of the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Negative displayed value in ppm HCl without dust filter
Ammonia	NH_3	7664-41-7	200 ppm	≤ 0.2
Boron trifluoride [4]	BF_3	7637-07-2	15 ppm	≤ 1
Chlorine	Cl2	7782-50-5	10 ppm	≤ 6
Nitrogen dioxide	NO_2	10102-44-0	50 ppm	≤ 25

The following table shows gases and vapors where the effect of the applied concentration on the sensors is below the Lower Detection Limit or gases which will have no effect on the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm HCl without dust filter
Acetaldehyde	CH_3CHO	75-07-0	500 ppm	no effect
Acryl nitrile	H2C=CH–CN	107-13-1	80 ppm	no effect
Carbon dioxide	CO_2	124-38-9	5 % by vol.	no effect
1,1 Dichloroethane	$C_2H_4Cl_2$	75-34-3	50 ppm	no effect
Diethylamine	$(C_2H_5)_2NH$	109-89-7	100 ppm	no effect
Diethylether	$(C_2H_5)_2O$	60-29-7	400 ppm	no effect
Epichlorohydrin	$C_2H_3OCH_2Cl$	106-89-8	30 ppm	no effect
Ethylene oxide	C_2H_4O	75-21-8	20 ppm	no effect
Formaldehyde	HCHO	50-00-0	50 ppm	no effect
Methanol	CH_3OH	67-56-1	500 ppm	no effect
Methylamine	CH_3NH_2	74-89-5	100 ppm	no effect
Nitrogen trifluoride	NF_3	7783-54-2	30 ppm	no effect
i-Propanol	$(CH_3)_2CHOH$	67-63-0	500 ppm	no effect
Tetrahydrofuran	C_4H_8O	109-99-9	60 ppm	no effect
Tetrahydrothiophene	C_4H_8S	110-01-0	5 ppm	no effect
Vinyl chloride	C_2H_3Cl	75-01-4	50 ppm	no effect

DrägerSensor HCN 6809650

Intended Use

Electrochemical diffusion sensor for suitable Dräger transmitters. For monitoring the hydrogen cyanide (HCN) concentration in ambient air.

Technical Data

Electrode reactions	
Measuring electrode	$4\ HCN \rightarrow (CN)_2 + 2\ H^+ + 2\ e^-$
Counter electrode	$½\ O_2 + 2\ H^+ + 2\ e^- \rightarrow H_2O$
Measuring Gas	HCN
Repeatability / Accuracy	
Zero	≤ ± 0.5 ppm
sensitivity	≤ ± 5 % of measured value
Linearity tolerance	≤ ± 5 % of measured value
Effect of temperature	
Temperature conditions	-20°C to +65°C (-4°F to 150°F)
zero	≤ ± 1 ppm
sensitivity	≤ ± 5 % of measured value / K
Effect of humidity	
Humidity conditions	5% to 95% relative humidity
zero	± 0.01 ppm / % r.h.
sensitivity	≤ ± 0.1 % of measured value / % r.h.
Effect of pressure	
zero	no effect
sensitivity	≤ ± 0.1 % of measured value / hPa
Effect of flow between 0 and 6 m/s	
zero	no effect
sensitivity	≤ ± 10 % of measured value
Drift during a month period	
zero	± 0.1 ppm
sensitivity	≤ ± 5 % of measured value
Range	
Max. measuring range	50 ppm
Default measuring range	50 ppm
Min. measuring range	10 ppm
Lower detection limit (LDL)	1.5 ppm
Display resolution	0.1 ppm
Zero clamping - capture range	± 0.5 ppm
Under range warning	-2.5 ppm
Under range fault	-5 ppm
Alarm thresholds	
A1 Alarm default	10 ppm
A2 Alarm default	20 ppm

Alarm response time	
on gas exposure with 5x alarm threshold, t0...20	≤ 5 sec.
on gas exposure with 1.6x alarm threshold, t0...63	≤ 15 sec.
Warm-up-time	
ready for operation after max.	15 minutes
ready for calibration after max.	30 minutes
Operation	
Periodical Sensor Self-Test	Polytron 6100 and Polytron 7000 / 8100 with respective Dongle every 20 minutes
Orientation	NA
Gas doses limitation	NA
Special considerations	NA
Design	
Sensor Design	electrochemical, 3-electrodes, amperometric
Electrolyte	sealed aqueous acid
Material	
black sensor housing	polypropylene (PP)
gasket/ blue gasket	thermoplastic vulcanizate (TPV)
membrane	polytetrafluoroethylene (PTFE)
label	polyester
Filter	
Factory installed filter	Dust Filter 6809595
Optional Filter	Selective Filter BF 6809653
Useful life	
Expected service life, in ambient air	> 2 years
Guarantee	1 year

Cross sensitivities

Gases with positive cross sensitivity

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm HCN
Arsine	AsH_3	7784-42-1	3 ppm	≤ 15
Butadiene	$CH_2CHCHCH_2$	106-99-0	50 ppm	≤ 100
tert-Butyl mercaptan	$(CH_3)_3CSH$	75-66-1	5 ppm	≤ 8
Carbon monoxide	CO	630-08-0	1000 ppm	≤ 10
Disilane	Si_2H_6	1590-87-0	10 ppm	≤ 120
Ethine (Acetylene)	C_2H_2	74-86-2	200 ppm	≤ 50
Hydrogen	H_2	1333-74-0	1000 ppm	≤ 5
Hydrogen selenide	SeH_2	7783-07-5	5 ppm	≤ 5
Hydrogen sulfide	H_2S	7783-06-4	20 ppm	≤ 10
Nitrogen monoxide	NO	10102-43-9	20 ppm	≤ 1
Phosphine	PH_3	7803-51-2	10 ppm	≤ 50
Propane	C_3H_8	74-98-6	1 % by vol	≤ 1
n-Propyl mercaptan	$CH_3CH_2CH_2SH$	107-03-9	6 ppm	≤ 3
Styrene	$C_6H_5CHCH_2$	100-42-5	30 ppm	≤ 15
Sulfur dioxide	SO_2	7446-09-5	20 ppm	≤ 40
Tetrahydrothiophene	C_4H_8S	110-01-0	5 ppm	≤ 2.5
Toluene	$C_6H_5CH_3$	108-88-3	1 % by vol	≤ 1
Vinyl acetate	$CH_3COOCHCH_2$	108-05-4	30 ppm	≤ 1

Gases with negative cross sensitivity

Gases with negative cross sensitivity may displace a positive reading of the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Negative displayed value in ppm HCN
Chlorine	Cl_2	7782-50-5	5 ppm	≤ 0.1
Methylamine	CH_3NH_2	74-89-5	100 ppm	≤ 1
Nitrogen dioxide	NO_2	10102-44-0	20 ppm	≤ 20

The following table shows gases and vapors where the effect of the applied concentration on the sensors is below the Lower Detection Limit or gases which will have no effect on the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm HCN
Acetaldehyde	CH_3CHO	75-07-0	55 ppm	no effect
Acryl nitrile	H2C=CH–CN	107-13-1	80 ppm	no effect
Ammonia	NH_3	7664-41-7	60 ppm	no effect
Boron trifluoride	BF_3	7637-07-2	25 ppm	no effect
Carbon dioxide	CO_2	124-38-9	5 % by vol	no effect
1,1 Dichloroethane	$C_2H_4Cl_2$	75-34-3	400 ppm	no effect
Diethylamine	$(C_2H_5)_2NH$	109-89-7	100 ppm	no effect
Diethylether	$(C_2H_5)_2O$	60-29-7	400 ppm	no effect
Epichlorohydrin	$C_2H_3OCH_2Cl$	106-89-8	35 ppm	no effect
Ethanol	C_2H_5OH	64-17-5	250 ppm	no effect
Ethene	C_2H_4	74-85-1	50 ppm	no effect
Ethylene oxide	C_2H_4O	75-21-8	30 ppm	no effect
Formaldehyde	HCHO	50-00-0	45 ppm	no effect
Methyl methacrylate	$CH_2CH(CH_3)COOCH_3$	80-62-6	60 ppm	no effect
i-Propanol	$(CH_3)_2CHOH$	67-63-0	500 ppm	no effect
Propene	CH_2CHCH_3	115-07-1	50 ppm	no effect
Tetrahydrofuran	C_4H_8O	109-99-9	60 ppm	no effect
Vinyl chloride	C_2H_3Cl	75-01-4	50 ppm	no effect

DrägerSensor HCN LC 6813200

Intended Use

Electrochemical diffusion sensor for suitable Dräger transmitters. For monitoring the hydrogen cyanide (HCN) concentration in ambient air.

Technical Data

Electrode reactions	
Measuring electrode	$Ag + HCN \rightarrow AgCN + H^+ + e^-$
Counter electrode	$½\ O_2 + H^+ + e^- \rightarrow ½\ H_2O$
Measuring Gas	HCN
Repeatability / Accuracy	
Zero	≤ ± 0.05 ppm
sensitivity	≤ ± 5 % of measured value
Linearity tolerance	≤ ± 10 % of measured value
Effect of temperature	
Temperature conditions	-40°C to +55°C (-40°F to 131°F)
zero	± 0.005 ppm / K
sensitivity	≤ ± 5 % of measured value / K
Effect of humidity	
Humidity conditions	5% to 95% relative humidity
zero	± 0.001 ppm / % r.h
sensitivity	≤ ± 0.2 % of measured value / % r.h.
Effect of pressure	
zero	no effect
sensitivity	≤ ± 0.1 % of measured value / hPa
Effect of flow between 0 and 6 m/s	
zero	no effect
sensitivity	≤ ± 10 % of measured value
Drift during a month period	
zero	± 0.01 ppm
sensitivity	≤ ± 2 % of measured value
Range	
Max. measuring range	50 ppm
Default measuring range	50 ppm
Min. measuring range	5 ppm
Lower detection limit (LDL)	0.1 ppm
Display resolution	0.02 ppm
Zero clamping - capture range	± 0.1 ppm
Under range warning	-1 ppm
Under range fault	-2 ppm
Alarm thresholds	
A1 Alarm default	4 ppm
A2 Alarm default	8 ppm

Alarm response time	
on gas exposure with 5x alarm threshold, t0...20	≤ 10 sec.
on gas exposure with 1.6x alarm threshold, t0...63	≤ 30 sec.
Warm-up-time	
ready for operation after max.	15 minutes
ready for calibration after max.	60 minutes
Operation	
Periodical Sensor Self-Test	Polytron 5100 / 6100 and Polytron 7000 / 8100 with respective Dongle every 20 minutes
Orientation	downwards, tilted by max ± 30°
Gas doses limitation	20 000 ppm x h HCN
Special considerations	NA
Design	
Sensor Design	electrochemical, 3-electrodes, amperometric
Electrolyte	organic, liquid polycarbonate
Material	
black sensor housing	polypropylene (PP)
gasket/ blue gasket	thermoplastic vulcanizate (TPV)
membrane	polytetrafluoroethylene (PTFE)
label	polyester
Filter	
Factory installed filter	Dust Filter 6812224
Optional Filter	Sensor can be equipped with filter BF 6809653 Capacity 1000 ppm x h H2S, SO2 or HCl
Useful life	
Expected service life, in ambient air	> 1.5 years
Guarantee	1 year

Operation with selective filter BF

The sensor is calibrated and shipped with a dust filter. In order to eliminate cross sensitivities, the dust filter can be replaced by the selective filter BF. Thereby the sensitivity is reduced by approximately 15 % and the gas response is slowed down 10 s.
After applying a selective filter, the sensor would have to be recalibrated for best accuracy.

Cross sensitivities

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm HCN with dust filter	Displayed value in ppm HCN with selective filter BF
Acetoncyanhydrin	C_4H_7NO	75-86-5	1 ppm	≤ 4	Not tested
Arsine	AsH3	7784-42-1	0.1 ppm	≤ 0.15	≤ 0.15
Chlorine	Cl2	7782-50-5	0.5 ppm	≤ 0.2	no effect
Dicyan	C2N2	460-19-5	20 ppm	≤ 0.1	≤ 0.1
Hydrogen chloride	HCl	7647-01-0	2 ppm	≤ 0.5	no effect
Hydrogen sulfide	H2S	7783-06-04	1 ppm	≤ 1.0	no effect
Nitrogen dioxide	NO2	10102-44-0	1 ppm	≤ 0.15 (–) *	≤ 0.15 (–) *
Sulfur dioxide	SO2	7446-09-5	2 ppm	≤ 0.15	no effect

(–) * negative display.

The following table shows gases and vapors where the effect of the applied concentration on the sensors is below the Lower Detection Limit or gases which will have no effect on the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm HCN with dust filter	Displayed value in ppm HCN with selective filter BF
Ammonia	NH_3	7664-41-7	30 ppm	no effect	
Alkanes	– – –		% by vol. range	no effect	
Carbon dioxide	CO_2	124-38-9	1,5 % by vol.	no effect	
Carbon disulfide	CS_2	75-15-0	50 ppm	no effect	
Carbon monoxide	CO	630-08-0	50 ppm	no effect	
Chlorobenzene	C_6H_5Cl	108-90-7	50 ppm	no effect	
Dichloromethane	CH_2Cl_2	75-09-2	50 ppm	no effect	
Ethanol	C2H5OH	64-17-5	250 ppm	no effect	
Hydrogen	H2	1333-74-0	1 000 ppm	no effect	
Hydrogen peroxide	H2O2	7722-84-1	1 ppm	no effect	
Nitrogen monoxide	NO	10102-43-9	30 ppm	no effect	
Ozone	O3	10028-15-6	1 ppm	no effect	
i-Propanol IPA	(CH3)2CHOH	67-63-0	4.5 % by vol	no effect	

DrägerSensor Hydride 6809635

Intended Use

Electrochemical diffusion sensor for suitable Dräger transmitters. For monitoring the phosphine (PH3), arsine (AsH3), diborane (B2H6), silane (SiH4), germane (GeH4), bis-(-tert-butylamine)silane (BTBS), Disilane (DS), hydrogen selenide (SeH2), monomethyl silane (MMS) and trimethyl silane (TMS) concentration in the ambient air.

Technical Data

Electrode reactions						
Measuring electrode	$PH_3 + 4\ H_2O \rightarrow H_3PO_4 + 8\ H^+ + 8\ e^-$ (shown for PH_3)					
Counter electrode	$2\ O_2 + 8\ H^+ + 8\ e^- \rightarrow 4\ H_2O$					
Measuring Gas	PH_3	AsH_3	B_2H_6	SiH_4	GeH_4	BTBS
Repeatability / Accuracy						
Zero	≤ ± 0.01 ppm	≤ ± 0.01 ppm	≤ ± 0.01 ppm	≤ ± 0.01 ppm	≤ ± 0.01 ppm	≤ ± 0.2 ppm
sensitivity	≤ ± 5 % of measured value					
Linearity tolerance	≤ ± 5 % of measured value					
Effect of temperature						
Temperature conditions	-40°C to +65°C (-40°F to 150°F)					
zero	≤ ± 0.005 ppm / K	≤ ± 0.005 ppm / K	≤ ± 0.005 ppm / K	≤ ± 0.005 ppm / K	≤ ± 0.005 ppm / K	≤ ± 0.05 ppm / K
sensitivity	≤ ± 0.3 % of measured value / K					
Effect of humidity						
Humidity conditions	5% to 95% relative humidity					
zero	± 0.02 ppm / % r.h					
sensitivity	≤ ± 8 % of measured value / % r.h.					
Effect of pressure						
zero	no effect					
sensitivity	≤ ± 0.1 % of measured value / hPa					
Effect of flow between 0 and 6 m/s						
zero	no effect					
sensitivity	≤ ± 5 % of measured value					
Drift during a month period						
zero	≤ ±0.005 ppm	≤ ±0.005 ppm	≤ ±0.01 ppm	≤ ±0.01 ppm	≤ ±0.01 ppm	≤ ±0.05 ppm
sensitivity	≤ ± 3 % of measured value					
Range						
Max. measuring range	20 ppm					
Default measuring range	1 ppm					
Min. measuring range	0.3 ppm					
Lower detection limit (LDL)	0.03 ppm					
Display resolution	0.01 ppm					
Zero clamping - capture range	± 0.01 ppm					
Under range warning	-0.05 ppm					
Under range fault	-0.1 ppm					
Alarm thresholds						
A1 Alarm default	0.1 ppm (for PH_3)					
A2 Alarm default	0.2 ppm (for PH_3)					

Alarm response time	
on gas exposure with 5x alarm threshold, t0...20	≤ 5 sec.
on gas exposure with 1.6x alarm threshold, t0...63	≤ 15 sec.
Warm-up-time	
ready for operation after max.	15 minutes
ready for calibration after max.	30 minutes
Operation	
Periodical Sensor Self-Test	Polytron 5100 / 6100 and Polytron 7000 / 8100 with respective Dongle every 20 minutes
Orientation	NA
Gas doses limitation	NA
Special considerations	NA
Design	
Sensor Design	electrochemical. 3-electrodes. amperometric
Electrolyte	sealed aqueous acid
Material	
black sensor housing	polypropylene (PP)
gasket/ blue gasket	thermoplastic vulcanizate (TPV)
membrane	polytetrafluoroethylene (PTFE)
label	polyester
Filter	
Factory installed filter	Selective Filter MF 6809638
Optional Filter	Selective Filter BF 6809653*; Selective Filter HSF 6809862*
Useful life	
Expected service life, in ambient air	> 3 years
Guarantee	1 year

Cross-calibration and surrogate gas

The DrägerSensor Hydride can be used for detection of the gases and vapors listed in the table below.

Gas / Vapor	Chemical formula	CAS number	Default measuring range [ppm]	minimum measuring range [ppm]	maximum measuring range [ppm]	lower detection limit [ppm]	relative sensitivity
Phosphine	PH_3	7803-51-2	1	0.3	20	0.03	1.0
Arsine	AsH_3	7784-42-1	1	0.3	20	0.03	0.85
Diborane	B_2H_6	19287-45-7	1	0.5	1	0.05	0.4
Silane	SiH_4	7803-62-5	5	5	50	0.05	0.95
Germanium hydride	GeH_4	7782-65-2	1	0.3	20	0.05	0.6
Bis-(-tert-butylamine)silane	BTBS $C_8H_{22}N_2Si$	186598-40-3	20	5	20	0.4	0.08
Disilane	Si_2H_6	1590-87-0	20	5	20	0.3	0.1
Hydrogen selenide	SeH_2	7783-07-5	1	0.5	1	0.3	0.4
Monomethylsilane (MMS)	CH_3SiH_3	992-94-9	20	5	20	0.05	0.55
Trimethylsilane (TMS)	$(CH_3)_3SiH$	993-07-7	20	5	20	0.3	0.11
Sulfur dioxide	SO_2	7446-09-5	20	-	-	-	0.2

Cross sensitivities

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm with selective filter MF					
				PH_3	AsH_3	B_2H_6	SiH_4	GeH_4	BTBS
Acetone	CH_3COCH_3	67-64-1	1.25 % by vol.	≤ 0.03	≤ 0.03	≤ 0.08	≤ 0.03	≤ 0.06	≤ 0.4
Acryl nitrile	H2C=CH–CN	107-13-1	80 ppm	≤ 0.05	≤ 0.05	≤ 0.15	≤ 0.05	≤ 0.1	≤ 0.7
Ammonia	NH_3	7664-41-7	200 ppm	≤ 0.2 (-) *	≤ 0.2 (-) *	≤ 0.5 (-) *	≤ 0.2 (-) *	≤ 0.4 (-) *	≤ 2.5
Boron trifluoride	BF_3	7637-07-2	15 ppm	≤ 0.2 (-) *	≤ 0.2 (-) *	≤ 0.5 (-) *	≤ 0.2 (-) *	≤ 0.4 (-) *	≤ 2.5
Butadiene	$CH_2CHCHCH_2$	106-99-0	50 ppm	≤ 10	≤ 10	≤ 25	≤ 10	≤ 20	≤ 125
tert-Butyl mercaptan	$(CH_3)_3CSH$	75-66-1	4 ppm	≤ 1	≤ 1	≤ 2.5	≤ 1	≤ 2	≤ 14
3-Butyn-1-ol	C_4H_6O	927-74-2	50 ppm	≤ 18	Not tested				
Carbon monoxide	CO	630-08-0	100 ppm	≤ 0.1	≤ 0.1	≤ 0.25	≤ 0.1	≤ 0.2	≤ 1
Chlorine	Cl_2	7782-50-5	8 ppm	≤ 1 (-) *	≤ 1 (-) *	≤ 2.5 (-) *	≤ 1 (-) *	≤ 2 (-) *	≤ 14
Ethanol	C_2H_5OH	64-17-5	250 ppm	≤ 0.2	≤ 0.2	≤ 0.5	≤ 0.2	≤ 0.4	≤ 3
Ethene	C_2H_4	74-85-1	1000 ppm	≤ 1	≤ 1	≤ 2.5	≤ 1	≤ 2	≤ 14
Ethine (Acetylene)	C_2H_2	74-86-2	200 ppm	≤ 60	≤ 60	≤ 150	≤ 60	≤ 120	≤ 750
Hydrogen	H_2	1333-74-0	1000 ppm	≤ 0.5	≤ 0.5	≤ 1.2	≤ 0.5	≤ 1	≤ 7
Hydrogen bromide	HBr	10035-10-6	100 ppm	≤ 0.02	≤ 0.02	≤ 0.05	≤ 0.02	≤ 0.04	≤ 0.3
Hydrogen chloride	HCl	7647-01-0	20 ppm	≤ 0.02	≤ 0.02	≤ 0.05	≤ 0.02	≤ 0.04	≤ 0.3
Hydrogen cyanide	HCN	74-90-8	20 ppm	≤ 2.5	≤ 2.5	≤ 6	≤ 2.5	≤ 5	≤ 32
Hydrogen fluoride	HF	7664-39-3	15 ppm	≤ 0.05	≤ 0.05	≤ 0.15	≤ 0.05	≤ 0.1	≤ 1
Hydrogen peroxide	H_2O_2	7722-84-1	5 ppm	≤ 2	≤ 2	≤ 5	≤ 2	≤ 4	≤ 25
Hydrogen sulfide	H_2S	7783-06-4	20 ppm	≤ 20	≤ 20	≤ 45	≤ 20	≤ 40	≤ 250
Methanol	CH_3OH	67-56-1	50 ppm	≤ 0.04	≤ 0.04	≤ 0.1	≤ 0.04	≤ 0.08	≤ 0.5
Methylamine	CH_3NH_2	74-89-5	100 ppm	≤ 0.05	≤ 0.05	≤ 0.15	≤ 0.05	≤ 0.1	≤ 0.7
Nitrogen dioxide	NO_2	10102-44-0	50 ppm	≤ 12 (-) *	≤ 12 (-) *	≤ 30 (-) *	≤ 12 (-) *	≤ 24 (-) *	≤ 150
Nitrogen monoxide	NO	10102-43-9	20 ppm	≤ 0.1	≤ 0.1	≤ 0.25	≤ 0.1	≤ 0.2	≤ 1.5
i-Propanol	$(CH_3)_2CHOH$	67-63-0	500 ppm	≤ 0.05	≤ 0.05	≤ 0.15	≤ 0.05	≤ 0.1	≤ 1
n-Propyl mercaptan	$CH_3CH_2CH_2SH$	107-03-9	6 pp	≤ 0.5	≤ 0.5	≤ 1.5	≤ 0.5	≤ 1	≤ 7
Propylene	CH_3CHCH_2	115-07-1	50 ppm	≤ 0.15	≤ 0.15	≤ 0.4	≤ 0.15	≤ 0.3	≤ 2
Styrene	$C_6H_5CHCH_2$	100-42-5	30 ppm	≤ 4	≤ 4	≤ 10	≤ 4	≤ 8	≤ 50
Sulfur dioxide	SO_2	7446-09-5	1 ppm	0.2	0.24	≤ 0.45	≤ 0.22	≤ 0.42	≤ 3
Tetrahydrothiophene	C_4H_8S	110-01-0	5 ppm	≤ 0.02	≤ 0.02	≤ 0.05	≤ 0.02	≤ 0.04	≤ 0.3
Toluene	$C_6H_5CH_3$	108-88-3	1 % by vol.	≤ 0.01	≤ 0.01	≤ 0.03	≤ 0.01	≤ 0.02	≤ 0.1
Trimethyl borane	$B(CH_3)_3$	593-90-8	8 ppm	≤ 1	≤ 0.85	≤ 0.55	≤ 0.90	≤ 0.60	≤ 14
Vinyl acetate	$CH_3COOCHCH_2$	108-05-4	30 ppm	≤ 0.08	≤ 0.08	≤ 2	≤ 0.08	≤ 0.16	≤ 0.1

(–) * negative display.

The following table shows gases and vapors where the effect of the applied concentration on the sensors is below the Lower Detection Limit or gases which will have no effect on the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm with selective filter MF					
				PH_3	AsH_3	B_2H_6	SiH_4	GeH_4	BTBS
Acetaldehyde	CH_3CHO	75-07-0	500 ppm	no effect					
Carbon dioxide	CO_2	124-38-9	5 % by vol.	no effect					
1.1 Dichloroethane	$C_2H_4Cl_2$	75-34-3	50 ppm	no effect					
Diethyl amine	$(C_2H_5)_2NH$	124-40-3	100 ppm	no effect					
Diethylether	$(C_2H_5)_2O$	60-29-7	400 ppm	no effect					
Epichlorohydrin	$C_2H_3OCH_2Cl$	106-89-8	35 ppm	no effect					
Ethylene oxide	C_2H_4O	75-21-8	20 ppm	no effect					
Formaldehyde	HCHO	50-00-0	40 ppm	no effect					
Nitrogen trifluoride	NF_3	7783-54-2	26 ppm	no effect					
Tetrahydrofuran	C_4H_8O	109-99-9	60 ppm	no effect					
Vinyl chloride	C_2H_3Cl	75-01-4	50 ppm	no effect					

DrägerSensor Hydride SC 6809980

Intended Use

Electrochemical diffusion sensor for suitable Dräger transmitters. For monitoring phosphine (PH3). arsine (AsH3). diborane (B2H6). silane (SiH4). germanium hydride (GeH4). monomethyl silane (MMS) and trimethylamine (TMS) – concentration in the ambient air under ambient conditions in interior spaces.
The sensor is characterized by very low cross-sensitivity to hydrogen and alcohols.

Technical Data

Electrode reactions				
Measuring electrode	$PH_3 + 4\ H_2O \rightarrow H_3PO_4 + 8\ H^+ + 8\ e^-$ (shown for PH_3)			
Counter electrode	$2\ O_2 + 8\ H^+ + 8\ e^- \rightarrow 4\ H_2O$			
Measuring Gas	PH_3	AsH_3	B_2H_6	SiH_4
Repeatability / Accuracy				
Zero	≤ ± 0.001 ppm	≤ ± 0.002 ppm	≤ ± 0.003 ppm	≤ ± 0.01 ppm
sensitivity	≤ ± 2 % of measured value	≤ ± 3 % of measured value	≤ ± 5 % of measured value	≤ ± 5 % of measured value
Linearity tolerance	≤ ± 5 % of measured value			
Effect of temperature				
Temperature conditions	-20°C to +50°C (-4°F to 122°F)			
zero	≤ ± 0.0002 ppm / K	≤ ± 0.0003 ppm / K	≤ ± 0.0005 ppm / K	≤ ± 0.0005 ppm / K
sensitivity	≤ ± 0.2 % of measured value / K	≤ ± 0.2 % of measured value / K	≤ ± 0.5 % of measured value / K	≤ ± 0.5 % of measured value / K
Effect of humidity				
Humidity conditions	5% to 95% relative humidity			
zero	no effect			
sensitivity	≤ ± 0.1 % of measured value / % r.h.	≤ ± 0.1 % of measured value / % r.h.	≤ ± 0.2 % of measured value / % r.h.	≤± 0.1 % of measured value / % r.h.
Effect of pressure				
zero	no effect			
sensitivity	≤ ± 0.01 % of measured value / hPa			
Effect of flow between 0 and 6 m/s				
zero	no effect			
sensitivity	≤ ± 10 % of measured value			
Drift during a month period				
zero	≤ ±0.005 ppm			
sensitivity	≤ ± 10 % of measured value			
Range				
Max. measuring range	1 ppm			
Default measuring range	1 ppm			
Min. measuring range	0.3 ppm			
Lower detection limit (LDL)	0.01 ppm			
Display resolution	0.005 ppm			
Zero clamping - capture range	± 0.005 ppm			
Under range warning	-0.1 ppm			
Under range fault	-0.2 ppm			
Alarm thresholds				
A1 Alarm default	0.1 ppm (for PH_3)			
A2 Alarm default	0.2 ppm (for PH_3)			

Alarm response time	
on gas exposure with 5x alarm threshold, t0...20	≤ 10 sec.
on gas exposure with 1.6x alarm threshold, t0...63	≤ 20 sec.
Warm-up-time	
ready for operation after max.	480 minutes
ready for calibration after max.	720 minutes
Operation	
Periodical Sensor Self-Test	Polytron 6100 and Polytron 7000 / 8100 with respective Dongle every 30 minutes
Orientation	downwards. tilted by max ± 30°
Gas doses limitation	NA
Special considerations	NA
Design	
Sensor Design	electrochemical. 3-electrodes. amperometric
Electrolyte	organic. liquid polycarbonate
Material	
black sensor housing	polypropylene (PP)
gasket/ blue gasket	thermoplastic vulcanizate (TPV)
membrane	polytetrafluoroethylene (PTFE)
label	polyester
Filter	
Factory installed filter	Dust Filter 6809595
Optional Filter	Selective Filter BF 6809653*
Useful life	
Expected service life, in ambient air	> 3 years
Guarantee	1 year

Cross-calibration and surrogate gas

The DrägerSensor Hydride SC can be used for detection of the gases and vapors listed in the table below.

Gas / Vapor	Chemical formula	CAS number	Default measuring range [ppm]	minimum measuring range [ppm]	maximum measuring range [ppm]	lower detection limit [ppm]	relative sensitivity
Phosphine	PH_3	7803-51-2	1	0.3	1	0.01	1.0
Arsine	AsH_3	7784-42-1	1	0.3	1	0.01	0.65
Diborane	B_2H_6	19287-45-7	1	0.3	5	0.02	0.45
Silane	SiH_4	7803-62-5	5	1	20	0.05	0.65
Germanium hydride	GeH_4	7782-65-2	1	0.3	5	0.02	0.5
Monomethylsilane (MMS)	CH_3SiH_3	992-94-9	5	1	20	0.05	0.65
Trimethylsilane (TMS)	$(CH_3)_3SiH$	993-07-7	5	1	20	0.2	0.15
Nitrogen dioxide	NO_2		25*	-	-	-	0.2

*For surrogate calibration only

Cross sensitivities

Gases with positive cross sensitivity

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm			
				PH_3	AsH_3	B_2H_6	SiH_4
Butadiene	$CH_2CHCHCH_2$	106-99-0	50ppm	≤ 0.01	≤ 0.02	≤ 0.02	≤ 0.02
tert- Butylarsine - TBA	$(CH_3)_3CAsH_2$	4262-43-5	10 ppm	≤ 15	Not tested		
Carbon monoxide	CO	630-08-0	5000 ppm	≤ 0.01	≤ 0.02	≤ 0.02	≤ 0.02
Ethine (Acetylene)	C_2H_2	74-86-2	100 ppm	≤ 0.05	≤ 0.1	≤ 0.1	≤ 0.1
Hydrogen	H_2	1333-74-0	8000 ppm	≤ 0.02	≤ 0.5	≤ 1.2	≤ 0.5
Hydrogen chloride	HCl	7647-01-0	10 ppm	≤ 0.05	≤ 0.1	≤ 0.1	≤ 0.1
Hydrogen cyanide	HCN	74-90-8	10 ppm	≤ 0.02	≤ 0.04	≤ 0.04	≤ 0.04
Hydrogen selenide	H_2Se	7783-07-5	1 ppm	≤ 0.1	≤ 0.2	≤ 0.2	≤ 0.2
Hydrogen sulfide	H_2S	7783-06-4	1 ppm	≤ 0.2	≤ 0.4	≤ 0.4	≤ 0.4
Sulfur dioxide	SO_2	7446-09-5	1 ppm	0.05	0.1	≤ 0.1	≤ 0.1

Gases with negative cross sensitivity

Gases with negative cross sensitivity may displace a positive reading of the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Negative displayed value in ppm			
				PH_3	AsH_3	B_2H_6	SiH_4
Ammonia	NH_3	7664-41-7	50 ppm	≤ 0.03	≤ 0.06	≤ 0.06	≤ 0.06
Chlorine	Cl_2	7782-50-5	1 ppm	≤ 0.1	≤ 0.2	≤ 0.2	≤ 0.2
Nitrogen dioxide	NO_2	10102-44-0	1 ppm	≤ 0.1	≤ 0.2	≤ 0.2	≤ 0.2
Ozone	O_3	10028-15-6	0.1 ppm	≤ 0.02	≤ 0.04	≤ 0.04	≤ 0.04

The following table shows gases and vapors where the effect of the applied concentration on the sensors is below the Lower Detection Limit or gases which will have no effect on the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm			
				PH_3	AsH_3	B_2H_6	SiH_4
Carbon dioxide	CO_2	124-38-9	5 % by vol.	no effect			
Ethanol	C_2H_5OH	64-17-5	250 ppm	no effect			
Hydrogen peroxide	H_2O_2	7722-84-1	10 ppm	no effect			
Methanol	CH_3OH	67-56-1	100 ppm	no effect			
Nitrogen monoxide	NO	10102-43-9	5 ppm	no effect			
i-Propanol	$(CH_3)_2CHOH$	67-63-0	500 ppm	no effect			

DrägerSensor NH_3 HC 6809645

Intended Use

Electrochemical diffusion sensor for suitable Dräger transmitters. For monitoring the ammonia (NH_3) concentration in ambient air.

Technical Data

Electrode reactions	
Measuring electrode	$NH_3 \rightarrow ½\ N_2 + 3\ H^+ + 3\ e^-$
Counter electrode	$¾\ O_2 + 3\ H^+ + 3\ e^- \rightarrow 3/2\ H_2O$
Measuring Gas	NH_3
Repeatability / Accuracy	
Zero	≤ ± 10 ppm
sensitivity	≤ ± 5 % of measured value
Linearity tolerance	≤ ± 3 % of measured value
Effect of temperature	
Temperature conditions	-40°C to +65°C (-40°F to 150°F)
zero	≤ ± 0.1 ppm / K for –40 °C to 20 °C (–40 °F to 70 °F) ≤ ± 1 ppm / K for 20 °C to 65 °C (70 °F to 150 °F)
sensitivity	≤ ± 0.5 % of measured value / K
Effect of humidity	
Humidity conditions	5% to 95% relative humidity
zero	≤ ± 0.5 ppm / % r.h.
sensitivity	≤ ± 0.1 % of measured value / % r.h.
Effect of pressure	
zero	no effect
sensitivity	≤ ± 0.1 % of measured value / hPa
Effect of flow between 0 and 6 m/s	
zero	no effect
sensitivity	≤ ± 3 % of measured value
Drift during a month period	
zero	≤ ± 10 ppm
sensitivity	≤ ± 5 % of measured value
Range	
Max. measuring range	1000 ppm
Default measuring range	1000 ppm
Min. measuring range	300 ppm
Lower detection limit (LDL)	30 ppm
Display resolution	5 ppm
Zero clamping - capture range	± 5 ppm
Under range warning	-50 ppm
Under range fault	-100 ppm
Alarm thresholds	
A1 Alarm default	50 ppm
A2 Alarm default	100 ppm

Alarm response time	
on gas exposure with 5x alarm threshold, t0...20	≤ 10 sec.
on gas exposure with 1.6x alarm threshold, t0...63	≤ 20 sec.
Warm-up-time	
ready for operation after max.	120 minutes
ready for calibration after max.	660 minutes
Operation	
Periodical Sensor Self-Test	Polytron 5100 / 6100 and Polytron 7000 / 8100 with respective Dongle every 20 minutes
Orientation	NA
Gas doses limitation	NA
Special considerations	NA
Design	
Sensor Design	electrochemical, 3-electrodes, amperometric
Electrolyte	sealed aqueous salt solution
Material	
black sensor housing	polypropylene (PP)
gasket/ blue gasket	thermoplastic vulcanizate (TPV)
membrane	polytetrafluoroethylene (PTFE)
label	polyester
Filter	
Factory installed filter	Dust Filter 6809595
Optional Filter	none
Useful life	
Expected service life, in ambient air	> 2 years
Guarantee	1 year

Cross sensitivities

Gases with positive cross sensitivity

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm NH_3
Acetaldehyde	CH_3CHO	75-07-0	55 ppm	≤ 10
Arsine	AsH_3	7784-42-1	3 ppm	≤ 10
tert-Butyl mercaptan	$(CH_3)_3CSH$	75-66-1	5 ppm	≤ 5
Carbon monoxide	CO	630-08-0	100 ppm	≤ 5
Disilane	Si_2H_6	1590-87-0	10 ppm	≤ 5
Epichlorohydrin	$C_2H_3OCH_2Cl$	106-89-8	35 ppm	≤ 5
Ethanol	C_2H_5OH	64-17-5	250 ppm	≤ 5
Ethylene oxide	C_2H_4O	75-21-8	20 ppm	≤ 5
Formaldehyde	HCHO	50-00-0	45 ppm	≤ 25
Hydrogen	H_2	1333-74-0	1000 ppm	≤ 5
Hydrogen cyanide	HCN	74-90-8	50 ppm	≤ 5
Hydrogen selenide	H_2Se	7783-07-5	5 ppm	≤ 10
Hydrogen sulfide	H_2S	7783-06-4	100 ppm	≤ 500
Methyl methacrylate	$CH_2CH(CH_3)COOCH_3$	80-62-6	60 ppm	≤ 5
Nitrogen monoxide	NO	10102-43-9	20 ppm	≤ 15
Phosphine	PH_3	7803-51-2	10 ppm	≤ 35
n-Propyl mercaptan	$CH_3CH_2CH_2SH$	107-03-9	10 ppm	≤ 15
Sulfur dioxide	SO_2	7446-09-5	20 ppm	≤ 10
Tetrahydrothiophene	C_4H_8S	110-01-0	5 ppm	≤ 10
Vinyl acetate	$CH_3COOCHCH_2$	108-05-4	30 ppm	≤ 5

Gases with negative cross sensitivity

Gases with negative cross sensitivity may displace a positive reading of the sensor

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Negative displayed value in ppm NH_3
Carbon dioxide	CO_2	124-38-9	1,5 % by vol	≤ 10
Chlorine	Cl_2	7782-50-5	10 ppm	≤ 10
Nitrogen dioxide	NO_2	10102-44-0	50 ppm	≤ 50

The following table shows gases and vapors where the effect of the applied concentration on the sensors is below the Lower Detection Limit or gases which will have no effect on the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm NH_3
Acryl nitrile	H2C=CH–CN	107-13-1	80 ppm	no effect
Boron trifluoride	BF_3	7637-07-2	15 ppm	no effect
Butadiene	$CH_2CHCHCH_2$	106-99-0	50 ppm	no effect
1,1 Dichloroethane	$C_2H_4Cl_2$	75-34-3	50 ppm	no effect
Diethylether	$(C_2H_5)_2O$	60-29-7	400 ppm	no effect
Ethene	C_2H_4	74-85-1	1000 ppm	no effect
Ethine (Acetylene)	C_2H_2	74-86-2	200 ppm	no effect
Hydrogen bromide	HBr	10035-10-6	100 ppm	no effect
Methane	CH_4	74-82-8	2 % by vol	no effect
Methanol	CH_3OH	67-56-1	500 ppm	no effect
Propane	C_3H_8	74-98-6	2 % by vol	no effect
i-Propanol	$(CH_3)_2CHOH$	67-63-0	500 ppm	no effect
Propene	CH_2CHCH_3	115-07-1	50 ppm	no effect
Styrene	$C_6H_5CHCH_2$	100-42-5	30 ppm	no effect
Tetrahydrofuran	C_4H_8O	109-99-9	60 ppm	no effect
Vinyl chloride	C_2H_3Cl	75-01-4	50 ppm	no effect

DrägerSensor NH_3 LC 6809680

Intended Use

Electrochemical diffusion sensor for suitable Dräger transmitters. For monitoring the ammonia (NH3), methylamine (MA), dimethylamine (DMA), trimethylamine (TMA), ethylamine (EA), diethylamine (DEA) and triethylamine (TEA) concentration in the ambient air.

Technical Data

Electrode reactions	
Measuring electrode	$NH_3 \rightarrow ½\ N_2 + 3\ H^+ + 3\ e^-$
Counter electrode	$¾\ O_2 + 3\ H^+ + 3\ e^- \rightarrow 3/2\ H_2O$
Measuring Gas	NH_3
Repeatability / Accuracy	
Zero	≤ ± 1.5 ppm
sensitivity	≤ ± 5 % of measured value
Linearity tolerance	≤ ± 3 % of measured value
Effect of temperature	
Temperature conditions	-40°C to +65°C (-40°F to 150°F)
zero	≤ ± 0.1 ppm / K
sensitivity	≤ ± 5 % of measured value
Effect of humidity	
Humidity conditions	5% to 95% relative humidity
zero	≤ ± 0.05 ppm / % r.h.
sensitivity	≤ ± 0.1 % of measured value / % r.h.
Effect of pressure	
zero	no effect
sensitivity	≤ ± 0.1 % of measured value / hPa
Effect of flow between 0 and 6 m/s	
zero	no effect
sensitivity	≤ ± 3 % of measured value
Drift during a month period	
zero	≤ ± 1 ppm
sensitivity	≤ ± 5 % of measured value
Range	
Max. measuring range	300 ppm
Default measuring range	100 ppm
Min. measuring range	50 ppm
Lower detection limit (LDL)	5 ppm
Display resolution	0.5 ppm
Zero clamping - capture range	± 1 ppm
Under range warning	-5 ppm
Under range fault	-10 ppm
Alarm thresholds	
A1 Alarm default	12.5 ppm
A2 Alarm default	25 ppm

Alarm response time	
on gas exposure with 5x alarm threshold, t0...20	≤ 5 sec.
on gas exposure with 1.6x alarm threshold, t0...63	≤ 15 sec.
Warm-up-time	
ready for operation after max.	120 minutes
ready for calibration after max.	660 minutes
Operation	
Periodical Sensor Self-Test	Polytron 5100 / 6100 and Polytron 7000 / 8100 with respective Dongle every 20 minutes
Orientation	NA
Gas doses limitation	NA
Special considerations	NA
Design	
Sensor Design	electrochemical, 3-electrodes, amperometric
Electrolyte	sealed aqueous salt solution
Material	
black sensor housing	polypropylene (PP)
gasket/ blue gasket	thermoplastic vulcanizate (TPV)
membrane	polytetrafluoroethylene (PTFE)
label	polyester
Filter	
Factory installed filter	Dust Filter 6809595
Optional Filter	none
Useful life	
Expected service life, in ambient air	> 2 years
Guarantee	1 year

Cross-calibration and surrogate gas

The DrägerSensor NH3 LC can be used for detection of the gases and vapors listed in the table below.

Gas / Vapor	Chemical formula	CAS number	Default measuring range [ppm]	minimum measuring range [ppm]	maximum measuring range [ppm]	lower detection limit [ppm]	relative sensitivity
Ammonia	NH_3	7664-41-7	100	50	300	5	1.0
Methylamine MA	CH_3NH_3	74-89-5	100	100	100	5	0.7
Dimethylamine DMA	$(CH_3)_2NH$	124-40-3	100	100	100	5	0.5
Trimethylamine TMA	$(CH_3)_3N$	75-50-3	100	100	100	5	0.5
Ethylamine EA	$C_2H_5NH_2$	75-04-7	100	100	100	5	0.7
Diethylamine DEA	$(C_2H_5)_2NH$	109-89-7	100	100	100	5	0.5
Triethylamine TEA	$(C_2H_5)_3N$	121-44-8	100	100	100	5	0.5

Gas / Vapor	Chemical formula	CAS number	Default measuring range [ppm]	minimum measuring range [ppm]	maximum measuring range [ppm]	Lower detection limit [ppm]	relative sensitivity
Dimethylethylamine DMEA	$(CH_3)_2$ C_2H_5N	598-56-1	100	100	100	5	0.4
Isopropylamine	$(CH_3)_2$ $CHNH_2$	75-31-0	200	100	200	10	0.3
Tetrakis-dimethyl-amino-titan TDMAT	$C_8H_{24}N_4Ti$	3275-24-9	100	100	100	5	1.0

Cross sensitivities

Gases with positive cross sensitivity

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm NH_3
Acetaldehyde	CH_3CHO	75-07-0	55 ppm	≤ 10
Arsine	AsH_3	7784-42-1	3 ppm	≤ 10
Butadiene	$CH_2CHCHCH_2$	106-99-0	50 ppm	≤ 1
tert-Butylamine	$(CH_3)_3CNH_2$	75-64-9	200 ppm	≤ 40
tert-Butyl mercaptan	$(CH_3)_3CSH$	75-66-1	5 ppm	≤ 5
Carbon monoxide	CO	630-08-0	100 ppm	≤ 2
Disilane	Si_2H_6	1590-87-0	10 ppm	≤ 3
Epichlorohydrin	$C_2H_3OCH_2Cl$	106-89-8	35 ppm	≤ 3
Ethanol	C_2H_5OH	64-17-5	250 ppm	≤ 3
Ethylene oxide	C_2H_4O	75-21-8	20 ppm	≤ 2
Formaldehyde	HCHO	50-00-0	45 ppm	≤ 25
Hydrogen	H_2	1333-74-0	1000 ppm	≤ 3
Hydrogen bromide	HBr	10035-10-6	100 ppm	≤ 1
Hydrogen cyanide	HCN	74-90-8	50 ppm	≤ 2
Hydrogen selenide	H_2Se	7783-07-5	5 ppm	≤ 10
Hydrogen sulfide	H_2S	7783-06-4	100 ppm	≤ 500
Methane	CH_4	74-82-8	2 % by vol	≤ 1
Methyl methacrylate	$CH_2CH(CH_3)COOCH_3$	80-62-6	60 ppm	≤ 4
Nitrogen monoxide	NO	10102-43-9	20 ppm	≤ 15
Phosphine	PH_3	7803-51-2	10 ppm	≤ 35
i-Propanol	$(CH_3)_2CHOH$	67-63-0	500 ppm	≤ 1
Propene	CH_2CHCH_3	115-07-1	50 ppm	≤ 1
n-Propyl mercaptan	$CH_3CH_2CH_2SH$	107-03-9	10 ppm	≤ 12
Sulfur dioxide	SO_2	7446-09-5	20 ppm	≤ 7
Tetrahydrothiophene	C_4H_8S	110-01-0	5 ppm	≤ 6
Vinyl acetate	$CH_3COOCHCH_2$	108-05-4	30 ppm	≤ 3

Gases with negative cross sensitivity

Gases with negative cross sensitivity may displace a positive reading of the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Negative displayed value in ppm NH_3
Carbon dioxide	CO_2	124-38-9	1,5 % by vol	≤ 6
Chlorine	Cl_2	7782-50-5	10 ppm	≤ 25
Nitrogen dioxide	NO_2	10102-44-0	50 ppm	≤ 50

The following table shows gases and vapors where the effect of the applied concentration on the sensors is below the Lower Detection Limit or gases which will have no effect on the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm NH_3
Acryl nitrile	H2C=CH–CN	107-13-1	80 ppm	no effect
Boron trifluoride	BF_3	7637-07-2	15 ppm	no effect
1,1 Dichloroethane	$C_2H_4Cl_2$	75-34-3	50 ppm	no effect
Diethylether	$(C_2H_5)_2O$	60-29-7	400 ppm	no effect
Ethene	C_2H_4	74-85-1	1000 ppm	no effect
Ethine (Acetylene)	C_2H_2	74-86-2	200 ppm	no effect
Methanol	CH_3OH	67-56-1	500 ppm	no effect
Styrene	$C_6H_5CHCH_2$	100-42-5	30 ppm	no effect
Tetrahydrofuran	C_4H_8O	109-99-9	60 ppm	no effect
Vinyl chloride	C_2H_3Cl	75-01-4	50 ppm	no effect

DrägerSensor NH_3 TL 6813095

Intended Use

Electrochemical diffusion sensor for suitable Dräger transmitters. For monitoring concentrations of ammonia (NH3), methylamine (MA), dimethylamine (DMA), trimethylamine (TMA), ethylamine (EA), diethylamine (DEA) and triethylamine (TEA) in ambient air. Drift when permanent gassing, for example, with 50 ppm NH3 up to +5 ppm after 4 weeks. Effect reversible in air.

Technical Data

Electrode reactions	
Measuring electrode	$2\ NH_3 + 2\ H^+ \rightarrow 2\ NH4^+$
Counter electrode	$2\ NH4^+ \rightarrow 2\ NH_3 + 2\ H^+$
Measuring Gas	NH_3
Repeatability / Accuracy	
Zero	≤ ± 1 ppm
sensitivity	≤ ± 5 % of measured value
Linearity tolerance	≤ ± 5 % of measured value
Effect of temperature	
Temperature conditions	-40°C to +65°C (-40°F to 150°F)
zero	≤ ± 2 ppm
sensitivity	≤ ± 5 % of measured value
Effect of humidity	
Humidity conditions	5% to 95% relative humidity
zero	≤ ± 1 ppm
sensitivity	≤ ± 0.1 % of measured value / % r.h.
Effect of pressure	
zero	no effect
sensitivity	≤ ± 0.1 % of measured value / hPa
Effect of flow between 0 and 6 m/s	
zero	no effect
sensitivity	≤ ± 5 % of measured value
Drift during a month period	
zero	no effect
sensitivity	≤ ± 2 % of measured value
Range	
Max. measuring range	300 ppm
Default measuring range	100 ppm
Min. measuring range	50 ppm
Lower detection limit (LDL)	1 ppm
Display resolution	0.5 ppm
Zero clamping - capture range	± 1 ppm
Under range warning	-5 ppm
Under range fault	-10 ppm
Alarm thresholds	
A1 Alarm default	12.5 ppm
A2 Alarm default	25 ppm

Alarm response time	
on gas exposure with 5x alarm threshold, t0...20	≤ 5 sec.
on gas exposure with 1.6x alarm threshold, t0...63	≤ 30 sec.
Warm-up-time	
ready for operation after max.	15 minutes
ready for calibration after max.	60 minutes
Operation	
Periodical Sensor Self-Test	Polytron 5100 / 6100 and Polytron 7000 / 8100 with respective Dongle every 30 minutes
Orientation	downwards, tilted by max ± 30°
Gas doses limitation	NA
Special considerations	NA
Design	
Sensor Design	electrochemical, 3-electrodes, amperometric
Electrolyte	organic, liquid polycarbonate
Material	
black sensor housing	polypropylene (PP)
gasket/ blue gasket	thermoplastic vulcanizate (TPV)
membrane	polytetrafluoroethylene (PTFE)
label	polyester
Filter	
Factory installed filter	Dust Filter 6812224
Optional Filter	none
Useful life	
Expected service life, in ambient air	> 2 years
Guarantee	1 year

Cross-calibration and surrogate gas

The DrägerSensor NH3 TL can be used for detection of the gases and vapors listed in the table below.

Gas / Vapor	Chemical formula	CAS number	Default measuring range [ppm]	minimum measuring range [ppm]	maximum measuring range [ppm]	lower detection limit [ppm]	relative sensitivity
Ammonia	NH_3	7664-41-7	100	50	300	1	1.0
Methylamine MA	CH_3NH_3	74-89-5	100	100	100	1	1.0
Dimethylamine DMA	$(CH_3)_2NH$	124-40-3	100	100	100	2	0.65
Trimethylamine TMA	$(CH_3)_3N$	75-50-3	100	100	100	2	0.55
Ethylamine EA	$C_2H_5NH_2$	75-04-7	100	100	100	1	1.0
Diethylamine DEA	$(C_2H_5)_2NH$	109-89-7	100	100	100	2	0.65
Triethylamine TEA	$(C_2H_5)_3N$	121-44-8	100	100	100	2	0.55
Dimethylethylamine DMEA	$(CH_3)_2$ C_2H_5N	598-56-1	100	100	100	5	0.4

Cross sensitivities

Gases with positive cross sensitivity

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm NH_3 with dust filter
Bis(diethylamino)silane	$SiH_2[N(CH_2CH_3)_2]_2$	27804-64-4	100 ppm	≤ 90
Carbon dioxide	CO_2	124-38-9	10 % by vol	≤ 1
Carbon monoxide	CO	630-08-0	100 ppm	≤ 1
Hydrogen sulfide	H_2S	7783-06-4	20 ppm	≤ 1
Nitrogen dioxide	NO_2	10102-44-0	10 ppm	≤ 1
Nitrogen monoxide	NO	10102-43-9	20 ppm	≤ 1

Gases with negative cross sensitivity

Gases with negative cross sensitivity may displace a positive reading of the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Negative displayed value in ppm NH_3 with dust filter
Chlorine	Cl_2	7782-50-5	10 ppm	≤ 6
Sulfur dioxide	SO_2	7446-09-5	20 ppm	≤ 12

The following table shows gases and vapors where the effect of the applied concentration on the sensors is below the Lower Detection Limit or gases which will have no effect on the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm NH_3 with dust filter
Alkanes	– – –		% by vol. range	no effect
Ethanol	C_2H_5OH	64-17-5	250 ppm	no effect
Hydrogen	H_2	1333-74-0	1 000 ppm	no effect
Hydrogen chloride	HCl	7647-01-0	5 ppm	no effect
Hydrogen cyanide	HCN	74-90-8	50 ppm	no effect
Ozone	O_3	10028-15-6	0,5 ppm	no effect

DrägerSensor NH_3 TH 6800055

Intended Use

Electrochemical diffusion sensor for suitable Dräger transmitters. For monitoring the concentration of ammonia (NH_3) in the ambient air.

Technical Data

Electrode reactions	
Measuring electrode	$2\ NH_3 + 2\ H^+ \rightarrow 2\ NH4^+$
Counter electrode	$2\ NH4^+ \rightarrow 2\ NH_3 + 2\ H^+$
Measuring Gas	NH_3
Repeatability / Accuracy	
Zero	
sensitivity	
Linearity tolerance	
Effect of temperature	
Temperature conditions	-40°C to +65°C (-40°F to 150°F)
zero	
sensitivity	
Effect of humidity	
Humidity conditions	5% to 95% relative humidity
zero	
sensitivity	
Effect of pressure	
zero	no effect
sensitivity	
Effect of flow between 0 and 6 m/s	
zero	no effect
sensitivity	
Drift during a month period	
zero	no effect
sensitivity	
Range	
Max. measuring range	10000 ppm
Default measuring range	1000 ppm
Min. measuring range	300 ppm
Lower detection limit (LDL)	10 ppm
Display resolution	5 ppm
Zero clamping - capture range	± 5 ppm
Under range warning	-50 ppm
Under range fault	-100 ppm
Alarm thresholds	
A1 Alarm default	125 ppm
A2 Alarm default	250 ppm

Alarm response time	
on gas exposure with 5x alarm threshold, t0...20	≤ 10 sec.
on gas exposure with 1.6x alarm threshold, t0...63	≤ 20 sec.
Warm-up-time	
ready for operation after max.	15 minutes
ready for calibration after max.	60 minutes
Operation	
Periodical Sensor Self-Test	Polytron 5100 / 6100 and Polytron 7000 / 8100 with respective Dongle every 30 minutes
Orientation	downwards, tilted by max ± 30°
Gas doses limitation	NA
Special considerations	NA
Design	
Sensor Design	electrochemical, 3-electrodes, amperometric
Electrolyte	organic, liquid polycarbonate
Material	
black sensor housing	polypropylene (PP)
gasket/ blue gasket	thermoplastic vulcanizate (TPV)
membrane	polytetrafluoroethylene (PTFE)
label	polyester
Filter	
Factory installed filter	Dust Filter 6812224
Optional Filter	none
Useful life	
Expected service life, in ambient air	> 2 years
Guarantee	1 year

Cross sensitivities

Gases with positive cross sensitivity

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm NH_3 with dust filter
Carbon dioxide	CO_2	124-38-9	1,6 % by vol.	≤ 1
Carbon monoxide	CO	630-08-0	100 ppm	≤ 1
Hydrogen sulfide	H_2S	7783-06-4	10 ppm	≤ 1
Nitrogen dioxide	NO_2	10102-44-0	10 ppm	≤ 0.5
Nitrogen monoxide	NO	10102-43-9	10 ppm	≤ 1

Gases with negative cross sensitivity

Gases with negative cross sensitivity may displace a positive reading of the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Negative displayed value in ppm NH_3 with dust filter
Chlorine	Cl_2	7782-50-5	10 ppm	≤ 10
Sulfur dioxide	SO_2	7446-09-05	10 ppm	≤ 8

The following table shows gases and vapors where the effect of the applied concentration on the sensors is below the Lower Detection Limit or gases which will have no effect on the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm NH_3 with dust filter
Alkanes	– – –		% by vol. range	no effect
Ethanol	C_2H_5OH	64-17-5	250 ppm	no effect
Hydrogen	H_2	1333-74-0	1 000 ppm	no effect
Hydrogen chloride	HCl	7647-01-0	5 ppm	no effect
Hydrogen Cyanide	HCN	74-90-8	50 ppm	no effect
Ozone	O_3	10028-15-6	0,5 ppm	no effect

DrägerSensor NH_3 FL 6813260

Intended Use

Electrochemical diffusion sensor for suitable Dräger transmitters. For monitoring concentrations of ammonia (NH_3), methylamine (MA), dimethylamine (DMA), trimethylamine (TMA), ethylamine (EA), diethylamine (DEA) and triethylamine (TEA) in ambient air. The sensor withstands permanent exposure of 50 ppm a.

Technical Data

Electrode reactions	
Measuring electrode	$2\ NH_3 + 2\ H^+ \rightarrow 2\ NH4^+$
Counter electrode	$2\ NH4^+ \rightarrow 2\ NH_3 + 2\ H^+$
Measuring Gas	NH_3
Repeatability / Accuracy	
Zero	≤ ± 1 ppm
sensitivity	≤ ± 5 % of measured value
Linearity tolerance	≤ ± 5 % of measured value
Effect of temperature	
Temperature conditions	-40°C to +65°C (-40°F to 150°F)
zero	± 2 ppm
sensitivity	≤ ± 5 % of measured value
Effect of humidity	
Humidity conditions	5% to 95% relative humidity
zero	± 1 ppm
sensitivity	≤ ± 0.1 % of measured value / % r.h.
Effect of pressure	
zero	no effect
sensitivity	≤ ± 0.1 % of measured value / hPa
Effect of flow between 0 and 6 m/s	
zero	no effect
sensitivity	≤ ± 5 % of measured value
Drift during a month period	
zero	no effect
sensitivity	≤ ± 2 % of measured value
Range	
Max. measuring range	300 ppm
Default measuring range	100 ppm
Min. measuring range	50 ppm
Lower detection limit (LDL)	1 ppm
Display resolution	0.5 ppm
Zero clamping - capture range	± 0.5 ppm
Under range warning	-5 ppm
Under range fault	-10 ppm
Alarm thresholds	
A1 Alarm default	12.5 ppm
A2 Alarm default	25 ppm

Alarm response time	
on gas exposure with 5x alarm threshold, t0...20	≤ 25 sec.
on gas exposure with 1.6x alarm threshold, t0...63	≤ 90 sec.
Warm-up-time	
ready for operation after max.	15 minutes
ready for calibration after max.	60 minutes
Operation	
Periodical Sensor Self-Test	No
Orientation	downwards, tilted by max ± 30°
Gas doses limitation	NA
Special considerations	NA
Design	
Sensor Design	electrochemical, 4-electrodes, amperometric
Electrolyte	organic, liquid polycarbonate
Material	
black sensor housing	polypropylene (PP)
gasket/ blue gasket	thermoplastic vulcanizate (TPV)
membrane	polytetrafluoroethylene (PTFE)
label	polyester
Filter	
Factory installed filter	Dust Filter 6812224
Optional Filter	none
Useful life	
Expected service life, in ambient air	> 2 years
Guarantee	3 years

Cross-calibration and surrogate gas

The DrägerSensor NH3 FL can be used for detection of the gases and vapors listed in the table below.

Gas / Vapor	Chemical formula	CAS number	Default measuring range [ppm]	minimum measuring range [ppm]	maximum measuring range [ppm]	lower detection limit [ppm]	relative sensitivity
Ammonia	NH_3	7664-41-7	100	50	300	1	1.0
Methylamine MA	CH_3NH_3	74-89-5	100	100	100	1	1.0*
Dimethylamine DMA	$(CH_3)_2NH$	124-40-3	100	100	100	2	0.65*
Trimethylamine TMA	$(CH_3)_3N$	75-50-3	100	100	100	2	0.55*
Ethylamine EA	$C_2H_5NH_2$	75-04-7	100	100	100	1	1.0*
Diethylamine DEA	$(C_2H_5)_2NH$	109-89-7	100	100	100	2	0.65*
Triethylamine TEA	$(C_2H_5)_3N$	121-44-8	100	100	100	2	0.55*

*The relative sensitivity has a tolerance of ±10%

Cross sensitivities

Gases with positive cross sensitivity

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm NH_3 with dust filter
Carbon dioxide	CO_2	124-38-9	10 % by vol.	≤ 1
Carbon monoxide	CO	630-08-0	100 ppm	≤ 1
Hydrogen sulfide	H_2S	7783-06-04	20 ppm	≤ 1
Nitrogen dioxide	NO_2	10102-44-0	10 ppm	≤ 1
Nitrogen monoxide	NO	10102-43-9	20 ppm	≤ 1

Gases with negative cross sensitivity

Gases with negative cross sensitivity may displace a positive reading of the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Negative displayed value in ppm NH_3 with dust filter
Chlorine	Cl_2	7782-50-5	10 ppm	≤ 6
Sulfur dioxide	SO_2	7446-09-05	20 ppm	≤ 12

The following table shows gases and vapors where the effect of the applied concentration on the sensors is below the Lower Detection Limit or gases which will definitely have no effect on the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm NH_3 with dust filter
Alkanes	– – –		% by vol. range	no effect
Ethanol	C_2H_5OH	64-17-5	250 ppm	no effect
Hydrogen	H_2	1333-74-0	1 000 ppm	no effect
Hydrogen chloride	HCl	7647-01-0	5 ppm	no effect
Hydrogen Cyanide	HCN	74-90-8	50 ppm	no effect
Ozone	O_3	10028-15-6	0,5 ppm	no effect

DrägerSensor NO 6809625

Intended Use

Electrochemical diffusion sensor for suitable Dräger transmitters. For monitoring the nitrogen monoxide (NO) concentration in ambient air.

Technical Data

Electrode reactions	
Measuring electrode	$NO + H_2O \dashrightarrow NO_2 + 2\,H^+ + 2\,e^-$
Counter electrode	$½\,O_2 + 2\,H^+ + 2\,e^- \rightarrow 2\,H_2O$
Measuring Gas	NO
Repeatability / Accuracy	
Zero	≤ ± 1 ppm
sensitivity	≤ ± 4 % of measured value
Linearity tolerance	≤ ± 4 % of measured value
Effect of temperature	
Temperature conditions	-40°C to +65°C (-40°F to 150°F)
zero	≤ ± 0.2 ppm / K
sensitivity	≤ ± 0.2 % of measured value / K
Effect of humidity	
Humidity conditions	5% to 95% relative humidity
zero	≤ ± 0.05 ppm / % r.h.
sensitivity	≤ ± 0.1 % of measured value / % r.h.
Effect of pressure	
zero	≤ ± 0.05 ppm / hPa
sensitivity	≤ ± 0.1 % of measured value / hPa
Effect of flow between 0 and 6 m/s	
zero	no effect
sensitivity	≤ ± 5 % of measured value
Drift during a month period	
zero	no effect
sensitivity	≤ ± 3 % of measured value
Range	
Max. measuring range	200 ppm
Default measuring range	50 ppm
Min. measuring range	30 ppm
Lower detection limit (LDL)	3 ppm
Display resolution	0.1 ppm
Zero clamping - capture range	± 0.3 ppm
Under range warning	-2.5 ppm
Under range fault	-5 ppm
Alarm thresholds	
A1 Alarm default	10 ppm
A2 Alarm default	20 ppm

Alarm response time	
on gas exposure with 5x alarm threshold, t0...20	≤ 10 sec.
on gas exposure with 1.6x alarm threshold, t0...63	≤ 20 sec.
Warm-up-time	
ready for operation after max.	30 minutes
ready for calibration after max.	660 minutes
Operation	
Periodical Sensor Self-Test	Polytron 5100 / 6100 and Polytron 7000 / 8100 with respective Dongle every 20 minutes
Orientation	NA
Gas doses limitation	NA
Special considerations	NA
Design	
Sensor Design	electrochemical, 3-electrodes, amperometric
Electrolyte	sealed aqueous acid
Material	
black sensor housing	polypropylene (PP)
gasket/ blue gasket	thermoplastic vulcanizate (TPV)
membrane	polytetrafluoroethylene (PTFE)
label	polyester
Filter	
Factory installed filter	Dust Filter 6809595
Optional Filter	none
Useful life	
Expected service life, in ambient air	> 3 years
Guarantee	1 year

Cross sensitivities

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm NO
Acetone	CH_3COCH_3	67-64-1	1000 ppm	≤ 1
Ammonia	NH_3	7664-41-7	50 ppm	≤ 0.2
Arsine	AsH_3	7784-42-1	5 ppm	≤ 15
Benzene	C_6H_6	71-43-2	0.6 % by vol	≤ 1
Butadiene	$CH_2CHCHCH_2$	106-99-0	50 ppm	≤ 5
Carbon disulfide	CS_2	75-15-0	15 ppm	≤ 1
Carbon monoxide	CO	630-08-0	1000 ppm	≤ 12
Diborane	B_2H_6	19287-45-7	5 ppm	≤ 8
Disilane	Si_2H_6	1590-87-0	10 ppm	≤ 30
Ethanol	C_2H_5OH	64-17-5	200 ppm	≤ 4
Ethene	C_2H_4	74-85-1	1000 ppm	≤ 3
Ethine (Acetylene)	C_2H_2	74-86-2	200 ppm	≤ 300
Ethyl mercaptan	C_2H_5SH	75-08-1	10 ppm	≤ 10
Ethylene oxide	C_2H_4O	75-21-8	30 ppm	≤ 0.1
Hydrogen	H_2	1333-74-0	1000 ppm	≤ 5
Hydrogen chloride	HCl	7647-01-0	40 ppm	≤ 1
Hydrogen cyanide	HCN	74-90-8	25 ppm	≤ 10
Hydrogen sulfide	H_2S	7783-06-4	20 ppm	50
Nitrogen dioxide	NO_2	10102-44-0	20 ppm	≤ 1
Octane	C_8H_{18}	111-65-9	0.4 % by vol	≤ 1
Phosgene	$COCl_2$	75-44-5	5 ppm	≤ 1
Phosphine	PH_3	7803-51-2	10 ppm	≤ 30
Propane	C_3H_8	74-98-6	1 % by Vol	≤ 1
i-Propanol	$(CH_3)_2CHOH$	67-63-0	500 ppm	≤ 0.1
Propene	CH_2CHCH_3	115-07-1	0.5 % by Vol	≤ 1
Silane	SiH_4	7803-62-5	5 ppm	≤ 15
Styrene	$C_6H_5CHCH_2$	100-42-5	30 ppm	≤ 8
Sulphuric acid	H_2SO_4	7664-93-9	20 ppm	≤ 15
Tetrahydrothiophene	C_4H_8S	110-01-0	5 ppm	≤ 1
Toluene	$C_6H_5CH_3$	108-88-3	0.6 % by vol	≤ 1
Trichlorethene	$CHClCCl_2$	79-01-6	1000 ppm	≤ 1
Xylene	$C_6H_4(CH_3)_2$	1330-20-7	0.5 % by Vol	≤ 10

Gases with negative cross sensitivity

Gases with negative cross sensitivity may displace a positive reading of the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Negative displayed value in ppm NO
Chlorine	Cl_2	7782-50-5	5 ppm	≤ 1

The following table shows gases and vapors where the effect of the applied concentration on the sensors is below the Lower Detection Limit or gases which will have no effect on the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm NO
Hydrogen	H_2	1333-74-0	5 % by vol	no effect

DrägerSensor NO_2 6809655

Intended Use

Electrochemical diffusion sensor for suitable Dräger transmitters. For monitoring the nitrogen dioxide (NO_2) concentration in ambient air.

Technical Data

Electrode reactions	
Measuring electrode	$NO_2 + 2\ H^+ + 2\ e^- \rightarrow NO + H_2O$
Counter electrode	$H_2O \rightarrow ½\ O_2 - Ad + 2\ H^+ + 2\ e^-$
Measuring Gas	NO_2
Repeatability / Accuracy	
Zero	≤ ± 0.1 ppm
sensitivity	≤ ± 5 % of measured value
Linearity tolerance	≤ ± 4 % of measured value
Effect of temperature	
Temperature conditions	-40°C to +65°C (-40°F to 150°F)
zero	≤ ± 0.01 ppm / K (–40 to 40 °C / –40 to 105 °F) ≤ ± 0.1 ppm / K (40 to 65 °C / 105 to 150 °F)
sensitivity	≤ ± 4 % of measured value
Effect of humidity	
Humidity conditions	5% to 95% relative humidity
zero	≤ ± 0.01 ppm / % r.h.
sensitivity	≤ ± 0.1 % of measured value / % r.h.
Effect of pressure	
zero	no effect
sensitivity	≤ ± 0.1 % of measured value / hPa
Effect of flow between 0 and 6 m/s	
zero	no effect
sensitivity	≤ ± 10 % of measured value
Drift during a month period	
zero	≤ ± 0.1 ppm
sensitivity	≤ ± 4 % of measured value
Range	
Max. measuring range	100 ppm
Default measuring range	10 ppm
Min. measuring range	5 ppm
Lower detection limit (LDL)	0.3 ppm
Display resolution	0.1 ppm
Zero clamping - capture range	± 0.2 ppm
Under range warning	-0.5 ppm
Under range fault	-1 ppm
Alarm thresholds	
A1 Alarm default	2 ppm
A2 Alarm default	4 ppm

Alarm response time	
on gas exposure with 5x alarm threshold, t0...20	≤ 5 sec.
on gas exposure with 1.6x alarm threshold, t0...63	≤ 15 sec.
Warm-up-time	
ready for operation after max.	5 minutes
ready for calibration after max.	60 minutes
Operation	
Periodical Sensor Self-Test	Polytron 5100 / 6100 and Polytron 7000 / 8100 with respective Dongle every 20 minutes
Orientation	NA
Gas doses limitation	NA
Special considerations	NA
Design	
Sensor Design	electrochemical, 3-electrodes, amperometric
Electrolyte	sealed aqueous acid
Material	
black sensor housing	polypropylene (PP)
gasket/ blue gasket	thermoplastic vulcanizate (TPV)
membrane	polytetrafluoroethylene (PTFE)
label	polyester
Filter	
Factory installed filter	Dust Filter 6809595
Optional Filter	none
Useful life	
Expected service life, in ambient air	> 1.5 years
Guarantee	1 year

Cross sensitivities

Gases with positive cross sensitivity

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm NO_2 without selective filter	Displayed value in ppm NO_2 with selective filter CF
Ammonia	NH_3	7664-41-7	200 ppm	≤ 0.5	≤ 0.5
Chlorine	Cl_2	7782-50-5	10 ppm	≤ 5	≤ 0.5

Gases with negative cross sensitivity

Gases with negative cross sensitivity may displace a positive reading of the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Negative displayed value in ppm NO_2 without selective filter	Negative displayed value in ppm NO_2 with selective filter CF
Acetaldehyde	CH_3CHO	75-07-0	500 ppm	≤ 1	≤ 0.5
Acetone	CH_3COCH_3	67-64-1	500 ppm	≤ 1	≤ 0.5
Arsine	AsH_3	7784-42-1	5 ppm	≤ 18	≤ 0.5
Boron trifluoride	BF_3	7637-07-2	15 ppm	≤ 0.6	≤ 0.6
Butadiene	$CH_2CHCHCH_2$	106-99-0	50 ppm	≤ 40	≤ 40
tert-Butyl mercaptan	$(CH_3)_3CSH$	75-66-1	5 ppm	≤ 3	no effect
Carbon monoxide	CO	630-08-0	100 ppm	≤ 0.5	≤ 0.5
Disilane	Si_2H_6	1590-87-0	10 ppm	≤ 45	≤ 1
Ethanol	C_2H_5OH	64-17-5	250 ppm	≤ 1	≤ 1
Ethene	C_2H_4	74-85-1	1000 ppm	≤ 3	≤ 3
Ethine (Acetylene)	C_2H_2	74-86-2	200 ppm	≤ 200	≤ 200
Hydrogen	H_2	1333-74-0	1 % by vol	≤ 10	≤ 10
Hydrogen cyanide	HCN	74-90-8	20 ppm	≤ 10	≤ 2
Hydrogen peroxide	H_2O_2	7722-84-1	1000 ppm	≤ 2	≤ 2
Hydrogen selenide	H_2Se	7783-07-5	5 ppm	≤ 2.5	≤ 0.5
Hydrogen sulfide	H_2S	7783-06-4	20 ppm	≤ 60	no effect
Phosphine	PH_3	7803-51-2	10 ppm	≤ 45	≤ 0.5
Propene	CH_2CHCH_3	115-07-1	50 ppm	≤ 0.5	≤ 0.5
n-Propyl mercaptane	$CH_3CH_2CH_2SH$	107-03-9	10 ppm	≤ 2.2	no effect
Styrene	$C_6H_5CHCH_2$	100-42-5	30 ppm	≤ 15	≤ 15
Sulfur dioxide	SO_2	7746-09-5	20 ppm	≤ 16	≤ 3
Toluene	$C_6H_5CH_3$	108-88-3	1 % by vol	≤ 1	≤ 1

The following table shows gases and vapors where the effect of the applied concentration on the sensors is below the Lower Detection Limit or gases which will have no effect on the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm NO_2 without selective filter	Displayed value in ppm NO_2 with selective filter CF
Acryl nitrile	H2C=CH–CN	107-13-1	80 ppm	no effect	no effect
Carbon dioxide	CO_2	124-38-9	5 % by vol	no effect	no effect
1.1 Dichloroethane	$C_2H_4Cl_2$	75-34-3	50 ppm	no effect	no effect
Diethyl amine	$(C_2H_5)_2NH$	124-40-3	100 ppm	no effect	no effect
Diethylether	$(C_2H_5)_2O$	60-29-7	400 ppm	no effect	no effect
Epichlorohydrin	$C_2H_3OCH_2Cl$	106-89-8	35 ppm	no effect	no effect
Ethylene oxide	C_2H_4O	75-21-8	20 ppm	no effect	no effect
Formaldehyde	HCHO	50-00-0	50 ppm	no effect	no effect
Hydrogen bromide	HBr	10035-10-6	100 ppm	no effect	no effect
Hydrogen fluoride	HF	7664-39-3	15 ppm	no effect	no effect
Methanol	CH_3OH	67-56-1	500 ppm	no effect	no effect
Methylamine	CH_3NH_2	74-89-5	100 ppm	no effect	no effect
Nitrogen monoxide	NO	10102-43-9	20 ppm	no effect	no effect
Nitrogen trifluoride	NF_3	7783-54-2	25 ppm	no effect	no effect
Propane	C_3H_8	74-98-6	1 % by vol	no effect	no effect
i-Propanol	$(CH_3)_2CHOH$	67-63-0	500 ppm	no effect	no effect
Tetrahydrofuran	C_4H_8O	109-99-9	60 ppm	no effect	no effect
Tetrahydrothiophene	C_4H_8S	110-01-0	5 ppm	no effect	no effect
Vinyl acetate	$CH_3COOCHCH_2$	108-05-4	30 ppm	no effect	no effect
Vinyl chloride	C_2H_3Cl	75-01-4	50 ppm	no effect	no effect

DrägerSensor NO_2 LC 6813205

Intended Use

Electrochemical diffusion sensor for suitable Dräger transmitters. For monitoring the nitrogen dioxide (NO_2) concentration in ambient air.

Technical Data

Electrode reactions	
Measuring electrode	$2\ NO_2 + 4\ H^+ + 4\ e^- \rightarrow 2\ NO + 2\ H_2O$
Counter electrode	$H_2O \rightarrow O_2 + 4\ H^+ + 4\ e^-$
Measuring Gas	NO_2
Repeatability / Accuracy	
Zero	≤ ± 0.02 ppm
sensitivity	≤ ± 5 % of measured value
Linearity tolerance	≤ ± 10 % of measured value
Effect of temperature	
Temperature conditions	-40°C to +65°C (-40°F to 150°F)
zero	≤ ± 0.03 ppm
sensitivity	≤ ± 0.2 % of measured value / K
Effect of humidity	
Humidity conditions	5% to 95% relative humidity
zero	≤ ± 0.0001 ppm / % r.h.
sensitivity	≤ ± 0.2 % of measured value / % r.h.
Effect of pressure	
zero	no effect
sensitivity	≤ ± 0.1 % of measured value / hPa
Effect of flow between 0 and 6 m/s	
zero	no effect
sensitivity	≤ ± 10 % of measured value
Drift during a month period	
zero	≤ ± 0.01 ppm
sensitivity	≤ ± 2 % of measured value
Range	
Max. measuring range	20 ppm
Default measuring range	20 ppm
Min. measuring range	1 ppm
Lower detection limit (LDL)	0.05 ppm
Display resolution	0.01 ppm
Zero clamping - capture range	± 0.05 ppm
Under range warning	-0.5 ppm
Under range fault	-1 ppm
Alarm thresholds	
A1 Alarm default	0.5 ppm
A2 Alarm default	1 ppm

Alarm response time	
on gas exposure with 5x alarm threshold, t0...20	≤ 5 sec.
on gas exposure with 1.6x alarm threshold, t0...63	≤ 15 sec.
Warm-up-time	
ready for operation after max.	5 minutes
ready for calibration after max.	60 minutes
Operation	
Periodical Sensor Self-Test	Polytron 5100 / 6100 and Polytron 7000 / 8100 with respective Dongle every 20 minutes
Orientation	NA
Gas doses limitation	NA
Special considerations	NA
Design	
Sensor Design	electrochemical, 3-electrodes, amperometric
Electrolyte	sealed aqueous acid
Material	
black sensor housing	polypropylene (PP)
gasket/ blue gasket	thermoplastic vulcanizate (TPV)
membrane	polytetrafluoroethylene (PTFE)
label	polyester
Filter	
Factory installed filter	Dust Filter 6809595
Optional Filter	none
Useful life	
Expected service life, in ambient air	> 2 years
Guarantee	1 year

Cross sensitivities

Gases with positive cross sensitivity

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm NO_2 with dust filter
Chlorine	Cl_2	7782-50-5	0.5 ppm	≤ 0.5
Chlorine dioxide	ClO_2	10049-04-4	1 ppm	≤ 0.7
Nitrogen monoxide	NO	10102-43-9	20 ppm	≤ 0.4
Ozone	O_3	10028-15-6	0,5 ppm	≤ 0.5
Hydrogen cyanide	HCN	74-90-8	50 ppm	≤ 0.2

Gases with negative cross sensitivity

Gases with negative cross sensitivity may displace a positive reading of the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Negative displayed value in ppm NO_2 with dust filter
Hydrogen sulfide	H_2S	7783-06-04	20,9 ppm	≤ 1.8
Sulfur dioxide	SO_2	7446-09-05	20 ppm	≤ 0.8
Ammonia	NH_3	7664-41-7	50 ppm	≤ 0.08

The following table shows gases and vapors where the effect of the applied concentration on the sensors is below the Lower Detection Limit or gases which will have no effect on the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm NO_2 with dust filter
Arsine	AsH_3	7784-42-1	0.5 ppm	no effect
Carbon monoxide	CO	630-08-0	5060 ppm	no effect
Carbon dioxide	CO_2	124-38-9	1,5 % by vol.	no effect
Ethine	C_2H_2	74-86-2	1 % by vol.	no effect
Ethan	C_2H_6	74-84-0	0,1 % by vol.	no effect
Ethanol	C_2H_5OH	64-17-5	250 ppm	no effect
Hydrazine	N_2H_4	302-01-2	0,5 ppm	no effect
Hydrogen	H_2	1333-74-0	1 000 ppm	no effect
Hydrogen chloride	HCl	7647-01-0	5 ppm	no effect
Methane	CH_4	74-82-8	4 % by vol.	no effect
Phosphine	PH_3	7803-51-2	1,2 ppm	no effect
Propane	C_3H_8	74-98-6	1 % by vol.	no effect

DrägerSensor N_2H_4 6810180

Intended Use

Electrochemical diffusion sensor for suitable Dräger transmitters. For monitoring the hydrazine (N_2H_4), monomethyl hydrazine (MMH) and dimethyl hydrazine (UDMH) concentration in the ambient air.

Technical Data

Electrode reactions	
Measuring electrode	$N_2H_4 \rightarrow N_2 + 4\ H^+ + 4\ e^-$
Counter electrode	$O_2 + 4\ H^+ + 4\ e^- \rightarrow 2\ H_2O$
Measuring Gas	N_2H_4
Repeatability / Accuracy	
Zero	≤ ± 0.02 ppm
sensitivity	≤ ± 5 % of measured value
Linearity tolerance	≤ ± 5 % of measured value
Effect of temperature	
Temperature conditions	-20°C to +65°C (-5°F to 150°F)
zero	≤ ± 0.03 ppm
sensitivity	≤ ± 0.2 % of measured value / K
Effect of humidity	
Humidity conditions	5% to 95% relative humidity
zero	≤ ± 0.001 ppm / % r.h.
sensitivity	≤ ± 0.2 % of measured value / % r.h.
Effect of pressure	
zero	no effect
sensitivity	≤ ± 0.1 % of measured value / hPa
Effect of flow between 0 and 6 m/s	
zero	no effect
sensitivity	≤ ± 10 % of measured value
Drift during a month period	
zero	≤ ± 0.01 ppm
sensitivity	≤ ± 2 % of measured value
Range	
Max. measuring range	5 ppm
Default measuring range	1 ppm
Min. measuring range	0.3 ppm
Lower detection limit (LDL)	0.02 ppm
Display resolution	0.01 ppm
Zero clamping - capture range	± 0.05 ppm
Under range warning	-0.1 ppm
Under range fault	-0.2 ppm
Alarm thresholds	
A1 Alarm default	0.1 ppm
A2 Alarm default	0.2 ppm

Alarm response time	
on gas exposure with 5x alarm threshold, t0...20	≤ 30 sec.
on gas exposure with 1.6x alarm threshold, t0...63	≤ 60 sec.
Warm-up-time	
ready for operation after max.	15 minutes
ready for calibration after max.	90 minutes
Operation	
Periodical Sensor Self-Test	Polytron 5100 / 6100 and Polytron 7000 / 8100 with respective Dongle every 20 minutes
Orientation	NA
Gas doses limitation	NA
Special considerations	NA
Design	
Sensor Design	electrochemical, 3-electrodes, amperometric
Electrolyte	sealed aqueous acid
Material	
black sensor housing	polypropylene (PP)
gasket/ blue gasket	thermoplastic vulcanizate (TPV)
membrane	polytetrafluoroethylene (PTFE)
label	polyester
Filter	
Factory installed filter	Dust Filter 6812224
Optional Filter	none
Useful life	
Expected service life, in ambient air	> 1 year
Guarantee	0.5 years

Cross-calibration and surrogate gas

The DrägerSensor N_2H_4 can be used for detection of the gases and vapors listed in the table below.

Gas / Vapor	Chemical formula	CAS number	Default measuring range [ppm]	minimum measuring range [ppm]	maximum measuring range [ppm]	lower detection limit [ppm]	relative sensitivity
Hydrazine	N_2H_4	302-01-2	1	0.3	5	0.02	1.0
Monomethyl hydrazine MMH	$CH_3NH\text{-}NH_2$	60-34-4	1	1	5	0.02	0.6
Dimethyl hydrazine UDMH	$(CH_3)_2N\text{-}NH_2$	57-14-7	1	1	5	0.02	0.6

Cross sensitivities

Gases with positive cross sensitivity

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm N_2H_4
Acetone	CH_3COCH_3	67-64-1	1000 ppm	≤ 0.01
Ammonia	NH_3	7664-41-7	250 ppm	≤ 2.5
Carbon monoxide	CO	630-08-0	1000 ppm	≤ 0.01
Ethanol	C_2H_5OH	64-17-5	130 ppm	≤ 0.01
Ethene	C_2H_4	74-85-1	20 ppm	≤ 0.01
Hydrogen	H_2	1333-74-0	1000 ppm	≤ 0.01
Hydrogen sulfide	H_2S	7783-06-4	20 ppm	≤ 0.25
Nitrogen dioxide	NO_2	10102-44-0	20 ppm	≤ 0.05
Nitrogen monoxide	NO	10102-43-9	25 ppm	≤ 0.05
i-Propanol	$(CH_3)_2CHOH$	67-63-0	1000 ppm	≤ 0.01
Sulfur dioxide	SO_2	7446-09-5	10 ppm	≤ 0.01

Gases with negative cross sensitivity

Gases with negative cross sensitivity may displace a positive reading of the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Negative displayed value in ppm N_2H_4
Chlorine	Cl_2	7782-50-5	10 ppm	≤ 0.1

The following table shows gases and vapors where the effect of the applied concentration on the sensors is below the Lower Detection Limit or gases which will have no effect on the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm N_2H_4
Carbon dioxide	CO_2	124-38-9	1.5 % by vol	no effect
Methane	CH_4	74-82-8	3 % by vol	no effect
Propane	C_3H_8	74-98-6	1.5 % by vol	no effect

DrägerSensor O_2 6809720

Intended Use

Electrochemical diffusion sensor for suitable Dräger transmitters. For monitoring the concentration of oxygen (O_2) in the ambient air.

Technical Data

Electrode reactions	
Measuring electrode	$O_2 + 2\ H_2O + 4\ e^- \rightarrow 4\ OH^-$
Counter electrode	$2\ Pb \rightarrow 2\ Pb^{2+} + 4\ e^-$
Measuring Gas	O_2
Repeatability / Accuracy	
Zero	≤ ± 0.2 % by Vol.
sensitivity	≤ ± 2 % of measured value
Linearity tolerance	≤ ± 0.2 % by Vol. (0 to 25 % by vol.) ≤ ± 5 % of measured value (25 to 100 % by vol.)
Effect of temperature	
Temperature conditions	-20°C to +40°C (-5°F to 105°F)
zero	≤ ± 0.01 % by Vol. / K
sensitivity	≤ ± 0.3 % of measured value / K (–20 to 0 °C / –5 to 32 °F) ≤ ± 0.2 % of measured value / K (0 to 40 °C / 32 to 105 °F)
Effect of humidity	
Humidity conditions	10% to 95% relative humidity
zero	≤ ± 0.002 % by vol. / r.h.
sensitivity	≤ ± 0.1 % of measured value / % r.h.
Effect of pressure	
zero	≤ ± 0.002 % by vol. / hPa
sensitivity	≤ ± 0.1 % of measured value / hPa
Effect of flow between 0 and 6 m/s	
zero	no effect
sensitivity	≤ ± 1 % of measured value
Drift during a month period	
zero	no effect
sensitivity	≤ ± 3 % of measured value
Range	
Max. measuring range	100 Vol. %
Default measuring range	25 Vol. %
Min. measuring range	5 Vol %
Lower detection limit (LDL)	4000 ppm
Display resolution	1000 ppm
Zero clamping - capture range	± 1250 ppm
Under range warning	-6250 ppm
Under range fault	-12500 ppm
Alarm thresholds	
A1 Alarm default	19 Vol. %
A2 Alarm default	23 Vol. %

Alarm response time	
on gas exposure with 5x alarm threshold, t0...20	≤ 10 sec.
on gas exposure with 1.6x alarm threshold, t0...63	≤ 20 sec.
Warm-up-time	
ready for operation after max.	20 minutes
ready for calibration after max.	30 minutes
Operation	
Periodical Sensor Self-Test	Polytron 5100 and Polytron 7000 / 8100 with respective Dongle every 10 minutes
Orientation	NA
Gas doses limitation	400 000 Vol% x h. at 24°C 260 000 Vol% x h. at 40°C
Special considerations	s. below
Design	
Sensor Design	electrochemical, 3-electrodes, galvanic cell
Electrolyte	aqueous solution of potassium hydroxide
Material	
black sensor housing	polypropylene (PP)
gasket/ blue gasket	thermoplastic vulcanizate (TPV)
membrane	polytetrafluoroethylene (PTFE)
label	polyester
Filter	
Factory installed filter	Dust Filter 6809595
Optional Filter	none
Useful life	
Expected service life, in ambient air	> 1.5 years
Guarantee	1 year

Caution
Acidic gas concentration > 1 % by vol. may result in increased sensor drifts. In this event calibration intervals should be reduced. The service life of the sensor is reduced proportionately to the period of exposure to and concentration of the acid gases (e.g. service life in atmospheres containing CO_2: 5000 % by vol. CO_2 x hours).

Organic solvents such as acetone, propanol etc. dissolve in the plastic components of the sensor. If such substances are present in concentrations > 1 % by vol. over several days, sensor drifts may occur, requiring shorter calibration intervals. This does not influence the service life of the sensor.

Cross sensitivities

No cross-sensitivity with respect to toxic gases in a range of up to 100 ppm.
For gases with a concentration beyond 1 % by vol.: see table.
The effect of O2 displacement is not considered in this table (partial pressure measurement).

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Deviation from measured value in % O_2 by vol.
Acetone	CH_3COCH_3	67-64-1	1 % by vol.	≤ 0.1
Carbon dioxide	CO_2	124-38-9	5 % by vol.	≤ 0.1
Carbon monoxide	CO	630-08-0	1 % by vol.	≤ 0.1
Ethan	C_2H_6	74-84-0	10 % by vol.	≤ 0.1
Ethanol	C_2H_5OH	64-17-5	1 % by vol.	≤ 0.1
Ethene	C_2H_4	74-85-1	5 % by vol.	≤ 0.1
Ethine (Acetylene)	C_2H_2	74-86-2	2 % by vol.	≤ 0.1
Hydrogen	H_2	1333-74-0	10 % by vol.	≤ 0.1
Methane	CH_4	74-82-8	10 % by vol.	≤ 0.1
Methanol	CH_3OH	67-56-1	1 % by vol.	≤ 0.1
Propane	C_3H_8	74-98-6	5 % by vol.	≤ 0.1

DrägerSensor O2 LS 6809630

Intended Use

Electrochemical diffusion sensor for suitable Dräger transmitters. For monitoring the displacement of oxygen (O_2) by nitrogen in the ambient air. The sensor can also be used to monitor oxygen displacement through the presence of helium. To do this, the gas type O2He must be selected in the suitable transmitter (see instructions for use of the transmitter).

Technical Data

Electrode reactions	
Measuring electrode	$O_2 + 4\ H^+ + 4\ e^- \rightarrow 2\ H_2O$
Counter electrode	$2\ H_2O \rightarrow O_2 + 4\ H^+ + 4\ e^-$
Measuring Gas	O_2
Repeatability / Accuracy	
Zero	≤ ± 0.1 % by Vol.
sensitivity	≤ ± 1 % of measured value
Linearity tolerance	≤ ± 0.3 % by Vol.
Effect of temperature	
Temperature conditions	-40°C to +65°C (-40°F to 150°F)
zero	≤ ± 0.02 % by Vol. / K
sensitivity	≤ ± 0.1 % of measured value / K
Effect of humidity	
Humidity conditions	5% to 95% relative humidity
zero	No effect
sensitivity	≤ ± 0.1 % of measured value / % r.h.
Effect of pressure	
zero	no effect
sensitivity	≤ ± 0.1 % of measured value / hPa
Effect of flow between 0 and 6 m/s	
zero	no effect
sensitivity	≤ ± 1 % of measured value
Drift during a month period	
zero	no effect
sensitivity	≤ ± 0.5 % of measured value
Range	
Max. measuring range	25 Vol. %
Default measuring range	25 Vol. %
Min. measuring range	5 Vol %
Lower detection limit (LDL)	5000 ppm
Display resolution	1000 ppm
Zero clamping - capture range	± 2.500 ppm
Under range warning	-6250 ppm
Under range fault	-12500 ppm
Alarm thresholds	
A1 Alarm default	19 Vol. %
A2 Alarm default	23 Vol. %

Alarm response time	
on gas exposure with 5x alarm threshold, t0...20	≤ 5 sec.
on gas exposure with 1.6x alarm threshold, t0...63	≤ 15 sec.
Warm-up-time	
ready for operation after max.	90 minutes
ready for calibration after max.	360 minutes
Operation	
Periodical Sensor Self-Test	Polytron 5100 / 6100 and Polytron 7000 / 8100 with respective Dongle every 20 minutes
Orientation	NA
Gas doses limitation	NA
Special considerations	NA
Design	
Sensor Design	electrochemical, 3-electrodes, amperometric
Electrolyte	sealed aqueous acid
Material	
black sensor housing	polypropylene (PP)
gasket/ blue gasket	thermoplastic vulcanizate (TPV)
membrane	polytetrafluoroethylene (PTFE)
label	polyester
Filter	
Factory installed filter	Dust Filter 6809595
Optional Filter	none
Useful life	
Expected service life, in ambient air	> 3 years
Guarantee	1 year

Caution:
The sensor gets irreversible harmed when exposed to high or permanent concentrations (dosage approx. 100,000 ppm x hours) of unsaturated hydrocarbons, alcohols or hydrogen.

Cross sensitivities

The effect of oxygen displacement is not considered in this table.
Example:
with 2% ethene by vol. in air – deviation of measured value on account of cross sensitivity (value from table) = –1% O_2 by vol.
O_2 displacement by 2% ethene by vol. (2% of 20% O_2 by vol.) = –0.4% O_2 by vol.
Reading of the Dräger transmitter (20.9 – 1 – 0.4) = 19.5% O_2 by vol.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Deviation from measured value with dust filter
Carbon monoxide	CO	630-08-0	100 ppm	≤ 0,1 (-)*
Diethylether	$(C_2H_5)_2O$	60-29-7	400 ppm	≤ 0,1 (-)*
Ethene	C_2H_4	74-85-1	2 % by vol	≤ 1 (-)*
Ethine (Acetylene)	C_2H_2	74-86-2	1 % by vol	≤ 0,5 (-)*
Ethylene oxide	C_2H_4O	75-21-8	20 ppm	≤ 2 (-)*
Hydrogen	H_2	1333-74-0	1 % by vol	≤ 1,5 (-)*
Propylene	CH_3CHCH_2	115-07-1	50 ppm	≤ 0,2 (-)*

The following table shows gases and vapors where the effect of the applied concentration on the sensors is below the Lower Detection Limit or gases which will definitely have no effect on the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Deviation from measured value with dust filter
Acetaldehyde	CH_3CHO	75-07-0	50 ppm	no effect
Acryl nitrile	H2C=CH–CN	107-13-1	80 ppm	no effect
Ammonia	NH_3	7664-41-7	50 ppm	no effect
Arsine	AsH_3	7784-42-1	3 ppm	no effect
Butadiene	$CH_2CHCHCH_2$	106-99-0	50 ppm	no effect
tert-Butyl mercaptan	$(CH_3)_3CSH$	75-66-1	4 ppm	no effect
Carbon dioxide	CO_2	124-38-9	5 % by vol	no effect
Chlorine	Cl_2	7782-50-5	8 ppm	no effect
Diborane	B_2H_6	19287-45-7	5 ppm	no effect
1,1 Dichloroethane	$C_2H_4Cl_2$	75-34-3	50 ppm	no effect
Diethylamine	$(C_2H_5)_2NH$	109-89-7	100 ppm	no effect
Epichlorohydrin	$C_2H_3OCH_2Cl$	106-89-8	35 ppm	no effect
Ethanol	C_2H_5OH	64-17-5	250 ppm	no effect
Formaldehyde	HCHO	50-00-0	40 ppm	no effect
Hydrogen chloride	HCl	7647-01-0	20 ppm	no effect
Hydrogen cyanide	HCN	74-90-8	20 ppm	no effect
Hydrogen fluoride	HF	7664-39-3	15 ppm	no effect
Hydrogen peroxide	H_2O_2	7722-84-1	5 ppm	no effect
Hydrogen selenide	SeH_2	7783-07-5	5 ppm	no effect
Hydrogen sulfide	H_2S	7783-06-4	20 ppm	no effect
Methylamine	CH_3NH_2	74-89-5	100 ppm	no effect
Methyl methacrylate	$CH_2CH(CH_3)COOCH_3$	80-62-6	50 ppm	no effect
Nitrogen dioxide	NO_2	10102-44-0	50 ppm	no effect
Nitrogen monoxide	NO	10102-43-9	20 ppm	no effect
Phosgene	$COCl_2$	75-44-5	1 ppm	no effect
Phosphine	PH_3	7803-51-2	10 ppm	no effect
i-Propanol	$(CH_3)_2CHOH$	67-63-0	500 ppm	no effect
Silane	SiH_4	7803-62-5	5 ppm	no effect
Styrene	$C_6H_5CH_3$	100-42-5	30 ppm	no effect
Sulfur dioxide	SO_2	7446-09-5	20 ppm	no effect
Tetrahydrofurane	C_4H_8O	109-99-9	60 ppm	no effect
Tetrahydrothiophene	C_4H_8S	110-01-0	5 ppm	no effect
Vinyl chloride	C_2H_3Cl	75-01-4	50 ppm	no effect

DrägerSensor OV 1 6810740

Intended Use

Electrochemical diffusion sensor for suitable Dräger transmitters. For monitoring the ethylene oxide (EO), propylene oxide (PO), methanol (MeOH), ethanol (EtOH), isopropanol (IPA), acetylene (C_2H_2), ethene (C_2H_4), propene (C3H6), butadiene (BTD), formaldehyde (FYDE), acetaldehyde (Aald), diethyl ether (Et_2O), tetrahydrofuran (THF), vinyl acetate (VAc) and vinyl chloride (VC) concentration in ambient air, especially for the detection of leaks. The sensor is not suitable for monitoring limit values below the twofold detection limit.

Technical Data

Electrode reactions	
Measuring electrode	$C_2H_4O + 3\ H_2O \rightarrow 2\ CO_2 + 10\ H^+ + 10\ e^-$ (shown for ethylene oxide C_2H_4O)
Counter electrode	$5/2\ O_2 + 10\ H^+ + 10\ e^- \rightarrow 5\ H_2O$
Measuring Gas	C_2H_4O
Repeatability / Accuracy	
Zero	≤ ± 2 ppm
sensitivity	≤ ± 5 % of measured value
Linearity tolerance	≤ ± 5 % of measured value
Effect of temperature	
Temperature conditions	-20°C to +65°C (-50°F to 150°F)
zero	± 0.1 ppm / K (–20 to 40 °C / –5 to 105 °F) ± 1 ppm / K (40 to 65 °C / 105 to 150 °F)
sensitivity	≤ ± 1 % of measured value / K
Effect of humidity	
Humidity conditions	5% to 95% relative humidity
zero	± 0.01 ppm / % r.h.
sensitivity	≤ ± 0.1 % of measured value / % r.h.
Effect of pressure	
zero	no effect
sensitivity	≤ ± 0.1 % of measured value / hPa
Effect of flow between 0 and 6 m/s	
zero	no effect
sensitivity	≤ ± 10 % of measured value
Drift during a month period	
zero	± 1 ppm
sensitivity	≤ ± 5 % of measured value
Range	
Max. measuring range	200 ppm
Default measuring range	50 ppm
Min. measuring range	20 ppm
Lower detection limit (LDL)	5 ppm
Display resolution	0.5 ppm
Zero clamping - capture range	± 0.5 ppm ± 2 ppm EtOH, IPA, Aald
Under range warning	-2.5 ppm
Under range fault	-5 ppm
Alarm thresholds	
A1 Alarm default	10 ppm (for EO)
A2 Alarm default	20 ppm (for EO)

Alarm response time	
on gas exposure with 5x alarm threshold, t0...20	≤ 40 sec.
on gas exposure with 1.6x alarm threshold, t0...63	≤ 100 sec.
Warm-up-time	
ready for operation after max.	120 minutes
ready for calibration after max.	1440 minutes
Operation	
Periodical Sensor Self-Test	Polytron 5100 / 6100 and Polytron 7000 / 8100 with respective Dongle every 20 minutes
Orientation	NA
Gas doses limitation	recommended preferably for leak detection; polymerizing gases can clog the membrane, restricting excess of gas
Special considerations	slow recovery from exposure with some vapors; not suitable for permanent gas exposure
Design	
Sensor Design	electrochemical, 3-electrodes, amperometric
Electrolyte	sealed aqueous acid
Material	
black sensor housing	polypropylene (PP)
gasket/ blue gasket	thermoplastic vulcanizate (TPV)
membrane	polytetrafluoroethylene (PTFE)
label	polyester
Filter	
Factory installed filter	Dust Filter 6809595
Optional Filter	none
Useful life	
Expected service life, in ambient air	> 2 years
Guarantee	1 year

Cross-calibration and surrogate gas

The DrägerSensor OV1 can be used for detection of the gases and vapors listed in the table below.

Gas / Vapor	Chemical formula	CAS number	Default measuring range [ppm]	minimum measuring range [ppm]	maximum measuring range [ppm]	lower detection limit [ppm]	relative sensitivity
Acetaldehyde Aald	CH_3CHO	75-07-0	100	50	200	10	0.3
Acetylene (Ethine)	C_2H_2	74-86-2	50	20	100	5.0	1.1
Butadiene BTD	$CH_2CHCHCH_2$	106-99-0	50	20	200	5.0	1.2
Carbon monoxide*	CO	630-08-0	300	30	1000	5.0	0.55
Diethylether Et2O	$(C_2H_5)_2O$	60-29-7	50	50	200	10	0.5
Ethanol EtOH	C_2H_5OH	64-17-5	50	20	200	10	0.6
Ethene	C_2H_4	74-85-1	50	20	100	5.0	1.3
Ethylene oxide EO	C_2H_4O	75-21-8	50	20	200	5.0	1.0
Formaldehyde FYDE	HCHO	50-00-0	50	20	100	5.0	1.0
Iso-Propanol IPA	$(CH_3)_2CHOH$	67-63-0	200	100	300	10	0.3
Methanol MeOH	CH_3OH	67-56-1	50	20	200	5.0	1.2
Propylene (Propene)	C_3H_6	115-07-1	50	30	100	5.0	0.7
Propylene oxide PO	C_3H_6O	75-56-9	50	20	200	5.0	0.8
Tetrahydrofuran THF	C_4H_8O	109-99-9	50	30	200	5.0	0.75
Vinyl acetate VAc	$CH_3COOC_2H_3$	108-05-4	50	20	100	5.0	0.8
Vinyl chloride VC	C_2H_3Cl	75-01-4	50	20	100	5.0	0.8

*For surrogate calibration only.

Cross sensitivities

s. DrägerSensor OV 2

DrägerSensor OV 2 6810745

Intended Use

Electrochemical diffusion sensor for suitable Dräger transmitters. For monitoring the ethylene oxide (EO), epichlorohydrin (ECH), styrene (Styr), acrylonitrile (ACN) and methyl methacrylate (MMA) concentration in ambient air, especially for the detection of leaks. The sensor is not suitable for monitoring limit values below the twofold detection limit.

Technical Data

Electrode reactions	
Measuring electrode	$C_2H_4O + 3\ H_2O \rightarrow 2\ CO_2 + 10\ H^+ + 10\ e^-$ (shown for ethylene oxide C_2H_4O)
Counter electrode	$5/2\ O_2 + 10\ H^+ + 10\ e^- \rightarrow 5\ H_2O$
Measuring Gas	C_2H_4O
Repeatability / Accuracy	
Zero	≤ ± 2 ppm
sensitivity	≤ ± 5 % of measured value
Linearity tolerance	≤ ± 5 % of measured value
Effect of temperature	
Temperature conditions	-20°C to +65°C (-50°F to 150°F)
zero	± 0.1 ppm / K (–20 to 40 °C / –5 to 105 °F) ± 1 ppm / K (40 to 65 °C / 105 to 150 °F)
sensitivity	≤ ± 1 % of measured value / K
Effect of humidity	
Humidity conditions	5% to 95% relative humidity
zero	± 0.01 ppm / % r.h.
sensitivity	≤ ± 0.1 % of measured value / % r.h.
Effect of pressure	
zero	no effect
sensitivity	≤ ± 0.1 % of measured value / hPa
Effect of flow between 0 and 6 m/s	
zero	no effect
sensitivity	≤ ± 10 % of measured value
Drift during a month period	
zero	± 1 ppm
sensitivity	≤ ± 5 % of measured value
Range	
Max. measuring range	200 ppm
Default measuring range	50 ppm
Min. measuring range	20 ppm
Lower detection limit (LDL)	5 ppm
Display resolution	1 ppm
Zero clamping - capture range	± 1
Under range warning	-2.5 ppm
Under range fault	-5 ppm
Alarm thresholds	
A1 Alarm default	10 ppm (for EO)
A2 Alarm default	20 ppm (for EO)

Alarm response time	
on gas exposure with 5x alarm threshold, t0...20	≤ 20 sec.
on gas exposure with 1.6x alarm threshold, t0...63	≤ 45 sec.
Warm-up-time	
ready for operation after max.	120 minutes
ready for calibration after max.	1440 minutes
Operation	
Periodical Sensor Self-Test	Polytron 5100 / 6100 and Polytron 7000 / 8100 with respective Dongle every 20 minutes
Orientation	NA
Gas doses limitation	recommended preferably for leak detection; polymerizing gases can clog the membrane, restricting excess of gas
Special considerations	slow recovery from exposure with some vapors; not suitable for permanent gas exposure
Design	
Sensor Design	electrochemical, 3-electrodes, amperometric
Electrolyte	sealed aqueous acid
Material	
black sensor housing	polypropylene (PP)
gasket/ blue gasket	thermoplastic vulcanizate (TPV)
membrane	polytetrafluoroethylene (PTFE)
label	polyester
Filter	
Factory installed filter	Dust Filter 6809595
Optional Filter	none
Useful life	
Expected service life, in ambient air	> 1 year
Guarantee	1 year

Cross-calibration and surrogate gas

The DrägerSensor OV2 can be used for detection of the gases and vapors listed in the table below.

Gas / Vapor	Chemical formula	CAS number	Default measuring range [ppm]	minimum measuring range [ppm]	maximum measuring range [ppm]	lower detection limit [ppm]	relative sensitivity
Ethylene oxide EO	C_2H_4O	75-21-8	50	20	200	5.0	1.0
Epichlorohydrin ECH	$C_2H_3OCH_2Cl$	106-89-8	50	20	100	5.0	0.45
Epichlorohydrin Styr	$C_6H_5CHCH_2$	100-42-5	50	20	100	5.0	0.5
Acrylonitrile ACN	CH_2CHCN	107-13-1	50	20	100	5.0	0.2
Methyl methacrylate MMA	$CH_2C(CH_3)COOCH_3$	80-62-6	50	20	100	5.0	0.5
Carbon monoxide*	CO	630-08-0	300	30	1000	5.0	0.55

Calibration groups:

Displayed name[1]	Gas / Vapor	Chemical formula	CAS[2] number	Calibration Group 6809615	Calibration Group 6810740	Calibration Group 6810745
EO	Ethylene oxide	C_2H_4O	75-21-8	A	A	A
PO	Propylene oxide	C_3H_6O	75-56-9	A	A	
MeOH	Methanol	CH_3OH	67-56-1	A	A	
EtOH	Ethanol	C_2H_5OH	64-17-5	A	A	
PrOH	iso-Propanol	$(CH_3)_2CHOH$	67-63-0	A	A	
C2H4	Ethylene (Ethene)	C_2H_4	74-85-1	A	A	
C3H6	Propylene (Propene)	C_3H_6	115-07-1	A	A	
BTD	Butadiene	$CH_2CHCHCH_2$	106-99-0	A	A	
FYDE (HCHO)	Formaldehyde	HCHO	50-00-0	A	A	
Aald	Acetaldehyde	CH_3CHO	75-07-0	A	A	
VAc	Vinyl acetate	$CH_3COOC_2H_3$	108-05-4	A	A	
VC	Vinyl chloride	C_2H_3Cl	75-01-4	A	A	
C2H2	Acetylene (Ethine)	C_2H_2	74-86-2	B	B	
Et20	Diethylether	$(C_2H_5)_2O$	60-29-7	C	C	
THF	Tetrahydrofuran	C_4H_8O	109-99-9	D	D	
ECH (CIPO)	Epichlorohydrin	$C_2H_3OCH_2Cl$	106-89-8	A		A
Styr	Styrene	$C_6H_5CHCH_2$	100-42-5	E		A
ACN	Acrylonitrile	CH_2CHCN	107-13-1			A
MMA	Methyl methacrylate	$CH_2C(CH_3)COOCH_3$	80-62-6			A
CO	Carbon monoxide	CO	630-08-0	A	A	A

Cross sensitivities

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm C_2H_4O
Carbon monoxide	CO	630-08-0	100 ppm	≤ 55
Hydrogen	H_2	1333-74-0	1 000 ppm	≤10
Hydrogen cyanide	HCN	74-90-8	20 ppm	≤ 20
Hydrogen selenide	H_2Se	7783-07-5	5 ppm	≤ 5
Hydrogen sulfide	H_2S	7783-06-4	20 ppm	≤ 44
Nitrogen dioxide	NO_2	10102-44-0	50 ppm	≤ 5
Nitrogen monoxide	NO	10102-43-9	20 ppm	≤17
Sulfur dioxide	SO_2	7446-09-05	20 ppm	≤10
Acrolein	CH_2=CHCHO	107-02-8	100 ppm	≤ 140
Acetone cyanohydrin ACN	$CH_3C(CH_3)$OHCN	75-86-5	100 ppm	≤ 7
Acrylic acid	CH_2=CHCOOH	79-10-7	100 ppm	≤ 10
Allyl acetate	$CH_3COOCH_2CH=CH_2$	591-87-7	100 ppm	≤ 100
Allyl alcohol	CH_2=$CHCH_2OH$	107-18-6	100 ppm	≤ 100
Allyl amine	CH_2=$CHCH_2NH_2$	107-11-9	100 ppm	≤ 70
Allyl bromide	CH_2=$CHCH_2Br$	106-95-6	100 ppm	≤ 15
Allyl chloride	CH_2=$CHCH_2Cl$	107-05-1	100 ppm	≤ 30
Allyl glycidyl ether	CH_2=$CHCH_2OCH_2C_2H_3O$	106-92-3	100 ppm	≤ 40
i-Amyl alcohol	$(CH_3)_2CHC_2H_4OH$	123-51-3	100 ppm	≤ 60
n-Amyl alcohol	$C_5H_{11}OH$	71-41-0	100 ppm	≤ 30
n-Butanol	C_4H_9OH	71-36-3	100 ppm	≤ 65
2-Butenal	$CH_3CH=CHCHO$	123-73-9	100 ppm	≤ 140
2-Butoxyethanol	$C_4H_9OC_2H_4OH$	111-76-2	100 ppm	≤ 65
i-Butyl acrylate	CH_2=$CHCOOC_4H_9$	106-63-8	100 ppm	≤ 15
n-Butyl acrylate	CH_2=$CHCOOC_4H_9$	141-32-2	100 ppm	≤ 15
Butylene oxide	C_4H_8O	106-88-7	100 ppm	≤ 40
i-Butyl aldehyde	$(CH_3)_2CHCHO$	78-84-2	100 ppm	≤ 15
n-Butyl aldehyde	C_3H_7CHO	123-72-8	100 ppm	≤ 15
t-Butyl peroxide	$C_8H_{18}O_2$	110-05-4	200 ppm	≤ 40
1-Chloro-2-butylene	$CH_3CH=CHCH_2Cl$	591-97-9	100 ppm	≤ 15
2-Choroethanol	C2H5ClO	107-07-3	20 ppm	≤ 40
Chloroprene	C_4H_5Cl	126-99-8	40 ppm	≤ 30
Cyclopentadiene	C_5H_6	542-92-7	100 ppm	≤ 70
Diethylenglycol	$C_4H_{10}O_3$	111-46-6	30 ppm	≤ 6
Dimethylcarbonat	$C3H_6O_3$	616-38-6	660 ppm	≤ 3
Dimethyl disulfide	$(CH_3)_2S_2$	624-92-0	50 ppm	≤ 65
Dimethyl ether	$(CH_3)_2O$	115-10-6	1000 ppm	≤ 15
Dimethyl sulfide	$(CH_3)_2S$	75-18-3	50 ppm	≤ 40
1,3,Dichlorpropene	$C_3H_4Cl_2$	542-75-6	200 ppm	≤ 18
1.3-Dioxolan	$(CH_2)_3O_2$	646-06-0	100 ppm	≤ 200
Ethyl acrylate	CH_2=$CHCOOC_2H_5$	140-88-5	100 ppm	≤ 15
Ethyl format	$HCOOC_2H_5$	109-94-4	100 ppm	≤ 40
Ethyl methacrylate	CH_2=$C(CH_3)COOC_2H_5$	97-63-2	100 ppm	≤ 20
Ethylmethylcarbonat	$C_4H_8O_3$	623-53-0	400 ppm	≤ 5
Ethyl vinyl ether	CH_2=$CHOC_2H_5$	109-92-2	100 ppm	≤ 50

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm C_2H_4O
Furan	$(CH)_4O$	110-00-9	100 ppm	≤ 40
Furan aldehyde	C_4H_3OCHO	98-01-1	100 ppm	≤ 30
Furfuryl alcohol	$C_4H_3OCH_2OH$	98-00-0	100 ppm	≤ 35
1-Heptene	$C_5H_{11}CH=CH_2$	592-76-7	100 ppm	≤ 15
Hexamethyl disiloxane	$(CH_3)_3Si\text{-}O\text{-}Si(CH_3)_3$	107-46-0	100 ppm	≤ 95
1-Hexene	$C_4H_9CH=CH_2$	592-41-6	100 ppm	≤ 15
Mesityl oxide	$(CH_3)_2C=CHCOCH_3$	141-79-7	100 ppm	≤ 60
Methacrolein	C_4H_6O	78-85-3	50 ppm	≤ 60
Methanethiol	CH_3SH	74-93-1	50 ppm	≤75
Methyl acrylate	$CH_2=CHCOOCH_3$	96-33-3	100 ppm	≤ 15
Methyl glycol	$CH_3OC_2H_4OH$	109-86-4	100 ppm	≤ 140
Methyl methacrylate	$CH_2=C(CH_3)COOCH_3$	80-62-6	100 ppm	≤ 30
α-Methyl styrene	$C_6H_5C(CH_3)=CH_2$	98-83-9	100 ppm	≤ 40
Phenol	C_6H_5OH	108-95-2	40 ppm	≤ 15
n-Propyl mercaptan	$CH_3CH_2CH_2SH$	107-03-9	6 ppm	≤ 4
Styrene	$C_6H_5CH=CH_2$	100-42-5	100 ppm	≤ 20
Trichloroethene	$CHClCCl_2$	79-01-6	1 00 ppm	≤ 30
1,1,1-Trichloroethane	CH_3CCl_3	71-55-6	1 000 ppm	≤ 30
Tetrahydrothiophene	C_4H_8S	110-01-0	5 ppm	≤ 3,5
1.1.3.3-Tetramethyl disiloxane, TMDS	$((CH_3)_2HSi)_2O$	3277-26-7	100 ppm	≤ 40
2.4.4-Trimethyl-1-pentene	$CH_2=C(CH_3)CH_2C(CH_3)_3$	107-39-1	100 ppm	≤ 60
4-Vinylcyclohexene-1	$C_6H_9CH=CH_2$	100-40-3	100 ppm	≤ 50
Vinyl fluoride	$CH_2=CHF$	75-02-5	100 ppm	≤ 80

The following table shows gases and vapors where the effect of the applied concentration on the sensors is below the Lower Detection Limit or gases which will have no effect on the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm C_2H_4O
Acetic acid	CH_3COOH	64-19-7	100 ppm	no effect
Acetonitrile	CH_3CN	75-05-8	40 ppm	no effect
Benzene	C_6H_6	71-43-2	2000 ppm	no effect
Boron trifluoride	BF_3	7637-07-2	15 ppm	no effect
Carbon dioxide	CO_2	124-38-9	5 % by vol.	no effect
Chlorine	Cl_2	7782-50-5	10 ppm	no effect
Chloro benzene	C_6H_5Cl	108-90-7	200 ppm	no effect
1,1-Dichloroethane	$C_2H_4Cl_2$	75-34-3	50 ppm	no effect
Dichloromethane	CH_2Cl_2	75-09-2	1 000 ppm	no effect
Diethylamine	$(C_2H_5)_2NH$	109-89-7	100 ppm	no effect
Dimethyl formamide	$HCON(CH_3)_2$	68-12-2	100 ppm	no effect
Ethane	C_2H_6	74-84-0	0.2 % by vol.	no effect
Ethyl acetate	$CH_3COOC_2H_5$	141-78-6	100 ppm	no effect
Hydrogen bromide	HBr	10035-10-6	100 ppm	no effect
Hydrogen chloride	HCl	7647-01-0	20 ppm	no effect
Hydrogen fluoride	HF	7664-39-3	10 ppm	no effect
Methane	CH_4	74-82-8	2 % by vol	no effect
Methylamine	CH_3NH_2	74-89-5	100 ppm	no effect
Phosgene	$COCl_2$	75-44-5	50 ppm	no effect
Propane	C_3H_8	74-98-6	1 % by vol	no effect
Tetrachloroethene	CCl_2CCl_2	127-18-4	100 ppm	no effect
Toluene	$C_6H_5CH_3$	108-88-3	1 000 ppm	no effect
Xylene	$C_6H_4(CH_3)_2$	1330-20-7	2 000 ppm	no effect

DrägerSensor O_3 6814005

Intended Use

Electrochemical diffusion sensor for suitable Dräger transmitters. For monitoring the ozone (O_3) concentration in ambient air.

Technical Data

Electrode reactions	
Measuring electrode	$O_3 + 2\ H^+ + 2\ e^- \rightarrow O_2 + H_2O$
Counter electrode	$2\ H_2O \rightarrow O_2 + 4\ H^+ + 4\ e^-$
Measuring Gas	O_3
Repeatability / Accuracy	
Zero	≤ ±0.02 ppm
sensitivity	≤ ± 5 % of measured value
Linearity tolerance	≤ ± 10 % of measured value
Effect of temperature	
Temperature conditions	-40°C to +65°C (-40°F to 150°F)
zero	≤ ± 0.03 ppm
sensitivity	≤ ± 0.2 % of measured value / K
Effect of humidity	
Humidity conditions	5% to 95% relative humidity
zero	± 0.001 ppm / % r.h.
sensitivity	≤ ± 0.5 % of measured value / % r.h.
Effect of pressure	
zero	no effect
sensitivity	≤ ± 0.1 % of measured value / hPa
Effect of flow between 0 and 6 m/s	
zero	no effect
sensitivity	≤ ± 10 % of measured value
Drift during a month period	
zero	± 0.01 ppm
sensitivity	≤ ± 10 % of measured value
Range	
Max. measuring range	5 ppm
Default measuring range	1 ppm
Min. measuring range	0.5 ppm
Lower detection limit (LDL)	0.02 ppm
Display resolution	0.005 ppm
Zero clamping - capture range	± 0.01 ppm
Under range warning	-0.5 ppm
Under range fault	-1 ppm
Alarm thresholds	
A1 Alarm default	0.1 ppm
A2 Alarm default	0.2 ppm

Alarm response time	
on gas exposure with 5x alarm threshold, t0...20	≤ 5 sec.
on gas exposure with 1.6x alarm threshold, t0...63	≤ 15 sec.
Warm-up-time	
ready for operation after max.	5 minutes
ready for calibration after max.	60 minutes
Operation	
Periodical Sensor Self-Test	Polytron 6100 and Polytron 7000 / 8100 with respective Dongle every 20 minutes
Orientation	NA
Gas doses limitation	NA
Special considerations	NA
Design	
Sensor Design	electrochemical, 3-electrodes, amperometric
Electrolyte	sealed aqueous acid
Material	
black sensor housing	polypropylene (PP)
gasket/ blue gasket	thermoplastic vulcanizate (TPV)
membrane	polytetrafluoroethylene (PTFE)
label	polyester
Filter	
Factory installed filter	no filters allowed
Optional Filter	no filters allowed
Useful life	
Expected service life, in ambient air	> 1 year
Guarantee	0.5 years

Cross sensitivities

Gases with positive cross sensitivity

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm O_3 with dust filter
Chlorine	Cl_2	7782-50-5	0.5 ppm	≤ 0.3
Chlorine dioxide	ClO_2	10049-04-4	1 ppm	≤ 0.4
Hydrogen cyanide	HCN	74-90-8	50 ppm	≤ 0.2
Hydrogen peroxide	H2O2	7722-84-1	10 ppm	≤ 0.5
Nitrogen dioxide	NO_2	10102-44-0	5 ppm	1.5 ≤ x ≤ 3
Nitrogen monoxide	NO	10102-43-9	20 ppm	≤ 0.2

Gases with negative cross sensitivity

Gases with negative cross sensitivity may displace a positive reading of the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Negative displayed value in ppm O_3 with dust filter
Ammonia	NH_3	7664-41-7	50 ppm	≤ 0.04
Hydrogen sulfide	H_2S	7783-06-4	20,9 ppm	≤ 0.9
Sulfur dioxide	SO_2	7446-09-5	20 ppm	≤ 0.4

The following table shows gases and vapors where the effect of the applied concentration on the sensors is below the Lower Detection Limit or gases which will have no effect on the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm O_3 with dust filter
Arsine	AsH_3	7784-42-1	0.5 ppm	no effect
Carbon dioxide	CO_2	124-38-9	1,5 % by vol.	no effect
Carbon monoxide	CO	630-08-0	5060 ppm	no effect
Ethan	C_2H_6	74-84-0	0,1 % by vol.	no effect
Ethanol	C_2H_5OH	64-17-5	250 ppm	no effect
Ethine	C_2H_2	74-86-2	1 % by vol.	no effect
Hydrazine	N_2H_4	302-01-2	0,5 ppm	no effect
Hydrogen	H_2	1333-74-0	1 000 ppm	no effect
Hydrogen chloride	HCl	7647-01-0	5 ppm	no effect
Methane	CH_4	74-82-8	4 % by vol.	no effect
Phosphine	PH_3	7803-51-2	1,2 ppm	no effect
Propane	C_3H_8	74-98-6	1 % by vol.	no effect

DrägerSensor PH_3 / AsH_3 6809695

Intended Use

Electrochemical diffusion sensor for suitable Dräger transmitters. For monitoring the phosphine (PH_3) and arsine (AsH_3) concentration in the ambient air.

Technical Data

Electrode reactions	
Measuring electrode	$PH_3 + 4\ H_2O \rightarrow H_3PO_4 + 8\ H^+ + 8\ e^-$ (shown for PH_3)
Counter electrode	$2\ O_2 + 8\ H^+ + 8\ e^- \rightarrow 4\ H_2O$
Measuring Gas	PH_3
Repeatability / Accuracy	
Zero	≤ ±0.01 ppm
sensitivity	≤ ± 5 % of measured value
Linearity tolerance	≤ ± 5 % of measured value
Effect of temperature	
Temperature conditions	-40°C to +65°C (-40°F to 150°F)
zero	≤ ± 0.001 ppm / K
sensitivity	≤ ± 0.3 % of measured value / K
Effect of humidity	
Humidity conditions	5% to 95% relative humidity
zero	± 0.001 ppm / % r.h.
sensitivity	≤ ± 0.1 % of measured value / % r.h.
Effect of pressure	
zero	no effect
sensitivity	≤ ± 0.1 % of measured value / hPa
Effect of flow between 0 and 6 m/s	
zero	no effect
sensitivity	≤ ± 5 % of measured value
Drift during a month period	
zero	± 0.01 ppm
sensitivity	≤ 5 % / 6 months
Range	
Max. measuring range	20 ppm
Default measuring range	1 ppm
Min. measuring range	0.3 ppm
Lower detection limit (LDL)	0.02 ppm
Display resolution	0.01 ppm
Zero clamping - capture range	± 0.02 ppm
Under range warning	-0.05 ppm
Under range fault	-0.1 ppm
Alarm thresholds	
A1 Alarm default	0.1 ppm (for PH_3)
A2 Alarm default	0.2 ppm (for PH_3)

Alarm response time	
on gas exposure with 5x alarm threshold, t0...20	≤ 5 sec.
on gas exposure with 1.6x alarm threshold, t0...63	≤ 15 sec.
Warm-up-time	
ready for operation after max.	15 minutes
ready for calibration after max.	30 minutes
Operation	
Periodical Sensor Self-Test	Polytron 6100 and Polytron 7000 / 8100 with respective Dongle every 10 minutes
Orientation	NA
Gas doses limitation	NA
Special considerations	NA
Design	
Sensor Design	electrochemical, 3-electrodes, amperometric
Electrolyte	sealed aqueous acid
Material	
black sensor housing	polypropylene (PP)
gasket/ blue gasket	thermoplastic vulcanizate (TPV)
membrane	polytetrafluoroethylene (PTFE)
label	polyester
Filter	
Factory installed filter	Selective Filter MF 6809638
Optional Filter	none
Useful life	
Expected service life, in ambient air	> 3 years
Guarantee	1 year

Cross-calibration and surrogate gas

The DrägerSensor PH3 / AsH3 can be used for detection of the gases and vapors listed in the table below.

Gas / Vapor	Chemical formula	CAS number	Default measuring range [ppm]	minimum measuring range [ppm]	maximum measuring range [ppm]	lower detection limit [ppm]	relative sensitivity
Arsine	AsH_3	7784-42-1	1	0.3	20	0.02	0.5
Phosphine	PH_3	7803-51-2	1	0.3	20	0.02	1.0

Cross sensitivities

Gases with positive cross sensitivity

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm PH_3 with selective filter MF
Acetone	CH_3COCH_3	67-64-1	1000 ppm	≤ 0.01
Chlorine	Cl_2	7782-50-5	5 ppm	≤ 0.005
Diborane	B_2H_6	19287-45-7	5 ppm	≤ 0.06
Ethene	C_2H_4	74-85-1	1.8 % by vol	≤ 0.02
Ethine (Acetylene)	C_2H_2	74-86-2	200 ppm	≤ 0.05
Ethylene oxide	C_2H_4O	75-21-8	20 ppm	≤ 0.01
Hydrogen	H_2	1333-74-0	1.6 % by vol	≤ 0.02
Hydrogen cyanide	HCN	74-90-8	15 ppm	≤ 0.8
Hydrogen fluoride	HF	7664-39-3	20 ppm	≤ 0.02
Hydrogen sulfide	H_2S	7783-06-4	20 ppm	≤ 0.3
Methanol	CH_3OH	67-56-1	500 ppm	≤ 0.01
Nitrogen monoxide	NO	10102-43-9	20 ppm	≤ 0.02
Silane	SiH_4	7803-62-5	5 ppm	≤ 0.03
Styrene	$C_6H_5CH_3$	100-42-5	30 ppm	≤ 0.01
Sulfur dioxide	SO_2	7446-09-5	20 ppm	≤ 0.02

Gases with negative cross sensitivity

Gases with negative cross sensitivity may displace a positive reading of the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Negative displayed value in ppm PH_3 with selective filter MF
Fluorine	F_2	7782-41-4	10 ppm	≤ 0.04
Nitrogen dioxide	NO_2	10102-44-0	20 ppm	≤ 0.1

The following table shows gases and vapors where the effect of the applied concentration on the sensors is below the Lower Detection Limit or gases which will have no effect on the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm PH_3 with selective filter MF
Ammonia	NH_3	7664-41-7	60 ppm	no effect
Carbon dioxide	CO_2	124-38-9	10 % by vol	no effect
Carbon monoxide	CO	630-08-0	120 ppm	no effect
Ethanol	C_2H_5OH	64-17-5	250 ppm	no effect
Hydrogen chloride	HCl	7647-01-0	20 ppm	no effect
Hydrogen peroxide	H_2O_2	7722-84-1	*	no effect
Ozone	O_3	10028-15-6	1 ppm	no effect
i-Propanol	$(CH_3)_2CHOH$	67-63-0	500 ppm	no effect

*measured above a 30 % hydrogen peroxide solution at 25 °C (77 °F)

DrägerSensor SO_2 6809660

Intended Use

Electrochemical diffusion sensor for suitable Dräger transmitters. For monitoring the sulfur dioxide (SO_2) concentration in ambient air.

Technical Data

Electrode reactions	
Measuring electrode	$SO_2 + 2\ H_2O \rightarrow H_2SO_4 + 2\ H^+ + 2\ e^-$
Counter electrode	$½\ O_2 + 2\ H^+ + 2\ e^- \rightarrow H_2O$
Measuring Gas	SO_2
Repeatability / Accuracy	
Zero	≤ ±0.2 ppm
sensitivity	≤ ± 3 % of measured value
Linearity tolerance	≤ ± 4 % of measured value
Effect of temperature	
Temperature conditions	-40°C to +65°C (-40°F to 150°F)
zero	≤ ± 0.01 ppm / K (–40 to 40 °C / –40 to 105 °F) ≤ ± 0.1 ppm / K (40 to 65 °C / 105 to 150 °F)
sensitivity	≤ ± 0.1 % of measured value / K
Effect of humidity	
Humidity conditions	5% to 95% relative humidity
zero	± 0.01 ppm / % r.h.
sensitivity	≤ ± 0.2 % of measured value / % r.h.
Effect of pressure	
zero	no effect
sensitivity	≤ ± 0.1 % of measured value / hPa
Effect of flow between 0 and 6 m/s	
zero	no effect
sensitivity	≤ ± 10 % of measured value
Drift during a month period	
zero	± 0.1 ppm
sensitivity	≤ ± 4 % of measured value
Range	
Max. measuring range	100 ppm
Default measuring range	10 ppm
Min. measuring range	5 ppm
Lower detection limit (LDL)	0.5 ppm
Display resolution	0.1 ppm
Zero clamping - capture range	± 0.2 ppm
Under range warning	-0.5 ppm
Under range fault	-1 ppm
Alarm thresholds	
A1 Alarm default	2 ppm
A2 Alarm default	4 ppm

Alarm response time	
on gas exposure with 5x alarm threshold, t0...20	≤ 5 sec.
on gas exposure with 1.6x alarm threshold, t0...63	≤ 15 sec.
Warm-up-time	
ready for operation after max.	15 minutes
ready for calibration after max.	30 minutes
Operation	
Periodical Sensor Self-Test	Polytron 5100 / 6100 and Polytron 7000 / 8100 with respective Dongle every 20 minutes
Orientation	NA
Gas doses limitation	NA
Special considerations	NA
Design	
Sensor Design	electrochemical, 3-electrodes, amperometric
Electrolyte	sealed aqueous acid
Material	
black sensor housing	polypropylene (PP)
gasket/ blue gasket	thermoplastic vulcanizate (TPV)
membrane	polytetrafluoroethylene (PTFE)
label	polyester
Filter	
Factory installed filter	Dust Filter 6812224
Optional Filter	Selective Filter K1F 6809663
Useful life	
Expected service life, in ambient air	> 2 years
Guarantee	3 year

Cross sensitivities

Gases with positive cross sensitivity

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm SO_2
Arsine	AsH_3	7784-42-1	5 ppm	≤ 20
Boron trifluoride	BF_3	7637-07-2	15 ppm	≤ 1
Butadiene	$CH_2CHCHCH_2$	106-99-0	50 ppm	≤ 50
tert-Butyl mercaptan	$(CH_3)_3CSH$	75-66-1	4 ppm	≤ 3
Carbon monoxide	CO	630-08-0	200 ppm	≤ 1
Disilane	Si_2H_6	1590-87-0	10 ppm	≤ 50
Ethanol	C_2H_5OH	64-17-5	250 ppm	≤ 1
Ethene	C_2H_4	74-85-1	1000 ppm	≤ 4
Ethine (Acetylene)	C_2H_2	74-86-2	200 ppm	≤ 140
Hydrogen	H_2	1333-74-0	1000 ppm	≤ 2
Hydrogen cyanide	HCN	74-90-8	20 ppm	≤ 12
Hydrogen fluoride	HF	7664-39-3	15 ppm	≤ 0.5
Hydrogen selenide	H_2Se	7783-07-5	5 ppm	≤ 3
Hydrogen sulfide	H_2S	7783-06-4	20 ppm	≤ 60
Nitrogen monoxide	NO	10102-43-9	20 ppm	≤ 0.5
Phosphine	PH_3	7803-51-2	10 ppm	≤ 50
Propane	C_3H_8	74-98-6	1 % by vol	≤ 1
i-Propanol	$(CH_3)_2CHOH$	67-63-0	500 ppm	≤ 0.5
Propene	CH_2CHCH_3	115-07-1	50 ppm	≤ 0.25
n-Propyl mercaptan	$CH_3CH_2CH_2SH$	107-03-9	10 ppm	≤ 8
Styrene	$C_6H_5CHCH_2$	100-42-5	30 ppm	≤ 165
Thionyl Chloride	$SOCl_2$	7719-09-7	10 ppm	≤ 5
Toluene	$C_6H_5CH_3$	108-88-3	1 % by vol	≤ 1
Vinyl acetate	$CH_3COOCHCH_2$	108-05-4	30 ppm	≤ 0.53

Gases with negative cross sensitivity

Gases with negative cross sensitivity may displace a positive reading of the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Negative displayed value in ppm SO_2
Ammonia	NH_3	7664-41-7	200 ppm	≤ 0.5
Chlorine	Cl_2	7782-50-5	10 ppm	≤ 5
Nitrogen dioxide	NO_2	10102-44-0	50 ppm	≤ 60

The following table shows gases and vapors where the effect of the applied concentration on the sensors is below the Lower Detection Limit or gases which will have no effect on the sensor.

Gas / Vapor	Chemical formula	CAS number	Applied gas concentration	Displayed value in ppm SO_2
Acryl nitrile	H2C=CH–CN	107-13-1	80 ppm	no effect
Carbon dioxide	CO_2	124-38-9	5 % by vol	no effect
1,1 Dichloroethane	$C_2H_4Cl_2$	75-34-3	50 ppm	no effect
Diethylether	$(C_2H_5)_2O$	60-29-7	400 ppm	no effect
Diethyl amine	$(C_2H_5)_2NH$	124-40-3	100 ppm	no effect
Epichlorohydrin	$C_2H_3OCH_2Cl$	106-89-8	35 ppm	no effect
Ethylene oxide	C_2H_4O	75-21-8	20 ppm	no effect
Formaldehyde	HCHO	50-00-0	50 ppm	no effect
Hydrogen bromide	HBr	10035-10-6	100 ppm	no effect
Methanol	CH_3OH	67-56-1	500 ppm	no effect
Methylamine	CH_3NH_2	74-89-5	100 ppm	no effect
Tetrahydrofuran	C_4H_8O	109-99-9	60 ppm	no effect
Tetrahydrothiophene	C_4H_8S	110-01-0	5 ppm	no effect
Vinyl chloride	C_2H_3Cl	75-01-4	50 ppm	no effect

DrägerFilter

General

Design and mode of operation

The DrägerFilter selectively remove gases or vapors from the ambient atmosphere. The filter is to be placed in the gas access path of a DrägerSensor or sampling System.
The filter material is selected to adsorb, absorb or react with specific interfering substances furthermore having little effect on the target gas to be measured.

Important operational advice:

- **It is not allowed to install DrägerFilter on any other sensor than the specified one. Other target gas may not pass the filter or off-gassing chemicals from the reaction could poison the sensor.**
- Installing a filter changes some of the sensor/instrument specifications. It will reduce sensitivity of the target gas, and the response time will be extended, and the relative sensitivities between different gases might change.
- After installing or replacing a DrägerFilter, the instrument must be calibrated explicitly on the target gas to be measured.
- For best results, always calibrate with the gas to be detected; cross calibration using a surrogate gas will result in a reduced accuracy.
- Since the filter can result in a longer response time, the time to alarm on the controller will be increased as well.
- The filter has a finite capacity and should be replaced before it is saturated.
- High gas concentration of a to be filtered gas could result in a break-through even though the capacity is not yet been used up.
- In the case that the filter is damaged, avoid contact with the chemicals contained.
- A retention filter smoothest a concentration profile and emits a constant low concentration.

Factory installed DrägerFilter:

Sensors with factory installed filters are factory calibrated with the filter in place.

DrägerSensor	Part number	DrägerFilter	Part number	Absorbs
DrägerSensor H2	6809685	A2F	6809684	H2S, NO, NO2, SO2, Hydrocarbons
DrägerSensor Hydride	6809635	MF	6809638	H2O2
DrägerSensor PH3/AsH3	6809695			
DrägerSensor CO LH	6812570	D3F	6812435	Hydrocarbons
DrägerSensor CO	6809605	Dust	6809595	
DrägerSensor CO LS	6809620			
DrägerSensor H2S LS	6809610			
DrägerSensor H2S HC	6809710			
DrägerSensor H2S	6810435			
DrägerSensor NH3 LC	6809680			
DrägerSensor NH3 HC	6809645			
DrägerSensor OV	6809615			
DrägerSensor OV1	6810740			
DrägerSensor OV2	6810745			
DrägerSensor Hydrides SC	6809980			
DrägerSensor HCN	6809650			
DrägerSensor NO	6809625			
DrägerSensor NO2	6809655			
DrägerSensor O2 LS	6809630			
DrägerSensor O2	6809720			
DrägerSensor SO2	6809660	Dust	6812224	
DrägerSensor NH3 TL	6813095			
DrägerSensor NH3 TH	6800055			
DrägerSensor HCN LC	6813200			
DrägerSensor NO2 LC	6813205			
DrägerSensor NH3 FL	6813260			
DrägerSensor NH3 AL	6813735			
DrägerSensor PH3/AsH3	6809695			
DrägerSensor SO2	6809660			

Optional DrägerFilter available for:

DrägerSensor	Part number	DrägerFilter	Part number	Absorbs
DrägerSensor CO	6809605	A2F	6809684	H2S, NO, NO2, SO2, Hydrocarbons
DrägerSensor CO LS	6809620			
DrägerSensor CO	6809605	D3F	6812435	Hydrocarbons
DrägerSensor CO LS	6809620			
DrägerSensor H2	6809685			
DrägerSensor SO2	6809660	K1F	6809663	H2S
DrägerSensor COCl2	6809930	K2F	6809933	H2S, HCl, O3
DrägerSensor HCN	6809650	BF	6809653	H2S, SO2, NO, B2H6
DrägerSensor Hydrides	6809635*			
DrägerSensor Hydrides SC	6809980*			
DrägerSensor Hydrides	6809635*	HSF	6809862	Styrene
DrägerSensor HCl	6809640	NF	6809643	Noise due to flow

* Restriction with some target gases to be considered.

Use of DrägerFilter forbidden for:

Warning: These sensors don't allow any dust or selective filter.

Nothing to be installed in front of the sensor to achieve maximum sensitivity.

DrägerSensor	Part number
DrägerSensor HCl	6809640
DrägerSensor H2O2 LC	6809705
DrägerSensor H2O2 HC	6809675
DrägerSensor Cl2	6809665
DrägerSensor Ozone	6814005
DrägerSensor Hydrazine	6810180

Dust Filter 6809595

Approved for use with sensor:	
DrägerSensor – most sensors	Factory installed
Not approved for use with sensor:	
DrägerSensor SO2	6809660
Filter	
Filter effect	Dust, dirt, mud, water
No Filter effect	see data for the respective sensor
Filter principle	Retention by porous hydrophobic PE
Expected capacity / service life	Application dependent
Ambient operating conditions	
Temperature range	-50...65 °C
Relative humidity range	0…99% r.h. (non-condensing)
Storage conditions	
Temperature range	-40...65 °C
Relative humidity range	0…99% r.h. (non-condensing)
Max storage time	5 years
Effect on sensor specification	None for all non-adsorbent substances
Technical Design	
Dimensions (Ø x L)	23mm x 6.5 mm
Weight	1 g
Housing Material	PE
Amount of filter chemical	NA
Gas supply	Diffusion

Dust Filter 6812224

Approved for use with sensor:	
DrägerSensor SO2	6809660
DrägerSensor – most sensors	Factory installed
Not approved for use with sensor:	
DrägerSensor HCl	6809640
DrägerSensor H2O2 LC	6809705
DrägerSensor H2O2 HC	6809675
DrägerSensor Cl2	6809665
DrägerSensor O3	6814005
DrägerSensor Hydrazine	6810180
DrägerSensor COCl2	6809930
Filter	
Filter effect	Dust, dirt, mud, water
No Filter effect	see data for the respective sensor
Filter principle	Retention by porous hydrophobic PE
Expected capacity / service life	Application dependent
Ambient operating conditions	
Temperature range	-50...65 °C
Relative humidity range	0…99% r.h. (non-condensing)
Storage conditions	
Temperature range	-40...65 °C
Relative humidity range	0…99% r.h. (non-condensing)
Max storage time	5 years
Effect on sensor specification	None for all non-adsorbent substances
Technical Design	
Dimensions (Ø x L)	23mm x 6.5 mm
Weight	1 g
Housing Material	PTFE
Amount of filter chemical	NA
Gas supply	Diffusion

Selective filter A2F 6809684

Approved for use with sensor:	
DrägerSensor H2	6809685
DrägerSensor CO	6809605
DrägerSensor CO LS	6809620
Filter	
Filter effect	H2S, NO, NO2, SO2, many organic chemicals
No Filter effect	CO, H2
Filter principle	Chemical reaction
Expected capacity / service life	4000 ppm h H2S
Ambient operating conditions	
Temperature range	-40...65 °C
Relative humidity range	10…95% r.h. (non-condensing)
Storage conditions	
Temperature range	-20...40 °C
Relative humidity range	10…95% r.h. (non-condensing)
Max storage time	1 year
Effect on sensor specification	see data for the respective sensor
Technical Design	
Dimensions (Ø x L)	23mm x 6.5 mm
Weight	1.2 g
Housing Material	PTFE
Amount of filter chemical	1 g
Gas supply	Diffusion

Selective filter MF 6809638

Approved for use with sensor:	
DrägerSensor Hydride	6809635
DrägerSensor PH3 / AsH3	6809695
Filter	
Filter effect	H2O2
No Filter effect	All others
Filter principle	Chemical reaction
Expected capacity / service life	2 years
Ambient operating conditions	
Temperature range	-40...65 °C
Relative humidity range	10…95% r.h. (non-condensing)
Storage conditions	
Temperature range	-20...40 °C
Relative humidity range	10…95% r.h. (non-condensing)
Max storage time	1 year
Effect on sensor specification	None
Technical Design	
Dimensions (Ø x L)	23mm x 6.5 mm
Weight	1 g
Housing Material	PTFE
Amount of filter chemical	0.01 g
Gas supply	Diffusion

Selective filter D3F 6812435

Approved for use with sensor:	
DrägerSensor CO	6809605
DrägerSensor CO LS	6809620
DrägerSensor CO LH	6812570
Filter	
Filter effect	Many organic chemicals
No Filter effect	CO, H2
Filter principle	Adsorption by activated charcoal
Expected capacity / service life	4000 ppm h H2S
Ambient operating conditions	
Temperature range	-40...65 °C
Relative humidity range	10…95% r.h. (non-condensing)
Storage conditions	
Temperature range	-20...40 °C
Relative humidity range	10…95% r.h. (non-condensing)
Max storage time	1 year
Effect on sensor specification	Affects sensitivity and response time
Technical Design	
Dimensions (Ø x L)	23mm x 6.5 mm
Weight	1 g
Housing Material	PTFE
Amount of filter chemical	0.6 g activated charcoal
Gas supply	Diffusion

Selective filter BF 6809653

Approved for use with sensor:	
DrägerSensor HCN	6809650
DrägerSensor HCN LC	6813200
DrägerSensor Hydride	6809635
DrägerSensor Hydride SC	6809980
Filter	
Filter effect	H2S, SO2, NO, B2H6
No Filter effect	HCN, NH3, PH3, AsH3, SiH4, GeH4, NO2
Filter principle	Chemical reaction
Expected capacity / service life	1000 ppm h H2S ± 20 %
Ambient operating conditions	
Temperature range	0...65 °C
Relative humidity range	10…95% r.h. (non-condensing)
Storage conditions	
Temperature range	-20...40 °C
Relative humidity range	10…95% r.h. (non-condensing)
Max storage time	0.5 year
Effect on sensor specification	Affects sensitivity and response time
Technical Design	
Dimensions (Ø x L)	23 mm x 6.5 mm
Weight	1 g
Housing Material	PTFE
Amount of filter chemical	0.25 g
Gas supply	Diffusion

Selective filter K1F 6809663

Approved for use with sensor:	
DrägerSensor SO2	6809660
Filter	
Filter effect	H2S
No Filter effect	Many others
Filter principle	Chemical reaction
Expected capacity / service life	5000 ppm h H2S
Ambient operating conditions	
Temperature range	-40...65 °C
Relative humidity range	10…95% r.h. (non-condensing)
Storage conditions	
Temperature range	-20...40 °C
Relative humidity range	10…95% r.h. (non-condensing)
Max storage time	1 year
Effect on sensor specification	Affects sensitivity and response time
Technical Design	
Dimensions (Ø x L)	23 mm x 6.5 mm
Weight	1.5 g
Housing Material	PTFE
Amount of filter chemical	0.25 g
Gas supply	Diffusion

Selective filter K2F 6809933

Approved for use with sensor:	
DrägerSensor COCl2	6809930
Filter	
Filter effect	H2S, HCl, O3
No Filter effect	CL2, HCN, NO2, NH3
Filter principle	Chemical reaction
Expected capacity / service life	15 ppm h H2S; 150 ppm h HCl
Ambient operating conditions	
Temperature range	-40...65 °C
Relative humidity range	10…95% r.h. (non-condensing)
Storage conditions	
Temperature range	-20...40 °C
Relative humidity range	10…95% r.h. (non-condensing)
Max storage time	0.5 year
Effect on sensor specification	see data for the respective sensor
Technical Design	
Dimensions (Ø x L)	23 mm x 6.5 mm
Weight	1 g
Housing Material	PTFE
Amount of filter chemical	2 mg
Gas supply	Diffusion

Selective filter NF 6809643

Approved for use with sensor:	
DrägerSensor HCl	6809640
Filter	
Filter effect	Reduces signal noise caused by air flow – no impact on gas
No Filter effect	NA
Filter principle	Porous hydrophobic PC membrane
Expected capacity / service life	NA
Ambient operating conditions	
Temperature range	-40...65 °C
Relative humidity range	10…95% r.h. (non-condensing)
Storage conditions	
Temperature range	-20...40 °C
Relative humidity range	10…95% r.h. (non-condensing)
Max storage time	5 year
Effect on sensor specification	None
Technical Design	
Dimensions (ø x L)	23 mm x 6.5 mm
Weight	1 g
Housing Material	PTFE
Amount of filter chemical	NA
Gas supply	Diffusion

Selective filter HSF 6809862

Approved for use with sensor:	
DrägerSensor Hydride	6809635
Filter	
Filter effect	Styrene vapour (others not tested: alcohols, polyethylene glycols, diols, phenols, monoamines, diamines, ethanol amines, amides, aldehydes, ketones, chlorinated aromatics
No Filter effect	HCN, NH3, PH3, AsH3, SiH4, GeH4, NO2
Filter principle	Retention
Expected capacity / service life	160 ppm h ± 20 % Styrene vapour The PH3 capacity was determined by applying 30 ppm styrene and measuring the time until a value of 20 ppm PH3 was reached. The capacity depends on the applied concentration. A higher concentration will cause a reduction in the capacity.
Ambient operating conditions	
Temperature range	-20...50 °C
Relative humidity range	10…95% r.h. (non-condensing)
Storage conditions	
Temperature range	-20...40 °C
Relative humidity range	10…95% r.h. (non-condensing)
Max storage time	0.5 year
Effect on sensor specification	PH3 sensitivity (taken after 3 minutes exposure) reduced by 20 % PH3 response time increased by factor 2 AsH3 sensitivity (taken after 3 minutes exposure) reduced by 25 % AsH3 response time increased by factor 5 B2H6 sensitivity (taken after 3 minutes exposure) reduced by 35 % B2H6 response time increased by factor 2 SO2 sensitivity (taken after 20 minutes exposure) reduced by 25 % SO2 response time increased by factor 20
Effect on surrogate-calibration	Surrogate-calibration with SO2 calibration gas is only approved for the detection of PH3 (when the filter is installed). The SO2 gas must be applied for more than 10 minutes because of long response time. The accuracy will be ± 20%.
Technical Design	
Dimensions (Ø x L)	23 mm x 6.5 mm
Weight	1 g
Housing Material	PTFE
Amount of filter chemical	0.4 g
Gas supply	Diffusion

Shelf Life

General

Some materials are subject to an ageing process, i.e. from a certain point the product properties can no longer be guaranteed.

The target of Shelf Life Management is to ensure that only products with a sufficient remaining shelf life are delivered to the customer. The Shelf Life process begins with the manufacture of a product and ends with first time of usage by the customer.

Definitions

The **Use by Date** defines the time until which the product must be used. This ensures that the product is ready for use in accordance with the instructions for use.

The **Date of Manufacture** is the time at which the product becomes an age-monitored material during the manufacturing process.

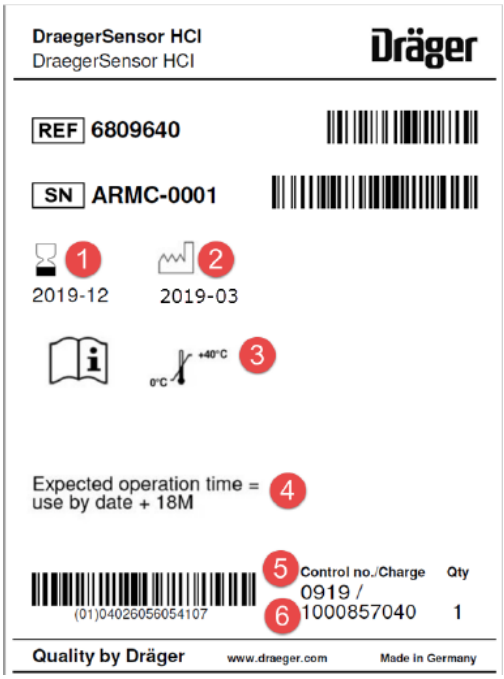
Expected Service Life indicates the typical lifespan of a sensor under normal operation conditions at 20°C (68°F), 50 %r.h., 1013 hPa. This applies for the operation of the sensor (the date from which the sensor is plugged into the instrument).

Storage conditions – the expected service life specification is derived from sensors stored at room temperature. Outside this range, the sensor is stressed, and the specified sensor properties can no longer be guaranteed. Plastic becomes soft at hot temperatures and brittle at freezing temperatures.

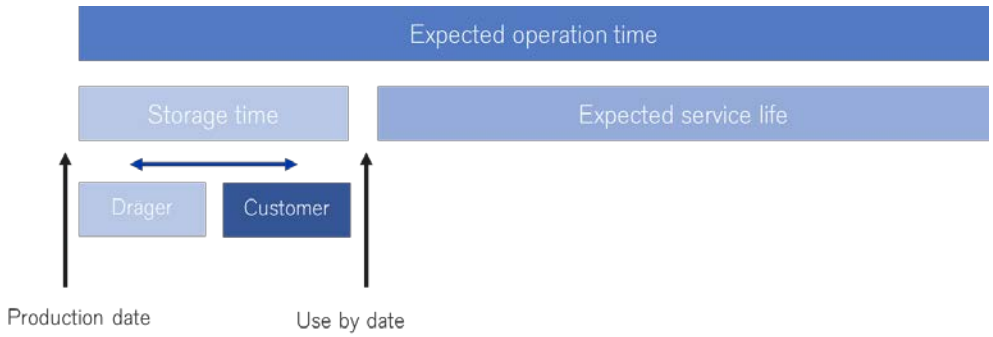
Package label

Position:

1. **Use by date** (YYYY-MM): The sensor can be **stored** in the **original packaging until the “use by date”** so that the “expected service life” is achieved. In the event of storage beyond the "use by date", the "expected service life" is reduced accordingly.
2. **Date of manufacture** (YYYY-MM): The production date is coded in the serial number SN and marked at the symbol.
3. **Storage conditions**: The ambient storage condition is marked on the label and should be considered.
4. **Expected operation time**: The ageing of a sensor begins with its manufacture. The expected operation time (lifetime) is the sum of the storage time and the “expected service life” as specified in the sensor instruction for use.
5. **Control no.**: The control number is for internal Dräger shelf-life management: 0919 reads as September 2019. Latest by this date the product must be shipped to the dealer or customer.
6. **Charge** (internal batch identifier).



Expected operation time:



Guarantee

Indicates the Manufacturer's guarantee period for the sensor

Limited manufacturer guarantee.
Dräger grants a limited manufacturer guarantee for products in this technical handbook if operated in a Dräger Polytron 6100 or Dräger Polytron 8100 within the specified guarantee period under the following conditions.

Dräger guarantees to the End Customer a product lifetime for the guarantee period indicated in this handbook, beginning with the first use of the product, but not longer than the guarantee period indicated plus one year after manufacture of the product. End Customer is the person or legal entity that acquired the new and unused product for its own use and not for resale.

Dräger's obligations and End Customer's sole and exclusive remedy under the Limited Manufacturer Guarantee is limited to the replacement of the defective product with a new product. For any valid claim hereunder (as determined by Dräger in its sole discretion), Dräger will replace the product free of charge with a new unit of the same type and properties.

The End Customer must provide written notice of any claim under the Limited Manufacturer Guarantee within thirty (30) days of when the claim becomes known or should have been known and in any event within the stated guarantee period. Such notice must be provided to either Dräger or the dealer where he acquired the product.

The Limited Manufacturer Guarantee is valid only if the End Customer

(i) performed all maintenance measures recommended by the manufacturer (in the published Product Specifications or instructions for use) or required by applicable law and
(ii) did not use the product in any manner which is outside its intended use as provided in the Product Specifications or instructions for use.

This Limited Manufacturer Guarantee excludes any damage caused to the product (a) due to any act or omission of End Customer or any other third party, or (b) caused by transport, installation, modifications to, or improper use of the product.

DRÄGER MAKES NO GUARANTEE FOR THE PRODUCT OTHER THAN THE ONE SET FORTH HEREIN OR THAT WHICH MAY BE PROVIDED IN A SEPARATE WARRANTY OR GUARANTEE COVERING THE PRODUCT. THIS GUARANTEE DOES NOT LIMIT ANY STATUTORY OR OTHER MANDATORY RIGHTS THE END CUSTOMER MAY BE ENTITLED TO.

The Limited Manufacturer Guarantee and its enforcement are subject to German substantive law to the exclusion of the UN Convention on the International Sale of Goods (CISG) and the conflict of laws rules. Place of performance is Lübeck, Germany. The courts of Lübeck, Germany shall have exclusive jurisdiction.