# Gas and Transmitter List

**Preliminary Remarks**

- This list can only state a selection of gases and vapours which can be measured. In case of not listed gases we kindly ask you to contact *ExTox*.
- You will find parameters for explosion and health protection concerning the listed gases and vapours on our *ExTox*-Homepage.
- The following types are not mentioned in the list below. The *ExTox* Sales Team will inform you about article numbers on demand.
  - Transmitter ExSens-I/Sens-I: integrated RS 485-Interface for remote adjustment
  - Transmitter …-IR3: measuring tolerances are more constricted for this type compared with Type …–IR2. But this type is not suitable for measurement in aggressive medium, such as for example biogas or dump gas.
  - Transmitter ExSens …-V-…: type with sealed sensor block for operation in sampling systems, for example *ExTox* IMC.
  - Transmitter Sens …-P-…-IR: types including integrated pressure compensation
  - Transmitter Sens with stainless steel housing
- On demand the Standard-Measuring range can at factory-sided adjustment be varied in range of 50 to 200 %. Higher deviations on demand.

| Measured Gas | Transmitter | Article-No. Sens/ExSens | Standard Range | Type Specific Features/ Remarks |
|---|---|---|---|---|
| Acetone ($CH_3COCH_3$) | | | | see: Flammable Gases |
| Acetonitrile ($CH_3CN$) | | | | see: Ethylene Oxide |
| Acetylene ($C_2H_2$) | | | | see: Flammable Gases |
| Ammonia ($NH_3$) | $NH_3$-3-WT | 211202/ 251000 | 0…30000 ppm (3 %(v/v)) | ▪ Main application ammonia refrigerating plants: machine rooms (ambient air) and discharging lines (installation with pipe adapter) of ammonia refrigerating plants<br>▪ Temperature: -20 °C to +55 °C<br>▪ Response time $t_{90}$: 20 s |
| | $NH_3$-1000-EC | 211201/ 251010 | 0…1000 ppm | ▪ Main application ammonia refrigerating plants: machine rooms, production and storage rooms (ambient air)<br>▪ Lifetime depends on application rate, basic load with ammonia at place of installation to be avoided.<br>▪ Cross sensitivities:<br>20 ppm $H_2S$ → ca. 2 ppm $NH_3$<br>20 ppm $SO_2$ → ca. -40 ppm $NH_3$ (!)<br>▪ Temperature: -20 °C to +40 °C<br>▪ Response time $t_{90}$: 60 s |
| | $NH_3$-T-1000-EC | 211220/ 251014 | 0…1000 ppm | ▪ Main application ammonia refrigerating plants: machine rooms, production and storage rooms (ambient air)<br>▪ Lifetime depends on application rate, basic load with ammonia at place of installation to be avoided.<br>▪ Cross sensitivities:<br>100 ppm CO → ca. 100 ppm $NH_3$<br>100 ppm $H_2$ → ca. 100 ppm $NH_3$<br>20 ppm $H_2S$ → ca. 40 ppm $NH_3$<br>20 ppm $SO_2$ → ca. 5 ppm $NH_3$<br>Alcohol and amines<br>▪ Temperature: -40 °C to +40 °C (low temperature application)<br>▪ Response time $t_{90}$: 90 s |
| | $NH_3$-1000-HL2 | 211303/ 251073 | 0…1000 ppm | ▪ Main application ammonia refrigerating plants: machine room (ambient air)<br>▪ Warning device, measuring accuracy limited due to measuring principle<br>▪ Temperature: -20 °C to +55 °C<br>▪ Response time $t_{90}$: 60 s |
| | NH3-100-EC2 | 211296/ 251071 | 0…100 ppm | ▪ Main application work places (ambient air)<br>▪ Lifetime depends on application rate, basic load with ammonia at place of installation to be avoided.<br>▪ Cross Sensitivities:<br>20 ppm $H_2S$ → ca. 2 ppm $NH_3$<br>20 ppm $SO_2$ → ca. -40 ppm $NH_3$ (!)<br>▪ Temperature: -20 °C to +40 °C<br>▪ Response time $t_{90}$: 60 s |

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| Measured Gas | Transmitter | Article-No. Sens/ExSens | Standard Range | Type Specific Features/ Remarks |
|---|---|---|---|---|
| Ammonia ($NH_3$) in fluid medium | $NH_3$-20-IS | 291015, 291054/ ------ | 0…20 ppm in brine | ▪ Main application ammonia refrigerating plants: brine and cooling water circuits, basins<br>▪ separate Data Sheet |
| Argon (Ar) | | | | Can only be measured by means of oxygen deficiency |
| Arsine ($AsH_3$) | | | | see: Hydride Gases (Silane, Phosphine) |
| Benzol ($C_3H_6$) | | | | see: Flammable Gases |
| Boron Trichloride ($BCl_3$) | | | | see: Hydrogen Chloride |
| Boron Trifluoride ($BF_3$) | | | | see: Hydrogen Fluoride |
| Butane, n-/ Isobutane ($C_4H_{10}$) | | | | see: Flammable Gases |
| Butane-1-ol ($C_4H_9OH$) | | | | see: Flammable Gases |
| Butane-2-ol ($C_4H_9OH$) | | | | see: Flammable Gases |
| Butanone ($CH_3COC_2H_5$) | | | | see: Flammable Gases |
| Butylacetate ($CH_3COOC_4H_9$) | | | | see: Flammable Gases |
| Carbon Dioxide ($CO_2$) | CO2-100-IR2 | 211226/ 251031 | 0…100 % (v/v) | ▪ Main application Gas Analysis, for example biogas and dump gas<br>▪ Operation in sampling systems, for example *ExTox* IMC<br>▪ above 50 % (v/v) measuring accuracy is limited<br>▪ Temperature: -10 °C to +55 °C<br>▪ Response Time $t_{90}$: 25 s (operation by means of aspiration: 10 s) |
| | CO2-10000-IR3 | 211292/ ------ | 0…10000 ppm (0…10 % (v/v)) | ▪ Temperature: -0 °C to +45 °C<br>▪ Response Time $t_{90}$: 25 s |
| | CO2-5-IR2 | 211236/ 251016 | 0…5 % (v/v) | ▪ Temperature: -10 °C to +55 °C<br>▪ Response Time $t_{90}$: 25 s |
| | CO2-T-5-IR2 | 211241/ 251051 | 0…5 % (v/v) | ▪ Temperature: -25 °C to +55 °C (low temperature application)<br>▪ Response Time $t_{90}$: 25 s |
| | CO2-5000-IR2 | 211237/ 251021 | 0…5000 ppm | ▪ Temperature: -10 °C to +55 °C<br>▪ Response Time $t_{90}$: 25 s |
| | CO2-500-IR3 | 211261/ ------ | 0…500 ppm | ▪ Temperature: -0 °C to +45 °C<br>▪ Response Time $t_{90}$: 25 s |
| Carbon Monoxide (CO) | IR-Absorption | 293007 | 0…100 % (v/v) | ▪ Special version (gas card)<br>▪ Operation only in sampling systems, for example *ExTox* IMC |
| | IR-Absorption | 293006 | 0…35 % (v/v) | ▪ Special version (gas card)<br>▪ Operation only in sampling systems, for example *ExTox* IMC |
| | CO-4-EC | 211256/ ------ | 0…4 % (v/v) (40000 ppm) | ▪ Cross sensitivities:<br>10000 ppm $H_2$ → ca. 10000 ppm CO<br>10000 ppm $C_2H_4$ → ca. 1000 ppm CO<br>▪ Temperature: -10 °C to +40 °C<br>▪ Response Time $t_{90}$: 40 s |
| | CO-2-IR-P | 211278/ ------ | 0…2 % (v/v) | ▪ Special version<br>▪ Operation only in sampling systems, for example *ExTox* IMC<br>▪ Dimensions Type Sens:<br>188 mm x 105 mm x 65 mm<br>▪ Temperature: -10 °C to +40 °C<br>▪ Response Time $t_{90}$: 30 s |
| | CO-4000-EC | 211230/ 251030 | 0…4000 ppm | ▪ Cross sensitivities:<br>1000 ppm $H_2$ → ca. 600 ppm CO<br>1000 ppm $C_2H_4$ → ca. 100 ppm CO<br>▪ Temperature: -10 °C to +40 °C<br>▪ Response Time $t_{90}$: 40 s |
| | CO-300-EC | 211205/ 251006 | 0…300 ppm | ▪ Cross sensitivities:<br>100 ppm $H_2$ → ca. 540 ppm CO<br>▪ 100 ppm $C_2H_4$ → ca. 75 ppm CO<br>▪ Temperature: -10 °C to +40 °C<br>▪ Response Time $t_{90}$: 40 s |

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| Measured Gas | Transmitter | Article-No. Sens/ExSens | Standard Range | Type Specific Features/ Remarks |
|---|---|---|---|---|
| Carbon Monoxide (CO)<br>*- continued -* | CO-300-EC2 | 211309/<br>251076 | 0…300 ppm | ▪ $H_2$-compensated<br>▪ Cross sensitivities:<br>100 ppm $H_2$ → ca. 0 ppm CO<br>100 ppm $C_2H_4$ → ca. 75 ppm CO<br>▪ Temperature: -10 °C to +40 °C<br>▪ Response time $t_{90}$: 40 s |
| Chlorine ($Cl_2$) | Cl2-10-EC2 | 211298/<br>------- | 0…10 ppm | ▪ Cross sensitivities:<br>1 ppm $Br_2$ → ca. 1 ppm $Cl_2$<br>1 ppm $F_2$ → ca. 0.4 ppm $Cl_2$<br>1 ppm $ClO_2$ → ca. 0.5 ppm $Cl_2$<br>10 ppm $SO_2$ → ca. 2 ppm $Cl_2$<br>10 ppm $NO_2$ → ca. 2 ppm $Cl_2$<br>▪ All parts which are in touch with gas have to be rinsed with test gas for minimum 30 min. before calibration.<br>▪ Sens: Sensor protection cap made of Teflon<br>▪ Temperature: -10 °C to +40 °C<br>▪ Response Time $t_{90}$: 30 s |
| Chlorine Dioxide ($ClO_2$) | ClO2-1-EC2 | 211276/<br>------ | 0…1 ppm | ▪ Cross sensitivities:<br>1 ppm $Cl_2$ → ca. 0.6 ppm $ClO_2$<br>20 ppm $H_2S$ → ca. -5 ppm $ClO_2$ (!)<br>0.5 ppm $O_3$ → ca. 1.5 ppm $ClO_2$<br>▪ All parts which are in touch with gas have to be rinsed with test gas for minimum 30 min. before calibration.<br>▪ Warning device, limited measuring accuracy<br>▪ An adjustment with Chlorine Dioxide is impossible under usual operation conditions. Calibration with replacement gas Chlorine.<br>▪ At place of installation a functional test can only be done with Chlorine<br>▪ Sensor protection cap made of Teflon<br>▪ Temperature: -20 °C to +40 °C<br>▪ Response Time $t_{90}$: 120 s, $t_{50}$: 20 s |
| Climatic Variables: Temperature, Humidity, Pressure | TF | 211265/<br>251047 | -40 to 120 °C,<br>0 to 100 % r.H., | separate Data Sheet |
| | TFD | 211255 | -40 to 120 °C,<br>0 to 100 % r.H.,<br>0 to 2000 hPa (mbar) | separate Data Sheet |
| Cooling Agents | KM-1-HL | 211213/<br>251018 | 0…5000 ppm<br>(0,5 % (v/v)) | ▪ Main application: leakage detection for cooling agents containing hydrogen (for example R134a, R404a, R507, R152a, R22, …)<br>▪ Warning device, Measuring accuracy limited due to principle<br>▪ Temperature: -20 °C to +50 °C<br>▪ Response Time $t_{90}$: 60 s |
| | R134-2000-IR | 211291/<br>…… | 0…2000 ppm | ▪ Special version<br>▪ Temperature: -20 °C to +40 °C<br>Response time $t_{90}$: 60 s |
| | R507-1000-IR | 211294/<br>…… | 0…1000 ppm | ▪ Special version<br>▪ Temperature: -20 °C to +40 °C<br>Response time $t_{90}$: 60 s |
| Diborane ($B_2H_6$) | | | | see: Hydride Gases (Silane, Phosphine) |
| Diethyl Ether ($C_2H_5OC_2H_5$) | | | | see: Flammable Gases |
| Dimethyl Ether ($CH_2OCH_4$) | | | | see: Flammable Gases |
| Ethane ($C_2H_6$) | | | | see: Flammable Gases |
| Ethanol ($C_2H_5OH$) | | | | see: Flammable Gases |
| Ethine ($C_2H_2$) | | | | see: Flammable Gases |
| | | | | see: Flammable Gases |

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|---|---|---|---|---|
| Ethene/ Ethylene ($C_2H_4$) | C2H4-1000-EC | 211240/ 251022 | 0…1000 ppm | ▪ Cross sensitivities:<br>10 ppm $H_2$ → ca. 6 ppm $C_2H_4$<br>10 ppm $H_2S$ → ca. 25 ppm $C_2H_4$<br>10 ppm $SO_2$ → ca. 6 ppm $C_2H_4$<br>10 ppm NO → ca. 3 ppm $C_2H_4$<br>10 ppm $NO_2$ → ca. 6 ppm $C_2H_4$<br>10 ppm HCN → ca. 5ppm $C_2H_4$<br>▪ Temperature: -10 °C to +40 °C<br>▪ Response Time $t_{90}$: 40 s |
| Ethyl Acetate ($CH_3COOC_2H_5$) | | | | see: Flammable Gases |
| Ethylene Oxide ($C_2H_4O$) | EO-100-EC | 211219/ 251013 | 0…100 ppm | ▪ The used sensor disposes of a limited selectivity. But this fact allows an application for a lot of other gases, if these are only binary mixtures (measured gas/air) and the absolute measuring accuracy only plays a subordinated role.<br>▪ Cross sensitivities (Selection):<br>100 ppm $C_2H_6O$ → ca. 55 ppm $C_2H_4O$<br>100 ppm $C_7H_8O$ → ca. 20 ppm $C_2H_4O$<br>100 ppm $C_4H_8O$ → ca. 10 ppm $C_2H_4O$<br>100 ppm CO → ca. 40 ppm $C_2H_4O$<br>(further gases: please contact *ExTox* on demand)<br>▪ Calibration with replacement gas: please contact *ExTox*<br>▪ Temperature: -20 °C to +40 °C<br>▪ Response Time $t_{90}$: 120 s |
| Flammable Gases and Vapours | BG-100-IR2 | 211227/ 251024 | 0…100 % (v/v) | ▪ Main application Gas Analysis Methane ($CH_4$), for example biogas or dump gas<br>▪ Designed for measurement in the range of 40 to 60 % (v/v) $CH_4$<br>▪ Operation in sampling systems, for example *ExTox* IMC<br>▪ Temperature: -20 °C to +55 °C<br>▪ Response Time $t_{90}$: 30 s (operation by means of aspiration: 10 s) |
| | IR-Absorption | 293000/ …… | 0…100 % (v/v) | ▪ Main application: gas analysis methane ($CH_4$), gas feed-in systems<br>▪ Special version (Gascard)<br>▪ Operation in sampling systems, for example *ExTox* IMC |
| | BG-100-90-IR2 / BG-V-100-90-IR2 | 211304/ 251074 | 0…100 % (v/v) | ▪ Main application: Gas analysis Methane ($CH_4$), for example biogas and dump gas<br>▪ Designed for measurement close to 100 % (v/v) $CH_4$<br>▪ Operation in sampling systems, for example *ExTox* IMC<br>▪ Temperature: -20 °C to +55 °C<br>▪ Response time $t_{90}$: 30 s (operation by means of aspiration: 10 s) |
| | BG-IR2 | 211216/ 251005 | 0…100 % LEL | ▪ Main application: areas with danger of sensor poison (for example sewage plants), areas with oxygen reduction, areas with use of higher hydrocarbons<br>▪ Measuring gas: hydrocarbons (HC)<br>▪ Temperature: -20 °C to +55 °C<br>▪ Response Time $t_{90}$: 30 s (operation by means of aspiration: 10 s) |
| | BG-WT | 211206/ 251001 | 0…100 % LEL | ▪ Main application: all standard applications for explosion protection<br>▪ Measuring gases: all flammable gases<br>▪ Temperature: -25 °C to +55 °C<br>▪ Response Time $t_{90}$: 15…60 s, depending on gas type |

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| Measured Gas | Transmitter | Article-No. Sens/ExSens | Standard Range | Type Specific Features/ Remarks |
|---|---|---|---|---|
| | BG-HL | 211207/ 251004 | 0…100 % LEL | ▪ Main application: monitoring of ambient air, for example heating<br>▪ Measuring gases: Hydrogen, Methane, Propane, Butane (other gases possible acc. to prior agreement with *ExTox*)<br>▪ Warning device, measuring accuracy limited due to principle<br>▪ Temperature: -25 °C to +55 °C<br>▪ Response Time $t_{90}$: 30…60 s, depending on gas type |
| | BG-5000-HL | 211215/ 251002 | 0…5000 ppm | ▪ Main application: detection of leakages and vestiges<br>▪ Measuring gases: Hydrogen, Methane, Propane or Butane (other gases possible acc. to prior agreement with *ExTox*)<br>▪ Warning device, measuring accuracy limited due to principle<br>▪ Temperature: -25 °C to +55 °C<br>▪ Response Time $t_{90}$: 30…60 s, depending on gas type |
| Fluorine ($F_2$) | F2-10-EC | 211258/ ------ | 0…10 ppm | As F2-1-EC, except Response Time $t_{90}$: 90 s, $t_{50}$: 40 s |
| | F2-1-EC | 211228/ ------ | 0…1 ppm | ▪ Warning device, limited measuring accuracy<br>▪ Lifetime: ca. 1…2 years<br>▪ Cross sensitivities:<br>0.2 ppm $AsH_3$ → ca. 1 ppm $F_2$<br>0.5 ppm $Cl_2$ → ca. 0.7 ppm $F_2$<br>0.5 ppm $O_3$ → ca. 0.6 ppm $F_2$<br>0.3 ppm HCN → ca. -1 ppm $F_2$ (!)<br>0.5 ppm $NO_2$ → ca. -1 ppm $F_2$ (!)<br>0.5 ppm $H_2S$ → ca. -1 ppm $F_2$ (!)<br>$Br_2$, $PH_3$ (impossible to quantize)<br>▪ All parts which are in touch with gas have to be rinsed with test gas for minimum 30 min. before calibration.<br>▪ An adjustment with Fluorine is impossible under usual operation conditions. Calibration with replacement gas Chlorine.<br>▪ At place of installation a functional test can only be done with Chlorine<br>▪ Temperature: -10 °C to +40 °C<br>▪ Response Time $t_{90}$: 90 s, $t_{50}$: 30 s |
| Fuels (Mixture) | | | | see: Flammable Gases |
| German ($GeH_4$) | | | | see: Hydride Gases (Silane, Phosphine) |
| Helium (He) | | | | Can only be measured by means of oxygen deficiency |
| Heptane, n- ($C_7H_{16}$) | | | | see: Flammable Gases |
| Hexane, n- ($C_6H_{14}$) | | | | see: Flammable Gases |
| Humidity, relative | | | | see: Climatic Variables |
| Hydride Gases | | | | see: Silane, Phosphine |
| Hydrogen ($H_2$) | H2-100-WLD<br>H2-30-WLD<br>H2-10-WLD | 940364/ ------<br>940345/ ------<br>940414/ ------ | 0…100 % (v/v)<br>0…30 % (v/v<br>0…10 % (v/v | ▪ Measuring principle: Thermal conductivity<br>▪ Main application gas analysis<br>▪ Operation in sampling systems, for example *ExTox* IMC<br>▪ Gas cooler required in case of changing humidity<br>▪ Measurement in binary gas mixtures only (Every additional component will affect the readings due to different thermal conductivity)<br>▪ Temperature: -10 °C to +40 °C<br>▪ Response Time $t_{90}$: 30 s |
| | BG-WT | 211206/ 251001 | 0…100 % LEL | see: Flammable Gases |
| | BG-HL | 211207/ 251004 | 0…100 % LEL | see: Flammable Gases |

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| Measured Gas | Transmitter | Article-No. Sens/ExSens | Standard Range | Type Specific Features/ Remarks |
|---|---|---|---|---|
| Hydrogen ($H_2$) *- continued -* | H2-30-EC | 211242/ …… | 0…30 % (v/v) | ▪ Operation only in sampling systems, for example *ExTox* IMC<br>▪ Transmitter with extension of measuring range<br>▪ Cross sensitivities: H2S, unsaturated hydrocarbons (impossible to quantify)<br>▪ Temperature: -20 °C to +40 °C<br>▪ Response time $t_{90}$: 80 s |
| | H2-2-EC | 211229/ 251026 | 0…2 % (v/v) | ▪ Cross sensitivities: 100 ppm $H_2S$ → ca. 200 ppm $H_2$ unsaturated hydrocarbons (impossible to quantize)<br>▪ Temperature: -20 °C to +40 °C<br>▪ Response Time $t_{90}$: 60 s |
| | H2-1-EC | 211251/ ------- | 0…1 % (v/v) | ▪ Maximum measuring range: 1 % $H_2$ (v/v)<br>▪ Cross sensitivities: 100 ppm CO → ca. 60 ppm $H_2$, 10 ppm $NO_2$ → ca. -40 ppm $H_2$ (!), $H_2S$: Filter with dose dependent life time, unsaturated hydrocarbons (impossible to quantize)<br>▪ Temperature: -20 °C to +40 °C<br>▪ Response Time $t_{90}$: 60 s |
| | BG-5000-HL | 211215/ 251002 | 0…5000 ppm | see: Flammable Gases |
| | H2-1000-EC | 211225/ 251017 | 0…1000 ppm | ▪ Cross sensitivities: 10 ppm $H_2S$ → ca. 2 ppm $H_2$ 10 ppm $H_2S$ → ca. 2 ppm $H_2$ 10 ppm NO → ca. 3 ppm $H_2$ 10 ppm HCN → ca. 3 ppm $H_2$ 10 ppm $C_2H_4$ → ca. 8 ppm $H_2$ unsaturated hydrocarbons (impossible to quantize)<br>▪ Temperature: -20 °C to +40 °C<br>▪ Response Time $t_{90}$: 60 s |
| | H2-1000-EC incl. Activated carbon filter | 211243/ ------ | 0….1000 ppm | ▪ Main application Biogas analysis<br>▪ Activated carbon filter for reduction of cross sensitivities<br>▪ Operation only in sampling systems, for example *ExTox* IMC<br>▪ Cross sensitivities: activated carbon filter have to be replaced depending on contamination, otherwise penetration takes place<br>▪ Temperature: -20 °C to +40 °C<br>▪ Response Time $t_{90}$: 50 s |
| Hydrogen Bromide (HBr) | | | | see: Hydrogen Chloride |
| Hydrogen Chloride (HCl) | HCL-50-EC | 211210/ ------ | 0…50 ppm | ▪ Cross sensitivities: 1 ppm HBr → ca. 1 ppm HCl 20 ppm $H_2S$ → ca. 15 ppm HCl 20 ppm $SO_2$ → ca. 10 ppm HCl 20 ppm HCN → ca. 10 ppm HCl 100 ppm NO → ca. 45 ppm HCl 0.2 ppm As → ca. 0.8 ppm HCl 0.1 ppm $PH_3$ → ca. 0.8 ppm HCl<br>▪ All parts which are in touch with gas have to be rinsed with test gas for minimum 30 min. before calibration<br>▪ Temperature: -10 °C to +40 °C<br>▪ Response Time $t_{90}$: 90 s, $t_{50}$: 40s |
| Hydrochloric Acid Vapours (HCl) | | | | see: Hydrogen Chloride |

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|---|---|---|---|---|
| Hydrogen Cyanide (HCN) | HCN-30-EC | 211239/ ------ | 0…30 ppm | ▪ Cross sensitivities:<br>50 ppm NO → ca. -3 ppm HCN (!)<br>20 ppm $NO_2$ → ca. -14 ppm HCN (!)<br>20 ppm $H_2S$ → ca. 40 ppm HCN (delayed)<br>▪ Temperature: -20 °C to +40 °C<br>▪ Response Time $t_{90}$: 60 s |
| Hydrogen Fluoride (HF) | HF-10-EC | 211235/ ------ | 0…10 ppm | ▪ Cross sensitivities:<br>1 ppm $Cl_2$ → ca. 0.7 ppm HF<br>20 ppm $SO_2$ → ca. 16 ppm HF<br>10 ppm HCl → ca. 6 ppm HF<br>Fluoride (impossible to quantize)<br>▪ All parts which are in touch with gas have to be rinsed with test gas for minimum 30 min. before calibration.<br>▪ Calibration with replacement gas Hydrogen Chloride or Chlorine.<br>▪ Temperature: -10 °C to +40 °C<br>▪ Response Time $t_{90}$: 100 s, $t_{50}$: 50 s |
| Hydrogen peroxide ($H_2O_2$) | H2O2-100-EC | 211301/ ------ | 0…100 ppm | ▪ Cross sensitivities:<br>10 ppm $SO_2$ → ca. 10 ppm $H_2O_2$<br>▪ Temperature: -20 °C to +40 °C<br>▪ Response time $t_{90}$: 60 s |
| Hydrogen Sulphide ($H_2S$) | H2S-5000-EC/ H2S-V-5000-EC | 211297/ 251075 | 0…5000 ppm | ▪ Main application gas analysis, for example biogas and dump gas<br>▪ Operation only in sampling systems, for example *ExTox* IMC<br>▪ Cross sensitivities:<br>10 ppm $NO_2$ → ca. -25 ppm $H_2S$ (!)<br>10 ppm $Cl_2$ → ca. -15 ppm $H_2S$ (!)<br>50 ppm NO → ca. 10 ppm $H_2S$<br>20 ppm $SO_2$ → ca. 20 ppm $H_2S$<br>▪ Temperature: -20 °C to +45 °C<br>▪ Response Time $t_{90}$: 60 s |
| | H2S-3000-EC/H2S-V-3000-EC2 | 211224/ 251049 | 0…3000 ppm | ▪ Main application gas analysis, for example biogas and dump gas<br>▪ Transmitter with extension of measuring range<br>▪ Operation in sampling systems, for example *ExTox* IMC<br>▪ Cross sensitivities:<br>1 % (v/v) $H_2$ → ca. 10…20 ppm $H_2S$<br>▪ Dimensions Type Sens:<br>188 mm x 105 mm x 65 mm<br>▪ Temperature: -20 °C to +45 °C<br>▪ Response time $t_{90}$: 60 s |
| | H2S-100-EC | 211212/ 251003 | 0…100 ppm | ▪ Cross sensitivities:<br>5 ppm $NO_2$ → ca. -1 ppm $H_2S$ (!)<br>10 ppm HCN → ca. -1 ppm $H_2S$ (!)<br>5 ppm $SO_2$ → ca. 1 ppm $H_2S$<br>1 % (v/v) ppm $H_2$ → ca. 15 ppm $H_2S$<br>▪ Hydrogen Sulphide concentrations above the end value of measuring range may destroy the sensor already after a short time.<br>▪ Temperature: -40 °C to +45 °C<br>▪ Response Time $t_{90}$: 60 s |
| | H2S-100-EC-BIO | 211289/ --- | 0…100 ppm | ▪ Main application gas analysis, for example biogas and dump gas<br>▪ Operation only in sampling systems, for example *ExTox* IMC<br>▪ Protection above Hydrogen Sulphide concentrations above the end value of measuring range up to ca. 500 ppm<br>▪ Cross sensitivities:<br>1 % (v/v) $H_2$ → ca. 15 ppm $H_2S$<br>▪ Dimensions Type Sens:<br>188 mm x 105 mm x 65 mm<br>▪ Temperature: -40 °C to +45 °C<br>▪ Response Time $t_{90}$: 60 s |

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| Measured Gas | Transmitter | Article-No. Sens/ExSens | Standard Range | Type Specific Features/ Remarks |
|---|---|---|---|---|
| Hydrogen Sulphide ($H_2S$) *- continued -* | H2S-50-EC | 211287 | 0…50 ppm | ▪ Low cross sensitivity to $H_2$<br>▪ Cross sensitivities:<br>5 ppm $NO_2$ → ca. -1 ppm $H_2S$ (!)<br>10 ppm HCN → ca. -1 ppm $H_2S$ (!)<br>5 ppm $SO_2$ → ca. 1 ppm $H_2S$<br>1 % (v/v) ppm $H_2$ → < 5 ppm $H_2S$<br>▪ $H_2S$ concentrations above the end value of measuring range may destroy the sensor already after a short time.<br>▪ Temperature: -40 °C to +45 °C<br>▪ Response Time $t_{90}$: 60 s |
| IPA | | | | see: Propanol |
| Isopropyl Acetate ($CH_3COOC_3H_7$) | | | | see: Flammable Gases |
| Kerosine (Mixture) | | | | See: Flammable Gases |
| Laughing gas ($N_2O$) | | | | see: Nitrous Oxide |
| Methane ($CH_4$) | | | | see: Flammable Gases |
| Methanol ($CH_3OH$) | | | | see: Flammable Gases |
| Methyl Acetate ($CH_3COOCH_3$) | | | | see: Flammable Gases |
| Methyl Ethyl Ketone/ MEK ($CH_3COC_2H_5$) | | | | see: Flammable Gases |
| Nitrogen ($N_2$) | | | | Can only be measured by means of oxygen deficiency |
| Nitrogen Oxide ($NO_x$) | | | | see Nitrogen Monoxide |
| Nitrogen Dioxide ($NO_2$) | NO2-5000-EC | 211293/ ------ | 0…5000 ppm | ▪ Lifetime: ca. 2 years<br>▪ Temperature: -20 °C to +45 °C<br>▪ Response Time $t_{90}$: 60 s |
| | NO2-1000-EC | 211223/ …… | 0…1000 ppm | ▪ Operation in sampling systems, for example *ExTox* IMC<br>▪ Transmitter with extension of measuring range<br>▪ Lifetime: ca. 2 years<br>▪ Cross sensitivities:<br>10 ppm $H_2S$ → ca. -1 ppm $NO_2$ (!)<br>10 ppm $SO_2$ → ca. -0.1 ppm $NO_2$ (!)<br>10 ppm $Cl_2$ → ca. 10 ppm $NO_2$<br>▪ Dimensions Type Sens:<br>188 mm x 105 mm x 65 mm<br>▪ Temperature: -20 °C to +45 °C<br>▪ Response Time $t_{90}$: 60 s |
| | NO2-20-EC | 211222/ 251015 | 0…20 ppm | ▪ Lifetime: ca. 2 years<br>▪ Cross sensitivities:<br>10 ppm $H_2S$ → ca. -1 ppm $NO_2$ (!)<br>10 ppm $SO_2$ → ca. -0.1 ppm $NO_2$ (!)<br>10 ppm $Cl_2$ → ca. 10 ppm $NO_2$<br>▪ Temperature: -20 °C to +40 °C<br>▪ Response Time $t_{90}$: 40 s |
| Nitrogen Monoxide (NO) | NO-3000-EC | 211275/ ------ | 0…3000 ppm | ▪ Lifetime: ca. 2 years<br>▪ Cross sensitivities:<br>100 ppm $NO_2$ → ca. 1 ppm NO<br>▪ Temperature: -20 °C to +40 °C<br>▪ Response Time $t_{90}$: 30 s |
| | NO-100-EC | 211214/ 251008 | 0…100 ppm | ▪ Can be used for sum measurement of $NO_x$<br>▪ Lifetime: ca. 2 years<br>▪ Cross sensitivities:<br>15 ppm $SO_2$ → ca. 5 ppm NO<br>10 ppm $NO_2$ → ca. 4 ppm NO<br>unsaturated hydrocarbons and hydrogen: impossible to quantize<br>▪ Temperature: -20 °C to +40 °C<br>▪ Response Time $t_{90}$: 30 s |
| Nitrous Oxide ($N_2O$) | N2O-1-IR2 | 211253/ 251067 | 0…1 % (v/v) (10000 ppm) | ▪ Alarm levels from 0.05 % (v/v) (500 ppm) (Estimation based on most unfavourable operation conditions)<br>▪ Temperature: -25 °C to +55 °C<br>▪ Response Time $t_{90}$: 30 s |
| Nonane, n- ($C_9H_{20}$) | | | | see: Flammable Gases |
| Octane, n- ($C_8H_{18}$) | | | | see: Flammable Gases |

# Gas and Transmitter List

| Measured Gas | Transmitter | Article-No. Sens/ExSens | Standard Range | Type Specific Features/ Remarks |
|---|---|---|---|---|
| Oxygen ($O_2$) | O2-25-KE | 211218/ 251012 | 0…25 % (v/v) | ▪ Main application monitoring of ambient air, inertisation, gas analysis, for example biogas and dump gas<br>▪ Lifetime: ca. 5 years (longlife)<br>▪ Hydrocarbons, for example $CH_4$, as well as Carbon Monoxide, Carbon Dioxide, Hydrogen, Chlorine and inert gases don't interfere.<br>▪ Indication is proportional to the oxygen partial pressure, that means fluctuations of the ambient pressure lead to changes.<br>▪ High concentrations of ammonia in the measured gas (> 100 ppm NH3) may reduce lifetime of the sensor.<br>▪ Ozone (O3) may influence sensitivity of the sensor and may affect sensor materials<br>▪ During operation sensor opening has definitely to be placed downwards.<br>▪ Temperature: +5 °C to +40 °C, -10 °C to +5 °C: Measuring signal up to 10 % lower than at +20 °C<br>▪ Response Time $t_{90}$: 20 s (operation by means of aspiration: 10 s) |
| | O2-25-EC | 211208/ 251007 | 0…25 % (v/v) | ▪ Main application monitoring of ambient air<br>▪ Lifetime: ca. 2 years, reduced by operation in Carbon Dioxide.<br>▪ Temperature: -20 °C to +50 °C<br>▪ Response Time $t_{90}$: 20 s |
| | Paramagnetic | | 0…25 % (v/v) | ▪ Special version on demand<br>▪ Measuring range: 5 to 100 % (v/v) possible<br>▪ Operation only in sampling systems, for example *ExTox* IMC |
| | O2-25-ZrO2 | 211282/ ------ | 0…25 % (v/v) | ▪ Special version on demand<br>▪ Measuring principle: Zirconium oxide-sensor |
| | O2-0.5-KE | 211279/ ------ | 0…0.5 % (v/v) | ▪ Operation in sampling systems only , for example *ExTox* IMC<br>▪ Lifetime: ca. 5 years (longlife)<br>▪ Temperature: +5 °C to +40 °C<br>▪ Response Time $t_{90}$: 120 s |
| | O2-200-EC | 211280/ 251070 | 0…200 ppm | ▪ Operation in sampling systems, for example *ExTox* IMC<br>▪ Lifetime: ca. 2 years (inert operation)<br>▪ Temperature: -10 °C to +40 °C<br>▪ Response Time $t_{90}$: 20 s |

# Gas and Transmitter List

| Measured Gas | Transmitter | Article-No. Sens/ExSens | Standard Range | Type Specific Features/ Remarks |
|---|---|---|---|---|
| Ozone ($O_3$) | O3-1-EC | 211211/ …… | 0…1 ppm | ▪ Lifetime: ca. 1…2 years<br>▪ Warning device, limited measuring accuracy<br>▪ Cross sensitivities:<br>100 ppm $NH_3$ → ca. -3 ppm $O_3$ (!)<br>20 ppm $SO_2$ → ca. -0.2 ppm $O_3$ (!)<br>10 ppm $NO_2$ → ca. 5 ppm $O_3$<br>20 ppm $H_2S$ → ca. 2 ppm $O_3$<br>1 ppm $Cl_2$ → ca. 1.5 ppm $O_3$<br>1 ppm $F_2$ → ca. 1 ppm $O_3$<br>▪ At longer application of Hydrogen Sulphide the sensor gets insensitive.<br>▪ All parts which are in touch with gas have to be rinsed with test gas for minimum 30 min. before calibration.<br>▪ An adjustment with Ozone is impossible under usual operation conditions due to its high reactivity. Calibration with replacement gas Chlorine.<br>▪ At place of installation a functional test can only be done with Chlorine<br>▪ Temperature: -20 °C to +40 °C<br>▪ Response Time $t_{90}$: 30 s |
| Pentane, n- ($C_5H_{12}$) | | | | see: Flammable Gases |
| Phosphorous Trichloride ($PCl_3$) | | | | see: Hydrogen Chloride |
| Phosgene/ Carbonyl Chloride ($COCl_2$) | COCl2-1-EC | 211259/ ------ | 0…1 ppm | ▪ Lifetime: ca. 1…2 years<br>▪ Cross sensitivities:<br>0.2 ppm $AsH_3$ → ca. 0.2 ppm $COCl_2$<br>0.5 ppm $Cl_2$ → ca. 0.2 ppm $COCl_2$<br>10 ppm HCl → ca. 25 ppm $COCl_2$<br>0.3 ppm $O_3$ → ca. 0.03 ppm $COCl_2$<br>10 ppm $NO_2$ → ca. -1 ppm $COCl_2$ (!)<br>1 ppm $ClO_2$→ ca. -3 ppm $COCl_2$ (!)<br>$H_2S$ (prefilter, after penetration indication which cannot be quantized)<br>▪ Warning device, limited measuring accuracy<br>▪ An adjustment with Ozone is impossible under usual operation conditions. Calibration with replacement gas Chlorine.<br>▪ At place of installation a functional test can only be done with Chlorine<br>▪ Temperature: -10 °C to +40 °C<br>▪ Response Time $t_{90}$: 120 s, $t_{50}$: 60 s |
| Phosphine ($PH_3$) | PH3-1-EC | 211234/ ------ | 0…1 ppm | ▪ Also suitable for measurement of other Hydride Gases<br>▪ Cross sensitivities:<br>1 ppm $SiH_4$ → ca. 0.6 ppm $PH_3$<br>1 ppm $GeH_4$ → ca. 0.6 ppm $PH_3$<br>1 ppm $AsH_3$ → ca. 0.6 ppm $PH_3$<br>1 ppm $B_2H_6$ → ca. 0.6 ppm $PH_3$<br>2 ppm $Cl_2$ → ca. -0.15 ppm $PH_3$ (!)<br>10 ppm $SO_2$ → ca. 0.75 ppm $PH_3$<br>5 ppm $NO_2$ → ca. -0.75 ppm $PH_3$ (!)<br>20 ppm $H_2S$ → ca. 4 ppm $PH_3$<br>20 ppm HCN → ca. 0.4 ppm $PH_3$<br>▪ Calibration with replacement gas Silane<br>▪ High humidity may lead to reduction of indication and delayed response due to high solubility of the measured gas<br>▪ Temperature: -10 °C to +40 °C<br>▪ Response Time $t_{90}$: 30 s, $t_{50}$: 10 s |
| pH in fluid mediums | pH-IS | 291024 | pH 0…14 | Separate Data Sheet |
| Pressure | | | | see: Climatic Variables |
| Propane ($C_3H_8$) | | | | see: Flammable Gases |
| Propanol, 1- ($C_3H_7OH$) | | | | see: Flammable Gases |

# Gas and Transmitter List

| Measured Gas | Transmitter | Article-No. Sens/ExSens | Standard Range | Type Specific Features/ Remarks |
|---|---|---|---|---|
| Propanol, 2-, iso-, i-/ IPA ($C_3H_7OH$) | | | | see: Flammable Gases |
| Propene/Propylene ($C_3H_6$) | | | | see: Flammable Gases |
| Propylene Oxide ($C_3H_6O$) | | | | see: Flammable Gases |
| R… Refrigerants Cooling Agents( Mix-tures), containing hy-drogen | | | | see: Cooling Agents |
| Smoke Detector | | 297000 | | Separate Data Sheet |
| Smoke Detector (Zone 0) | | 297005 | | Separate Data Sheet |
| Sulphur Dioxide ($SO_2$) | SO2-1000-EC | 211284 | 0…1000 ppm | ▪ Operation in sampling systems only, for example ExTox IMC<br>▪ Transmitter with extension of measuring range<br>▪ Cross sensitivities:<br>10 ppm NO2 → ca. -10 ppm SO2 (!)<br>10 ppm H2S → ca. 10 ppm SO2<br>10 ppm HCN → ca. 5 ppm SO2<br>10 ppm HCl → ca. 2 ppm SO2<br>▪ Dimensions Type Sens:<br>188 mm x 105 mm x 65 mm<br>▪ Temperature: -10 °C to +40 °C<br>▪ Response Time $t_{90}$: 45 s |
| | SO2-20-EC | 211217/ 251011 | 0…20 ppm | ▪ Cross sensitivities:<br>10 ppm $NO_2$ → ca. -10 ppm $SO_2$ (!)<br>10 ppm $H_2S$ → ca. 10 ppm $SO_2$<br>10 ppm HCN → ca. 5 ppm $SO_2$<br>10 ppm HCl → ca. 2 ppm $SO_2$<br>▪ Temperature: -10 °C to +40 °C<br>▪ Response time $t_{90}$: 45 s |
| | SO2-5-EC | 211269/ …… | 0…5 ppm | ▪ Measuring range 0…5 ppm and possible Alarm levels from 0.5 ppm for monitor-ing of work places.<br>▪ Cross sensitivities:<br>10 ppm $NO_2$ → ca. -15 ppm $SO_2$ (!)<br>10 ppm $H_2S$ → ca. 10 ppm $SO_2$<br>Temperature: -10 °C to +40 °C<br>▪ Response time $t_{90}$: 45 s |
| Sulphur Hexafluoride ($SF_6$) | SF6-1000-IR | 211277 | 0…1000 ppm | ▪ Special version<br>▪ Temperature: -20 °C to +40 °C<br>▪ Response time $t_{90}$: 60 s |
| Silane ($SiH_4$) | SiH4-50-EC | 211233/ 251019 | 0…50 ppm | ▪ Also suitable for measurement of other hydride gases<br>▪ Cross sensitivities:<br>1 ppm $AsH_3$ → ca. 1 ppm $SiH_4$<br>1 ppm $GeH_4$ → ca. 1 ppm $SiH_4$<br>1 ppm $PH_3$ → ca. 2 ppm $SiH_4$<br>1 ppm $B_2H_6$ → ca. 0.4 ppm $SiH_4$<br>1 ppm $ClO_2$ → ca. 0.2 ppm $SiH_4$<br>10 ppm $SO_2$ → ca. 2 ppm $SiH_4$<br>10 ppm $NO_2$ → ca. -1.5 ppm $SiH_4$ (!)<br>$H_2S$ (impossible to quantize)<br>▪ High humidity may lead to reduction of in-dication and delayed response due to high solubility of the measured gas<br>▪ Temperature: -10 °C to +40 °C<br>Response Time $t_{90}$: 60 s, $t_{50}$: 10 s |
| Silicium Tetrachloride ($SiCl_4$) | | | | See hydrogen chloride |

# Gas and Transmitter List

| Measured Gas | Transmitter | Article-No. Sens/ExSens | Standard Range | Type Specific Features/ Remarks |
|---|---|---|---|---|
| Styrol/ Vinylbenzol / Styrene/ Ethenylbenzol ($C_8H_8$) | C8H8-IR2 | 211270/ …… | 0…100 % UEG | ▪ Operation in sampling systems, for example *ExTox* IMC.<br>▪ Pay attention to adsorption at gas carrying components.<br>▪ Cross sensitivities: unsaturated hydro carbons: impossible to quantize<br>▪ Temperature: -25 °C to +55 °C<br>▪ Response time $t_{90}$: 30 s |
| Temperature | | | | See: climatic variable |
| Toluol ($C_7H_8$) | | | | See: flammable gases |
| Tetrahydrothiopene ($C_4H_8S$) | THT-15-EC | 211238/ 251023 | 0…15 ppm (0…55 mg/m³) | ▪ Main application: odorising of natural gas<br>▪ Cross sensitivities:<br>10 ppm $C_4H_{10}S$ → ca. 10 ppm THT<br>100 ppm CO → ca. 2 ppm THT<br>100 ppm $C_3H_80$ → ca. 50 ppm THT<br>$H_2S$ and unsaturated hydrocarbons, for example $C_2H_4$ (impossible to quantize)<br>▪ Temperature: -10 °C to +40 °C<br>▪ Response Time $t_{90}$: 30 s |
| Water Detector | | | | separate Data Sheet |
| Xylol, o- ($C_8H_{10}$) | | | | See: flammable gases |

(Subject to Technical Changes)