

Installation

Place:	The following recommendations can only be considered as guide. They do not replace expert evaluation of the individual local conditions. <i>ExTox</i> is at your disposal. <ul style="list-style-type: none"> Transmitter for monitoring of flammable gases and leakages of toxic gases should be installed close to potential sources of release; for gases heavier than air below and for gases lighter than air above the source of release. In case the source of release cannot be located, positioning is done correspondingly at the floor or on the ceiling. Most of the gases are heavier than air. Hydrogen, methane and ammonia are for example lighter than air. Transmitters for monitoring at working places are installed at face / respiration level.
Position:	Sensor opening to be placed downwards. Influence of position should be considered for calibration and adjustment at place of installation
Operation by means of Aspiration:	Combination with systems for sampling of measured gas, for example <i>ExTox</i> IMC, possible for measurement at places which are not accessible. Please do not hesitate to contact <i>ExTox</i> regarding application conditions.
Fixing:	Drilling jigs are available as download on our <i>ExTox</i> -Homepage
Alarm Levels:	<ul style="list-style-type: none"> Flammable Gases: Alarm levels from 10 % LEL (for higher hydrocarbons from 20 % LEL) Toxic Gases: Alarm levels from 10 % of standard measuring range. Lower limit of measuring range (acc. to DIN EN 45544 or IEC 62990-1) is approximately 5 % of standard measuring range. <p>(Valuation is based on most unfavourable application conditions. Lower alarm levels on demand)</p>
Initialisation:	After connection to power supply transmitters run through initialisation phase of 60 s. Fault signal is issued during this phase.
Time of Stabilisation:	<ul style="list-style-type: none"> Type ...-WT: approximately 2 min Type ...-IR: approximately 2 min Type ...-EC/-KE: approximately 5 min Type ...-HL: approximately 60 min <p>Transmitter should be operated under voltage for minimum 24 h before calibration.</p>

Features

Description of Measuring Principle:	<ul style="list-style-type: none"> Catalytic Combustion (Type ...-WT): The measured gas reaches two ceramic blended, electrically heated platinum coils. One of these coils is catalytically coated, so that flammable gases oxidize there with oxygen and cause a rise in temperature. This rise in temperature is evaluated and has to be considered as size for the measured gas concentration. Infrared-Absorption (Type ...-IR): Many gases absorb IR-light at specific wave lengths. In case a cell with measured gas is lighted through by an IR-Source, the attenuation of light intensity measured at the output has to be considered as size for the measured gas concentration. Electrochemical Sensor (Type ...-EC/-KE): The sensor consists of two or more electrodes which are arranged in an electrolyte. One of these electrodes is accessible for the measured gas. A redox reaction at the electrode takes place. This causes an electrical current which is proportional to the concentration in the measured gas. Metal Oxide-Semiconductor (Type ...-HL): A chemisorption of the measured gas takes place at the heated surface of a semi-conducting metal oxide. With that the metal oxide layer changes its electrical conductivity depending on the concentration of measured gas.
Cross Sensitivities:	<ul style="list-style-type: none"> Catalytic Combustion (Type ...-WT): Sensors react upon all flammable gases and vapours. Sensitivity decreases to higher hydrocarbons, while response time increases. Infrared-Absorption (Type ...-IR): Flammable Gases: The IR-Sensor reacts upon all hydrocarbons. Relative sensitivity varies depending on gas type. Hydrogen does not supply with a measuring signal due to the principle. SF₆, N₂O: For details ask <i>ExTox</i> please. Electrochemical Sensor (Type ...-EC/-KE): Type specific information to be taken from the <i>ExTox</i> Gas- and Transmitter List. All cross sensitivities listed therein have to be considered as guide value, as they could vary depending on production process, application conditions and sensor age. Metal Oxide-Semiconductor (Type ...-HL): Semiconductor sensors react upon all flammable gases and vapours as well as upon other gases, such as for example some refrigerants. The relative sensitivity varies depending on gas type. Hydrogen leads to a clear measuring signal even at ppm-concentrations. Reducing gases, such as NO₂ could cause negative measuring signals.

Transmitter Series ExSens and Sens: Operation Guide

Special Influences:	<ul style="list-style-type: none"> Catalytic Combustion (Type ...-WT): Some substances, as silicones, halogenated hydrocarbons, lead-tetra-ethyl, sulphur compounds and organic phosphor compounds lead to partly irreversible losses of sensitivity (sensor contamination) even in very low concentrations (ppm-range). A linear measuring signal cannot be secured at oxygen concentrations below 10 % (v/v). Infrared-Absorption (Type ...-IR): Keep dust and condensate away. Electrochemical Sensor (Type ...-EC/-KE): Long lasting operation in very dry atmosphere should be avoided. Permanent operation in air pollutant atmosphere may lead to malfunction. Oxygen-Sensor (Type ...-KE): During operation sensor opening has definitely to be placed downwards. Storage in deviant position may lead to changes in sensitivity and longer running-in time (up to several days). Metal Oxide-Semiconductor (Type ...-HL): Considerable changes of climatic environmental conditions, especially of humidity, should be avoided. Use preferentially at closed or protected places. Sensor contamination similar to Type ...-WT possible, but less distinctive. Deviations of oxygen content from normal air influence measuring behaviour.
Further Information:	<ul style="list-style-type: none"> Explosion protection: DGUV-I 213-057 (Merkblatt T023), Merkblatt T055, EN 60079-29-2 Toxic Gases: DGUV-I 213-056 (Merkblatt T021), EN 45544-4, EN 62990-2 (DGUV-I 213-056 and 213-057 are available as English versions.)
Maintenance	
Intervals:	<p>Regularly acc. to the applied regulations, otherwise depending on application conditions. ExTox recommends maintenance/system check every six months, but minimum once per year.</p> <p>For explosion protection DGUV-I 213-057 (Merkblatt T023) and EN 60079-29-2 should be kept. For monitoring of toxic gases DGUV-I 213-056 (Merkblatt T021) and EN 45544-4 or EN 62990-2 should be kept. Shorter test intervals should be kept in mind.</p> <p>Application of concentrations above the measuring range can permanently change zero point and sensitivity of gas sensors. In this case check-up with test gas should be done independent of the regular interval.</p>
Test Gas (Zero Point):	<ul style="list-style-type: none"> Type ...-WT/-EC/-HL: ambient air (free from measured gas), synthetic air Type ...-IR: ambient air (free from measured gas), synthetic air, nitrogen Types ... O2-25-EC/-KE: nitrogen
Test Gas (Sensitivity):	<p>Measuring Gas with concentration in the middle of measuring range or slightly above highest alarm level.</p> <p>Use of replacement gases only with consultation of ExTox.</p> <ul style="list-style-type: none"> Type ...-WT/-EC/-HL: Test gas mixture in air Type ...-IR: Test gas mixture in air or nitrogen Types ...O2-25-EC/-KE: ambient air
Application of Test Gas:	<p>0.5 to 1 l/min via ExTox-Calibration Adapter for ca. $3 \cdot t_{90}$-Response Time.</p> <p>For Types ...-EC/-HL unnecessary long application should be avoided.</p>
Sensor Lifetime:	<ul style="list-style-type: none"> Type ...-WT: 3 to 5 years Type ...-IR: 3 to >5 years Type ...-EC: 2 to 3 years (or ExTox Gas- / Transmitter List) Type ...-KE: approximately 5 years (when operated in air) Type ...-HL: 3 to 5 years <p>These remarks are valid for usual, but also difficult applications. Deviations in both directions are possible depending on the conditions of use and gas application. Extreme climatic loads, sensor contamination and permanent load with measured gas (for some Types ...-EC) can reduce lifetime.</p> <p>Exchange is recommended in case sensitivity under-runs half of the initial sensitivity. Independent of this an exchange should be done at the end of the mentioned upper limit of lifetime for Types ...-EC/-KE, as the functional loss can afterwards easily occur and it would be undiscovered until next maintenance.</p>

(Subject to Technical Changes)