



## Features

- Digital measurement value processing incl. temperature compensation
- Internal function control with integrated hardware watchdog
- Data / measured values sensor controller, therefore simple exchange uncalibrated <-> calibrated
- High accuracy, selectivity and reliability
- Low zero point drift
- Hardware & software compliant according to SIL2
- Easy maintenance and calibration by exchange of the sensor unit or by comfortable on-site calibration
- 4 – 20 mA (or 2 - 10Vdc) analog output with selectable signal output for special mode, fault etc.
- Reverse polarity protected, overload and short-circuit proof
- Housing for integration of the sensor unit

## Technical Data

<b>Gas type</b>	Pentane (C <sub>5</sub> H <sub>12</sub> )
<b>Detector element</b>	Pellistor (catalytic bead sensor)
<b>Power supply</b>	16 – 29Vdc, reverse-polarity protected
<b>Power consumption</b>	70 mA, max. (1.7VA for 24V)
<b>Analog output signal</b>	Proportional, overload and short-circuit proof, load ≤ 500 Ohm  <b>4- 20mA or 2-10V</b> = meas. range <b>3.2 &lt;4mA or 1.6-2V</b> = underrange <b>&gt;20-21.6 mA or 10-10.8V</b> = overrange <b>2.5 mA or 1.25V</b> = fault, low <b>&gt;21.8mA or 10.9V</b> = fault, high
<b>Measuring range</b>	0 – 100% LEL
<b>Measurement interval</b>	2 sec.
<b>Accuracy</b>	± 1 % LEL
<b>Relative gas density</b>	2.49
<b>Resolution</b>	0.2%
<b>Repeatability</b>	< 1% sig.
<b>t90 Time (time allowed for sensor to detect 90% of existing gas conc.)</b>	10 sec.
<b>Zero point variation</b>	0.5%
<b>Long-term zero-point drift</b>	< 0.3% LEL / month
<b>Long-term sensitivity drift</b>	< 1% LEL / month
<b>Temperature range</b>	-20 to +50 °C (-4 to 122 °F)
<b>Humidity range</b>	5 - 95% r.H. non-condensing
<b>Pressure range</b>	Atmospheric ± 20%
<b>Sensor life time</b>	> 36 months/normal ambient conditions

## Design Features

Exchangeable sensor unit including digital value processing, temperature compensation and self control for the continuous monitoring of the ambient air.

The gas detector unit houses a micro a controller with analog output and power supply including amplifier.

The micro controller calculates a linear 4 – 20 mA (or 2 – 10 Vdc) signal out of the measurement signal and also stores all relevant measured values and data of the sensor element.

Calibration is done either by simply replacing the sensor unit or by using the comfortable, integrated calibration routine directly at the system.

## Application

The gas detector is used for the detection of pentane gases in the non-Ex zone when a typical 4–20mA or 2–10Vdc signal is required.

## Ordering Codes

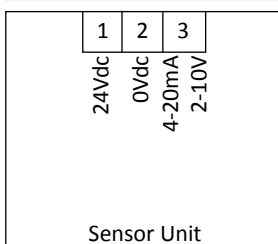
<b>APEN 100</b>	Gas Detector	2-10Vdc/4-20mA
<b>ZPEN 100</b>	Replacement Sensor	2-10Vdc/4-20mA
<b>ADUCT</b>	Duct Mounting Kit	

## Technical data (cont'd)

<b>Coverage area</b>	1 detector/80 - 120 m <sup>2</sup> , as a rule of thumb
<b>Calibration interval<sup>1</sup></b>	6 months
<b>Storage temperature</b>	5°C to 30°C (41°F to 86°F)
<b>Storage time</b>	6 months
<b>Poisoning</b>	The sensitivity of Pellistor sensors can be influenced by substances containing silicon compounds and even poisoned and destroyed by them.
<b>Enclosure</b>	Industrial plastic, fireproof according to UL94-VO
<b>Enclosure colour</b>	White
<b>Dimensions</b>	68 x 85 x 62 mm
<b>Weight</b>	Appr. 0.2 kg
<b>Protection class</b>	IP 65
<b>Mounting height</b>	<b>0.2 m above floor</b>
<b>Cable glands</b>	M20/M25
<b>Mounting</b>	Screw mounting / M25
<b>Wire connection</b>	Screw-type terminal min. 0.25 mm <sup>2</sup> , max. 1.5 mm <sup>2</sup> , 3-pin
<b>Directives</b>	EMC directives 2004/108/EC, CE Compliance with: EN 61010-1:2010, ANSI/UL 61010-1 CAN/CSA-C22.2 No. 61010-1
<b>Warranty</b>	1 year on material (without sensor element)

<sup>1</sup> Manufacturer recommended calibration interval for normal environmental conditions.

## Wiring Configuration



The detector is supplied with a 2-10Vdc control signal.

For a 4-20mA control signal, remove the resistor between terminals 2 and 3.



## Ordering Codes (cont'd)

### Alarm Units

<b>AAW 24</b>	Warning Horn 24Vdc 98 dB
<b>AAW 230</b>	Warning Horn 230Vac 98 dB
<b>OA 24</b>	Flashlight 24Vdc röd
<b>OAW 24</b>	Combined Warning Horn/Flashlight 24Vdc 98dB
<b>OAW 230</b>	Combined Warning Horn/Flashlight 230Vac 98dB
<b>OAW 24T</b>	Combined Warning Horn/Flashlight with reset button 24Vdc 98dB
<b>Gas Alarm</b>	Warning Plate flash "GASALARM" 24Vac/dc

## Special protection for persons and buildings

The devices are manufactured according to the regulations and various directives such as EN50545.

Products delivered by AP meet and even exceed the requirements stipulated by the new European standard EN50545.

The safety features check the connecting devices on functionality and open circuit - day and night.

Level SIL2 according to EN 50271

## Set-up and Standard Alarm Levels

0 - 100% LEL

- Early alarm level set at **5% LEL**
- Emergency alarm level set at **20% LEL**

Special protection for people and buildings. The units are manufactured in accordance with the rules and directives such as EN50545.

Products delivered by the AP meets and exceeds the requirements of the new European standard EN50545.

Safety functions control devices for connection warnings regarding functionality and open circuit - day and night.

Level SIL2 according to EN 50271.

### Set-up:

At 4mA the detector indicates that the sensor's service life has ended and links the fault indication to a relay output for alarm or similar.

3.2 mA and 21,6mA indicate sensor errors.

This is nonetheless an error and these values can be used for diagnostics as an internal check on functionality.

## General information

When and where is comprehensive monitoring needed to cover a large area? You may fear that leaks could occur over the whole area. One example could be a solvent storage depot. In similar places you have to assume that an area of 20 - 40 m<sup>2</sup> per detector could be affected depending on to what extent the vapours can spread (shelving, obstacles, etc.).

In a garage, the sensors are distributed rather evenly. It is estimated that no dangerously high concentrations would form in a garage between two detectors at the specified alarm thresholds with one detector covering 400 m<sup>2</sup>.

Concern about combustible gases has to be based on similar considerations with 80 - 120 m<sup>2</sup> per detector.

In a brewery, it is assumed that on a floor to be supervised the CO<sub>2</sub> will spread relatively evenly and close to the floor level.

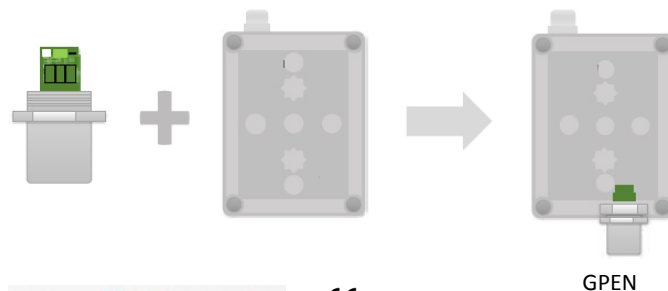
In a storage depot one detector per 100 m<sup>2</sup> would probably be sufficient. It is important at on-site visits to detect the deeper located areas where CO<sub>2</sub> could accumulate. If there are several such places, each of these areas has to be monitored with (at least) one detector independent of the other detectors. In addition you would have to consider obstacles disturbing uniform spread of vapour.

For a comprehensive monitoring of toxic gases it is important to consider the rate of propagation for this gas. Chlorine for instance, diffuses only very slowly. One detector can monitor a maximum of 10 m<sup>2</sup>.

Ammonia is lighter than air and propagates easily. But if there is moisture somewhere between the leak and the detector, a great deal of ammonia will be bound there and the detector will only detect a small amount of gas.

If there are ice deposits in cold stores, the ammonia will also be bound there and a detector will detect nothing. In this respect there is no general statement for a comprehensive monitoring, but in most applications this is not necessary.

The picture below shows how easy it is to replace the sensor element



CE

GPEN

XPEN xxx

Replaceable sensor