

## **NEW** Cub

### **Personal safety monitor for hazardous & toxic gases.**



The world's smallest, lightest, most sensitive personal PID monitor for hazardous and toxic compounds.

#### **Best available photoionisation (PID) detection**

- PID independently verified as best performing on the market
- Unrivalled sensitivity detects down to ppb levels
- Widest range detects gases 1 ppb - 5,000 ppm
- In-built humidity resistance with no need to compensate
- Anti-contamination design for extended field operation
- Measures 480 selectable compounds (10.6 eV lamp)

#### **Safety**

- Fastest (<5 second) response to hazardous gases & vapours
- Clear audio, visual and vibrating alarms
- Large LCD display for clear readings
- Longest battery life (16 hours)
- Meets ATEX, IECEx (US & Canadian certification pending)

#### **Ease of use**

- Smallest, lightest personal PID monitor available
- Simple one button operation
- Intuitive software and simple calibration routine
- Easy to service
- Easily upgrade your instrument

#### **Low cost operation**

- Inexpensive consumables and parts
- Free 2 year warranty when instrument registered online

Cub is the world's smallest, lightest personal PID monitor for the accurate detection of volatile organic and total aromatic compounds. With market leading parts-per-billion (ppb) sensitivity, Cub gives an early warning of hazardous gases, including benzene, before they reach levels which are harmful.

Cub is available in three distinct variants; ppm, ppb and TAC mode. Choose a ppb or ppm instrument with 10.6 eV lamp for accurately detecting a wide range of VOCs dependent on your sensitivity requirements. Cub<sup>TAC</sup> with 10.0 eV lamp gives accurate detection of total aromatic compounds (TACs) down to ppb levels.

Small, compact and lightweight Cub is robust yet comfortable and unobtrusive to wear. Cub has a dynamic range of 1 ppb to 5000 ppm, the widest on the market measuring 480 selectable compounds.

When worker exposure exceeds pre-set limits the instrument's audible, vibrating and flashing LED alarms alert you to the gases present. Readings are displayed in ppb and ppm on its bright, back-lit LCD display with selectable data logging time.



*Cub's linked together within their docking stations.*

Upgradeable ppb sensitivity can be purchased quickly and easily. CubDoc docking stations are available for USB communication, charging and calibrating your instrument, dependent on your

requirements.

The instrument's PID sensor technology has been independently verified as best performing for speed, accuracy and humidity resistant operation. Its unique Anti-contamination and patented Fence Electrode Technology provide extended run time in the most challenging environments, giving you accurate results you can truly rely on.

#### Applications include

- Industrial hygiene
- Chemical and petrochemical plants
- Oil & gas
- Pharmaceuticals
- Health & safety
- Hazardous materials
- First response

#### CUB TECHNICAL SPECIFICATION

##### SENSITIVITY

0.001 ppm (isobutylene equivalent)\*  
0.002 mg/m<sup>3</sup> (isobutylene equivalent)\*

##### ACCURACY

±5% display reading + one digit

##### RESPONSE TIME

<13 seconds (T90)

##### APPROVALS

Europe: ATEX: CE, Ex II 1G, Ex ia IIC T4; -20 °C ≤ Ta ≤ 55 °C  
IECEX: Ex ia IIC T4 -20 °C ≤ Ta ≤ 55 °C  
China: Ex ia IIC T4 -20 °C ≤ Ta ≤ 55 °C  
US and Canadian certification pending

##### BATTERY

Battery life up to 16 hours  
Battery charge time 4 hours

##### PID LAMP OPTIONS

10.6 eV, 10.0 eV

##### DATA LOGGING

30,000 readings

##### COMMUNICATION

USB 2.0

##### ALARM

LEDs, audio and vibrate  
Sounder 95 dB  
Pre-programmed TWA & STEL. Work exposure alarm levels on all models.

##### TEMPERATURE

Operating: -20 to 55 °C, -4 to 131 °F  
Humidity handling: Fence Electrode Technology

##### WEIGHT & DIMENSIONS

111g (3.91 oz)  
61 x 66 x 33 mm (2.4 x 2.6 x 2.2")

##### RESOLUTION

0.001 ppm

##### RANGE

ppm 0.1 - 5,000 ppm  
ppb 0.001 - 5,000 ppm  
TAC 0.01 - 5,000 ppm

##### CALIBRATION

2 point calibration via docking station

##### UPGRADEABLE

Upgrade ppm to ppb

##### IP RATING

Designed to IP65 (heavy rain)

##### LCD DISPLAY

Back lit multi colour

##### FLOW RATE

N/A (no pump)

##### DOCKING STATION OPTIONS

Charge only  
Charge and USB communication  
Charge, USB communication and calibration

\*Model dependent

This publication is not intended to form the basis of a contract and specifications can change without notice.





## Detecting benzene in refinery applications



Unrivalled Detect*ion*.

[www.ionscience.com](http://www.ionscience.com)



# Detecting benzene in refinery applications

## The problem

Benzene is a critical industrial chemical which is commonly found throughout the petrochemical industry. However, it is extremely hazardous and a recognised human carcinogen. To protect individuals, legislation has been put in place across the globe to ensure exposure is kept to a minimum, typically a time weighted average (TWA) of 1 ppm.\*

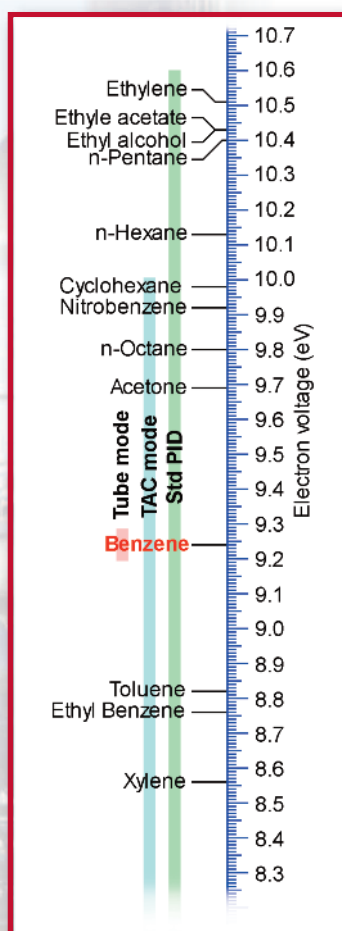
As this exposure limit is so low, its concentration alone usually defines the toxicity of vapours in the petrochemical industry as a whole. Therefore, it is essential that sub ppm benzene concentrations can be measured rapidly in the presence of the hundreds of aromatic and aliphatic compounds encountered throughout the industry.

## The solution: Cub<sup>TAC</sup> + Tiger Select

Traditionally, it has not been possible to collect accurate real-time measurements due to a lack of available technology. However, the combination of the Ion Science Cub<sup>TAC</sup> personal PID monitor plus the Tiger Select handheld screening device now make this a reality....



Cub<sup>TAC</sup> personal PID monitor worn to provide continuous detection.



\*OSHA standards

## ...How Cub<sup>TAC</sup> + Tiger Select detect benzene

Photoionisation detection (PID) allows the detection of benzene at ppb levels however, it is also sensitive to all the other aromatic and aliphatic compounds present.

Monitoring specifically for benzene is a 3 stage process:

- 1) A 10.0 eV lamp is used in the Cub<sup>TAC</sup> and Tiger Select to screen out the aliphatics, leaving the Total Aromatic Compounds = **TAC mode**.
- 2) If concentration exceeds 1 ppm with TAC mode, the Tiger Select is fitted with a filter tube that only allows benzene to pass through. The user can then assess the actual levels of benzene = **Tube mode**.
- 3) If benzene concentration exceeds 1 ppm in Tube mode, the user can then make an assessment of the short term exposure limit = **STEL mode**.

Unrivalled Detection.



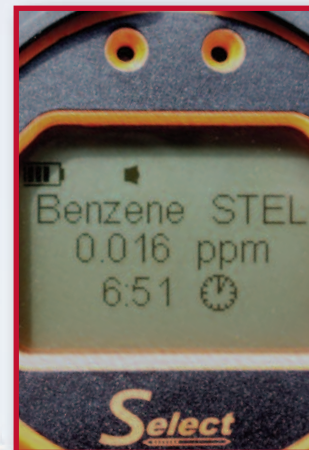
If Cub<sup>TAC</sup> alarms, TAC exceeds 1 ppm\*\* indicating benzene concentrations may be above safe levels.



To confirm the Cub<sup>TAC</sup> reading Tiger Select is used in **TAC mode**.



If 1 ppm is exceeded switch to **Tube mode**.



If this is below 1 ppm, all is well, if above enter **STEL mode**.

## Cub<sup>TAC</sup> + Tiger Select; the ultimate tools for monitoring benzene

The revolutionary Tiger Select and Cub<sup>TAC</sup> utilise the Ion Science patented Fence Electrode Technology and Anti-contamination design that deliver incomparable sensing performance over the range of environmental conditions experienced on site.

### Cub<sup>TAC</sup>

Cub<sup>TAC</sup> is the smallest, lightest personal PID monitor available with market leading parts-per-billion (ppb) sensitivity.

Robust yet small, comfortable and unobtrusive to wear

Cub<sup>TAC</sup> provides fast, accurate detection of total aromatic compounds including benzene, protecting workers within their environment. A Cub variant is also available for detecting a wide range of volatile organic compounds (VOCs).

Visit [www.ionscience.com/cub](http://www.ionscience.com/cub) for more info on Cub.



### Tiger Select

The Tiger Select hand-held gas detector with two mode operation rapidly detects benzene and Total Aromatic Compounds providing accurate, reliable data you can count on.

Its unique ability to rapidly switch between TAC mode and Tube mode means Tiger Select offers the most versatile portable benzene specific product on the market.

Visit [www.ionscience.com/select](http://www.ionscience.com/select) for more info on Tiger Select.



\*\*User can define alarm levels



TIGER SELECT TECHNICAL SPECIFICATION	
<b>ACCURACY*</b>	±10% display reading ± one digit benzene
<b>RESPONSE TIME</b>	120 seconds. Progressive indication of benzene is displayed in real time.
<b>INTRINSICALLY SAFE APPROVALS</b>	II 2G Ex ia IIC T4 (-15 °C ≤ Ta ≤ +45 °C) ITS09 ATEX 26890X IECEx ITS 10.0036X US and Canadian approvals pending
<b>BATTERY LIFE</b>	Li-ion: life up to 30 hours, charge time 6.5 hours Alkaline: 3 x AA, typically 12 hours life
<b>PID LAMPS</b>	Kr PID lamp with 10.0 eV filter pellet
<b>DATA LOGGING</b>	> 120,000 data log points including date and time stamp
<b>COMMUNICATION</b>	Direct USB 1.1
<b>ALARM</b>	Flashing LED's Amber (low alarm) Red (high alarm) Sounder 95 dBA at 300mm (12") Vibration on alarm Pre-programmed TWA and STEL
<b>TEMPERATURE</b>	Operating: -20 to 60 °C, -4 to 140 °F (non Intrinsically Safe) Humidity: 0-99% RH (non condensing)
<b>WEIGHT &amp; DIMENSIONS</b>	Instrument (probe fitted, no tube attached) Length: 465 x Height: 89 x Depth: 61 mm (18.3 x 3.5 x 2.4") Packed weight in standard case: 5 kg (11.6 lb)
<b>RESOLUTION</b>	10 ppb or 0.033 mg/m³ benzene
<b>RANGE</b>	0 - 40 ppm or 130 mg/m³ benzene in tube mode 0 - 4000 ppm in TAC mode (gas dependent)
<b>CALIBRATION</b>	2 and 3 point calibration (via calibration kit accessory)
<b>UPGRADEABLE</b>	Sensitivity; H & S mode; data logging. Available in standard running mode.
<b>IP RATING</b>	Designed to IP65 (heavy rain)
<b>LCD DISPLAY</b>	Back lit
<b>FLOW RATE</b>	220 ml/min (150 cc/min flow alarm)
<b>DOCKING STATION OPTIONS</b>	Charging cradle Travel dock

CUB TECHNICAL SPECIFICATION	
<b>ACCURACY</b>	±5% display reading + one digit
<b>RESPONSE TIME</b>	<13 seconds (T90)
<b>APPROVALS</b>	Europe: ATEX: CE, Ex II 1G, Ex ia IIC T4; -20 °C ≤ Ta ≤ 55 °C IECEx: Ex ia IIC T4 -20 °C ≤ Ta ≤ 55 °C China: Ex ia IIC T4 -20 °C ≤ Ta ≤ 55 °C US and Canadian certification pending
<b>BATTERY</b>	Battery life up to 16 hours Battery charge time 4 hours
<b>PID LAMP OPTIONS</b>	10.6eV, 10.0eV
<b>DATA LOGGING</b>	30,000 readings
<b>COMMUNICATION</b>	USB 2.0
<b>ALARM</b>	LEDs, audio and vibrate Sounder 95 dB Pre-programmed TWA & STEL. Work exposure alarm levels on all models.
<b>TEMPERATURE</b>	Operating: -20 to 55 °C, -4 to 131 °F Humidity handling: Fence Electrode Technology
<b>WEIGHT &amp; DIMENSIONS</b>	111g (3.91 oz) 61 x 66 x 33 mm (2.4 x 2.6 x 1.3")
<b>RESOLUTION</b>	0.001 ppm
<b>RANGE</b>	ppm 0.1 - 5,000 ppm ppb 0.001 - 5,000 ppm TAC 0.01 - 5,000 ppm
<b>CALIBRATION</b>	2 point calibration via docking station
<b>UPGRADEABLE</b>	Upgrade ppm to ppb
<b>IP RATING</b>	Designed to IP65 (heavy rain)
<b>LCD DISPLAY</b>	Back lit multi colour
<b>FLOW RATE</b>	N/A (no pump)
<b>DOCKING STATION OPTIONS</b>	Charge only Charge and USB communication Charge, USB communication and calibration

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Unrivalled Detection.

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