

Tetra 3 Personal Multi Gas Monitor

Updated: October 2020





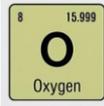
Crowcon Portable Gas Detection

Solutions to protect your workforce from flammable and toxic gasses utilising best in class technologies and decades of specialist experience



The Standard 4 Gases

The 4 Main Gases



Oxygen: Crucial for life!

Above the 19-23% safe zone can result in an increased fire risk. Below 19% can risk nausea, loss of consciousness and death.



Flammables: Anything which in the correct concentration can be ignited, e.g. Methane.

Tetra3 is certified so it can be used in areas where flammable gases might be present.



CO: Odourless, colourless and with a similar density to air, carbon monoxide is the 'silent killer'

Present in any process involving incomplete combustion of carbon fuel, naturally present in coal mines, and also used in some chemical and steel production processes.

High levels can lead to breathlessness, chest pain, seizures or loss of consciousness.

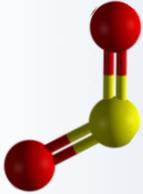


H₂S: Hydrogen sulphide is known for its 'bad egg' odour.

Produced during decay of organic materials, during oil extraction and pretty much anywhere where sewage is being processed.

High levels can lead to collapse, respiratory paralysis, convulsions, loss of consciousness.

Other Gases the Tetra 3 Detects:



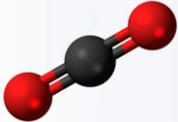
SO₂: This toxic gas is responsible for the 'burnt matches' smell and is a by-product of copper extraction and volcanic activity

Sulphur dioxide can irritate the respiratory system, especially during heavy physical activity which is why it is dangerous.



NH₃: Ammonia is a combination of nitrogen (N₂) and hydrogen (H₂) which form a colourless, pungent gas.

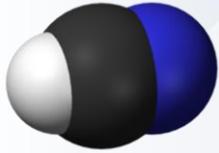
NH₃ serves as the starting material to produce many commercially important nitrogen compounds. Exposure to high concentrations of the gas can cause burning of the nose, throat and respiratory tract and in extreme cases, can be fatal



CO₂: Carbon Dioxide is a naturally occurring colourless, tasteless, odourless gas.

It is heavier than air which causes issues in cellars where CO₂ is commonly stored since it is difficult to ventilate. This causes a build up of CO₂ which can displace oxygen which makes it an asphyxiant as well as toxic depending on its concentration.

Other Gases the Tetra 3 Detects:



HCN: Hydrogen cyanide is very toxic, even at very low dosages (4.5ppm or 0.00045% volume) and normally is colourless or a very pale blue colour and has a 'bitter almonds' taste.

HCN can be found in metal mining processes, plastic production, PCB manufacture, ship fumigation and as a by-product of fires involving synthetic fibres. It prevents cells from respiring so symptoms range from dizziness to respiratory failure and death depending on exposure time and concentration.



O₃: Ozone forms naturally in the stratosphere and can be manmade, either way it has a blue colour and pungent smell.

If O₃ is inhaled it can damage the lungs, resulting in chest pain, coughing, shortness of breath and throat irritation.



Industry & Application

Industries

Steel

CO (H₂ immune),
O₂ depletion,
flammables



Waste and water

H₂S, low levels of
O₂, flammables,
(CO)

Utilities

O₂ depletion, H₂S,
flammables, CO



Oil and Gas

Flammables, H₂S,
O₂ depletion

Lease / construction

O₂ depletion, H₂S,
flammables, CO

Application Showcase

Clean Water & Utilities

The T3's extended range of gasses includes some which perfectly match the detection needs of clean water processes.

It can also be configured for all the most common utility area gasses



Beverage & HOREGA

The T3's can be specified with an IR CO2 and O2 sensor configuration which is great for cellars and storerooms in the beverage and HOREGA sectors.

It protects against oxygen depletion and CO2 poisoning the 2 most prevalent hazards in those environments



Case Study



Lanes
Group plc

CROWCON
Detecting Gas Saving Lives

Implementation

- Lanes Group PLC is the UK's largest independent drainage contractor, with over 25 years experience
- Fleet size: 200 operators
- Across 5 regional hubs

Requirement

1. Detect H₂S, CO, O₂ and CH₄ gases
2. Easy to operate device while wearing gloves
3. Be robust and dependable
4. Used for confined space entry and pre-entry checks



“Crowcon gas detection units are my most preferred device and have been since I began teaching confined spaces seven years ago – bulletproof”

Kris Taylor, Head of Health, Safety & Well-being at Lanes Group



Overview

Portables range overview

Market Price ↑

- Single gas
- Disposable



Clip
SGD

- Single gas
- Rechargeable
- Many sensor options



Gasman

- Multi gas
- Standard 4



T4

- Multi gas
- Many Sensor Options



T3

- 5 gas Multi gas
- Pump option
- Many Sensor Options



Gas-Pro



Gas-Pro TK

- Dual Range IR sensor Vol & %LEL
- Special Tank pre-entry mode



Detective+

- Temporary are monitor
- Loudest alarms
- Biggest battery
- Pumped option

T3

Personal 4-Gas Monitor



“Our T3 gives customers access to the standard 4 gasses plus a wide selection of popular exotic gas sensor options perfect for customers with bespoke requirements”

Robust

Rugged impact resistant design provides extra shock and vibration protection

Water and Dust resistant to IP65 and IP67

Can be submerged in water

Provides protection in the harshest environments

Effective warning

95 dB audible alarm

Vivid red/blue visual alarm

Vibrating alarm

Ensures clear warning facilitating prompt evacuations from hazard zones

Reliable

Proven sensor technology and software operation

Clear calibration-due warning

Lithium-ion battery provides 14 hours continuous operation from a single charge with no memory effects

Provides reliability you can trust and has the power to cover you for an extended shift

User friendly

Single button operation for all functions

Top mounted, backlit display of all gas readings, diagnostics and battery life

Can be operated with gloved hands

'At a glance' operating status

Available gasses:

Flam

O2

CO

H2S

CO/H2S Dual

SO2

O3

NH3

IR CO2



Key Features

Features



Rugged Design

When you work in difficult, harsh environments you need a device that isn't going to let you down. Its very easy to drop, bump, bang or scrape a portable gas detector when working in tough situations. If its not up to the task it will break, causing downtime while you arrange a replacement.

Tetra 3's rubberised over-mould makes it easy to hold and grip while protecting it from impacts and falls when dropped, making it a top choice for workers in hostile environments.

Tetra 3 is designed to work in harsh and hostile environments and has been independently certified to IP65 and IP67. This means that water doesn't get in when hosed or put under 1m (3ft 3") of water for 30 minutes and dust does not get in at all. Tetra 3 is also approved to work within -20°C to + 55°C



One Button Operation

Workers don't have the time and inclination to learn multiple complex operating systems and user interfaces. It also adds additional user training organization and facilitation requirements to fleet managers already busy workloads

T4 features simple and intuitive one button operation minimising training overheads and ensuring easy usability

Single Button Operation

Hold to turn on

Hold to turn off

Double press to open menu

Single press to navigate menu/confirm action

Double press to select menu item

Easy to operate wearing gloves

Backlight activates whenever button pressed



Top Mounted Display

We understand that these are mostly worn on the lapels of workers and operators, which is why we ergonomically placed the screen at the top of the device.

This means workers don't have to handle their detector to look at readings, leaving their hands free to continue work and prevents them from straining their necks.

Standard display shows all gas channels, battery status and the OK symbol confirming normal operation



Clip-on Filter Plate

In dirty and dusty work environments filters are essential to keep the sensors in your staff's portables' functioning properly. Most portables (including the Tetra 3) have internal filters which protect the sensors for moderate conditions but mean downtime and cost due to invasive servicing when its time to change them

With Tetra 3's clip on filter plate you can change quickly and non-intrusively change the filters. This reduces downtime and saves on servicing costs



Charging

Tetra 3 simple drops into the charger cradle

Ensure the power supply is plugged in and switched on

Plug the charger connector into the rear socket on the charging cradle

T:3 fully charges in around 6 hours from flat, although you may do a fast charge for a shorter period, which will enable quicker usage. Eg: ½ hr charge gives 1 ½ hr usage



Charger variants:

- Single way drop-in charger with UK, EU or US plug or in-line 110V/220V supply
- Single way drop-in charger with options as above including PC interface
- 5 way multi-charger with universal power supply
- Vehicle adapter for in-vehicle charging
- Universal charger for vehicle, wall and desk mounting with a multi-region plug (supplied with EU/UK/US/Australian inserts) and status indication



Data Functionality

Crowcon Connect

- T4 is compatible with Crowcon Connect, our new Gas safety and compliance insight solution



Crowcon Connect gives the visibility and insights you need from your detectors to ensure **compliance**, improve **efficiency** and raise levels of **safety**



Sensor option overview

Sensor Compatibility Overview

	Flam	H2S	CO	O2	SO2	NH3	CO2	Cl2	NO2	NO	O3	CO-H2S	ClO2	H2	HF	F2	PH3	HCN	HCL	COCL2	C2H4O	IR CO2	PID	
 Clip SGD		X	X	X																				
 Gasman	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X		X			X	
 T4	X	X	X	X																				
 T3	X	X	X	X	X	X	X				X	X						X					X	
 Gas Pro	X	X	X	X	X	X	X	X	X	X	X	X	X					X						
 Gas pro IR	X	X	X	X	X	X	X	X	X	X	X	X	X					X					X	
 Gas pro PID	X	X	X	X	X	X	X	X	X	X	X	X	X					X						X
 Gas Pro TK		X	X	X								X						X					X	
 Detective	X	X	X	X	X	X	X	X	X				X	X	X		X	X				X	X	



Product Codes and Cost Structures

Product Code Structure

T3-XXXXXXXXXX-A-XXX-Z
Sensor Codes
Region Code

Base

Base Code	Description
T3 Base 3 year	Base price

i-module Sensor Assemblies

Sensor Code	Description
AA	0-100% LEL methane
AB	0-100% LEL propane
AC	0-100% LEL pentane
AD	0-100% LEL butane
AE	0-100% LEL ethylene
AF	0-100% LEL hydrogen
CQ	0-100% LEL ethanol (unfiltered)
BV	0-100% LEL toluene (unfiltered)
KF	0-100% LEL pentane (unfiltered)
CP	0-25% oxygen, three year
AH	0-500ppm carbon monoxide
AI	0-100ppm hydrogen sulphide
AIAH	Dual toxic 0-500ppm carbon monoxide/0-100ppm hydrogen sulphide
AJ	0-20ppm sulphur dioxide
AP	0-1ppm ozone*
AR	0-100ppm ammonia
AS	0-1000ppm ammonia
KR	0-500ppm carbon monoxide (H ₂ filtered)
AQ	0-25ppm hydrogen cyanide
HG	Carbon dioxide 0-5% volume CO ₂ (infrared) - SAFE AREA ONLY
ZZ	No sensor fitted

* Reactive gases. Extra care required during sampling and calibration due to the nature of these gases.

Contact technical support or review the product manual for further detail.

Region, alarms and approvals

013	Australian alarms & English manual, ATEX
015	Brazilian alarms, BRA/PRT manual, INMETRO
007	Dutch alarms & manual, ATEX
003	French alarms & manual, ATEX
006	German alarms & manual, ATEX
008	Italian alarms & manual, ATEX
017	Polish alarms, Polish manual, ATEX
004	Spanish alarms & manual, ATEX
001	UK alarms & manual, ATEX
012	US alarms & manual, CSA
Safe area codes	
047	German alarms & English manual, Safe Area only
060	Dutch alarms & English manual, Safe Area only
041	Australian alarms & English manual, Safe Area only
030	Polish alarms & English manual, Safe Area only
031	UK alarms & English manual, Safe Area only
029	US alarms & English manual, Safe Area only
059	Italian alarms & manual, Safe Area only
037	Spanish alarms & manual, Safe Area only



Certification

Certification

IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres

Certificate No.: IECEx BAS 05.009 **Issue No. 12** **Certificate Issue:** 12 (2014-9-17)

Status: Current **Issue No. 11** (2014-8-6) **Issue No. 10** (2013-9-9) **Issue No. 9** (2008-11-17)

Date of Issue: 2014-09-11 **Page 1 of 4**

Applicant: Crowcon Detection Instruments Ltd
112 Brook Drive
Milton Park
Abingdon
Oxfordshire
OX14 4SD
United Kingdom **Issue No. 8** (2008-6-13) **Issue No. 7** (2007-7-6) **Issue No. 6** (2006-12-20)

Electrical Apparatus: TETRA 3

Optional accessory:

Type of Protection: Intrinsic Safety and Flameproof

Marking: Ex ia # IIC T4 Gb (20°C ≤ Ta ≤ +55°C)

Approved for issue on behalf of the IECEx: R S Sinclair
Certification body: R S Sinclair

Position: General Manager

Signature: *R S Sinclair*
(for personal use only) 11-9-14

Date: 11-9-14

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by: SGS Baseefa Limited
Rockhead Business Park,
Shadox Lane,
Buxton,
Derbyshire
S42 8JZ
United Kingdom

IECEx

CSA INTERNATIONAL

Certificate of Compliance

Certificate: 1843315 (LR 90397) **Master Contract:** 181472

Project: 2040122 **Date Issued:** 2008/09/23

Issued to: Crowcon Detection Instruments
Limited
2 Blacklands Way
Abingdon Business Park
Abingdon, Oxfordshire OX14 1DY
United Kingdom
Attention: Eric Macey

The products listed below are eligible to bear the CSA Mark shown

Issued by: Glenn Black
Glenn Black

Authorized by: Patricia Pasomko, Operations Manager
Patricia Pasomko

PRODUCTS

CLASS 4828 02 - SIGNAL APPLIANCES - Toxic Gas Detection Instruments - For Hazardous Locations

CLASS 4828 01 - SIGNAL APPLIANCES - Combustible Gas Detection Instruments-For Hazardous Locations

CLASS 4828 01

Class 1, Division 1, Groups A, B, C and D:

Ex ia d IIC T4:

SGS 107 Issue 2008.06.11

CSA

Certificate Number Baseefa0ATEX0187
Issue 12

Issued 11 September 2014
Page 1 of 5

1 **EC - TYPE EXAMINATION CERTIFICATE**

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres**
Directive 94/9/EC

3 **IEC - Type Examination Certificate Number:** Baseefa0ATEX0187 - Issue 12

4 **Equipment or Protective System:** TETRA 3

5 **Manufacturer:** Crowcon Detection Instruments Ltd

6 **Address:** Abingdon, Oxfordshire, OX14 4SD

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 Baseefa, Notified Body number 1180, in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Reports listed at Item 20.

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN 60079-0:2012 **EN 60079-1:2007** **EN 60079-11:2012**

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

12 The marking of the equipment or protective system shall include the following:

Ⓢ IIC 2 G Ex ia d IIC T4 Gb (20°C ≤ Ta ≤ +55°C)

Baseefa Customer Reference No. 6249 **Project File No. 118719**

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R S Sinclair
R S SINCLAIR
GENERAL MANAGER
On behalf of SGS Baseefa Limited

ATEX



Specification

Full Specification

Size	114 x 71 x 48mm (tapers to 20mm) (4.5 x 2.8 x 1.9ins)
Weight	295g (10.4oz)
Alarms	95dB multiple alarm sounds allow selection of distinctive tones for different alarm levels Internal vibrating alarm
Display	Graphic LCD with backlight, giving simultaneous display for all gas channels. Graphic symbols for battery (with proportional indication of remaining operation time), healthy operation or fault warning. Start up indication when calibration is due, overdue, or service required. Normal display: Real time gas concentration levels Display recall: Peak readings and TWA
Data logging	Timed: 50 hours at 1-minute data rate (>12,000 data logs of 4 channels) Threshold: Starts after adjustable pre-set level Event: >5,000 events
Event logging	Alarm, over range, calibration, bump, on/off, TWA, 1000 events
Battery	Rechargeable Li-ion battery
Operating time	Based on four-gas instrument fitted with flammable sensor: A 5-hour charge from flat provides at least 12 hours of continuous use. A 12-hour charge provides at least 14 hours of continuous use
Sampling	Diffusion or hand aspirator
Operating temperature	-20°C to +55°C (-4°F to +131°F)
Storage	-25°C to +65°C (-13°F to +149°F)
Humidity	20 to 90% RH@ 40°C non-condensing
Ingress protection	IP65 and IP67

Full Specification

Approvals	ATEX II 2G Ex ia db IIC T4 Gb (-20°C ≤ Ta ≤ +55°C) BASEEFA05ATEX0187 IECEX Ex ia db IIC T4 Gb (-20°C ≤ Ta ≤ +55°C) BAS05.0059 CSA Class I Division 1 Groups A, B, C and D
Safety standards	EN60079-0, EN60079-11, EN60079-1 CSA22.2, 152 EN50270, EN50271, EN50104, EN45544, EN60079, IEC61508
PC Interface	RS232 connection from interface module in charger RS232/USB converter available
Calibration	Can be routinely calibrated using Portables PC software or Crowcon Checkbox IMH
Charging	Single way drop-in charger with UK, EU or US plug or in-line 110V/220V supply Single way drop-in charger with options as above including PC interface 5 way multi-charger with universal power supply Vehicle adapter for in-vehicle charging Universal charger for vehicle, wall and desk mounting with a multi-region plug (supplied with EU/UK/US/Australian inserts) and status indication
Crowcon Connect Compatible?	Yes

Sensor Specification

Gas	Range	Typical Alarms
Flammable	0-100% LEL	20% LEL
Oxygen	0-25%	19/23.5% volume
Hydrogen sulphide (H ₂ S)	0-100ppm	5ppm
Carbon monoxide (CO)	1-500ppm	30ppm
Sulphur dioxide (SO ₂)	0-20ppm	1ppm
Ozone (O ₃)	0-1ppm	0.1ppm
Ammonia (NH ₃)	0-100ppm	25ppm
*Carbon dioxide (CO ₂)	0-5%	0.5 % volume



Accessories

Tetra3 Accessories



External Dust Filter
C011055



Charging Dock



Replacement sensor modules



Charger Interface Software
and Communication Kit



Gas Tester

Tetra3 Accessories



Shoulder strap
C01843



Tetra3 Hard Shell carry Case
C03363



Leather carry case
C011054



Car Charger Lead



Servicing

Ease of Maintenance

5 Simple steps

- Remove back
- Slide battery aside
- Remove i-module
- Replace i-module
- Re-assemble



I-module technology means easy sensor replacement

- Drop in replacement
- Pre-calibrated sensor modules

Easy connection of ribbon cable from sensor to main assembly





Summary

T3

Personal 4-Gas Monitor



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Robust

Rugged impact resistant design provides extra shock and vibration protection

Water and Dust resistant to IP65 and IP67

Can be submerged in water

Provides protection in the harshest environments

Effective warning

95 dB audible alarm

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Vibrating alarm

Ensures clear warning facilitating prompt evacuations from hazard zones

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Proven sensor technology and software operation

Clear calibration-due warning

Lithium-ion battery provides 14 hours continuous operation from a single charge with no memory effects

Provides reliability you can trust and has the power to cover you for an extended shift

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Single button operation for all functions

Top mounted, backlit display of all gas readings, diagnostics and battery life

Can be operated with gloved hands

'At a glance' operating status

Available gasses:

Flam

O2

CO

H2S

CO/H2S Dual

SO2

O3

NH3

IR CO2

