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# Detective +

## Transportable Multi-Gas Area Monitor

The Detective+ transportable area monitor is based on the highly successful Triple Plus+ and Detective models, building on the reputation, reliability and versatility of its forebears. Detective+ is inherently rugged and robust, with a sturdy fixed or folding leg protective frame options. Loud and clear alarms can be transmitted between Detective+ units while an optional built in pump allows faster gas response and better sensor protection. Detective+ may now be equipped with infra-red sensor technology, which provides CO<sub>2</sub> detection, allows higher flammable gas level monitoring and immunity to the poisoning effects which standard flammable gas sensors can suffer from. There are now two options for battery capacity, either 36 hours or 60 hours with standard configuration, providing remote sites with extended usage in-between charges. Couple these features with the wide range of toxic gas sensors available and it makes Detective+ one of the most versatile area monitors available. 55,000 Detective and TriplePlus+ users can't be wrong.



- Up to 4 gases monitored in a rugged and sturdy protective frame
- Ultra-loud 104 dBA siren and red LED cluster alarms
- Wide range of sensor options including infra-red
- Long 36 or 60 hour battery life
- Raised detectors, coupled with IP65 specification provides excellent sensor protection
- Built in pump option to provide faster gas response
- 12 Detective+ units may be linked together, up to 100m from adjacent units

### Superb pedigree

- Detective+ is based on the highly successful Triple Plus+ multi-gas monitor which has sold over 55,000 units worldwide

### Versatile and user friendly

- Infra-red sensors available
  - allows sampling of potentially high flammable gas levels and CO<sub>2</sub>
  - infra-red sensors are unaffected by poisoning
- Built-in pump option provides fast response and extra sensor protection
- Display provides clear information, allows identification of gas hazard
- Easy tracking of multiple hazards
- up to 60 hour battery operation
- Wide range of toxic gas sensors available

### Extremely loud and clear alarms

- Wailing omni-directional siren, 104 dBA @1 metre
- High intensity red LED clusters provide visual alarm indication
- All linked Detective+ units indicate an alarm sensed by any one unit
- Units actually sensing alarm have faster LED flash
- Audible and visible confidence blip
- Time weighted average alarms for 8 hours and 15 minutes averages

### Uniquely rugged, tripod construction

- Detectors are fully protected, even if device is overturned
- Raised detectors prevent water ingress
- Easy and quick to set up
- Folding or fixed leg options provide easy storage and transportation

To receive a calibration and/or repair quote-RMA from R.A.E. Services Inc.  
 Click here>> [www.raeservices.com/services/quote.htm](http://www.raeservices.com/services/quote.htm)

**Specification**

<b>Weight</b>	7.5 kg (19lb)		
<b>Dimensions</b>	640 h x 455 w x 455 d mm (25.2 x 17.9 x 17.9 inches)		
<b>Typical measuring ranges and alarm Settings</b> (up to four gas measurement channels)	<i>Alarm</i>	<i>Standard Range</i>	<i>Typical Levels</i>
		<i>Range</i>	<i>Levels</i>
	Flammable gas	0 - 100% LEL	20% LEL
	Oxygen	0 - 25%	19% & 23%
	Hydrogen sulphide	0 - 50 ppm	10 ppm
	Carbon monoxide	0 - 500 ppm	35 ppm
	Sulphur dioxide	0 - 10 ppm	2 ppm
	Chlorine	0 - 5 ppm	0.5 ppm
	Nitrogen dioxide	0 - 10 ppm	2 ppm
	Phosphine	0 - 5 ppm	0.5 ppm
	Ammonia	0 - 50 ppm	25 ppm
	Ammonia	0 - 1000 ppm	N/A
	Hydrogen (non-flammable levels)	0 - 2000 ppm	N/A
	Hydrogen cyanide	0 - 25 ppm	10 ppm
	Hydrogen chloride	0 - 10 ppm	5 ppm
	Ozone	0 - 1 ppm	0.3 ppm
	Chlorine Dioxide	0-1ppm	0.1ppm
	Hydrogen Fluoride	0-10ppm	1ppm
	Ethylene Oxide	0-10ppm	5ppm
	Volatile Organic	0-100ppm	N/A

**Infrared Sensors**  
 Infrared sensors for flammable gas can be supplied as a single range, 0-100% LEL, utilising a single display channel, or as a dual range, 0-100% LEL/0- 100% volume, which then occupies two display channels.  
 CO2 sensors are supplied as 0-2% volume. Only one IR sensor can be fitted, and IR sensors can only be used in combination with oxygen and toxic sensors

		Standard Range	
<b>Alarm</b>			
Flammable Gas	0-100% LEL	20% LEL	
Flammable Gas	0-100% v/v	None	
Flammable Gas	available for methane, propane, butane or ethylene		
CO2	0-2.0% v/v	0.5/1.5% v/v	

**Typical response times**  
 Methane 20 s, Oxygen 10 s, typical toxic gas 20 s, IR 30 s

**Expected sensor life**  
 Flammable 5 years, Toxic 3 years, Oxygen 2 year minimum, IR >5 years

**Audible alarms**  
 Wailing, omni-directional siren 104 dBA @ 1 metre.

**Visible alarms**  
 Three large, top mounted red LED clusters and single red LED on control panel.  
 In alarm mode LED clusters flash in quick succession LED clusters of linked Detectives repeating the alarm, flash more slowly than LED lights on those Detectives sensing the hazard.  
 Slow flashing green LED indicates normal working.  
 Rapid flashing green LED indicates low battery.

**Display**  
 High contrast LCD with back light 2 lines of 24 characters. Values and units for up to 4 gases displayed simultaneously at current, TWA or peak levels. Low battery, real time and elapsed time, calibration and configuration data also displayed

**Datalogging**  
 Adjustable sample rate, 100 hours @ 1 minute sample rate (maximum 6000 data points per channel)  
 Logging of events, user and site data

**Menu**  
 Operating menu allows access to setting up of instrument operation  
 Log Menu allows selection of Users and Sites from predefined lists, marking the log file with an event, and start or stop of data logging  
 Configuration Menu allows selection of display and alarm modes, setting of alarms, zero and calibration, and selection of flammable gas correction factors from predefined list .

**Battery**  
 6 V, 7.2 Ah Sealed lead acid battery pack  
 Optional 6V, 12Ah high capacity pack

**Battery life**  
 Standard instrument: Up to 36 hours assuming flammable/CO2 sensor fitted with 7.2Ah battery.  
 Up to 60 hours with optional 12Ah battery pack

**Battery charging**  
 Built-in battery charging circuit, dual rate 100 - 120 VAC and 200 - 250 V AC Input options available.  
 (Safe Area operation only)  
 Typical charge time: 12 hours

**Operating Temperature range**  
 -20°C to +40°C (-4°F to 104°F).

**Humidity**  
 5 - 95% RH non condensing

**Approvals**  
 Europe : ATEX II 2G EEx ib d IIC T4  
 USA and Canada : Class 1 Division 1 Groups A, B, C, D (Pending)

**Standards**  
 EN50014, EN50020, 94/9/EC  
 UL913 and CSA 22.2

**Ingress protection**  
 IP65

**EMC**  
 EN 50270

**PC Interface**  
 Detective+ has an in-built PC interface, which can be connected to the serial port of a computer using the optional RS232 lead. Portables PC software can be used to set alarms, clock, datalogging interval and password. Portables PC also controls datalogging, giving graphical display of instrument log file and allows file export to spreadsheet.

**Calibration**  
 Detective+ can be routinely calibrated quickly using its internal menu command, Portables PC or the Crowcon CheckBox IMH management system

**Accessories**  
 Baffle plate (to protect sensors)  
 Interconnecting lead - 10 m standard, longer lengths up to 100m available  
 Computer lead - RS232 serial link  
 Portables PC software  
 Aspirator Manual bulb and 2 m hose, both nonabsorbent and hydrocarbon resistant  
 Internal electric sampling pump option includes external water trap and 2m hose, longer lengths available on request

**Linked Detectives**  
 Up to 12 units can be linked to provide perimeter or area monitoring