



**XT Series
Personal Gas Detector**

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This manual is supplied pre-printed in English only. Alternative language versions are supplied on the CD accompanying the product, and are available for download from the Honeywell Analytics website: www.honeywellanalytics.com



Warning: Read Manual Prior to Use

1. Introduction

The XT is a disposable, easy to use, personal gas detector, designed for 2 years continuous monitoring of the atmosphere for potentially hazardous levels of oxygen deficiency or toxic gas.

SAFETY INFORMATION

- *Substitution of components may impair intrinsic safety*
- *Do not activate the detector after the date on the packaging*
- *Perform a self-test prior to each day's use*
- *Do not use in oxygen-enriched atmospheres*
- *Periodically test the sensors response to gas by exposing the detector to a target gas concentration that exceeds the alarm set points. Manually verify that the audible, visual and vibrating alarms are activated*
- *Exposure to extremely high levels of over-range gas may cause temporary loss of sensor accuracy. Allow monitor to stabilize in zero gas atmosphere before reuse. It is recommended to perform sensor response gas test prior to reuse.*

IMPORTANT NOTICE

Honeywell Analytics can take no responsibility for use of its equipment if it is not done in accordance with the appropriate issue and/or amendment of the relevant manual. If further details are required which do not appear in this manual, contact Honeywell Analytics or their agent.

Honeywell Analytics shall not be liable for any incidental or consequential damages in connection with any deletions, errors or omissions in this Manual.



WARNING: *The instrument contains a lithium battery. Do not mix with the solid waste stream. At end of life, the instrument should be disposed of by a qualified recycler or hazardous materials handler.*

2. Activating the Detector

To activate, hold Test Button (as shown below) for up to 20 seconds. The detector will emit 5 beeps and 5 flashes. The XT will warm up for one minute, showing a countdown in seconds and the Test Pass icon (✔) will be flashing. It will then set the remaining-life clock and perform a self-test. If the detector passes, the Test Pass icon (✔) is displayed. If the Test Fail icon (✘) is displayed then the detector has failed the self-test – please refer to the instructions in Section 6.



3. Display Features



A) Battery

B) Test Fail Icon

C) Test Pass Icon

D) Level 1 Alarm: CO, H₂S, O₂
Level 2 Alarm: CO, H₂S

E) Level 2 Alarm: O₂

F) Lifetime: Months ☾, Days ☿, Hours ☿

G) Concentration Units

H) Low Peak (O₂)

I) High Peak (CO, H₂S, O₂)

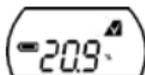
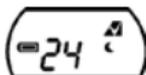
J) Readout

The XT is available with two types of display; Standard and Real Time. This section will illustrate the difference between the two display types.

On XT's equipped with the Standard Display, the remaining lifetime clock indicates how much longer the detector will operate. This is shown on the display as a countdown of remaining months (indicated by the ☾ icon), then days (☿) and finally hours (☿). The example in the table on the next page shows 24 months remaining.

Should the Standard Display XT unit be exposed to a level of gas in excess of the alarm set points the unit will display the concentration of the gas. If the measured reading exceeds the range of the detector then the numerical digits will flash.

The Real Time Display XT displays the concentration reading all the time. The lifetime remaining is displayed in the self-test mode.



	Standard Display	Real Time Display
Below Alarm	<i>Displays the lifetime remaining</i>	<i>Displays the gas concentration</i>
Above Alarm	<i>Displays the gas concentration</i>	<i>Displays the gas concentration</i>
Self-test	<i>Alarm set points, peak reading and time since peak</i>	<i>Alarm set points, peak reading, time since peak and lifetime remaining</i>

4. Gas Alarms

The XT has two levels of gas alarm, of which the level 2 alarm is more urgent than the level 1 alarm. The alarm set points are:

Gas Type	Level 1 Alarm	Level 2 Alarm	Part Numbers
<i>H₂S</i>	<i>10 ppm</i>	<i>15 ppm</i>	<i>2566-0112, 2566-0112RT</i>
<i>H₂S</i>	<i>5 ppm</i>	<i>5 ppm</i>	<i>2566-0112-01, 2566-0112RT-01</i>
<i>H₂S</i>	<i>5 ppm</i>	<i>10 ppm</i>	<i>2566-0112-06, 2566-0112RT-F</i>
<i>CO</i>	<i>35 ppm</i>	<i>100 ppm</i>	<i>2566-0111, 2566-0111RT</i>
<i>CO</i>	<i>20 ppm</i>	<i>50 ppm</i>	<i>2566-0111RT-01</i>
<i>CO</i>	<i>25 ppm</i>	<i>100 ppm</i>	<i>2566-0111RT-02</i>
<i>O₂</i>	<i>23.5% v/v</i>	<i>19.5% v/v</i>	<i>2566-0110, 2566-0110RT</i>

Note:

Additional part numbers are available with alternative alarm settings, which are shown on the instrument's label

Alarm Level	Display*	Audible Alarm	Visual Alarm	Vibrating Alarm
Level 1 Alarm		3 beeps per second	3 flashes per second	Yes
Level 2 Alarm		5 beeps per second	5 flashes per second	Yes

* Examples shown for H₂S

Note:

When the detected gas levels return to a safe level, the gas alarm will stop. The user cannot cancel an alarm.

Note:

New alarm level 1 and 2 can be created accordance with customer's request.

5. Maximum Gas Reading

The XT records the maximum readings measured under an alarm condition, and records the number of hours since this occurred. As each new higher level of gas is detected this counter is reset to zero, and after 24 hours has elapsed the counter is also reset to zero hours.

The maximum gas readings (minimum for oxygen) can be viewed by pressing the Test button within 24 hours of the gas alarm. This will cause the instrument to perform a self-test (see Section 6), after which the alarm set points and the maximum readings will be displayed. For instance;

a) the level 1 and level 2 alarm set points



Level 1 CO



Level 2 CO



Level 1 O₂

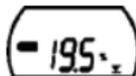


Level 2 O₂

b) the maximum or minimum reading measured



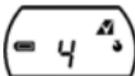
Maximum reading CO



Minimum reading O₂

To clear the peak value, press the Test button once while the maximum (peak) value is displayed.

c) the time elapsed since the maximum reading occurred in hours (e.g. 4 hours)



4 Hours

6. Performing a Self-Test

When the Test button is pressed the unit checks the sensor, circuit, batteries, audible and visual alarms and vibrating alarm.

After 24 hours has elapsed since the self-test was last performed the Test Pass icon (M) will be blinking. The self-test must then be performed by pressing the Test button. The detector will do the following:

- Turn on all the display elements
- Tests the audible and visual alarms and vibrating alarm
- Check the battery, electronic circuit and sensor
- Perform a sensor test
- Display the level 1 and level 2 alarm setpoints
- Display the maximum (minimum for O₂) gas reading (if such a reading has occurred)
- If a gas alarm has occurred since the Test button was last pressed the relevant alarm level icon will be displayed
- Lifetime Remaining (for units with Real Time Display)
- The result of the self-test as follows:

Self-Test Result	Display	Audible Alarm	Visual Alarm
Pass		None	None
Fail		1 long beep	1 flash

If the self-test fails repeat the self-test. The XT will warm up for one minute before the next self-test is performed. If it fails three consecutive times then the detector will display an error code (see Section 10).

Additionally, the XT will periodically check its battery, electronic circuit and sensor. If it fails the Test Fail icon () will be shown and the Test Pass icon () will blink. If it passes then the Test Pass icon will be displayed.

7. Testing Sensors and Alarms (Bump Testing)

To maintain optimal accuracy, the detector should be periodically supplied with a known concentration test gas (bump test) and if the readings are outside of 15% of the applied gas concentration, a span calibration should be performed, under conditions of standard temperature (15°C to 25°C/59°F to 77°F) humidity and pressure. Follow local regulations and/or your company's policy on the frequency of bump testing. For more information on test gas, contact your local Honeywell Analytics representative.

8. End of Life Alarm

When the XT has less than 1 day of remaining life it will flash the digits, as below:



End of Life Warning End of Life Reached

When the XT's life has ended the display will blink as shown above, the audible will beep once every 15 seconds, and the visual will flash once every 15 seconds, and the vibrating alarm will operate once every 15 seconds, until the Test button is pressed. The audible will then be turned off, and the detector will shutdown, displaying the relevant error code (see Section 10).

9. Safety Shutdown

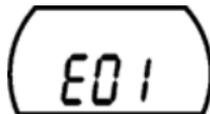
In the event that the battery runs out before the end of life is reached (due to excessive alarms) the battery icon will blink, the audible alarm will beep once every 15 seconds, and the visual alarm will flash once every 15 seconds, until the Test button is pressed. The audible alarm will then be turned off, and the detector will shutdown. A shutdown condition can also occur due to failure of the electronic circuitry or sensor. The relevant error code is shown (Section 10).

Note:

Shut down conditions due to extreme temperatures can be reset by moving the detector to a normal range temperature and pressing the Test button.

10. Error Codes

Error Code	Reason
E 01	Sensor Output Range error
E 02	Battery has run out
E 04	End of Life reached
E 08	System Fault
E 16	EEPROM Error



Sensor Output Range Error

11. Zero Calibration (Oxygen Span)

This must be performed in a clean atmosphere, and it is recommended that it be performed daily or after any gas alarm. Depress the Test button for 5 seconds. The instrument will initiate a zero by showing a countdown with a '0' for zero calibration, followed by a countdown from '20' to '0'.



When the zero calibration has been completed the XT will indicate a pass by beeping twice, flashing twice, and the (✓) symbol will flash for 5 seconds.



If the zero calibration is not OK then the XT will give a single beep and a single flash, the Test Fail icon (✗) will be displayed, and the zero calibration should be repeated.



12. Optional Span Calibration (CO AND H₂S Versions Only)

While the XT requires no calibration for its lifetime of 24 months there may be an occasion when it is deemed necessary to carry out a calibration, for instance, if a self-test fails. To carry out the span calibration the user requires the following additional equipment which can be purchased from Honeywell Analytics.

- Gas cylinder containing a known concentration calibration gas as follows:

Toxic Gas	Calibration Concentration
H ₂ S	25 ppm in air
CO	100 ppm in air

- A gas regulator supplying the gas at 300ml/min flow rate
- Tubing for use between the regulator and the test adaptor (supplied)

Carry out the zero calibration procedure as described in Section 11. Only if the zero calibration is successful can a span calibration be performed. At the end of the zero calibration procedure, the test button must be pressed continuously for 5 seconds while the  symbol is still flashing. Connect the gas cylinder and test adaptor and apply the gas at 300 ml/min. The instrument will display a 'C' (for calibration), and count down from '60' to '0'.



If the span calibration is successful the unit will give 2 beeps, 2 flashes and displays the Test Pass icon . If it fails the instrument gives a long beep, long flash and displays the Fail icon  (the calibration remains as it was before the span calibration was attempted).



Span Calibration - Pass



Span Calibration - Fail

13. Specification

Maximum Operating Life	<i>24 months from activation, assuming 3-5 minutes of alarm per day under normal operating conditions*</i>			
Sensor Range	CO	<i>0 to 1000 ppm (display: 0-200 ppm)</i>		
	H₂S	<i>0 to 100 ppm (display: 0-100 ppm)</i>		
	O₂	<i>0 to 30% v/v (display: 0-25% v/v)</i>		
Alarm Setpoints	Gas Type	Level 1	Level 2	Part Numbers
	H₂S	<i>10 ppm</i>	<i>15 ppm</i>	<i>2566-0112, 2566-0112RT</i>
	H₂S	<i>5 ppm</i>	<i>5 ppm</i>	<i>2566-0112-01, 2566-0112RT-01</i>
	H₂S	<i>5 ppm</i>	<i>10 ppm</i>	<i>2566-0112-06, 2566-0112RT-F</i>
	CO	<i>35 ppm</i>	<i>100 ppm</i>	<i>2566-0111, 2566-0111RT</i>
	CO	<i>20 ppm</i>	<i>50 ppm</i>	<i>2566-0111RT-01</i>
	CO	<i>25 ppm</i>	<i>100 ppm</i>	<i>2566-0111RT-02</i>
	O₂	<i>23.5% v/v</i>	<i>19.5% v/v</i>	<i>2566-0110, 2566-0110RT</i>
Note: Additional part numbers are available with alternative alarm settings, which are shown on the instrument's label				
Calibration	CO/ H₂S	<i>Zero adjustment (optional Span)</i>		
	O₂	<i>Span adjustment</i>		
Shelf Life	<i>12 months: CO/H₂S 6 months: O₂</i>			

Operating Temperature	<i>-4°F to +122°F (-20°C to +50°C)</i>	
Humidity	<i>5-95% RH (non-condensing)</i>	
Audible Alarm	<i>95db at 4" (95db at 10cm)</i>	
Visual Alarm	<i>High intensity red LEDs</i>	
Vibrating Alarm	<i>Standard</i>	
Display	<i>Custom LCD</i>	
Sensor Type	<i>Electrochemical</i>	
Battery	<i>3.6V non-replaceable Lithium battery</i>	
IP Rating	<i>IP67</i>	
Intrinsic Safety	<i>ATEX II 2 G Ex ia IIC T4</i>	
RFI/EMC	<i>CE EN50270:1999 and EN55011</i>	
Dimensions	<i>3.4"(H) x 2"(W) x 1.1"(D) (87 mm x 50 mm x 27 mm)</i>	
Weight	CO/ H₂S	<i>2.57 oz (73.0g)</i>
	O₂	<i>2.88 oz (81.3g)</i>

*Operating Life may be reduced by excessive alarms.

Note:

New alarm level 1 and 2 can be created accordance with customer's request.

14. Contacting Honeywell Analytics

To contact Honeywell Analytics, call: + 41 (0)44 943 4300 (Europe, Middle East, Africa
and India)
 + 1 800 538 0363 (Americas)
 + 82 (0)2 2025 0300 (Asia Pacific)

Or visit our website at www.honeywellanalytics.com

15. Sensor Cross-Sensitivity Data

H₂S SureCell Cross Sensitivity Data

Gas Type	Concentration Applied (ppm)	Reading (ppm H₂S)
<i>Carbon Monoxide</i>	<i>50</i>	<i>0</i>
<i>Sulfur Dioxide</i>	<i>2</i>	<i>0</i>
<i>Nitrogen Dioxide</i>	<i>3</i>	<i>0</i>
<i>Nitric Oxide</i>	<i>25</i>	<i>0</i>
<i>Chlorine</i>	<i>0.5</i>	<i>0</i>
<i>Hydrogen</i>	<i>100</i>	<i>0</i>
<i>Ethylene</i>	<i>100</i>	<i>0</i>
<i>Carbon Dioxide</i>	<i>5000</i>	<i>0</i>

CO SureCell Cross Sensitivity Data

Gas Type	Concentration Applied (ppm)	Reading (ppm CO)
<i>Hydrogen Sulfide</i>	<i>25</i>	<i>0</i>
<i>Sulfur Dioxide</i>	<i>50</i>	<i>0.5</i>
<i>Nitrogen Dioxide</i>	<i>800</i>	<i>20</i>
<i>Nitric Oxide</i>	<i>5</i>	<i>8</i>
<i>Chlorine</i>	<i>2</i>	<i>0</i>
<i>Hydrogen</i>	<i>100</i>	<i>20</i>
<i>Ethylene</i>	<i>100</i>	<i>85</i>
<i>Ammonia</i>	<i>100</i>	<i>0</i>

O₂ Cross Sensitivity Data

Gas Type	Concentration Applied	Reading (%v/v O₂)
<i>Hydrogen</i>	<i>100%</i>	<i>-9%</i>
<i>Methane</i>	<i>100%</i>	<i>0</i>
<i>Nitrogen Dioxide</i>	<i>25 ppm</i>	<i>0</i>

16. Accuracy Statement

To achieve optimal accuracy, the detector should be periodically supplied with a known concentration test gas, and if the readings are outside of 15% of the applied gas concentration, a span calibration should be performed, under conditions of standard temperature (15°C to 25°C), humidity and pressure.

Poisons should not affect the accuracy of the XT but certain compounds can block the gas access port of the sensor, such as silicone oils, giving a lower than expected reading.

17. Warranty

All products are designed and manufactured to the latest internationally recognized standards by Honeywell Analytics under a Quality Management system that is certified to ISO 9001:2000.

Device	Warranty Terms
<i>XT Series Personal Gas Detector</i>	24 months from date of switch on / installation provided this takes place prior to the 'Activate Before' / install by date. Pro rata after 'Activate Before' / install by date.
Service	Warranty Terms
A. Replacement with new product <i>within the first 90 days of the original warranty period.</i>	Full warranty period as specified in Warranty Terms above.
B. Repair (or replacement with new or reconditioned product at HA discretion) after the first 90 days of the original warranty period.	Pro-rata warranty realized as balance of original warranty specified in Warranty Terms above, or equivalent discounted price on a new, fully warranted instrument or component.
Components replaced under original product warranty.	<i>Warranted against same fault for 3 months from date of repair</i>
Repair or Replacement outside of original warranty period.	

Warranty Conditions

1. The HA Limited Product Warranty only extends to the sale of new and unused products to the original buyer where purchased from a HA authorized distributor or service center.
2. Not covered are:
 - consumable items such as dry-cell batteries, filters and fuses or routine replacement parts due to the normal wear and tear of the product;
 - any product which in HA's opinion has been altered, neglected, misused or damaged by accident or abnormal conditions of operation, handling, use or severe sensor poisoning; or failure to maintain and calibrate the product as prescribed in the product documentation;
 - defects attributable to improper installation, repair by an unauthorized person or the use of unauthorized accessories/parts on the product;
3. Any claim under the HA Product warranty must be made within the warranty period and as soon as reasonably possible after a defect is discovered.
4. If a warranty claim is being sought it is the responsibility of the buyer to return the product to the distributor or HA authorized service center along with a full description of the fault. If no description of the fault is provided, HA reserves the right to charge an investigation fee.
5. A warranty claim will only be accepted if a proof of purchase is submitted and all conditions contained within this warranty are met. When, in the opinion of HA, a warranty claim is valid, HA will repair or replace the defective product according to the terms herein. Where repair or replacement provides significant upgrade, enhancement or modification of the instrument, HA reserve the right to charge a reasonable fee in respect of such.
6. In the course of the investigation it may be determined that recalibration of the instrument is required. In such cases, calibration charges may apply.
7. Please note that if, in the opinion of HA the warranty claim is not valid, HA reserves the right to charge for an investigation, any repair work carried out and for any attendance by its service engineer at the usual rates in force at the time the claim was received.
8. In no event shall HA's liability exceed the original purchase price paid by the buyer for the product.
9. After the effective date, this warranty supersedes all existing warranty statements and HA makes no other warranty expressed or implied except as stated above.

EC Declaration of Conformity

The undersigned, representing the Manufacturer:

Manufacturer:

Honeywell Analytics Inc
405 Barclay Boulevard
Lincolnshire, Illinois USA
60069

Product(s) covered by this Declaration:

Type	Description
Impulse XT Series	Portable single gas Detector for monitoring one toxic or oxygen gas

The Technical File is maintained at the manufacturer's location.

The product(s) listed above conform to the relevant provisions of ATEX Directive 94/9/EC and EMC Directive 89/336/EEC, when installed, operated, serviced and maintained in accordance with the installation/operating instruction supplied in the product documentation.

Standard	Description
EN 50270: 1999	Electromagnetic Compatibility – Electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen
EN 50271:2002	Requirements and tests for apparatus using software and/or digital technologies
EN 60079-0:2006	Electrical apparatus for explosive gas atmospheres - Part 0:General Requirements
EN 60079-11:2007	Explosive atmospheres - Part 11:Equipment Protection by Intrinsic Safety "i"

Manufactured in accordance with Article 9, Annexes IV and VII of the Council Directive 94/9/EC.

Notified Body for ATEX	Certificate Number	QA Notification Number	Type Approval
UL International DEMKO A/S Lyskaer 8, P.O. Box 514 DK-2730 Herlev, Denmark DEMKO Notified No: 0539	DEMKO 10 ATEX 0941149	KEMA Quality B.V. No. KEMA 06ATEXQ0141 Iss3 Notified Body No: 0344	II 2 G Ex ia IIC T4

Year of CE Marking:

2003

For and on behalf of the authorized manufacturer in the community:

Name: John Stratman

Position: Director of Certification Relations, Honeywell Analytics Inc, Lincolnshire, Illinois, USA

Signature:

Date: 11-Mar-10

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This publication is not intended to form the basis of a contract.

Honeywell

Issue 6_04/2012

MAN0866_EMEA

ECO_HAA120024

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