



Ordering Information



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A complete assembly consists of two parts, a transmitter and sensor which must be ordered separately.

- **Transmitter PN#:** Two certified versions are available:
 - ATEX/IECEX approved version (Aluminium version part number S3KAL2, Stainless Steel version part number S3KAS2)
 - UL/CSA approved version (Aluminium version part number S3KUL2, Stainless Steel version part number S3KUS2)
 - INMETRO approved version (Aluminium version part number S3KNL2, Stainless Steel version part number S3KNS2)
- **Sensor PN#:** All certified ATEX, IECEX, UL, CSA (c-UL), INMETRO with two digits to specify gas type and range:
 - e.g. S3KXXC1SS (C1 denotes Carbon Monoxide, with a default range of 0-300ppm and user configurable for ranges from 0-100ppm to 0-999ppm)

Transmitter

S3KAL2 or S3KAS2 or S3KUL2 or S3KUS2 or S3KNL2 or S3KNS2

Series 3000 MkII transmitter is supplied complete with integral surface mounting lugs, 2 x M20 cable entries (ATEX/IECEX version) or 2 x 3/4" NPT conduit entries (UL/c-UL/INMETRO version), 1 x blanking plug, 1 x hexwrench set, weatherproof cover, operating magnet, configuration/test certificate and instruction manual. Units are 100% inspected prior to despatch from the factory. Order the required sensor separately.

Sensor Part Numbers and Available Gases

S3KXS01SS	Oxygen (O ₂) 0-25% Vol
S3KXSC1SS	Carbon Monoxide (CO) 0-300ppm (default) 0-100 to 0-500ppm selectable
S3KXSH1SS	Hydrogen Sulphide (H ₂ S) 0-15ppm (default) 0-10 to 0-50ppm selectable
S3KXSH2SS	Hydrogen Sulphide (H ₂ S) 0-100ppm (default) 0-50 to 0-500ppm selectable
S3KXSL1SS	Chlorine (Cl ₂) 0-5ppm (default) 0-5 to 0-20ppm selectable
S3KXSS1SS	Sulphur Dioxide (SO ₂) 0-15ppm (default) 0-5 to 0-20ppm selectable
S3KXSL1SS	Chlorine Dioxide (ClO ₂) 0-1ppm only
S3KXSM1SS	Nitrogen Monoxide (NO) 0-100ppm only
S3KXSN1SS	Nitrogen Dioxide (NO ₂) 0-10ppm only
S3KXSG1SS	Hydrogen (H ₂) 0-1000ppm only
S3KXSG2SS	Hydrogen (H ₂) 0-10,000 only
S3KXSR1SS	Hydrogen Chloride (HCl) 0-10ppm (default) 0-10 to 0-20ppm selectable
S3KXSF1SS	Hydrogen Fluoride (HF) 0-12ppm only
S3KXSA1SS	Ammonia (NH ₃) 0-200ppm (default) 0-50 to 0-200ppm selectable
S3KXSA2SS	Ammonia (NH ₃) 0-1000ppm (default) 0-200 to 0-1,000ppm selectable
S3KXSP1SS	Phosphine (PH ₃) 0-1.2ppm only

Shipping Details

Shipping carton dimensions: 315mm (12.4") (L) x 230mm (9.0") (W) x 115mm (4.5") (D)
 Approximate weight: Aluminium alloy LM25 : 1.7kg (3.75lbs.) Stainless Steel 316 : 3.7kg (8.16lbs.)

Optional Accessories

SPXCDMTBR	Pipe Mounting Bracket
SPXCSDSP	Sunshade/Deluge Protection
S3KCAL	Calibration gas flow housing
S3KCC	Collecting cone (for CO & H ₂ only)
S3KDMK	Duct mounting kit (for use when detecting O ₂ , CO, H ₂ S or H ₂ gas)
S3KRMK	ATEX/IECEX/UL/c-UL/INMETRO approved remote sensor mounting kit (includes enclosure with sensor socket, 15m (50 feet) of digital cable and glands, transmitter cable plug, mounting screws)
Calibration Gases	Contact Honeywell Analytics representative



Honeywell Analytics Lines of Business



Commercial

Vulcain-brand gas detection from stand-alone units to fully engineered, multi-point systems, all offering cost-effective regulatory compliance

- » Applications: parking structures, chillers, mechanical rooms, office towers, commercial buildings, shopping centers, swimming pools, golf courses, schools and universities, laboratories

Industrial

Renowned Sieger and Manning gas detection systems with advanced electrochemical, infrared and open path sensing technologies

- » Applications: oil and gas, cold storage, water/wastewater treatment, chemicals, engine rooms, plastics and fibers, agriculture, printing and light industrial

Portables

Single or multi-gas Lumidor and other premium detectors with compact, lightweight designs ranging from simple alarm only units to advanced, fully configurable and serviceable instruments

- » Applications: underground utility and electricity ducts, boiler rooms, post-fire sites, sewers, industrial plants, industrial hygiene, first responder teams, remote fleets



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High Tech/Government

A complete portfolio of gas and chemical detection instrumentation including infrared spectroscopy (MST) with no cross interference, to Chemcassette paper-based solutions (MDA Scientific) offering detection down to parts per billion

- » Applications: semiconductor manufacturing and nanotechnology, aerospace propulsion and safety, specialty chemicals industry, research laboratories, emergency response

Technical Services

24/7 global network includes post-sales service and Systems Integration teams

- » Emergency call out, service contracts, on/off-site repair, training and commissioning
- » Complete range of spares, consumables and accessories

Series 3000 MkII

Honeywell



2-wire loop powered toxic and Oxygen gas detector for use in potentially explosive atmospheres

Please Note:

While every effort has been made to ensure accuracy in this publication, no responsibility can be accepted for errors or omissions. Data may change, as well as legislation, and you are strongly advised to obtain copies of the most recently issued regulations, standards, and guidelines. This publication is not intended to form the basis of a contract.

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Series 3000 MkII



Installation



Technical Summary



Reliable detection

- Proven electrochemical sensing technology
- Uses Surecell™ electrochemical cells, ideal for hot and humid environments
- Long-life sensing elements (typical >2 years)
- Patented 'Reflex' sensing element verification diagnostics

Reduced installation costs

- Integral surface mounting lugs
- Optional horizontal or vertical pipe mounting bracket
- Flameproof transmitter allows field wiring to be run along with other non-IS instruments
- Plug-in sensor removes wiring

Reduced commissioning costs

- Sensor recognition software auto configures transmitter
- Non-intrusive configuration
- Plug and play factory configured sensors

Reduced maintenance costs

- IS sensor connection permits hot swap, reducing downtime
- User programmable calibration frequency
- Integral fault diagnostic software
- Menu/icon driven calibration procedure

Regulatory compliance

- European (ATEX)
- US (UL)
- Canadian (c-UL)
- International (IECEX)
- Brazil (Inmetro)

Range of optional accessories

- Remote sensor mounting kit
- Duct mounting kit (for H₂, CO and H₂S only)
- Calibration cup to apply test gas
- Collecting cone (for H₂ and CO only)

Typical applications

- Exploration and drilling platform
- Production platforms
- Onshore oil and gas terminals
- Refineries and chemical plants
- Power plants
- Waste water facilities
- Utilities

The Series 3000 MkII provides comprehensive monitoring of toxic and Oxygen gas hazards in potentially explosive atmospheres, both indoors and outdoors. This low powered gas detector operates on an industry standard 2-wire 4-20mA loop, making it ideal for both new and retrofit applications. Users can configure the detector without the need of a 'hot work permit' by using the LCD and magnetic switches. Fault diagnostic software and programmable calibration due frequency simplifies maintenance procedures.

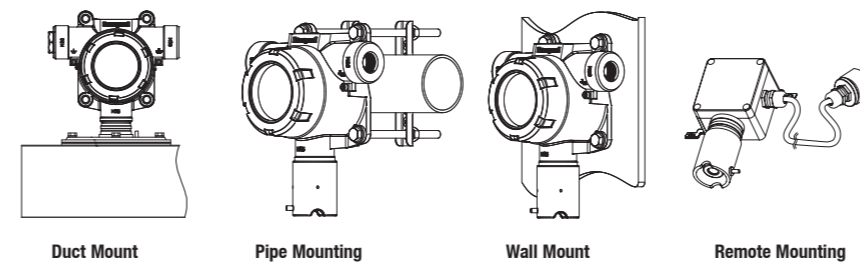


The intrinsically safe smart sensors are supplied pre-configured and can be 'hot swapped' without having to remove power to the detector, saving time and money during commissioning and routine servicing. A remote sensor mounting kit is available that allows the sensor to be mounted up to 15m (50ft) from the transmitter, making it ideal for operation in areas that are difficult to access.

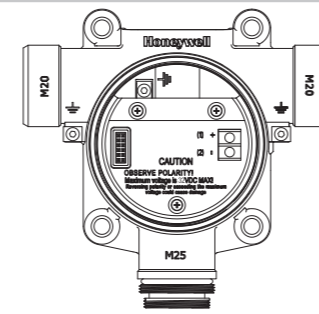
Series 3000 MkII is supplied with all necessary accessories for easy installation. The detector can be wall mounted using the integral mounting lugs or pipe mounted (horizontal or vertical) using the optional pipe mounting kit. Electrical installation is made using the 2 x M20 cable entries (ATEX/IECEX version) or 2 x 3/4"NPT conduit entries (UL/c-UL/INMETRO versions). A suitable blanking plug is also supplied to seal any unused entries. A weatherproof cap is also included for use in the harshest outdoor conditions.

Mechanical Installation Options

Series 3000 MkII is designed for use in potentially explosive atmospheres. As such, installation should follow national guidelines using suitable mechanically protected cable and glands (M20 or 3/4" NPT) or conduit (3/4" NPT). Use 0.5mm² (20AWG) to 2.0mm² (~14AWG) cross sectional area cable as needed to ensure minimum operating voltage at the detector, depending on installed cable length. Various accessories are available for different applications.



Electrical Connections



Terminal Number	Detector Terminal	Controller Connection
1	+	+VE Signal
2	-	Signal

Typical Maximum Installed Cable Lengths

The maximum cable length between a controller and detector is dependent upon:

- The minimum guaranteed supply voltage to the detector at the controller (V_c).
- The minimum operating voltage of the detector (V_d).
- The maximum current draw of the detector (I_m).
- The input impedance of the controller (R_c).
- The resistance of the cable (R_L).

Using the example values opposite, the table below shows typical cable lengths.

For a specific application, the cable manufacturer's resistance data for a specific cable type must be used.

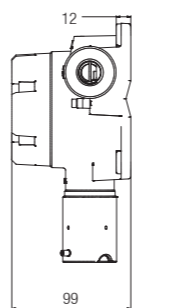
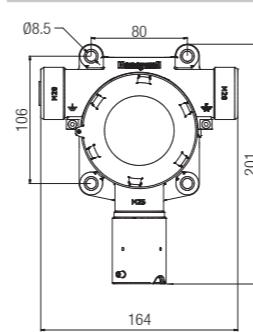
A cable length calculation formula can be found in the detector's product technical manual.

Maximum Cable Length km (m)

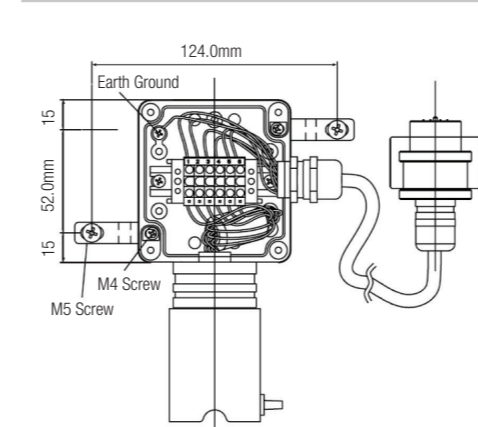
Cable Size	Cable Resistance R _L Ω/km (Ω/m)	Cable distance km (m) where the Input Impedance R _c = 33Ω	Cable distance km (m) where the Input Impedance R _c = 250Ω
0.5mm ² (20AWG)*	36.8 (59.2)	3.9 (6.3)	0.9 (1.0)
1.0mm ² (17AWG)*	19.5 (31.4)	7.3 (11.7)	1.7 (2.7)
1.5mm ² (16AWG)*	12.7 (20.4)	11.2 (18.0)	2.7 (4.3)
2.0mm ² (14AWG)*	10.1 (16.3)	14.1 (22.7)	3.4 (5.5)

*Nearest equivalent

Dimensions



Remote Mounting Arrangement



Note: All dimensions in mm (1" = 25.4mm)

Wiring Schematics

Detector supply V_d

- Assumed to be 17VDC

Maximum detector signal I_m

- Assumed to be 22mA (over range)

Cable resistance R_L

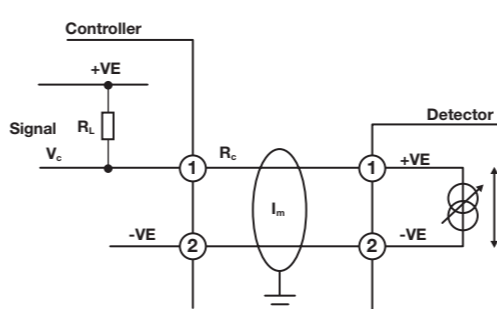
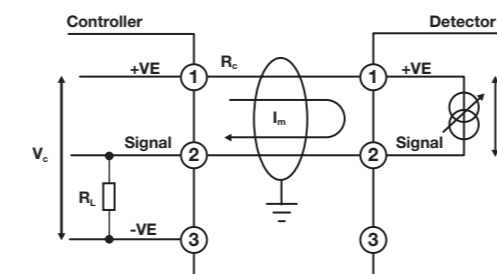
- Subject to cable type

Load resistor of control panel R_c

- Assumed 33Ω (min) or 250Ω (max)
- Subject to controller manufacturer

Controller supply voltage V_c

- Subject to controller manufacturer
- Assumed nominal of 24VDC



Series 3000 MkII Detector

Use
Rugged and reliable gas detector for the protection of personnel from toxic and Oxygen gas hazards. Suitable for use in Zone 1 or 2 hazardous areas and North American Class I and II Division 1 or 2 areas.

Detectable Gases

Gas	Formula	Selectable Full Scale Range	Default Range	Operating Temperature**	
			Min		Max
Oxygen	O ₂	25.0% / Vol only	25.0%Vol	-40°C / -40°F	55°C / 131°F
Hydrogen Sulphide	H ₂ S	10.0 to 50.0ppm	15.0ppm	-40°C / -40°F	55°C / 131°F
Hydrogen Sulphide	H ₂ S	50 to 500ppm	100ppm	-20°C / -4°F	55°C / 131°F
Carbon Monoxide	CO	100 to 500ppm	300ppm	-40°C / -40°F	55°C / 131°F
Sulphur Dioxide	SO ₂	5.0 to 20.0ppm	15.0ppm	-40°C / -40°F	55°C / 131°F
Ammonia	NH ₃	50 to 200ppm	200ppm	-20°C / -4°F	50°C / 122°F
Ammonia	NH ₃	200 to 1,000ppm	1,000ppm	-20°C / -4°F	40°C / 104°F
Chlorine	Cl ₂	5.0 to 20ppm	5.0ppm	-10°C / 14°F	55°C / 131°F
Chlorine Dioxide	ClO ₂	1.00ppm only	1.00ppm	-20°C / -4°F	55°C / 131°F
Nitric Monoxide	NO	100ppm only	100ppm	-20°C / -4°F	55°C / 131°F
Nitrogen Dioxide	NO ₂	5.0 to 50.0ppm	10ppm	-20°C / -4°F	55°C / 131°F
Hydrogen	H ₂	1,000ppm only	1,000ppm	-20°C / -4°F	55°C / 131°F
Hydrogen	H ₂	9,999ppm only	9,999ppm	-20°C / -4°F	55°C / 131°F
Hydrogen Chloride	HCl	10.0 to 20.0ppm	10ppm	-20°C / -4°F	55°C / 131°F
Hydrogen Fluoride	HF	12.0ppm only	12.0ppm	-20°C / -4°F	55°C / 131°F
Phosphine	PH	1.2ppm only	1.2ppm	-20°C / -4°F	55°C / 131°F

Electrical

Connections and Power

2-wire loop powered
17VDC (+ / -10%) to 32VDC (max) operation
22mA max. over range

Recommended Cable

2-wire with screen (90% coverage) or conduit
0.5mm² (20AWG) to 2.0mm² (14AWG)

Signal

0-100% FSD 4-20mA
Fault = 3mA
Calibration due selectable off or 3mA
Max. over range 22mA
Inhibit (toxic sensors) = Selectable 3mA or 4mA Inhibit
(Oxygen sensors) = Selectable 3mA or 17.4mA

Construction

Material

Transmitter: Epoxy painted aluminium alloy LM25 or 316 Stainless Steel
Sensor: 316 Stainless Steel with PTFE filter

Maximum Dimensions

164mm x 201mm x 99mm
6.4" x 7.9" x 3.9"

Weight

Aluminium alloy LM25: 1.7kg (3.75lbs.) Stainless Steel 316: 3.7kg (8.16lbs.)

Environmental

IP Rating

IP66 (EN 60529), NEMA 4X

Certified Temperature

ATEX/IECEX/INMETRO: -20°C to +55°C (-4°F to +131°F)
UL/c-UL: -40°C to +55°C (-40°F to +131°F)

Operating Humidity

Continuous 20-90% RH (non-condensing)
Intermittent 0-99% RH (non-condensing)

Operating Pressure

90-110kPa

Storage Conditions

15°C to 30°C (59°F to 86°F)
30-70% RH (non-condensing)

Certification

UL/c-UL Class I, Div. 1 & 2, Groups B, C & D; Class II, Div. 1 Groups E, F & G, Class II, Div.2, Groups F & G; Class I, Zone 1, Group IIB + H2 Hazardous Locations.
ATEX: Ⓢ II 2 (1) G Ex d [ia IIC Ga] IIB+H₂ T4 Gb (T_{amb} -20°C to +55°C / -4°F to 131°F)
IECEX Ex II 2 (1) G Ex d [ia IIC Ga] IIB+H₂ T4 Gb
INMETRO: BR-Ex d [ia] IIB+H₂ T4

Approvals

CE compliant in accordance with:
ATEX Directive 94/9/EC
EMC Directive 2004/108/EC (EN 50270:2006)

* +55°C intermittent.

