

S-Quad Extra Sensory Detection



Gent's new S-Quad sensor range for Vigilon is the UK's most innovative solution to the detection and signalling of fires. Patented dual angle optical scatter smoke detection improves both the speed and integrity of fire detection. This advanced sensing technology is coupled with an integral sounder with speech capability and strobe in the same intelligent device, making S-Quad a truly unique fire detection and alarm sensor.

LIFE SAFETY FIRST

- **Intelligent smoke, heat and CO gas sensing technology for early detection of fires**
- **Voice messaging ensures quicker and safer evacuation in the event of a fire**

MINIMISES FALSE ALARMS

- **Combined power of S-Quad and the Vigilon panel provides quick, intelligent decision making thus minimising false alarms**
- **A unique dual angle optical chamber within the S-Quad sensor recognises a clear distinction between smoke and steam**
- **Programmable sensor 'states' for different times during the day and night improves response to real fires and reduces instances of false alarms**
- **Combined CO gas, smoke and heat sensing further minimises false alarms**

SAVES MONEY

- **4 functionalities all in ONE sensor**
- **Supported on the same two wires (loop) within the Vigilon system thereby reducing installation cost**
- **Increased loop capacity with 200 sensors, 125 sensor sounders or 100 sensor strobes**
- **Fast and simple to install**
- **'SAFE' (Soft Addressed Firmware Encoded) addressing and 'soft' addressing does not require manual setting of switches in either the head or base**

SETS NEW INDUSTRY STANDARDS

- **Cutting edge technology building on the reliable analogue addressable Vigilon platform**
- **Conforms to the DDA (Disability Discrimination Act – 1995) Legislation**
- **Aesthetically pleasing; can be discreetly fitted in any environment**

S-Quad System Benefits

A combined Multi-sensor, Speech, Sounder and Strobe in one intelligent, discreet device providing a safe and cost effective solution for most applications.

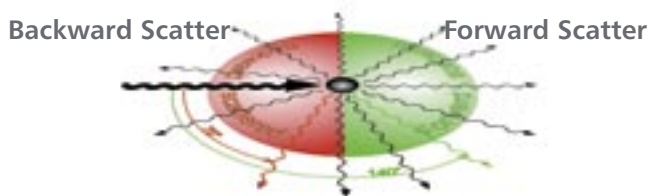
The S-Quad sensors inherit all the advantages of Vigilon's 34000 range combined with extra features, making Vigilon and S-Quad an industry leading combination for fire detection and alarm signalling. S-Quad combines traditional sensing technology with innovative techniques increasing the integrity of the fire decision and minimising incidents of false alarms. As well as the established Sensor Sounder, the S-Quad range includes advanced loop powered voice sounder and visual signalling technologies.

Life Safety First

- Sensor options detect combinations of smoke, heat and carbon monoxide
- Intelligent gas sensing technology monitors the concentration of carbon monoxide in the environment for early detection of potential fire hazard and dangerous levels of gas thus increasing life safety in the workplace
- The stored messages within the sensor allow specific instructions to be conveyed to ensure a safe, controlled evacuation

Minimises False Alarms

- The combined power of the sensor and the Vigilon panel provides intelligent decision making to react to potential fires more quickly. S-Quad incorporates 4 separate sensing elements – heat, carbon monoxide, optical forward and backward scatter
- Patented, dual angle optical forward and backward scatter allows instant identification of particles to distinguish between smoke and steam
- Day and night timed sensor 'states' can be programmed to improve the response to real fires and reduce the number of false alarms. Any of the four different sensors can be set at different sensitivity levels, depending on the application



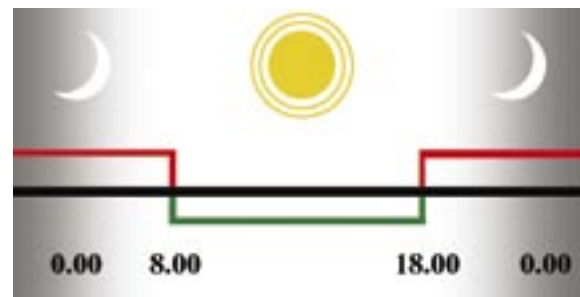
Optical Scatter

- Light beam is deflected by the particles in the chambers and results in beams scattered in many directions. The ratio of forward and backward scatter indicates the type of particles present

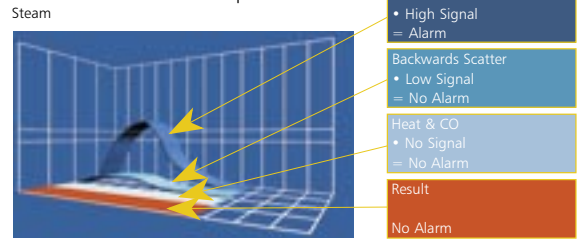
Carbon Monoxide Sensor

- This sensor is particularly effective at detecting smouldering fires. It will also warn building occupants of dangerous levels of this toxic gas. This technology is immune to false alarms caused by dust, steam and insects

Flexible sensitivity throughout the day



O²HCO Performance Examples



WHY A DUAL OPTICAL HEAT CO MULTISENSOR?

Combining the CO technology into the O²H sensor gives this multisensor the benefits of both high false alarm rejection and fast detection of a wide range of fire types.

Many combinations of the different sensors are used in the multisensor to enable fast and above all, reliable fire detection. The following 2 cases are an example of this.

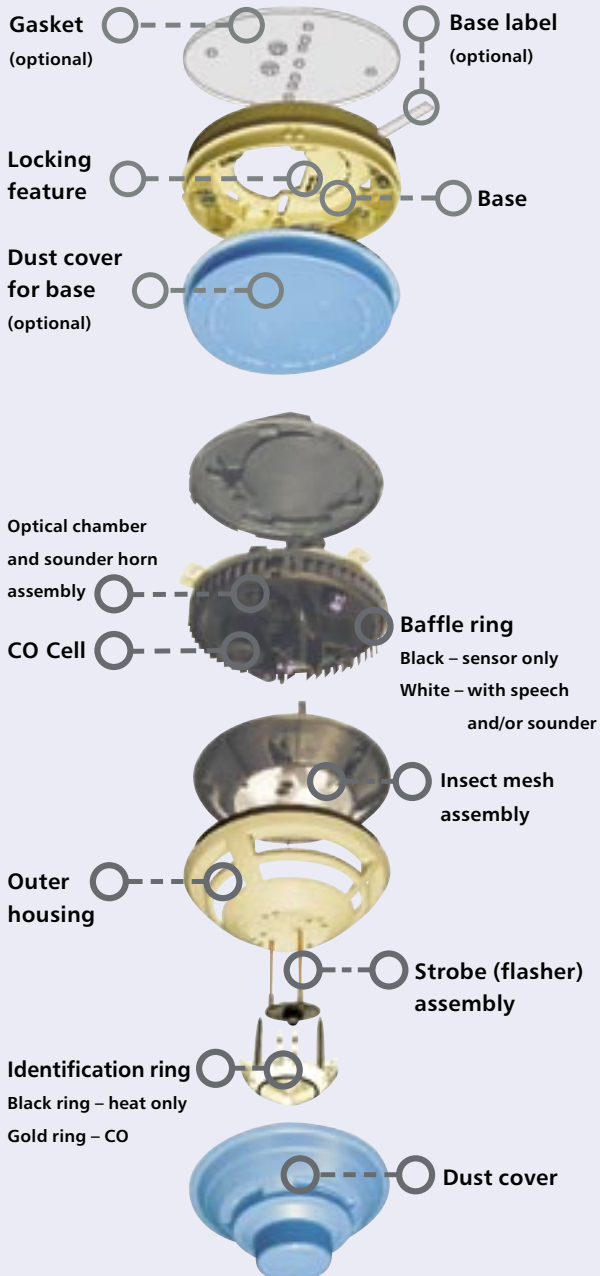
CASE 1: SMOLDERING FIRES With smouldering fires, either the CO levels will be sufficient to detect a fire early, or the presence of CO with smoke will enhance the sensitivity of the dual optical and hence the speed of detection. Note that this process is very immune to common false alarm signals, due to the discrimination of the CO cell used in combination with the dual optical sensor.

CASE 2: FLAMING FIRES With flaming fires the dual optical sensor becomes more sensitive. Furthermore if a rise in temperature is detected by the heat sensor, a further increase in optical sensitivity occurs, enabling fast and reliable detection of flaming fires.

Once again this process has good immunity to false alarms, due to the discrimination of the heat sensor used in combination with the dual optical sensor.



S-Quad features



Saves Money

- Comprehensive range of analogue addressable fire sensors all within ONE device
- Supported on 2 loop Vigilon system – only one set of terminations and one pair of cables required for multi-sensor, sounder, speech and strobe functionality
- Significant loop power capacity on Vigilon system with 200 sensors, 125 sensor sounders and 100 strobes
- Built-in isolators in every device
- Monitored input facility – fire, fault, non-fire – reduces the installed cost of the system and reduces the need for separate interfaces
- Monitored repeat LED output
- Loop powered installation incorporating S-Quad requires no additional interfaces or extra monitored sounder circuits
- S-Quad's intelligent design ensures quick and simple installation with more wiring space within the base

Sets New Industry Standards

- Integral high intensity flashing strobe conforms to the Disability Discrimination Act (DDA)1995 requirement in providing visual alarms in high noise areas or for those with hearing difficulties
- Low profile sensor range with semi-flush mounting option for enhanced, discreet appearance



S-Quad 4 Functions in ONE Sensor



SENSOR – A new concept in fire detection – a truly intelligent analogue sensor incorporating exceptional computing power in the sensor as well as the panel to achieve an extremely fast response to a real fire whilst minimising the risk of false alarms.

- The multi-sensor combines Heat (H), Carbon Monoxide (CO), Optical Forward Scatter (OFS), Optical Backward Scatter (OBS)
- The patented dual angle optical scatter technology allows identification of the particle source filtering potential false alarms due to steam and dust
- The gas sensing element (CO) within the chamber monitors the concentration of carbon monoxide, a product of incomplete combustion in some fire types, and potentially life threatening. The CO sensor allows rapid fire detection, with smouldering fires in areas where smoke detectors could register false alarms
- Combined CO gas sensing with dual angle optical and heat allows a higher level of false alarm immunity whilst still improving the detection speed of certain types of fire
- Each sensor element has sensitivity settings which can be adjusted to suit the environment / application and can be programmed for different time periods during the day or night
- Repeat fire LED output as standard (if monitored input not used)
- Operational LED blink 'On/Off' option
- Dust cover fitted as standard
- Analogue digital converters to prevent data corruption

Effectiveness in reducing False Alarms

Time comparison analogue sensors tested with...

Detector types and multi-sensor options tested with...	Detector types and multi-sensor options						
	H	I	O	CO	OH	O ² H	O ² HCO
Dust	Green	Green	Green	Green	Green	Green	Green
Aerosol	Green	Red	Blue	Green	Red	Green	Green
Steam	Blue	Red	Red	Green	Red	Blue	Green
Insects	Green	Red	Blue	Green	Red	Green	Green
Cigarette smoke	Green	Blue	Blue	Green	Red	Green	Green
Cooking fumes	Green	Red	Red	Green	Red	Red	Green
Other Gas leakages	Green	Blue	Red	Green	Green	Blue	Green

Legend: Red = Probable Alarm, Blue = Possible Alarm, Green = Unlikely Alarm

Effectiveness of Sensors to Detect Test Fires

Analogue sensors during standard test fires

Analogue sensors during standard test fires	Detector types and multi-sensor options						
	H	I	O	CO	OH	O ² H	O ² HCO
TF1 Open wood fire	Blue	Blue	Yellow	Blue	Green	Green	Green
TF2 Smouldering wood fire	Red	Yellow	Green	Blue	Green	Green	Green
TF3 Smouldering cotton fire	Red	Yellow	Green	Blue	Green	Green	Green
TF4 Open plastics (PU) fire	Blue	Green	Blue	Yellow	Blue	Green	Green
TF5 Liquid fire (n-heptane)	Blue	Green	Blue	Red	Blue	Green	Green
TF6 Liquid fire (spirit)	Blue	Green	Blue	Red	Blue	Green	Green

Legend: Red = No response, Yellow = Poor response, Blue = Acceptable response, Green = Good response

SPEECH– Another 'first' – a voice chip capable of delivering synchronised messages throughout the building via the sensor

- Programmable voice messaging ensures quicker and safer evacuation in the event of a fire or an emergency
- Complements the S-Cubed sounder with messages and complex sound signals such as the bell tone
- Soft-start' and programmable volumes
- Programmable message period 10-20 seconds
- Programmable silences and tones
- Low current consumption



RESEARCH* SHOWS ONLY 13% OF PEOPLE REACT TO BELLS, WHILST 70% REACT TO A VOICE MESSAGE.

*Sources: Brian Piggott (The Fire Research Station) and David Canter (Surrey University)





SOUNDER – Increased output with Vigilon still having the largest number of sounders on a loop

Combined sensor sounder technology provides a cost effective solution for alarm signalling saving on installation costs as there is no need for additional power supplies. Synchronised messages are transmitted through the same sensor that detects the fire.

- Attention tones can be programmed either as a bell (on speech variants) or a choice of 12 standard tones
- Soft' start option
- Uniform sound distribution
- Low current consumption
- Fully synchronised sound patterns via the panel
- Selectable speech messages available to suit most requirements – switched on/off by the Vigilon panel
- Rich harmonic sound output using patented technique
- Options for sound output:
 - Standard mode = 90 dBA@1m (typical)
 - Up to 98 dBA possible if required



STROBE – Warns those with hearing difficulties of potential fire hazard, now a legal requirement in all public buildings through DDA Legislation

- Built-in high intensity flashing strobe helps alert occupants in noisy environments as well as the hearing impaired
- Complies with the latest requirements of the DDA (Disability Discrimination Act 1995)
- Compatible with S-Cubed wall mounted strobe
- Low power consumption and high output LED technology ensures strobes are cost efficient and more reliable in use than other high powered strobes
- Wide viewing angle
- Synchronised across the loop
- Strobe can operate independently of the sounder if required
- Visual Indicators
 - Red LED – indicates Fire as well as reassures device is operating correctly
 - Strobe LED – flashes at different rate to Red indicating LED
 - Blue LED – indicates CO present
 - Gold ring to indicate CO version
 - Black ring indicates Heat detector only version



S-Quad Technical Specification

SYSTEM COMPATIBILITY

LOOP LOADING

Uniquely in the UK Fire, Detection and Alarm industry, Gent continues to offer backward compatibility assurance on its third generation of 34000 Vigilon range of sensors through the appropriate system upgrade.

PART NUMBER	DESCRIPTION	SYMBOL	LOAD FACTOR
S4-700	Sensor base	–	0
S4-720	Heat Sensor	H	1
S4-780	Heat Sensor Sounder	HS	8
S4-715	Optical Sensor	O	1
S4-710	Optical Heat Sensor	OH	1
S4-770	Optical Heat Sensor Sounder	OHS	8
S4-711	Dual Angle Optical Heat Sensor	O ² H	1
S4-771	Dual Angle Optical Heat Sensor Sounder	O ² HS	8
S4-720-ST-VO	Heat Sensor + Speech + Strobe	HSpSt	18-26**
S4-711-ST	Dual Angle Optical Heat Sensor + Strobe	O ² HSt	10
S4-711-VO	Dual Angle Optical Heat Sensor + Speech	O ² HSp	12-26**
S4-711-ST-VO	Dual Angle Optical Heat Sensor + Speech + Strobe	O ² HSpSt	18-26**
S4-911	Dual Angle Optical Heat & CO Sensor + Speech + Strobe	O ² HCO	1
S4-911-ST-VO	Dual Angle Optical Heat & CO Sensor	O ² HCOspSt	18-26**

Load factors for guide purposes only

** Higher value for 'turbo' mode or bell

SPECIFICATION

DESCRIPTION	DETAILS
Weight	110g (170g with base)
Dimensions	Diameter=117mm: height=49.6mm (height increases to 63.8mm with base)
IP Rating	IP30 (IP43 with gasket S4 - BASE GASKET)
Enclosure Materials	ABS
Colour	RAL 9010
Storage temperature	-20°C to 70°C (CO is -20°C to 50°C)
Ambient operating temperature	-10°C to 50°C
Relative Humidity	95% non condensing (25°C to 45°C)
Sensor Sounder Frequency	Low 700HZ – High 933HZ

Approvals Pending	Category	Standard
	Heat	EN54 : pt 5
	Optical Smoke all variants	EN54 : pt 7
	Optical Heat with CO	EN54 : pt 7 (ISO/DIS 7240 – 15) CEA 4021 Multi Sensor Standard
	Sounder	EN54 : pt 3
	Speech Sounder	EN54 : pt 3 : prA2 (draft)
	Strobe	EN54 : pt 23 (draft)
	Heat with CO	LPS 1274 : 1.0

VOICE MESSAGES

The speech function is provided by stored messages on a non-volatile flash memory component. This audible output from the flash memory processor lasts for up to 20 seconds of speech. There is also the capability to provide complex tones, such as bell and DIN tones. Each sensor includes 4 standard messages with the component, which are as follows:

- Alert Message: (Female Voice) **“An incident has been reported in the building, please await further instructions”**
- Alarm Message 1: (Female Voice) **“Attention please, this is an emergency please leave the building by the nearest available exit”**
- Alarm Message 2: (Male Voice) **“This is a Fire Alarm! Please leave the building immediately by the nearest available exit”**
- Test Message: (Female Voice) **“This is a test message, no action is required”**

10 Reasons to specify S-Quad

1

Advanced Sensing Technology coupled with integral sounder, speech capability and strobe in one intelligent device provides the UK's most innovative solution to the detection and signaling of fires.

2

Rapid Fire Detection 4 separate sensing elements including CO can be set with individual sensitivity levels and sensor 'states' can be programmed for different time periods to suit all applications and environments.

3

Minimal False Alarms The combined power of S-Quad and Vigilon panel provides quick, intelligible decision making. The S-Quad dual angle optical sensor recognises a clear distinction between smoke and steam.

4

Saves Lives The S-Quad range incorporates intelligent heat and gas sensing technology to allow the early detection of fires, which are known to be particularly hazardous to building occupants.

5

Safe Evacuation Voice messaging capability through the sounder functionality ensures quick and safe evacuation in the event of a fire.

6

Cost Savings S-Quad provides four functionalities within one device supported by 2-wire loop Vigilon system, with built-in isolators in every device.

7

Compliance with DDA (Disability Discrimination Act 1995) Legislation Built-in high intensity flashing strobe warns those with hearing difficulties of a potential fire hazard – now a legal requirement in all public buildings.

8

The Power of Vigilon Supports the largest number of Fire Detection and Alarm products on the same 2 cables with soft or SAFE (Soft Addressed Firmware Encoded) addressing options.

9

Monitored Line Input / Output Option Output can be used for a remote LED. Input can have a separate identity to the sensor although they share the same electronic address.

10

Peace of Mind All Gent fire products are designed to be compatible with the same successful Vigilon platform and supported by a UK wide network of Approved System Integrators.



S-Quad Extra Sensory Detection

GENT
by Honeywell

GENT by Honeywell is synonymous with quality and innovation in the fire detection and alarm industry. Gent technology meets rigorous British and European standards for all projects ranging from small installations to complex, multi-site networks.



Gent works in partnership with customers through the Gent 24 Network of Approved System Integrators who supply Gent equipment and carry out design, installation commissioning and maintenance operations to the highest standards of workmanship.

GENT
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