

# 614SERIES

## Conventional Smoke, CO Detection Range

### Description

The VIGILANT 614 series of low profile fire detectors consists of:

- 614CH Carbon Monoxide (CO) and Heat detector  
Using both CO and Heat sensors in combination enables an increase in the sensitivity of the CO sensor when a rapid increase in temperature is present (heat enhancement), making the 614CH suitable for detecting both slow smouldering and fast flaming fires. The heat sensor also acts as an independent rate-of-rise and fixed temperature detector Class A1R, conforming to AS 7240.5-2004. The 614CH is listed to AS 7240.6-2017 for CO detectors, and is well suited to applications where heat detection alone is insufficient but smoke detectors are vulnerable to nuisance alarms.
- 614P Photoelectric smoke detector  
The 614P is listed to AS 7240.7:2004 and is well suited to detecting visible smoke produced by smouldering fires including overheated electrical cabling.
- 614I Ionisation smoke detector  
The 614I Ionisation smoke detector is listed to AS 7240.7:2004. It reacts to visible and invisible fire aerosols enabling early detection of flaming fires.
- 614T Type A, B, C and D Heat detectors supplement the 614 series for heat only applications - refer separate information sheet.

The 614 series detectors are compatible with VIGILANT MX1, F3200, MX4428 and SIMPLEX 4100ESi CIE. They may be used as service replacements for the MINERVA 614 series detectors both on these and the obsolete F08 and F4000 panels.

### Installation

The 4B base should be fixed so that the park plunger faces toward the door or trafficable area, to suit the 614T, should it be used. This ensures the detector LED will be visible from the direction of entry. However, the 614P/I/CH LED is visible through 360° and can be oriented differently to suit the application. For effective detection of fast flaming fires in sleeping areas, 614CH detectors should be spaced as per heat detector requirements. Refer to the 4B base information sheet for more details. The VIGILANT 614 detectors mount onto the base with a clockwise rotational motion. Rotating the detector anticlockwise past an indent to the park position disconnects the detector from the circuit whilst still retaining it in the base. Depressing the plunger at the side of the base allows the detector to be rotated back into its operating position.

### Testing

The 614CH CO sensor is tested using the X330 in-situ tester with CO detector test gas, part no. 517.001.262. The heat sensor can be tested in-situ using the X461 test unit. The 614P and 614I smoke detectors can be tested in-situ using the X330 Test Tool with CRC-TEST Test Smoke.



### Specifications

Quiescent Current	70µA		
Alarm State Current <sup>1</sup>	5mA to 85mA		
Alarm State Voltage <sup>2</sup>	4V to 7.6V		
Ext. Powered Load <sup>3</sup>	50mA at 28Vdc (max.)		
Ambient Temp (min) <sup>4</sup>	0°C	-20°C	-20°C
Ambient Temp (max)	+50°C	+70°C	+70°C
Rel. Humidity (min) <sup>5</sup>	15%	10%	10%
Rel. Humidity (max) <sup>5</sup>	90%	95%	95%
Alarm Indicator Colour	Red		
Remote Indicator	VIGILANT E500 Mk2 series		
Dimensions (mm)	54 x 127 (H x dia)		
Sensitivity	38ppm, A1R	0.32 MIC X	4%Obs/m
ActivFire Listed	afp1718	afp1716	afp1715
FPANZ Listed	VF/345	VF/343	VF/344
Part Numbers	516.600.304	516.600.305	516.600.301
4B Base	517.050.041		
In-situ Smoke Tester	517.001.255 (X330)		
In-situ Heat Tester	X461		
Test Gas	517.001.262	CRC-TEST	CRC-TEST

Specifications are typical unless stated otherwise.

1. Must be externally limited. Minimum current for required LED visibility is 5mA. Maximum current 85mA at 55°C. 2. Minimum voltage with remote indicator shorted @ 5mA. Max @ 85mA without remote indicator connected. 3. Remote indicator output can control external load from +24V, eg. sounder. 4. Storage temp for 614CH -20°C to +55°C without exposure to icing or condensation. 5. Humidity must be non-condensing.

## Wiring

A maximum of two 1.5mm<sup>2</sup> cables can be connected at any one terminal. All wiring terminates at the base as follows:

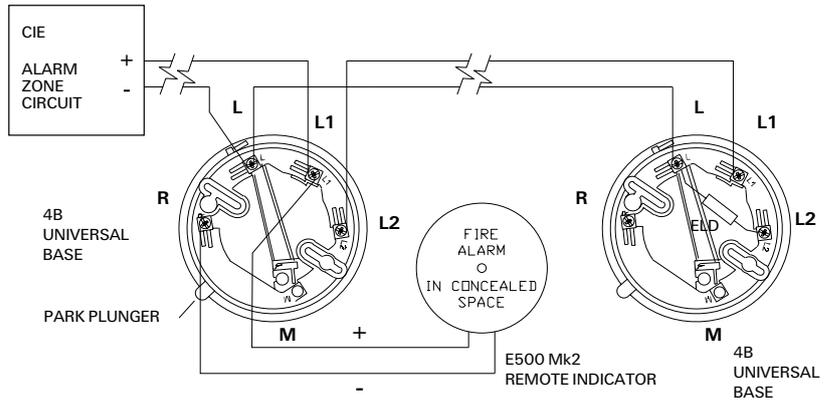
**R:** – Remote\*

**L:** – In and Out

**L1:** + In & Remote

**L2:** + Out

\* When a common remote indicator is used for two or more detectors, join the 'R' terminal to the next base 'R' terminal. The remote indicator will then activate when any of the connected detectors signals an alarm.



## Sealing Detector Base Holes

Where differential air pressure may exist between a ceiling cavity and the room below, it is advisable to seal cable access holes to the back of a fire detector in the room, thus stopping ceiling cavity air from flowing past or through the detector that could otherwise affect reliable fire detection. Such air flows may cause more rapid dust or moisture build-up in the detector or "shield" the detector from smoke or hot gas in the room during a fire.

## Avoiding Nuisance Alarms

The incidence of nuisance alarms can be greatly reduced if the following precautions are taken:

- Do not install smoke detectors in environments contaminated by airborne particles (eg. dust, saw-dust), where cigarette smoke is prevalent, or in areas with condensing humidity (eg. bathrooms). Use appropriate heat or carbon monoxide detectors in these areas.
- Do not install detectors where high air velocity is expected. Air flow will increase the amount of dust that accumulates in a detector and will increase the risk of nuisance alarms.

## Carbon Monoxide Fire Detection

CO is a toxic gas produced by carbon-based fires. Being colourless, odourless and tasteless, CO is almost impossible for a person to detect. Exposure to raised levels of CO can cause disorientation and collapse during physical exertion, whilst exposure to high levels of CO can lead to permanent brain damage and death. Slow-developing and smouldering fires produce significant amounts of CO before detectable levels of smoke are released. In these situations CO detectors respond far earlier than Photoelectric or Ionisation smoke detectors. Where the 614CH is used in sole occupancy units, it must be installed on heat detector spacing.

## Detector Selection Guide

In the table below, detectors in **BOLD** are recommended as the most suitable for detecting the given type of fire in the particular environment. Non-bold detectors are suitable but may not give optimum performance for that application.

Fire type \ Environment	Very clean (computer room)	Clean (office, hotel)	Moderately clean (warehouse)	Moderately dirty/smoky (loading area)	Dirty/smoky (car park)	Dirty/smoky Hot (kitchen)
Overheating (electrical/electronic equipment)	<b>614P</b> 614I	<b>614P</b> 614I 614CH	<b>614P</b> 614I	<b>614P</b>		
Smouldering (wood, paper)	<b>614CH</b> <b>614P</b>	<b>614CH</b> <b>614P</b>	<b>614P</b> 614CH	<b>614P</b> 614CH		
Flaming (wood, paper, flammable liquids)	<b>614CH</b> <b>614I</b> 614P	<b>614CH</b> <b>614I</b> 614P	<b>614I</b> 614CH 614P	<b>614I</b> 614CH 614T**		
Flaming with high heat (late stage flaming)	<b>614P</b> <b>614I</b> 614CH	<b>614P</b> <b>614I</b> 614CH 614T**	<b>614I</b> 614T** 614CH	<b>614I</b> 614T**	<b>614T**</b>	<b>614T**</b>

614I = Ionisation Smoke Detector    614P = Photoelectric Smoke Detector    614CH = combined Carbon Monoxide (CO) and Class A1R Heat Detector    614T = 614T Heat Detector.    These detectors can be used separately, or combined, to provide fire detection for most applications.    \*\* Refer to 614T Information sheet

## Maintenance

The VIGILANT 614 series detectors should be maintained in accordance with the relevant section of AS 1851 (Australia) or NZS 4512:2010 (New Zealand). Additionally, although the 614CH has an expected life in excess of 10 years, in order for the 614CH to provide the intended level of fire detection, the detector should be checked for calibration 5 years after installation (or 5 years after re-installation following service) or within 7 years of the date of manufacture. Note: temperature and humidity outside the specified range for more than short-duration excursions may detrimentally affect the service life or operation of the 614CH.

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VIGILANT, a respected regional brand of Johnson Controls, is a technology leader in the Australian and New Zealand fire detection markets with AS and NZS product approvals. The VIGILANT product line includes a comprehensive range of MX TECHNOLOGY fire detection products and the market-leading QE90 voice evacuation systems. VIGILANT product is widely supported throughout Australia and New Zealand by a network of installation companies, service companies and distributors.

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614INFVIG1708 August 2017

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