

## Cautions and Warnings



**READ AND SAVE THESE INSTRUCTIONS** - Follow the instructions in this installation manual. These instructions must be followed to avoid damage to this product and associated equipment. Product operation and reliability depend upon proper installation.

**DO NOT INSTALL ANY SIMPLEX PRODUCT THAT APPEARS DAMAGED** - Upon unpacking your Simplex product, inspect the contents of the carton for shipping damage. If damage is apparent, immediately file a claim with the carrier and notify an authorised Simplex product supplier.

**ELECTRICAL HAZARD** - Disconnect electrical field power when making any internal adjustments or repairs. All repairs should be performed by a representative or authorised agent of your local Simplex product supplier.

**STATIC HAZARD** - Static electricity can damage components. Handle as follows:

- Ground yourself before opening or installing components
- Prior to installation, keep components wrapped in anti-static material at all times

## In this publication

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## Introduction

The 516.850.051.E 850PH combined photoelectric smoke and heat sensor measures the amount of smoke present and the temperature and sends these values to the 4100-6077AU MX Digital Loop Card in the 4100ESi fire alarm panel. The 4100ESi software can determine if an alarm or other condition, e.g., fault is present. The sensor contains a loop short circuit isolator that isolates a section of loop cabling if a short circuit is present (requires 4B-C base to be used). The sensor must be plugged into one of the following bases:

- 517.050.042 4B-C Continuity base
- 516.800.910 802SB Sounder base – Loop powered
- 516.800.911 901SB Sounder base – Externally powered
- 516.800.957 LPSB3000 Symphony Sounder base - Loop powered
- 516.800.958 LPAV3000 Symphony Sounder/Beacon base - Loop powered

Using the 4100ESi programmer, the sensor can be programmed for:

- Smoke Sensitivity: Low, Normal, High
- Smoke sensor subject to day/night sensitivity change
- Fixed temperature mode: A2S or Rate of Rise mode A2R
- The LED to blink on poll or not

**Note:** Only when the 850PH sensor is fitted to the 4B-C Continuity base is its in-built short circuit isolator used.

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## Technical Specifications

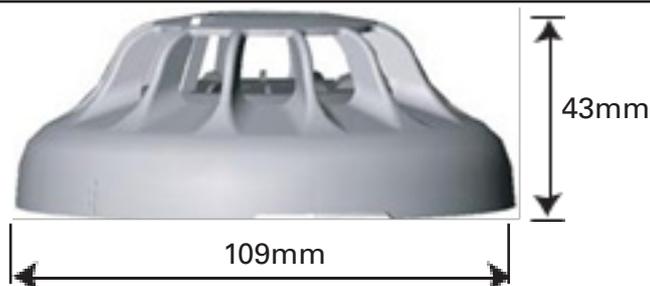


Figure 1. Overall Dimensions

## Environmental Characteristics

- Maximum Ceiling Ambient Temperature: 45°C for A2S, A2R setting, 70° if heat sensor is not used
- Humidity: up to 95% relative humidity at 32°C

## Electrical Characteristics

- Input voltage (*MX* Digital Loop): 20 to 40 VDC maximum
- Quiescent current: 330µA
- Alarm current without remote LED: 3 to 3.3 mA

Electrical characteristics at 25°C and at nominal supply voltage of 37.5V

## Operation

The smoke sensor uses a photoelectric chamber to determine the obscuration due to smoke. The heat sensor uses a single thermistor to produce an output proportional to temperature. Rate of change of temperature is determined by the panel by using differences between consecutive temperature values returned to the panel. The 850PH's alarm threshold is set in the 4100ESi panel. The sensor contains a red LED that is on steady for alarm and can be programmed to flash on polling from the panel. It also has a yellow LED that lights if the internal short circuit isolator is operated.

## Programming the Address

The 850PH's factory set address is 255. The address must be set to the required loop address with the 850EMT Service Tool. To do so, the detector must be placed on the 850EMT Service Tool, as shown in Figure 2, and programmed to the required address. Infrared programming of the sensor is available with the 850EMT, however, the loop must be powered by the panel and IR mode activated at the panel. Alternatively, the device's loop address can be programmed from the 4100ESi front panel by installing and readdressing one sensor at a time.

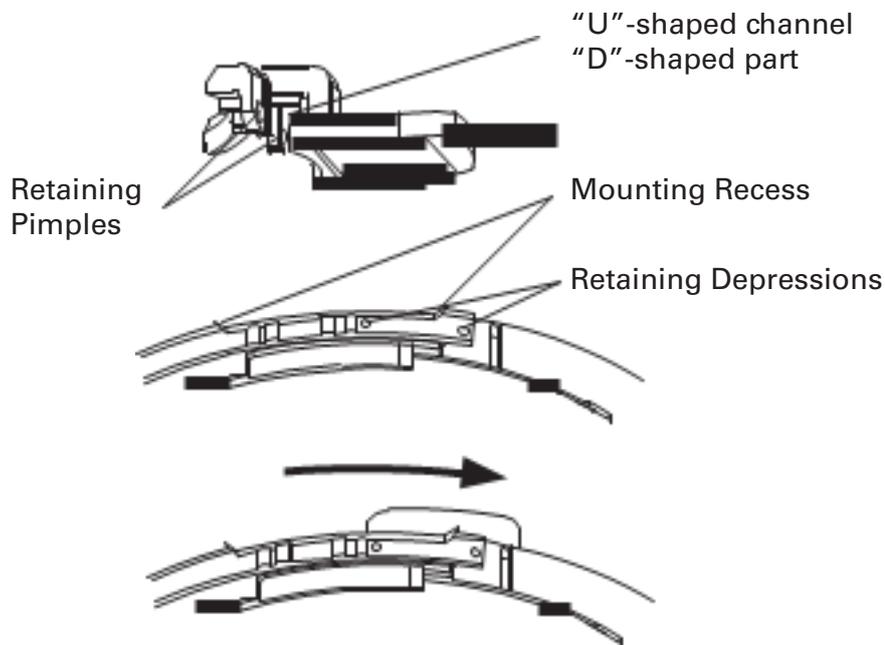


Figure 2. 850EMT Service Tool

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## Address Flag

An address flag can be used to identify the address (the address flag holds a label which is supplied in a pack for addresses 1 to 255) and is ordered separately from the sensor. The address flag is fitted to the bottom of the sensor (see Figure 3). When the sensor is fitted to the base and turned until fully fixed, the address flag is transferred to the base. If the sensor is removed from the base, the address flag remains with the base



**Figure 3. Fitting Address Flag Carrier**

## Ordering Information

Components	Number
Photo/Heat sensor	516.850.051.E
4B-C Continuity Base	517.050.042
802SB Sounder Base – Loop powered	516.800.910
901SB Sounder Base – Externally powered	516.800.911
LPSB3000 Symphony Sounder Base – Loop powered	516.800.957
LPAV3000 Symphony Sounder/Beacon Base – Loop powered	516.800.958
Remote Indicator	E500 Mk2 Series
Address Flags (pack of 100)	516.800.915
Address Flag Labels	516.800.931

**Table 1. Ordering Information**

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## Base Fixing

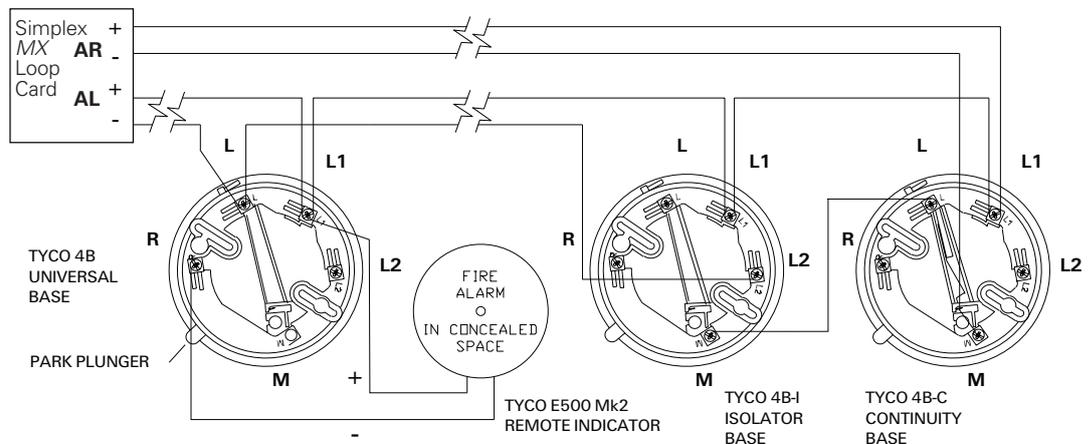
The 4B-C base is fixed to the ceiling, electrical box or deckhead mount in the traditional manner. Refer to the appropriate installation instructions for the other specialist bases.

The 4B-C has a park position that allows the sensor to be rotated so that it is disconnected from the addressable loop wiring. The base should be fixed so that the park plunger faces toward the door or trafficable area. This allows the sensor LED to be visible from that area.

Wiring for the bases is shown in Figure 4.

The sensor is fitted to the base by rotating the sensor until it engages with the base, then rotating further to make full contact. When correctly fitted, the raised ribs on the side of the sensor should align with a similar rib on the base.

## Wiring



**Figure 4. Base Wiring Information**

Cables should be arranged at each side of the terminal screw. A maximum of two 1.5mm<sup>2</sup> cables or one 2.5mm<sup>2</sup> cable can be fitted to one terminal. Any additional cables (such as Remote Indicator) should be fitted with suitable fork or eyelet crimp terminal lugs. The installation should comply with AS 1670.1. Further wiring information is available in the 4100ESi Field Wiring Diagrams manual LT0432.

4B Loop Cabling (not normally used)	4B-I Loop Cabling (not normally used)	<b>517.050.042</b> <b>4B-C Loop Cabling</b>
L (-In/Out) L1 (+In/Out). A remote indicator may be connected between loop positive L1 (+In/Out) and terminal R (-ve). Terminal L2 must not be used	L2 (-In) M (-Out) L1 (+In/Out). A remote indicator may be connected between loop positive L1 (+In/Out) and terminal R (-ve). Terminal L must not be used	L (-In) M (-Out) L1 (+In/Out). A remote indicator may be connected between loop positive L1 (+In/Out) and terminal R (-ve). Terminal L2 must not be used

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