series 65

9-33V

Wide voltage conventional fire detectors

- Ionisation smoke detectors
- Optical smoke detectors
- Heat detectors
- Relay bases

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Continuing our policy of bringing our customers the ultimate effectiveness in fire detection that current technology allows, Series 65 has been developed from the highly successful Series 60 range of conventional detectors.

series 65

9-33V

Series 65 incorporates well-proven sensing technologies, together with advances in materials and electronics technology, including an IC based on that used in XP95 analogue addressable detectors.

Having a wide operating voltage of 9-33V, the Series 65 detectors can be integrated into security systems, when used with a relay base.

The Series 65 wide voltage range consists of ionisation, integrating ionisation and optical smoke detectors, 4 grades of heat detector and a range of bases. The detectors are identical in appearance to Series 60.

Each type of detector is available in three versions:

- **a standard version**
- **a version with an LED which flashes continuously in quiescent mode**
- **and one with both a flashing LED and a magnet-operated test switch (reed relay)**

- wide operating voltage
- advanced electronic technology
- flashing LED option
- magnetic test switch option
- can be used on security systems
- electrically compatible with Series 60
- mechanically compatible with Series 60
- proven detection performance
- designed to meet approvals worldwide
- Range of bases available

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l Fire Detectors

Series 65 Ionisation Smoke Detector

The sensing part of the detector consists of two chambers - an open, outer chamber and a semi-sealed reference chamber within. Mounted in the reference chamber is a low activity radioactive foil of Americium 241 which enables current to flow between the inner and outer chambers when the detector is powered up. As smoke enters the detector, it causes a reduction of the current flow in the outer chamber and hence an increase in voltage measured at the junction between the two chambers. The voltage increase is monitored by the electronic circuitry which triggers the detector into the alarm state at a preset threshold. An externally visible red LED lights up when the detector changes to alarm state.

An **integrating ionisation detector**, suitable for use in areas where transient levels of smoke may be expected, is also available.

Series 65 Optical Smoke Detector

Optical smoke detectors incorporate a pulsing LED located in a chamber within the housing of the detector. The chamber is designed to exclude light from any external source. At an angle to the LED is a photo-diode which normally does not register the column of light emitted by the LED. In the event of smoke from a fire entering the chamber, the light pulse from the LED will be scattered and hence registered by the photo-diode. If the photo-diode "sees" smoke on the two following pulses, the detector changes into the alarm state and the indicator LED lights up. The detector housing is identical to that of the ionisation detector but has an indicator LED which is clear in quiescent state but produces red light in alarm.

Series 65 Heat Detector

The A1R, BR and CR (rate-of-rise) heat detectors operate by using a matched pair of thermistors to sense heat. One thermistor is exposed to the ambient temperature, the other is sealed. In normal conditions the two thermistors register similar temperatures, but, on the development of a fire, the temperature recorded by the exposed thermistor will increase rapidly, resulting in an imbalance, causing the detector to change into the alarm state. Rate-of-rise detectors are designed to detect a fire as the temperature increases, but they also have a fixed upper limit at which the detector will go into alarm if the rate of temperature increase has been too slow to trigger the detector earlier.

The CS (static response) heat detector has only one thermistor and changes to the alarm state at a preset temperature. Externally, the heat detectors are distinguishable from the smoke detectors by having wide openings to the surrounding atmosphere to allow good movement of air around the external thermistor.

Series 65 Bases

The bases have been designed to enable detectors to be plugged in without any need for force - particularly useful when fitting to suspended ceilings. **All Series 65 bases are lockable.**

The standard base is identical to the Series 60 base, so uses the same part number, **45681-200**. It contains no electronic parts which could be damaged during installation.

Relay Bases

Application

Series 65 relay bases are primarily intended for use with control units using 4-wire detector supply and alarm initiating circuits. Where local codes allow, they may also be used in 2- and 4-wire circuits to provide volt-free control signals to an auxiliary system such as an automatic door closer. *They are not suitable for use in systems where it is specified or required that operation of the auxiliary system shall be fail-safe.*

Description

Series 65 relay bases are designed for use with Apollo Series 65 fire detectors and compatible control equipment. *They must not be used with any other type of detector.*

The **standard Series 65 relay base**, **45681-245**, provides one set of volt-free, changeover (form C) contacts that change state when the detector signals an alarm.

Auxiliary relay base, **45681-246**, provides two sets of volt-free changeover contacts to facilitate the switching of a remote LED or other auxiliary device.

EOL (end-of-line) relay bases are intended for use with 4-wire circuits and feature two sets of changeover contacts and a power supervision relay. The end-of-line device specified by the control unit manufacturer should be connected across the terminals marked EOL - the EOL device will be connected across the initiating circuit when power is supplied to the detector. Part numbers: **45681-247**, for circuits having a supply voltage between 9 and 18 volts DC and **45681-248** for circuits having a supply voltage between 16 and 33 volts DC.

Installation

Full installation, commissioning and maintenance instructions are included with Series 65 relay bases.

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SPECIFICATION SUMMARY

Typical data at 23°C

Series 65 ionisation smoke detectors

Detector	Series 65 Ionisation/ Integrating Ionisation	Series 65 Ionisation/ Integrating Ionisation	Series 65 Ionisation/ Integrating Ionisation
Features	**Standard**	**Flashing LED**	**Flashing LED/Reed switch**
Part No	55000-217/55000-220	55000-216/55000-219	55000-215/55000-218
Supply voltage	9 to 33V	9 to 33V	9 to 33V
Average quiescent current at 24V	28µA	45µA	45µA
Average quiescent current at 9V	16µA	21µA	21µA
Alarm current at 24V	52mA	52mA	52mA
Alarm current at 9V	17mA	17mA	17mA
Alarm indication	Red LED	Red LED	Red LED
Normal operating temperature (no condensation or icing)	-20 to +60°C	-20 to +60°C	-20 to +60°C
Max wind continuous	10m/s	10m/s	10m/s
Remote output (R-) characteristics	Current sink to -ve line, limited to 17mA. *Note: when using a remote indicator a current-limiting series resistor may be required.*		

Series 65 optical smoke detectors

Detector	Series 65 Optical	Series 65 Optical	Series 65 Optical
Features	**Standard**	**Flashing LED**	**Flashing LED/Reed switch**
Part No	55000-317	55000-316	55000-315
Supply voltage	9 to 33V	9 to 33V	9 to 33V
Average quiescent current at 24V	40µA	45µA	45µA
Average quiescent current at 9V	35µA	40µA	40µA
Alarm current at 24V	52mA	52mA	52mA
Alarm current at 9V	17mA	17mA	17mA
Alarm indication	Clear LED, Red in alarm	Clear LED, Red in alarm	Clear LED, Red in alarm
Normal operating temperature (no condensation or icing)	-20 to +60°C	-20 to +60°C	-20 to +60°C
Max wind continuous	not affected	not affected	not affected
Remote output (R-) characteristics	Current sink to -ve line, limited to 17mA. *Note: when using a remote indicator a current-limiting series resistor may be required.*		

Series 65 heat detectors

Detector	Heat Class A1R	Heat Class A1R	Heat Class A1R
Features	**Standard**	**Flashing LED**	**Flashing LED/Reed switch**
Part No	55000-122	55000-121	55000-120
Supply voltage	9 to 33V	9 to 33V	9 to 33V
Average quiescent current at 24V	45µA	55µA	55µA
Average quiescent current at 9V	40µA	50µA	50µA
Alarm current at 24V	52mA	52mA	52mA
Alarm current at 9V	17mA	17mA	17mA
Alarm indication	Red LED	Red LED	Red LED
Normal operating temperature (no condensation or icing)	-20 to +90°C	-20 to +90°C	-20 to +90°C
Max wind continuous	not affected	not affected	not affected
Remote output (R-) characteristics	Current sink to -ve line, limited to 17mA. *Note: when using a remote indicator a current-limiting series resistor may be required.*		

The data above will be the same for the other classes (BR,CR,CS)

Series 65 relay bases

Relay base type	Standard	Auxiliary	EOL 12V	EOL 24V
Part No	45681-245	45681-246	45681-247	45681-248
Supply voltage	9 to 33V	9 to 33V	9 to 18V	16 to 33V
Normal operating temperature (no condensation or icing)	-20 to +70°C	-20 to +70°C	-20 to +70°C	-20 to +70°C
Relay ratings:				
Maximum switching power	30W, 50VA	30W, 50VA	30W, 50VA	30W, 50VA
Maximum switching current	1A (resistive load)	1A (resistive load)	1A (resistive load)	1A (resistive load)
Maximum switching voltage	50V AC	50V AC	50V AC	50V AC
Minimum capability	10µA, 10mV DC	10µA, 10mV DC	10µA, 10mV DC	10µA, 10mV DC
Dropout voltage	<6V	<6V	<6V	<6V

Series 65 Heat - Part Numbers

Class	Application Temperature °C		Static Response Temperature °C		Features		
	min	max	min	max	Standard Part No.	Flashing LED Part No.	Flashing LED/Reed Switch Part No.
A1R	25	50	54	65	55000-122	55000-121	55000-120
BR	40	65	69	85	55000-127	55000-126	55000-125
CR	55	80	84	100	55000-132	55000-131	55000-130
CS	55	80	84	100	55000-137	55000-136	55000-135

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