


700 Series conventional detectors



The 700 series detectors are microprocessor-based conventional fire detectors.

There are five models in the 700 series detector range, which measure and respond to certain parameters. Depending on the model, the following parameters are monitored:

- Smoke density
- Temperature
- Rate of rise of temperature

Devices summary

Model	Detector	Order number	Approvals
701P	Optical	516.900.001	EN54-7: 2018
701PH	Optical with heat enhancement	516.900.002	EN54-7: 2018, EN54-29: 2015
701H	Heat rate of rise (A1R)	516.900.003	EN54-5: 2017
702H	Heat fixed 60°C (A1S)	516.900.004	EN54-5: 2017
703H	Heat fixed 90°C (CS)	516.900.005	EN54-5: 2017

Operation

The 700 series detectors are for use in conventional two wire detection systems, where detectors are normally connected in zones. Each detector samples the ambient air every five seconds and if a fire condition is detected, a signalling current is drawn from the zone causing the Control and Indicating Equipment (fire alarm panel) to provide an alarm response for that zone.

700 series smoke detectors

- 701P operates by sensing the optical scatter from smoke particles generated in a fire.
- 701PH operates by sensing the optical scatter from smoke particles generated in a fire, and a rapid rate of rising temperature increases the smoke detection sensitivity.

Note: The 701PH detector will not raise a signal on temperature alone, and is not designed to comply with the EN54-5 standard for heat detectors.

The 700 series heat detectors include both Rate-of-Rise and Static (fixed temperature) types. These detect abnormally high rates of rising temperature and abnormally high temperatures respectively.

- 701H uses both rate-of-rise and fixed temperature sensing. The 701H is a category A1R heat detector. A1 denotes a static response temperature of 54°C to 65°C (EN54-5). The suffix R denotes a rate-of-rise characteristic, but the fixed element provides a backstop for fires where the temperature builds up gradually.
- 702H uses fixed temperature sensing. The 702H is a category A1S heat detector. A1 denotes a static response temperature of 54°C to 65°C (EN54-5). The suffix S denotes that the detector does not respond at a lower temperature, even at high rates of rising air temperature.
- 703H uses fixed temperature sensing. It is a category CS heat detector. C denotes a static response temperature of 84°C to 100°C (EN54-5). The suffix S denotes that the detector does not respond at a lower temperature, even at high rates of rising air temperature.

Installation

Base

The 700 series conventional detectors are plug-in detectors for ceiling mounting. The detectors plug into a 4B Base or a 4B-D Conventional Diode Base. Also, the detectors are compatible with the legacy 5B Base and 5BD Diode Continuity Base.

Wiring

The detector circuit requires only a positive and negative supply from the control and indicating panel and these are wired to terminals L1 and L on the base. A bridge circuit in the detector makes the detector polarity insensitive.

When a detector is fitted to provide continuity monitoring through the detector, base terminal L1 is connected to base terminal L2. Base terminals L2 and L provide outputs to the next detector or an end-of-line (EOL) device.

A drive is provided for a remote indicator LED connected between supply +ve and terminal R. Therefore, at a detector where a remote indicator is connected, the polarity of the supply must be known.

Fitting a detector

- 1 Install and connect base wiring according to instructions supplied with the base.
- 2 Identify the raised rib alignment markers on the edge of the detector and base.
- 3 Position the detector marker approximately 15mm or 15° anti-clockwise from the base marker.

- 4 Rotate the detector clockwise to mate it to the base. Ensure that the detector rib and base rib are aligned with each other.

Summary tables

The following tables show the features, functions and characteristics of the 700 series models.

	701P	701PH	701H	702H	703H	Units
Smoke (optical) sensing	•	•				
Heat rate-of-rise sensing		#	•			
Heat fixed (static) temperature			•	•	•	
Integral red LED for alarm indication	•	•	•	•	•	
Connection for a remote indicator	•	•	•	•	•	
Threshold compensation	•	•				
Mass*	92	92	81	81	81	grams
EN54-5 heat detector category			A1R	A1S	CS	
EN54-5 static response temperature			+54 to +65	+54 to +65	+84 to +100	°C
EN54-5 maximum application temperature**			+50	+50	+80	°C
Operating temperature***	-20 to +70	-20 to +70	-20 to +70	-20 to +70	-20 to +80	°C
Relative Humidity (RH)	95% non-condensing					%RH
Storage temperature	-25 to +80					°C
Dimensions	Diameter 108, Height 42 (55 with a 4B base)					mm
Material	Outer cover: white flame retardant PC-ABS					
Shock, Vibration, Impact, Corrosion, EMC	To applicable EN54 standard (EN54-5 or EN54-7 or EN54-29)					

The PH detector uses a temperature rate-of-rise to increase the smoke detection sensitivity. However, the PH detector will NOT signal a fire condition on the temperature rate-of-rise.

*Mass of the detector. Add 46 grams with a 4B base.

**Do not expose a heat detector to temperatures above the maximum application temperature, even for short periods of time, in the absence of a fire condition. Ambient conditions must always be at least 4°C below the minimum value of the heat detector's static response temperature.


***The maximum operating temperatures quoted are those at which the detector may sustain permanent damage. The maximum ambient temperatures at which the detectors may be used, without high false alarm rates, are dependent upon the detector type. Operation below 0°C is not recommended unless steps are taken to eliminate condensation and ice formation on the detector.

Characteristics	Minimum	Typical	Maximum	Units
Operating voltage (dc)	10.5	24	33	V
P model		50		µA
Average quiescent current PH model		60		µA
H models		37		µA
Switch on surge			200	µA
Stabilisation time		30		seconds
Alarm current*	65mA @30V, 35mA @20V, 12.5mA @12V			mA
Reset voltage		6.9		V
Reset time	2			seconds
Remote LED drive	Pulls low from line +ve via 1k (see note below**)			

*Alarm current excluding remote LED current.

****Note:** A drive is provided for a remote indicator connected between the positive supply and the R terminal. Therefore, the polarity of the supply must be known at a detector where a remote indicator is connected.

Approvals

	 2831 TYCO FIRE & SECURITY GMBH NEUHAUSEN AM RHEINFALL 8212 SWITZERLAND	CPR APPROVALS			EUROPEAN APPROVALS		MARINE APPROVALS								INTERNATIONAL APPROVALS					
		EN54-5:2017	EN54-7:2018	EN54-29:2015	LPCB	VDS	MED	CCS	KRS	ABS	BV	DNV	LRS	GL	UL	ULC	CSIRO	FPANZ	FM	SIL2
701P	DOP-2020-4271 / 2831-CPR-F4422		•		•															
701PH	DOP-2020-4272 / 2831-CPR-F4430		•	•	•															
701H	DOP-2020-4273 / 2831-CPR-F4424	•			•															
702H	DOP-2020-4274 / 2831-CPR-F4425	•			•															
703H	DOP-2020-4275 / 2831-CPR-F4426	•			•															