

# 700 Series Intelligent Conventional Marine Fire Detection Range

The 700 Series Intelligent Conventional Fire Detection Range is the first conventional detector range from Johnson Controls that uses algorithms to determine fire conditions more precisely. This provides superior performance and improved false alarm rejection rates.

Through innovative design, the built-in micro-processors in the 700 Series detectors offer drift compensation which extends the life of the detectors, thereby reducing service costs to the customers. Installers only need one fitting to complete the installation.

In addition to all of the features found in the 700 series detectors, the Marine approved detectors also include additional features and environmental protections, such as IP rating, conformal coating and an insect mesh. The whole range is approved by MED and IACS and the 711PH is also approved to EN54-29.



## Features

- Available as smoke, fixed heat, RoR heat, and photo heat
- Backward compatibility with 600 series
- Compatible with 4"B-D, 4B and 5B bases
- Low profile and discreet design
- Approval to EN54, LPCB standards
- Improved detection algorithms
- Built-in drift compensation
- EN54 approval
- Ingress protection
- Insect Mesh
- MED and IACS approvals
- Suitable for EN54 land applications

# 700 Series Intelligent Conventional Marine Fire Detection Range

## General

The 700 series of detectors are microprocessor-based conventional fire detectors. There are five models in the range, which measure certain parameters and respond to them. The parameters monitored are:

- Smoke density
- Fixed temperature
- Rate of temperature rise

The 700 series of detectors are used for conventional 2-wire detection systems, where detectors will normally be connected in zones. Each detector samples the ambient air every five seconds. If a fire condition is detected, a signalling current is drawn from the zone, causing the fire detection panel to provide an alarm response for the affected zone.

## Series 700 Conventional Detectors

### 711P Smoke Detector

The 711P Smoke Detector operates by sensing the optical scatter from smoke particles generated in a fire. These detectors are suitable for general applications and areas where cable overheating may occur, for example, in electrical services areas.

The 711P is rated IP44 and includes an insect mesh and Marine Approvals. It is also suitable for land application where these additional features may be required in an EN54 market.

### 711PH Optical and Heat Detector

The 711PH Optical and Heat Detector is suitable for normal ambient conditions, where the high-performance optical detector behaves as a normal optical detector. Only when a rapid rise in temperature is detected does the sensitivity of the detector increase and the condition change. This is the first conventional detector from Johnson Controls to be certified to the EN54-29 standard for multi-sensors.

The 711PH is rated IP44 and includes an insect mesh and Marine Approvals. It is also suitable for land application where these additional features may be required in an EN54 market.

### 71xH Heat Detectors

700 series heat detectors include rate-of-rise and fixed-temperature types. These detect high rates of temperature rises, and high temperatures, 60°C and 90°C, respectively. For general use and where ambient temperatures may be low, the 711H rate-of-rise heat detector may be preferred.

In environments where a sudden change in temperature is normal, such as kitchens and canteens, the slower responsiveness of the 712H or 713H fixed-temperature detectors may be suitable. The three heat detectors are rated IP55 and include an insect mesh and Marine Approvals.

They are also suitable for land applications where these additional features may be required in an EN54 market.

# 700 Series Intelligent Conventional Marine Fire Detection Range

## Technical specifications

Table 2: Performance characteristics

Characteristics	Minimum	Typical	Maximum	Units
Operating voltage (dc)	10.5	24	33	V
Average quiescent current		50 60 37		$\mu$ A $\mu$ A $\mu$ A
Switch on surge			200	$\mu$ A
Stabilisation time		30		seconds
Alarm current*	65mA @30V, 35mA @20V, 12.5mA @12V			mA
Holding current		3		mA
Reset voltage		6.9		
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.

# 700 Series Intelligent Conventional Marine Fire Detection Range

## Product Order Codes

516.900.101	711P: Optical Smoke Detector, Marine
516.900.102	711PH: Optical Heat Detector, Marine
516.900.103	711H: Heat Detector, Rate-of-Rise, Marine
516.900.104	712H: Heat Detector, Fixed 60°C, Marine
516.900.105	713H: Heat Detector, Fixed 90°C, Marine
516.800.908	801 RIL: Remote Indication LED
540.003.006	601 RIL: Remote Indication LED
577.001.035	601SB: Conventional Sounder Base
577.001.037	601SBD: Conventional Diode Sounder Base
568.001.018	MC600: Relay Base
517.050.015	Volume adjustment tool

# 700 Series conventional detectors - Marine



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
711P	Optical	516.900.101	EN54-7:2018
711PH	Optical with heat enhancement	516.900.102	EN54-7:2018, EN54-29:2015
711H	Heat rate of rise (A1R)	516.900.103	EN54-5:2017 + A1:2018
712H	Heat fixed 60°C (A1S)	516.900.104	EN54-5:2017 + A1:2018
713H	Heat fixed 90°C (CS)	516.900.105	EN54-5:2017 + A1:2018

## 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

- 711P operates by sensing the optical scatter from smoke particles generated in a fire.
- 711PH 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 711PH 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.

- 711H uses both rate-of-rise and fixed temperature sensing. The 711H 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.
- 712H uses fixed temperature sensing. The 712H 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.
- 713H 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 the 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.

	711P	711PH	711H	712H	713H	Units
Smoke (optical) sensing	•	•				

	711P	711PH	711H	712H	713H	Units
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)					
Ingress Protection IP-rating****	IP44	IP44	IP55	IP55	IP55	

# 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.


\*\*\*\*IP-rating when installed using a 4B-DHM 4" Deck Head Mount. During installation, carefully maintain the ingress protection; for example, the cable glands must also be IP-rated.

Characteristics	Minimum	Typical	Maximum	Units
Operating voltage (dc)	10.5	24	33	V
Average quiescent current		50		µA
P model		60		µA
PH model		37		µA
H models				
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

	 TYCO FIRE & SECURITY GMBH NEUHAUSEN AM RHEINFALL 8212 SWITZERLAND 2831/20 0832/21	CPR APPROVALS		EUROPEAN APPROVALS		MARINE APPROVALS BS IEC 60092-504:2016 / BS IEC 60533-2015 / E10 IACS							
		EN54-7:2018	EN54-29:2015	EN54-5:2017+A1:2018	LPCB	VDS	MED/UK-MED	CCS	KRS	ABS	BV	DNV GL	LRS
711P	DOP-2020-4271 / 2831-CPR-F4423 / 2831-MED-1103 Module B / 0832-UKCA-CPR-F0091 / 0832-UKCA-MED-F1004	•			•		•	•	•	•	•	•	•
711PH	DOP-2020-4272 / 2831-CPR-F4431 / 2831-MED-1105 Module B / 0832-UKCA-CPR-F0088 / 0832-UKCA-MED-F1003	•	•		•		•	•	•	•	•	•	•
711H	DOP-2020-4273 / 2831-CPR-F4427 / 2831-MED-1104 Module B / 0832-UKCA-CPR-F0100 / 0832-UKCA-MED-F1005			•	•		•	•	•	•	•	•	•
712H	DOP-2020-4274 / 2831-CPR-F4428 / 2831-MED-1104 Module B / 0832-UKCA-CPR-F0101 / 0832-UKCA-MED-F1005			•	•		•	•	•	•	•	•	•
713H	DOP-2020-4725 / 2831-CPR-F4429 / 2831-MED-1104 Module B / 0832-UKCA-CPR-F0102 / 0832-UKCA-MED-F1005			•	•		•	•	•	•	•	•	•