DATASHEET

MINERVA® MX

Series 600 Conventional Fire Detection Range

Features:

- Designed for approval to EN54, LPCB, VdS, SSL, ANPI, UL, ULC and Marine
- Low operational voltage (10.5V to 33V)
- Backward compatible with M600 Series
- Compatible with new 5B and 5BD 5" Bases
- Aesthetically discreet
- Superior performance and reliability
- Designed for rapid installation
- Locking kit included as part of 5" Base
- May be used in systems that meet BS5839 pt1
- Integral and remote alarm LED
- Wiring polarity independent

Series 600 Conventional Fire Detection Range

Tyco Safety Products conventional detector design evolution has resulted in the creation of a new Series 600 range of unobtrusively styled detectors, incorporating a number of unique design features enabling improved operation, installation and ease of servicing.

Through innovative design Series 600 detectors have the ability to reduce installation and servicing time to a minimum, needing only one visit to the ceiling to complete the installation and having a park position for the detector to simplify servicing.

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General

Included within the Series 600 range is the new conventional enhanced carbon monoxide fire detector (601CH). The incorporation of a reliable electrochemical CO detection cell and high specification low thermal mass thermistor for accurate temperature detection has enabled the introduction of an enhanced CO detector suitable for fast, reliable detection of both slow and fast developing fires.
The complete range has been designed to meet the requirements of BS (British standards) and EN (European Standards) for fire detectors. All detectors also carry a mandatory CE mark.

Series 600 Conventional Detectors

Series 600 provides the detector part of an automatic fire detection system. The Series 600 conventional or two state detector is one that provides two output states to the controller, either "normal" or a "fire alarm" condition.

The detectors along with call points are grouped into fire zones, with each zone being connected to the control panel; by a separate two wire circuit and having a separate zone indicator on the panel.

Application

As each type of fire detector responds to a particular "fire product", the relative speed of response of the detector is therefore dependent upon the type of fire being detected. The range of Series 600 fire detectors have been designed to provide the earliest possible warning of a fire condition, with a minimum possibility of false/unwanted alarms.

As smoke is normally present at an early stage in most fires, smoke type detectors (optical, high performance optical and ion chamber) are therefore considered the most useful. When considering the type of smoke detector for the application, the probable type of fuel for the fire should be considered, in general terms, fast developing fires are detected quicker with ion-chamber detectors, whereas with a slow developing fire an optical type smoke detector will respond quickest. But for general fire detection, where there is an equal possibility of either a "fast" or "slow" fire developing the intelligent high performance optical detector provides an excellent detection response.
In situations where the installation of smoke detectors would cause an unacceptable level of false alarms, heat detectors or the enhanced CO fire detector may be installed.

Because of the wide variety of applications that fire detectors are expected to cover, it is recommended that a fire risk assessment should be undertaken to determine the most suitable detector for any application.

Fire Test Response

Test Fire	Heat Developed	Smoke	Aerosol	Visible Portion	High Performance Optical	Ion Chamber	Optical
TF1 Open Cellulosic fire (wood)	STRONG	YES	INVISIBLE	DARK	C	A	N
TF2 Smoldering Pyrolysis fire (wood)	NEGLIGIBLE	YES	VISIBLE	LIGHT	B	C	A
TF3 Glowing Smoldering fire (cotton)	NEGLIGIBLE	YES	INVISIBLE	LIGHT	B	B	A
TF4 Open Plastics fire (polyurethane)	STRONG	YES	INVISIBLE	VERY DARK	B	A	C
TF5 Liquid fire (n-heptane)	STRONG	YES	INVISIBLE	VERY DARK	B	B	C
TF6 Liquid fire (methylated spirits)	STRONG	NO	NONE	NONE	N	N	N

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Optical Smoke 601P

601P detectors are capable of detecting the visible smoke produced by materials which smoulder or burn slowly, i.e. soft furnishings, plastic foam etc; or "smoke" produced by overheated but unburnt PVC. These detectors are particularly suitable for general applications and areas where cable overheating may occur, e.g. electrical services areas. Optical only detectors are not suitable for detecting fast burning fires producing little visible smoke or very black smoke.
The novel design of the asymmetrical sampling chamber and signal processing techniques stop unwanted alarms caused by very small insects, i.e. thrips. Smoke entering the sampling chamber scatters the infra-red light pulses onto a photodiode. These pulses are converted to an electrical signal which is compared against a preset alarm level or transmitted as an analogue value.

High Performance Optical Smoke 601PH

601PH detectors react to the complete range of fire products, from slow smoldering fires, producing visible particles to open flaming fires producing large numbers of very hot smaller sized aerosols. The combination of optical and heat technology allows detection of clear burning fire products which hitherto could only be easily detected by ion-chamber detectors.
For normal ambient conditions the HPO behaves as a normal detector. Only when a rapid rise in temperature is detected does the sensitivity of the detector increase and the presence of smoke will confirm a fire condition which will be transmitted as an alarm level.
The 601PH design incorporates a unique "mousehole" optical chamber with an unrivaled signal to noise ratio providing high resilience to dust and dirt which means reduced servicing costs. In addition a unique chamber cover actually draws slow moving smoke into the chamber to provide a more responsive detector.

Heat, Rate-of-Rise 601H-R, Fixed Temperature 601H-F

Heat detectors offer an acceptable, but less sensitive alternative to smoke detectors if environmental conditions rule out their use.
601H-R (rate-of-rise) and 601H-F (fixed temperature) detectors detect abnormally high rates of rise of temperature and abnormally high (static) temperatures respectively.
For general use and particularly where the ambient temperature may be low, a rate-of-rise heat detector 601H-R is to be preferred. A fixed temperature limit is also incorporated in these detectors.
In many environments, e.g. kitchens, canteens and boiler rooms, sudden, large changes in temperature are considered normal therefore rate-of-rise detectors are generally not suitable in these cases and a slower response fixed temperature detector 601H-F should be used.

Enhanced Carbon Monoxide Fire 601CH

601CH detectors are generally faster than ion-chamber and optical detectors in responding to fires that start by smoldering. They are also more tolerant of positioning and can be mounted in locations where there are likely to be obstacles to free smoke plume movement.
These detectors are particularly well suited to sleeping risks, storage areas and applications where smoke detectors are prone to false alarm. Incorporation of a A1R rate of rise heat detector within the 601CH provides extra non-selectable detection modes which allows the detector to operate in a wide variety of applications where combined risks mean that CO detection alone would be insufficient.
The integrated rate-of-rise heat detector acts as a normal heat detector, additionally enhancing the sensitivity of the carbon monoxide detector if a rapid change of temperature is detected by the detectors thermistor.

Ion Chamber Smoke 601I

601I detectors are offered for old specifications which still call for ionisation smoke detectors. The 601CH and 601PH detectors offer improved performance, significantly lower false alarms and environmental compatibility for smoke detection applications.
The 601I nevertheless offers detection of visible and invisible fire aerosols (products of combustion) and are therefore capable of detecting the early presence of hot smoldering and flaming fires, such as wood, paper etc.
They use a dual ionisation chamber in which the air is ionised by a single radioactive source. The presence of smoke in the sampling chamber causes a change in the balance voltage, between the two chambers. This is then compared against an alarm level.

Technical Publications

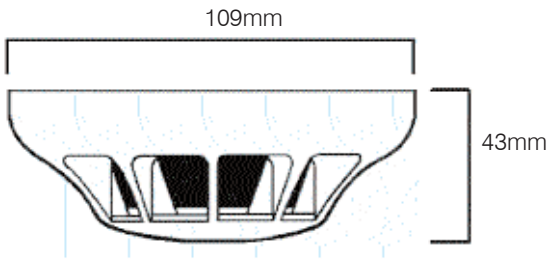
Customers are advised that a full range of product application and design information documents are available for this range via our website at www.tycosafetyproducts-europe.com.

Document Numbers

Series 600	01C-02-D1
601PH	01C-02-D2
601CH	01C-02-D3
601I	01C-02-D4
601H-R/601H-F	01C-02-D5
601P	01C-02-D6

Technical Specifications Mechanical

Detector Material	FR110 "Bayblend" Fire Resistant
Dimensions	See diagram below
Weight	See Specification Summary
Colour	White



Environmental & Electrical

Reset Time	2 - 5 seconds
Relative Humidity	0 - 95% non-condensing
Wiring Connections	SEM Terminal 2 x 1.5 mm^2

Note: Ion chamber radiation source
americium 241< 33.3kBq

Electromagnetic Compatibility

The detector complies with the following:
Product family standard EN50130-4 in respect of Conducted Disturbances, Radiated Immunity, Electrostatic Discharge, Fast Transients and Slow High Energy
EN50081-1 for Emissions

Specification Summary		Detector Weight (Kg)	Supply Voltage d.c.	Average Quiescent Current (µA)		Alarm Current (mA)		Operating Temperature (no condensation or icing)	Storage Temperature (no condensation or icing)	Remote Current (mA)@24V (1K1 internal resistor fitted)
Type	**Detector Description**			**10.5V**	**24V**	**10.5V**	**24V**			
601CH	Enhanced CO Fire	0.09	10.5 - 33V	60	68	14	53	-10°C to +55°C*	-20°C to +55°C	21
601H-R	Heat Rate of Rise	0.08	10.5 - 33V	57	65	14	53	-20°C to +70°C	-25°C to +80°C	21
601H-F	Heat 60°C Fixed Temp	0.08	10.5 - 33V	58	61	14	53	-20°C to +70°C	-25°C to +80°C	21
631H-F	Heat 90°C Fixed Temp	0.08	10.5 - 33V	58	61	14	53	-20°C to +70°C	-25°C to +80°C	21
601I	Ion Smoke	0.01	10.5 - 33V	52	62	15	53	-20°C to +70°C	-40°C to +80°C	21
601P	Optical Smoke	0.093	10.5 - 33V	63	67	12	45	-20°C to +70°C	-25°C to +80°C	21
601PH	High Performance Optical Smoke	0.093	10.5 - 33V	63	67	12	45	-20°C to +70°C	-25°C to +80°C	21

* When the detector is used for heat detection then the maximum ambient operating temperature is limited to 50°C.

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