



SPECIFICATION DATA

Dual Spectrum®

Infrared Flame Detector

Model PM-5MPX



DESCRIPTION

The Det-Tronics PM-5MPX Dual Spectrum® flame detector is optimized for the rigorous semiconductor fabrication industry, which is beset with many hazards that result in stringent requirements for fire protection safety systems. Flame detection requirements for this industry are specific: Factory Mutual Approvals (FM) addresses the detailed specific requirements for this application in Factory Mutual Loss Prevention Data Sheets 7-7/17-12, Semiconductor Fabrication Facilities. The PM-5MPX meets both industry and FM requirements.

A typical accident scenario involves a solvent or plastic wetbench component being ignited by faulty or misused electronics. If not detected and extinguished quickly, such fires and their combustion byproducts can severely contaminate the clean room and other facilities resulting in large production losses. The detector incorporates unique Dual Spectrum® infrared sensor technology, which establishes a new standard in flame detection and false alarm immunity. The polypropylene enclosure enables the detector to be utilized in both solvent or chemical etch wet benches.

Typical Applications:

- Semiconductor fabrication and processing facilities
- Fume hoods
- Semiconductor chemical process areas
- Clean rooms
- Gas cabinets
- Silane dispensing

FEATURES AND BENEFITS

FEATURES

- Performance approved to FM 3260: 2000
- Dual Spectrum® IR design
- Compact size
- LED indicator for operational status
- Built-in mounting plate
- Typical response time of < 0.5 second
- Explosion response – 25 milliseconds
- Polypropylene housing: Excellent resistance to corrosion and contamination effects
- Intrinsically safe for Haz. Loc.: Class I, Division 1, Groups C and D; Class I, Division 2, Groups A, B, C and D; Class II, Division 1, Groups E, F and G; Class II, Division 2, Groups F and G; and Class III, Divisions 1 and 2
- Internal electrical shielding and completely encapsulated

BENEFITS

- Excellent false alarm resistance
- Highest level EMI and RFI resistance
- Easy mounting
- Faster response means less contamination and production downtime
- Rapid response in the event of an exothermic reaction or pyrophoric fire
- Suitable for use in corrosive environments
- Allows Class I, Division 1 installations.



SPECIFICATIONS

Operating Voltage	9 to 30 volts dc																						
Power Consumption	10 ma at 30 vdc for normal operation and alarm																						
Relays	100 milliamps maximum at 30 volts dc Non-latching fire relay contacts close for 5 to 15 seconds Alarm Output: Normally open contacts Fault: Normally closed contacts																						
Wiring (Stranded wire)	<table border="1"> <thead> <tr> <th>Color</th><th>Description</th></tr> </thead> <tbody> <tr><td>BLK</td><td>V-</td></tr> <tr><td>BRN</td><td>V-</td></tr> <tr><td>RED</td><td>V+</td></tr> <tr><td>ORG</td><td>V+</td></tr> <tr><td>YEL</td><td>Alarm +</td></tr> <tr><td>GRN</td><td>Alarm +</td></tr> <tr><td>BLU</td><td>Alarm -</td></tr> <tr><td>VIO</td><td>Alarm -</td></tr> <tr><td>GRY</td><td>Trouble +</td></tr> <tr><td>WHT</td><td>Trouble -</td></tr> </tbody> </table>	Color	Description	BLK	V-	BRN	V-	RED	V+	ORG	V+	YEL	Alarm +	GRN	Alarm +	BLU	Alarm -	VIO	Alarm -	GRY	Trouble +	WHT	Trouble -
Color	Description																						
BLK	V-																						
BRN	V-																						
RED	V+																						
ORG	V+																						
YEL	Alarm +																						
GRN	Alarm +																						
BLU	Alarm -																						
VIO	Alarm -																						
GRY	Trouble +																						
WHT	Trouble -																						
Temperature Range	32°F to 120°F (0°C to 49°C)																						
Humidity Range	0 to 93% relative humidity Can withstand hose-down and liquid immersion																						
Ingress Protection (IEC)	IP67																						
Chemical Resistance	No degradation to housing or wire jacket observed after exposure to Cyclohexanone, NMP, HMDS, Photo Resist, Developer, Acetone, Isopropyl Alcohol, MEK, or Methanol at 60°C																						
Certifications	<p>FM: Approved to 3260: 2000. Tested to requirements of Factory Mutual Loss Prevention Data Sheets 7-7/17-12, Semiconductor Fabrication Facilities</p> <p>Intrinsically Safe for: Class I, Division 1, Groups C & D; Class II/III, Division 1, Groups E, F & G; Non-Incendive for: Class I, Division 2, Groups A, B, C & D; Class II/III, Division 2, Groups F & G</p> <p>EMC: CE compliant</p>																						
Cone of Vision	110° horizontal by 110° vertical, with highest sensitivity along the central axis																						
Enclosure Material	Polypropylene																						
Dimensions	<p><u>Length:</u> 3.1 by 3.1 in. (7.87 by 7.87 cm)</p> <p><u>Depth:</u> 1.7 in. (4.3 cm)</p> <p><u>Cable Length:</u> 50 ft. (15 m)</p>																						
Shipping Weight	(Approximate) 3.3 pounds (1.5 kg)																						

RESPONSE CHARACTERISTICS (Typical Response Time < 0.5 Sec.)

Fuel	Size	Distance (feet)
n-Heptane	1 x 1 foot	18
Isopropanol	8 in. dia.	8
Polypropylene	8 in. dia.	8

Note: Response time measurements based on shuttered test method.

FALSE ALARM IMMUNITY COMBINED WITH 10 INCH PROPANE FIRE SOURCE

False Alarm Source	False Alarm Source Distance (feet)	Fire Source Distance (inches)
Arc welding, unmodulated	3.5	12
Arc welding, modulated	3.5	12
70 W sodium vapor lamp, unmodulated	0.5	24
70 W sodium vapor lamp, modulated	0.5	19
250 W mercury vapor lamp, unmodulated	1.0	20
250 W mercury vapor lamp, modulated	1.0	20
300 W incandescent lamp, unmodulated	0.67	27
300 W incandescent lamp, modulated	0.67	21
500 W shielded quartz halogen lamp, unmodulated	2.5	25
500 W shielded quartz halogen lamp, modulated	2.5	18
1500 W electric quartz heater, unmodulated	9	24
1500 W electric quartz heater, modulated	9	27
Two 34 W fluorescent lamps, unmodulated	0.25	20
Two 34 W fluorescent lamps, modulated	0.25	24

FALSE ALARM IMMUNITY

False Alarm Source	Distance (inches)	Modulated Response	Unmodulated Response
Arc welding, Type E6012 rod, 1/8" dia., 1/4" plate	42	No alarm	No alarm
70 W sodium vapor lamp	6	No alarm	No alarm
250 W mercury vapor lamp	12	No alarm	No alarm
300 W incandescent lamp	8	No alarm	No alarm
500 W quartz halogen lamp shielded w/window	30	No alarm	No alarm
1500 W electric quartz heater	108	No alarm	No alarm
Two 34 W fluorescent lamps	<3	No alarm	No alarm

Specifications subject to change without notice.

All trademarks are the property of their respective owners.
© 2020 Carrier. All Rights Reserved.

Det-Tronics manufacturing system is certified to ISO 9001—the world's most recognized quality management standard.



Corporate Office
6901 West 110th Street
Minneapolis, MN 55438 USA
www.det-tronics.com

Phone: +1 952.941.5665
Toll-free: +1 800.765.3473
Fax: 952.829.8750
det-tronics@carrier.com