FlameWatch II

Integrated Flame Detection and Video

Bringing two technologies together...for enhanced protection. The FlameWatch II system is designed specifically for applications where a high performance flame detection solution and visual analysis/ record of an alarm event is required. These capabilities are ideally suited for remote locations in order to quickly evaluate the hazard from a controlled location and effectively mobilize response teams.

- **Choose From Any Of Our Advanced Flame Detectors: UV, UV/IR, Phoenix Triple IR**
- **Lowest Power Consumption of Any Flame Detector On the Market**
- **Wide Voltage Range Allows For Greater Stability and System Compatibility**
- **Wide Area Coverage, Extended Range with Fast Response Times**
- **Manual and Automatic Testing of Optical Surfaces — Constantly Monitors Internal Electronics**
- **Fast Response Times At All Sensitivity Settings With Wide Field of View**
- **Field Adjustable Time Delay And Sensitivity Settings Significantly Reduces False Alarms, Simplifies Installation**
- **Global Certifications and Approvals**
- **Compatible With Industry Standard CCTV Components**
- **Video Jacks Included**
- **Wide Camera Viewing angle of 100°**
- **Full color, high resolution video (NTSC & PAL formats available)**

The FlameWatch II system is available with our entire line of advanced flame detection solutions - UV, UV/IR, Phoenix Triple IR flame sensors. The entire package includes Class 1, Division 1, Groups BCD classification; CSA/ATEX certification, FM approvals (flame detector only), NEMA 4X explosion proof rated housings; and is available in aluminum or stainless steel.

With all the innovative design features from our entire flame line included, this package ensures a simplified installation, rock-solid performance, and lower maintenence costs.

The FlameWatch II full colour, composite video signal easily integrates into a wide array of industry standard CCTV hardware and software security systems with both NTSC and PAL formats. The wide field of view provides large area coverage by a single camera and the high resolution video sensor captures accurate detail of the area being monitored.

The FlameWatch II provides the unique integration of an industrial flame detector with an explosion proof video camera — delivering the complete safety and security package for your application.

NET SAFETY MONITORING INC.

EMERSON
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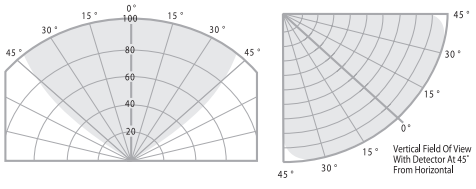
FlameWatch II [Optional Phoenix Triple IR Flame Detector]
Specifications

	ANALOG	RELAY	DIGITAL	HART
Operating Voltage Range	10 to 32 Vdc			
Power Consumption at 24 Vdc*	Nom 31 mA / 0.74 W Max 65 mA / 1.56 W	De-Energized: Nom 39 mA / 0.94 W Max 73 mA / 1.75 W Energized: Nom 53 mA / 1.22 W Max 86 mA / 2.06 W	Nom 31 mA / 0.74 W Max 65 mA / 1.56 W	Nom 57 mA /1.34 W Max 123 mA / 2.96 W
Temperature Range	Certified -40°C to +75°C (-40°F to +167°F) — Operational -50°C to +85°C (-58°F to +185°F)			
Field of View	90 degrees vertical / 90 degrees horizontal			
Spectral Range	Wavelengths between 2.5 – 5.5 microns			
Time Delay	Dip switch selectable to 0, 3, 5, 7 seconds			
Sensitivity Settings	Two adjustable settings via DIP switch (High / Low)			
Response Time	<5 seconds [depending on fuel source, fire size and distance]			
Enclosure Material	Red powdercoat with clear anodizing, copper-free aluminum (optional 316 Stainless Steel), factory sealed housing			
Humidity Range	0 to 95% RH, non-condensing			
Weight (with swivel)	2.1 Kg/4.5 lb (Stainless Steel option 3.4 Kg/7.5 lb)			
Outputs	Digitally stepped analog output 0 to 20 mA - into a maximum loop impedance of 800 Ohms at 32 Vdc or 150 Ohms at 10.5 Vdc. Isolated/Non-isolated loop supply.	Normally open/normally closed Form C contacts rated 5 Amps at 30 Vdc 125 Vac. Selectable energized / de-energized Fire relay. Fault relay fixed as energized. Both Fire and Fault relays fixed as non-latching.	RS-485 RTU Modbus® protocol	HART Communication Protocol
Certifications/Approvals	**CSA** - Class I, Division 1, Groups A *(Canada only)*, B, C and D - Temperature code T5 - CANADA: Class 1, Zone 1, Ex d IIB + H2 T5 **ANSI-UL/ISA** - Class I, Division 1, Groups B, C and D - Temperature code T5 - UNITED STATES: Class 1, Zone 1, AEx d IIB + H2 T5 **ATEX/IECEx** - Ⓔx II 2 G Ex d II B+H2 T5 Gb **GOST-R** - 1Ex d II BT5/H2 **INMETRO** - BR-Ex d II B+H2 T5 **Factory Mutual (FM) 3260** **SIL2 by exida®** **ABS Marine** **NEMA Type 4X • IP66** - Enclosure ratings			
Warranty	7 Years			

Summary of Distances

Fuel	Fire Size	Distance	Typical Response
n-heptane	1' x 1'	210 feet max	< 2sec @ 100 ft.
gasoline	1' x 1'	150 feet max	< 5sec @ 150 ft.
methane	32" plume	140 feet max	< 5sec @ 140 ft.

Example Field of View - Methane
32" plume - indicated in feet - consult factory for other gases



Immunity False Alarm Stimuli

Stimuli	Immunity Range
arc welding/sparking/arcing	10 ft +
direct and/or indirect sunlight	total
lightning	total
halogen, fluorescent, incandescent light	10 ft +
250W Sodium Vapor, 250W Metal Halide Light	10 ft +
electric heater (1500W)	10 ft +
propane heater - mod./unmod. (27000w)	12 ft +

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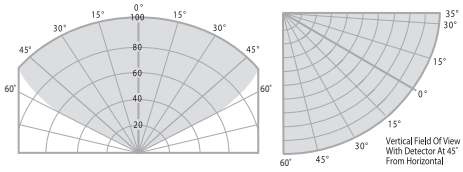
FlameWatch II [Optional UV/IR Flame Detector]
Specifications

	ANALOG	RELAY	HART
Operating Voltage Range	10 to 32 Vdc		
Power Consumption at 24 Vdc *with Heater	Nom 45 mA / 1.1 W Max 115 mA / 2.76 W *Nom 90 mA / 2.16 W Max 165 mA / 3.96 W	Nom 45 mA / 1.1 W Max 115 mA / 2.76 W *Nom 90 mA / 2.16 W Max 165 mA / 3.96 W	Nom 71 mA / 1.7 W Max 173 mA / 3.36 W *Nom 106 mA / 2.22 W Max 223 mA / 5.36 W
Temperature Range	Certified -40°C to +75°C (-40°F to +167°F) / Operational -50°C to +75°C (-58°F to +167°F)		
Field of View	120 degrees horizontal / 95 degrees vertical		
Spectral Range	UV Radiation 185 to 260 nanometres (1850 to 2600 angstroms) | IR Radiation in the 4.4 micron range		
Time Delay	Dip switch selectable to 0, 3, 5, 7 seconds		
Sensitivity Settings	DIP switch selectable to 8, 16, 24 or 32 counts per second		
Response Time	<6 seconds [depending on fuel source, fire size and distance]		
Enclosure Material	Red powdercoat with clear anodizing, copper-free aluminum (optional stainless steel), factory sealed housing		
Humidity Range	0 to 95% RH, non-condensing		
Weight (with swivel)	2.1 Kg/4.5 lb (Stainless Steel option 3.4 Kg/7.5 lb) - does not include junction boxes		
Outputs	0 to 20 mA - Into a maximum loop impedance of 800 Ohms at 32 V dc or 150 Ohms at 11.0 V dc. Non-isolated loop supply	Form C contacts rated 1 Amp at 30 Vdc, 0.5 Amp at 125 Vac. Selectable energized/de-energized, latching/non-latching Fire relay Fault relay factory set as energized/non-latching, cannot be modified	HART Communication Protocol
Certifications/Approvals	CSA - Class I, Division 1, Groups B, C and D - Temperature code T5 - CANADA: Class 1, Zone 1, Ex d IIB + H2 T5 ANSI/UL - Class I, Division 1, Groups B, C and D - Temperature code T5 - UNITED STATES: Class 1, Zone 1, AEx d IIB + H2 T5 ATEX/IECEx - ⟨Ex⟩ II 2 G Ex d II B+H2 T5 Gb GOST-R - 1Ex d II BT5/H2 INMETRO - BR-Ex d II B+H2 T5 Factory Mutual (FM) 3260 SIL2 by exida® ABS Marine NEMA Type 4X • IP66 - Enclosure ratings		
Warranty	3 Years Electronics / 2 Years Sensors		

Summary of Distances

Fuel	Fire Size	Typical Response
n-heptane	1' x 1'	< 11sec @ 140 ft.
gasoline	1' x 1'	< 6sec @ 120 ft. (< 3sec @ 50 ft.)
methane	30" plume	< 6sec @ 100 ft.

Example Field of View - Methane
32" plume - indicated in feet - consult factory for other flame types



Immunity False Alarm Stimuli

Stimuli	Immunity Range
Direct/Indirect Sunlight	total
1500W Heater	10 ft
Halogen, Incandescent Light	3 ft
Florescent Light	10 ft
Arc Welding	30 ft

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FlameWatch II [Optional UV Flame Detector]
Specifications

	ANALOG	RELAY	HART
Operating Voltage Range	10 to 32 Vdc		
Power Consumption at 24 Vdc *with Heater	Nom 45 mA / 1.1 W Max 115 mA / 2.76 W * Nom 90 mA / 2.16 W Max 165 mA / 3.96 W	Nom 45 mA / 1.1 W Max 95 mA / 2.28 W * Nom 90 mA / 2.16 W Max 145 mA / 3.48 W	Nom 71 mA / 1.7 W Max 173 mA / 3.36 W * Nom 106 mA / 2.22 W Max 223 mA / 5.36 W
Temperature Range	Certified -40°C to +75°C (-40°F to +167°F) / Operational -50°C to +75°C (-58°F to +167°F)		
Field of View	120 degrees horizontal / 95 degrees vertical		
Spectral Range	UV Radiation 185 to 260 nanometres (1850 to 2600 angstroms)		
Time Delay	DIP switch selectable to 0, 3, 5, 7 seconds		
Sensitivity Settings	DIP switch selectable to 8, 16, 24 or 32 counts per second		
Response Time	<6 seconds [depending on fuel source, fire size and distance]		
Enclosure Material	Red powdercoat with clear anodizing, copper-free aluminum (optional stainless steel), factory sealed housing		
Humidity Range	0 to 95% RH, non-condensing		
Weight (with swivel)	2.1 Kg/4.5 lb (Stainless Steel option 3.4 Kg/7.5 lb) - does not include junction boxes		
Outputs	0 to 20 mA - Into a maximum loop impedance of 800 Ohms at 32 V dc or 150 Ohms at 11.0 V dc. Non-isolated loop supply	Form C contacts rated 1 Amp at 30 Vdc, 0.5 Amp at 125 Vac. Selectable energized/de-energized, latching/non-latching Fire relay Fault relay factory set as energized/non-latching, cannot be modified	HART Communication Protocol
Certifications/Approvals	CSA - Class I, Division 1, Groups B, C and D - Temperature code T5 - CANADA: Class 1, Zone 1, Ex d IIB + H2 T5 ANSI/UL - Class I, Division 1, Groups B, C and D - Temperature code T5 - UNITED STATES: Class 1, Zone 1, AEx d IIB + H2 T5 ATEX/IECEx - ⟨Ex⟩ II 2 G Ex d II B+H2 T5 Gb GOST-R - 1Ex d II BT5/H2 INMETRO - BR-Ex d II B+H2 T5 Factory Mutual (FM) 3260 Performance Certification ABS Marine NEMA Type 4X • IP66 - Enclosure ratings		
Warranty	3 Years Electronics / 2 Years Sensors		

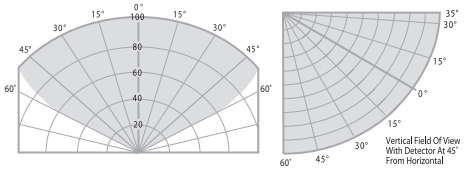
Summary of Distances

Fuel	Fire Size	Typical Response
n-heptane	1' x 1'	< 8.5sec @ 150 ft.
gasoline	1' x 1'	< 3sec @ 120 ft.
methane	30" plume	< 3sec @ 120 ft.

Immunity False Alarm Stimuli

Stimuli	Immunity Range
Direct/Indirect Sunlight	total
1500W Heater	10 ft
Halogen, Incandescent Light	3 ft
Florescent Light	10 ft

Example Field of View - Methane
32" plume - indicated in feet - consult factory for other flame types



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FlameWatch II [Exproof Video Camera — VID-JB]
Specifications

Operating Voltage Range	10 to 32 Vdc
Power Consumption	Nominal: 135 mA/3.24W - Max: 170mA/4.08W
Operating Temperature	-20°C to +50°C (-13°F to +122°F)
Field of View	100 degrees (Vertical/Horizontal)
Video Output	1Vp-p composite video (delivered by shielded twisted pair with male RCA connector)
Pixel Number	NTSC=270K / PAL=320K (Normal Resolution), NTSC = 380K / PAL=440K (High resolution)
Image Pick-up Device	1/3" Super HAD II CCD High Resolution
Effective Picture Elements	NTSC:768*494, PAL: 752*582(H*V)
Horizontal Resolution	540 TV lines
Minimum Illumination	0.1 Lux@F1.2
S/N Ratio	More than 48 dB
Auto Electronic Shutter	NTSC:1/60s~1/100,000s, PAL:1/50s~1/110,000s
Lens Furnished	Board lens 2.9 mm/F2.2
White Balance	Automatically(2500K ~ 9500K)
Gamma Characteristic	0.45
Gain Control	Automatically
Synchronous System	Negative sync. Internal
Certifications	• Factory Mutual (FM) Approvals (Pending) • US: XP/I/1/BCD/T5; I/1/AEx d/IIB+H_2 /T5 ; Type 4X, IP67 (Pending) • CAN: XP/I/1/BCD/T5; I/1/Ex d/IIB+H_2 /T5 ; Type 4X, IP67 (Pending) • ATEX: ⟨Ex⟩ II 2 G Ex d IIB+H_2; IP67 (Pending)
Enclosure Material	Aluminum standard (316 SS option)
NEMA/IP	NEMA Type 4X, IP67
Weight	Aluminum: 0.8kg/2.0lbs (316SS - 1.6kg/3.5lbs)

FlameWatch II [Integrated Flame Detection and Video]

Ordering Information - Accessories

ORDERING INFORMATION

FW2-IR3S-A	4-20mA Analog Output
FW2-IR3S-AR	4-20mA Analog Output and Fire and Fault Alarm Relays
FW2-IR3S-AD	4-20mA Analog Output and RS-485 MODBUS RTU Protocol
FW2-UV/IRS-A	4-20mA Analog Output
FW2-UV/IRS-AR	4-20mA Analog Output and Fire and Fault Alarm Relays
FW2-UVS-A	4-20mA Analog Output
FW2-UVS-AR	4-20mA Analog Output and Fire and Fault Alarm Relays

CAMERA ENCODING: PAL Encoded (—P) [NTSC is Standard]
ADDITIONAL APPROVALS : —X (ATEX/IECEX)
ENCLOSURE MATERIAL: Stainless Steel (—SS) [Aluminum is Standard]

Ordering Matrix Example:

FW2-IR3S-A-P-X-SS

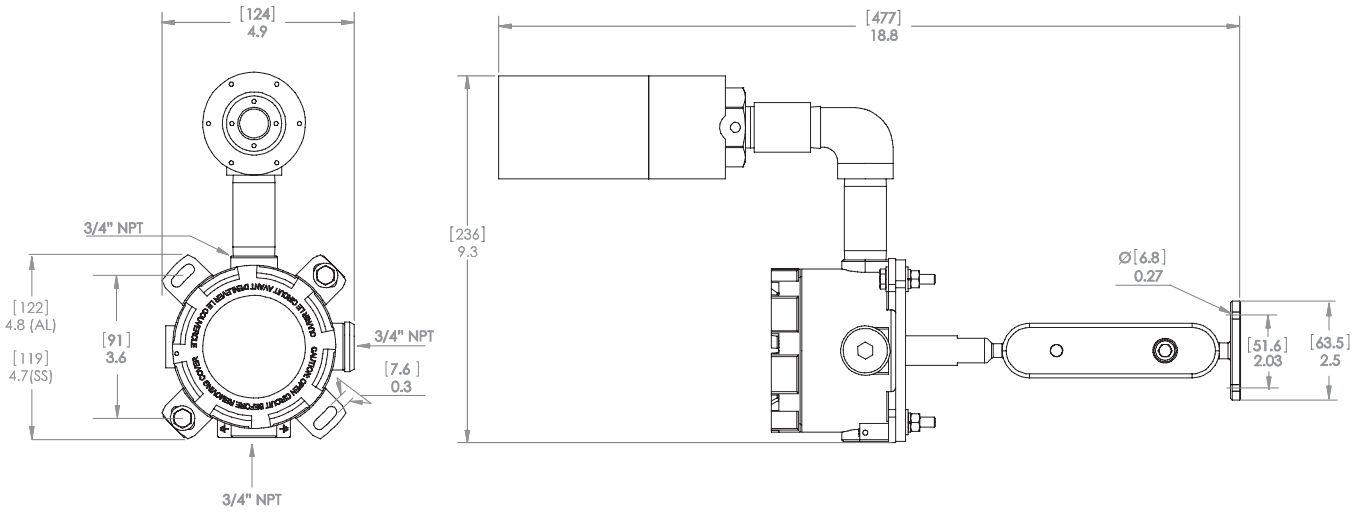
(Product - Flame Detector - Output - Optional Camera Encoding - Additional Approvals - Optional Enclosure Material)

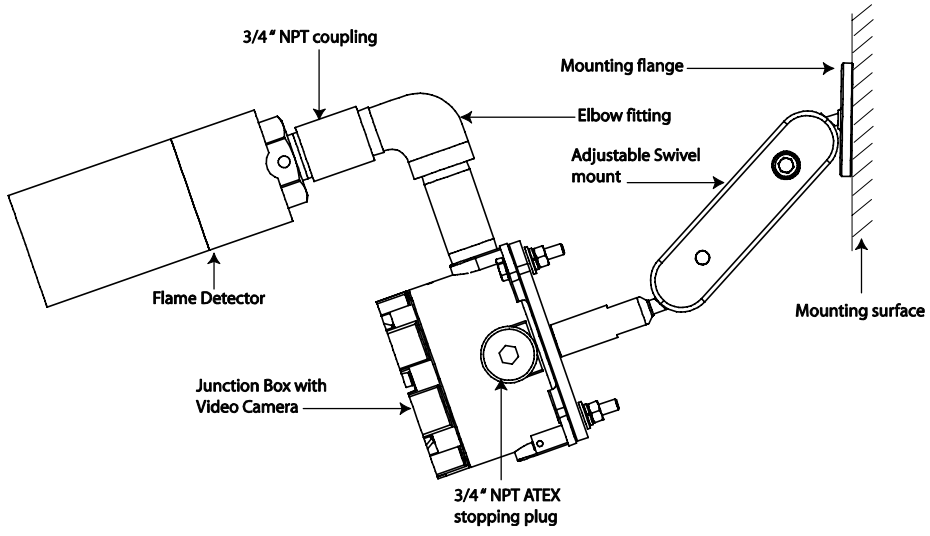
ACCESSORIES

LAT-120	Laser alignment tool assembly - used to define area of coverage for all NSM flame detectors
AIR-SHIELD	Air Shield assembly (aluminum), supplied clean instrument air keeps lens clear in areas with heavy airbourne particulate
FH-SHROUD	Field of View Restrictor Anodized (Red) for “S” series fire detectors (aluminum)
UN-MK-41	1” Pipe Mounting kit - Stainless steel
UN-MK-42	2” Pipe Mounting kit - Stainless steel
UN-MK-43	3” Pipe Mounting kit - Stainless steel
SSK-6	Sun shade kit for “FW2” Series flame detector/video camera (stainless steel)
TL-MP-KIT	Universal test lamp kit - certified rechargeable hand-held unit - produces accurate fire simulation (UV and IR sources)
TL-MP-KIT-X	Universal test lamp kit [ATEX] - certified rechargeable hand-held unit - produces accurate fire simulation (UV and IR sources)

FlameWatch II [Integrated Flame Detection and Video]

Dimensions (with swivel) - Mounting





Note: It is recommended that a sunshade kit be fitted on the video camera enclosure (junction box) if FlameWatch II is going to be continually exposed to direct sunlight, which may result in temperatures beyond 75°C.

HEADQUARTERS:
FLAME AND GAS DETECTION
Emerson Process Management
Net Safety Monitoring Inc.
2721 Hopewell Place NE
Calgary, Alberta, Canada T1Y 7J7
T +1 (403) 219 0688
T 1 866 FIREGAS
F +1 (403) 219 0694
www.net-safety.com

HEADQUARTERS:
GAS CHROMATOGRAPHS
Emerson Process Management
Rosemount Analytical
5650 Brittmoore Road
Houston, TX 77041 USA
T +1 (713) 827 6380
T 1 866 422 3683
F +1 (713) 827 3865
www.raihome.com

HEADQUARTERS:
PROCESS ANALYTICAL
Emerson Process Management
Rosemount Analytical
6565 P Davis Industrial Parkway
Solon, OH 44139 USA
T +1 (440) 914 1261
T 1 800 433 6076
F +1 (440) 914 1262
www.raihome.com

HEADQUARTERS:
LIQUID ANALYTICAL
Emerson Process Management
Rosemount Analytical
2400 Barranca Parkway
Irvine, CA 92606 USA
T +1 (949) 757 8500
T 1 800 854 8257
F +1 (949) 474 7250
www.raihome.com

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