



Ultra-High-Speed Optical Flame Detection and Releasing System Solutions  
for the Munitions Industry

*2018 NDIA International Explosives Safety  
Symposium & Exposition*

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# AGENDA

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- Det-Tronics introduction
- Optical Flame Detection technologies
- Meeting codes and standards
- Performance-based design evaluation
- Det-Tronics ultra-high-speed system solution
- Summary

# WHO IS DET-TRONICS?



Corporate Headquarters, Bloomington, MN



Systems Center, Bloomington, MN



45 years of engineering innovation and expertise

World-class manufacturer of industrial flame & gas safety systems

In-house system design, development, manufacturing, and testing capabilities

ISO9001 Manufacturing Process

Dedicated test facilities

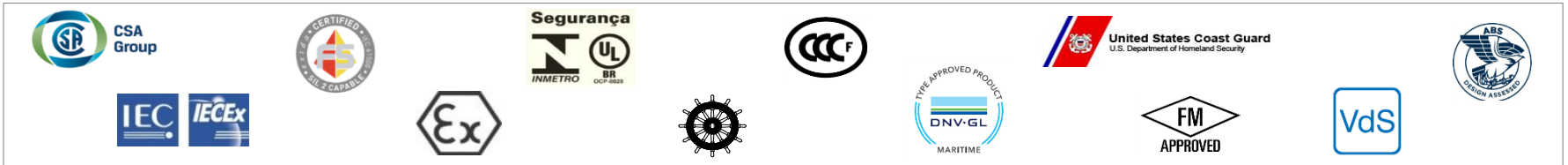
Global approvals group



# SEGMENTS SERVED



## Approvals



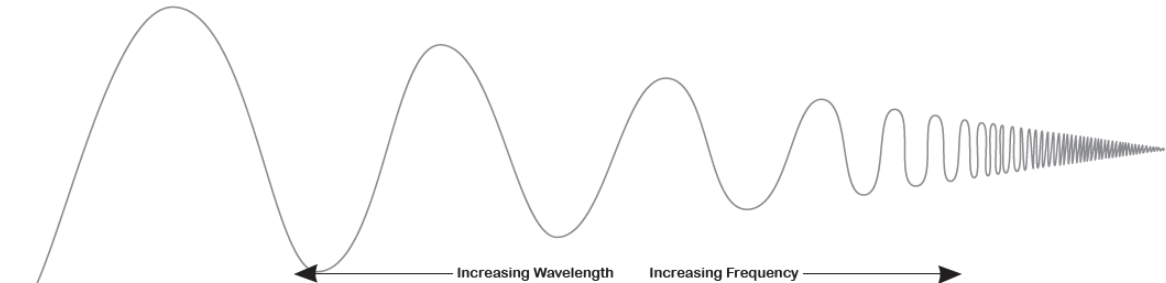
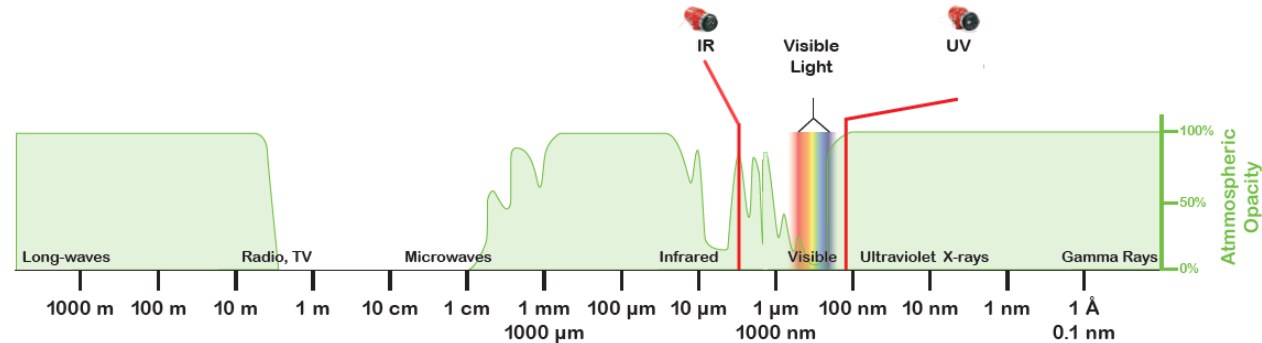
# OPTICAL FLAME DETECTION

## THE ELECTROMAGNETIC SPECTRUM

Detects the radiant energy emitted by flame

Ultraviolet

Infrared



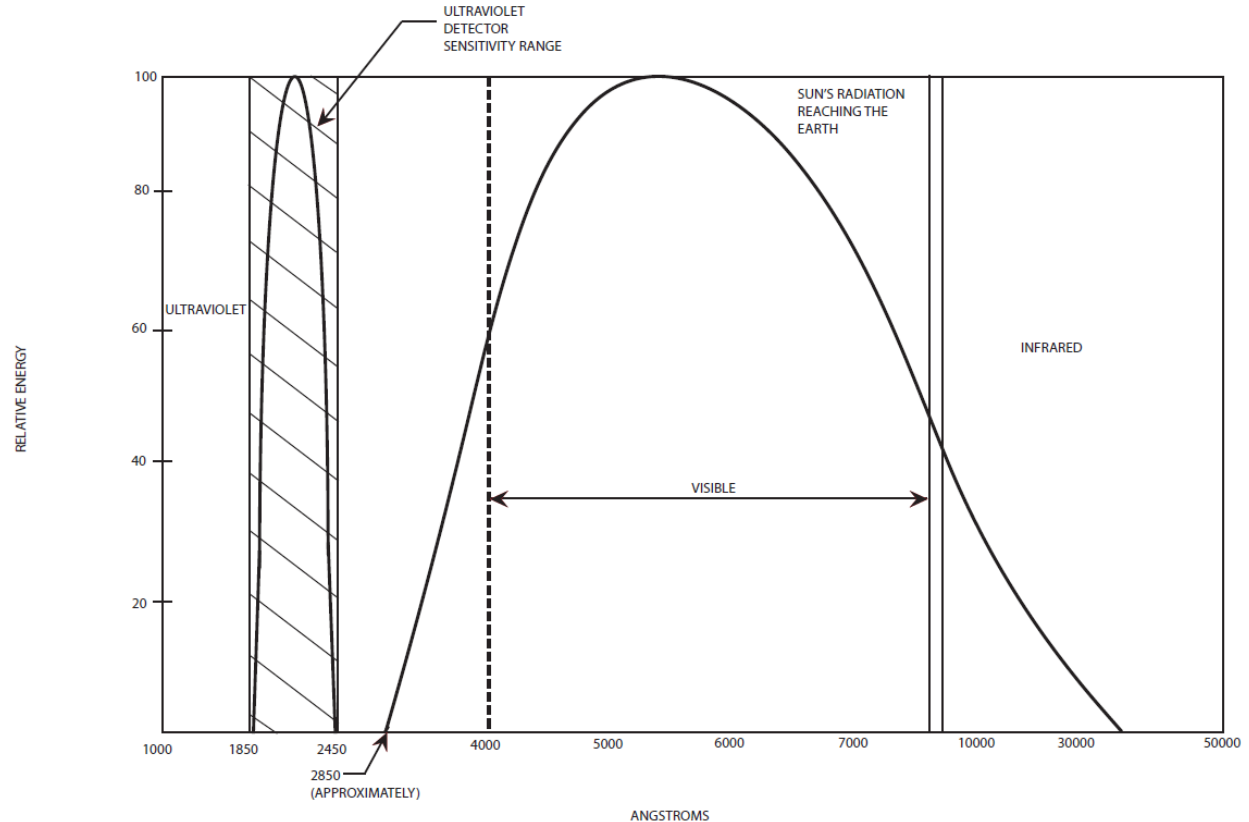
Note: 1 micrometer = 1000 nanometers = 10,000 Angstroms

# ULTRAVIOLET (UV) FLAME DETECTION

1850 - 2450 Angstroms

Solar-Blind

Outside of visible range

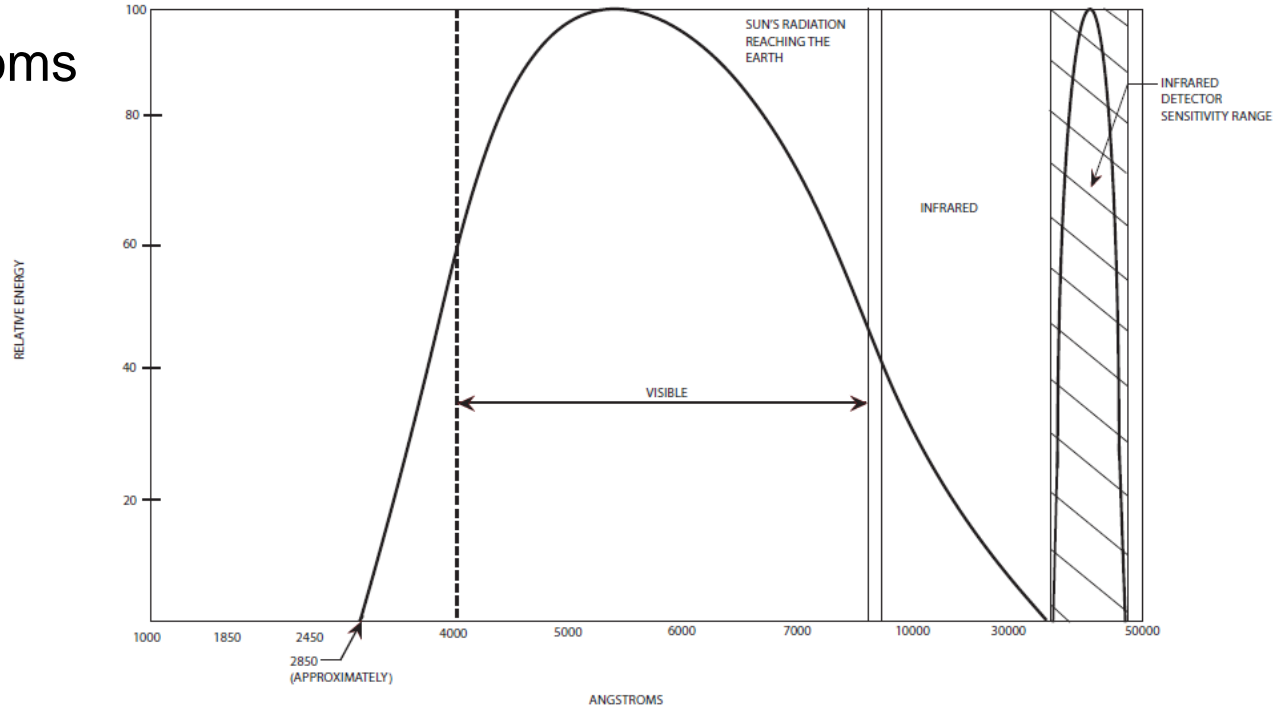


# INFRARED (IR) FLAME DETECTION

42,000 – 48,000 Angstroms

Solar-blind

Outside of visible range

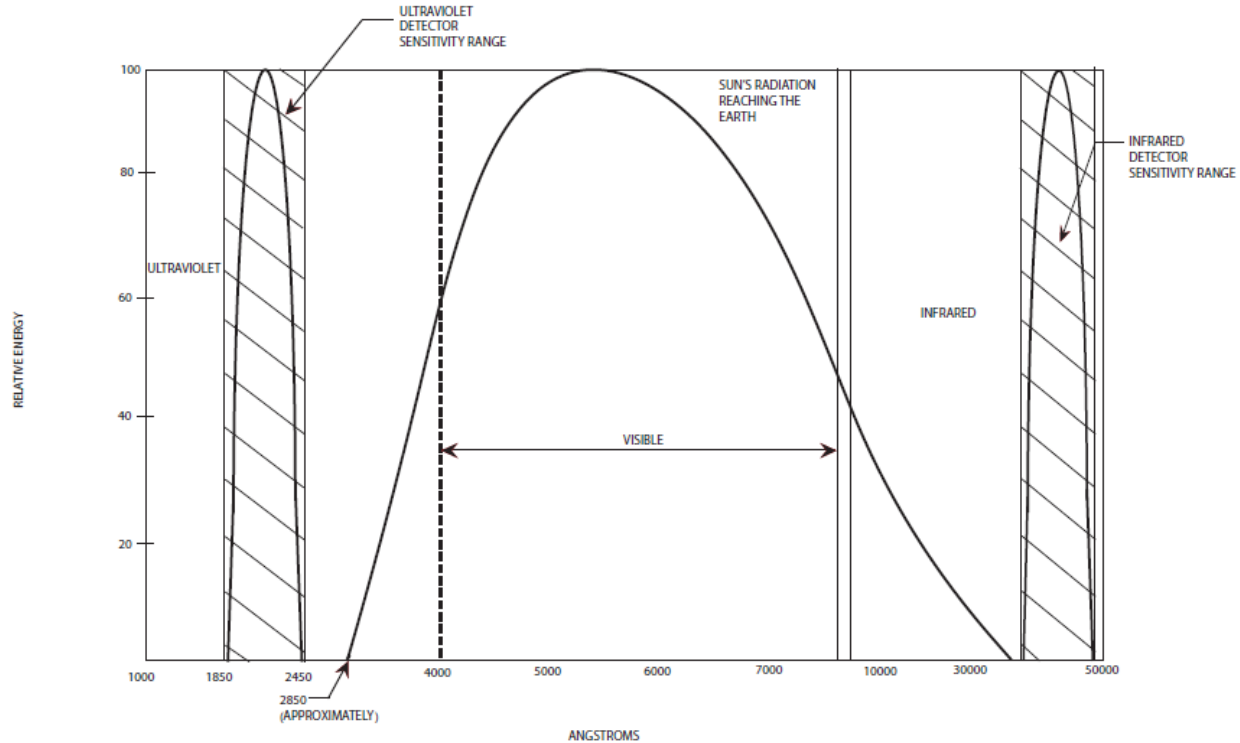


# UV IR FLAME DETECTION

Combines UV and IR technology

Solar-blind

Outside of visible range





# UV – BENEFITS AND LIMITATIONS

Less affected  
by elements

Speed of  
response

  
UV  
Detector

Detects most  
fire types

Unaffected by  
hot objects

Welding &  
Lighting

Vapors &  
Oil film

  
UV  
Detector

Nuclear radiation /  
X-rays

Smoke

# IR- BENEFITS AND LIMITATIONS

Less affected  
by smoke

Speed of  
response



Unaffected by arc welding /  
lightning / x-rays / nuclear  
radiation

Unaffected by  
vapors

Water & Ice

Modulated hot  
objects



Modulated high  
intensity lamps

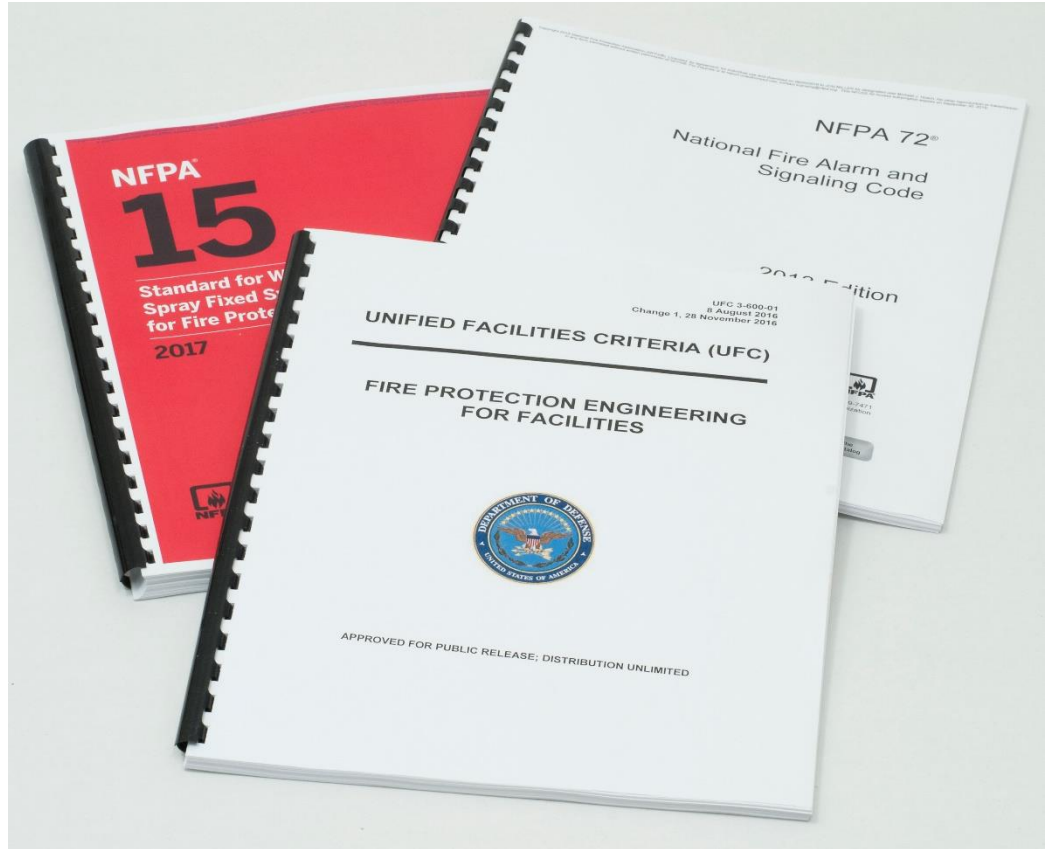
May not detect  
all fire types

# CODES AND STANDARDS

Provide knowledge and information to minimize risk and effects of fire

Adherence is required

Performance-based design



# PERFORMANCE BASED DESIGN



# ULTRA-HIGH-SPEED SOLUTION

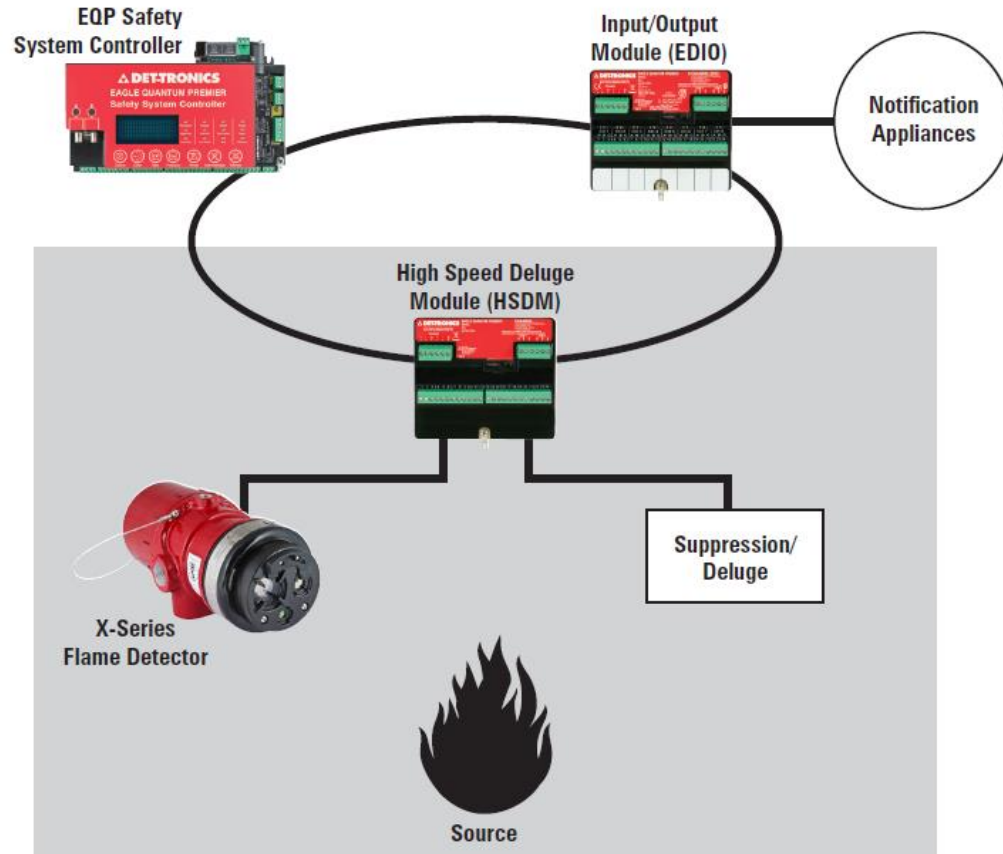
Mid-  
2019  
release

X2200 UV, X9800 IR, or X5200 UVIR  
flame detector

High Speed Deluge Module (HSDM)

Ultra-high-speed response capable  
<20mS in ideal conditions

Eagle Quantum Premier® System  
allows users to comply with NFPA 15,  
NFPA 72, UFC-3-600-01



# SUMMARY

Det-Tronics: The industry standard in flame detection & releasing for munitions applications for 40+ years

Continuing support for the munitions industry ---  
***new product release mid-2019***

Ultra-high-speed response capable <20mS  
in ideal conditions

Eagle Quantum Premier® System allows  
users to comply with NFPA 15, NFPA 72,  
UFC-3-600-01

