

# Fire Detection Technologies Comparison



Feature	SFD (Visual AI Detection)	Smoke Detectors	IR Detectors	UV Detectors
<b>Detection Method</b>	Computer vision & AI analysis of visual patterns	Smoke particle sensing	Infrared radiation detection	Ultraviolet radiation detection
<b>Detection Range</b>	Up to 100+ meters (330 feet+)	10-15 feet radius	15-50 feet	20-50 feet
<b>Response Time</b>	Immediate (flame recognition)	Delayed (requires smoke accumulation)	Fast (heat detection)	Fast (UV emission detection)
<b>False Alarm Rate</b>	Very Low (AI filtering) and Machine learning	High (cooking, steam, dust)	Medium (hot objects, sunlight)	High (sunlight, welding, lighting)
<b>Works Outdoors</b>	Yes	No (smoke disperses)	Limited (sunlight interference)	Limited (sunlight interference)
<b>Weather Resistance</b>	High	N/A (indoor only)	Medium (affected by temperature)	Low (affected by humidity/fog)
<b>Visual Verification</b>	Yes (image capture) [In RND progress]	No	No	No
<b>Mobile Alerts</b>	Yes (built-in)	Requires additional system	Requires additional system	Requires additional system
<b>Installation</b>	Simple (no wiring required)	Simple	Complex (professional)	Complex (professional)
<b>Location Precision</b>	Exact fire location	Room-level only	General direction	General direction
<b>Power Requirements</b>	network ac 110v/220v	Battery	Medium	Medium
<b>Effectiveness in Dust/Smoke</b>	Moderate (vision can be impaired)	High (designed for smoke)	Low (can be obscured)	Very low (easily blocked)
<b>Coverage Area</b>	Large (single unit)	Small (multiple units needed)	Medium	Medium
<b>Maintenance Requirements</b>	Minimal	Regular testing/battery change	Regular professional testing	Regular professional testing
<b>Suitable Environments</b>	Homes, businesses, industrial, outdoor	Primarily indoor residential	Industrial, specialized	Industrial, specialized
<b>Early Stage Detection</b>	Very early (visible flame)	Late (requires smoke build-up)	Early (heat detection)	Early (flame detection)
<b>Ability to Distinguish Sources</b>	High (AI recognition)	None	Limited	Limited
<b>Initial Cost</b>	Medium	Low	Medium to high	High
<b>Operating Cost</b>	Low	Very low	Medium	Medium to high