


# Model F110 Ultraviolet Flame Detector & Controller



- **Flame Sensor and Control Electronics self-contained in explosion proof enclosure**
- **Automatic and Manual Optical Path Checking**
- **Automatic Self Test Diagnostics for electronics and sensor elements**
- **Analog and Discrete Outputs**
- **High current relays for control or shutdown of external equipment.**
- **Explosion proof enclosure suitable for Class I Division 1 Groups B,C,D and EEx dIIB T6 locations**
- **NEMA4X weatherproof and corrosion resistant**
- **24 volt DC nominal operating voltage**
- **Approved by UL, C-UL & CENELEC**

 **Class I Groups B,C,D  
Class II Groups E,F,G**

 **Class I Groups B,C,D  
Class II Groups E,F,G**

 **EEx dIIB T6**

## THE DETECTOR

The SST Model F110 Ultraviolet Detector is a sophisticated, self-contained, optical flame detection system with many features not available in competitive detectors. It detects flames by sensing the ultraviolet (UV) radiation produced during a combustion process.

The Model F110 has its own internal control electronics and can readily replace older systems which utilize remote controllers. It incorporates state of the art circuit technology to perform extensive analysis on the output signals. The result: unparalleled detection reliability and outstanding application flexibility. In addition, the detector is equipped with an automatic Optical Self-Checking feature which continuously checks the optical path of the detector and key circuit functions.

## PHYSICAL DESCRIPTION

The Model F110 is self-contained in a two-piece explosion proof copper-free aluminum housing. It is suitable for use in "classified" areas where ignitable concentrations of flammable gas normally exist.

The housing is finished in a deep red color to permit rapid identification as a flame detector. A space-age protective coating permits use in harsh environments, such as offshore platforms, without degradation. A stainless steel housing is also available. Electrical connections are made through a 3/4 inch threaded outlet on the rear of the detector, suitable for connection to electrical conduit or a cable gland.

## OPERATIONAL DESCRIPTION

The Model F110 control electronics includes three (3) dry contact relays and a 0 to 20 mA current output. The detector may be installed for completely self-contained operation, utilizing the relays to control local equipment directly. Alarm and Status conditions may be transmitted by the detector to a central control room over a single wire using the 0 to 20 mA current loop. (Alarm and status indications may also be transmitted remotely using relay contacts.)

When the detector is installed and operating normally, the green "Ready" light will be visible through the detector window. This provides a rapid visual check of detector operation.

The Model F110 Detector responds to a flame with a variety of sensitivity and time delay scenarios. A multiposition jumper plug sets the detector for the most appropriate mode, such as quickest response, or specifically tuned to the exact conditions at your particular installation. SST provides a comprehensive Instruction Manual detailing the settings required to produce the desired response.

When a flame is initially detected, the Alarm outputs (relay and current loop) are instantly activated. A red LED, visible to a field inspector when viewing the unit's lens, is also activated. Should the flame persist for a specified period of time, The Delayed Alarm outputs (relay and current loop) will also activate.

Periodically, the Model F110 Detector runs the Automatic Self-Test routine. A self-contained source of UV radiation is transmitted via a quartz rod to the outside surface of the viewing window. The complete system of window, sensor and electronics is fully tested in this manner. Should the transmission of the window be degraded, or other circuit malfunctions detected, a Malfunction (relay and current loop) will be signaled and the yellow fault LED will illuminate.



## ARCHITECT'S AND ENGINEER'S SPECIFICATIONS

Flame detection capability shall be provided by an ultraviolet detector. The detector shall provide a minimum 70 foot on-axis sensitivity to a standard 1 square foot 87 octane unleaded gasoline fire. The sensor sensitivity response time shall be user selectable.

A comprehensive through-the-lens self check shall be performed periodically utilizing an internal test source arranged such that reflective surfaces are not required. The detector shall provide relay outputs for Alarm, Delayed Alarm, and Malfunction in addition to a 0 to 20 mA current loop capable of reporting the same conditions over a single wire.

All electronics shall be contained in a single user replaceable module which does not require field wiring or unwiring for replacement.

The detector housing shall be waterproof, explosion proof and corrosion resistant. The detector shall be classified as to explosion and fire hazard by Underwriter's Laboratories, and certified for use in potentially explosive atmospheres per CENELEC requirements. Safety Systems Technology Model F110 Multi-Model Ultraviolet Flame Detector & Controller, or approved equivalent, shall be supplied.

## TECHNICAL SPECIFICATIONS

<b>Flame Sensitivity:</b>	Reliably detects a 1 square foot gasoline fire at a distance of 70 feet in less than 3 seconds (user selectable).
<b>Cone of Vision:</b>	90 degrees (minimum)
<b>Spectral Sensitivity:</b>	1850 to 2450 Angstrom
<b>Detection Modes:</b>	Alarm (instantaneous, non-latching), Delayed Alarm (3 seconds non-latching), Delayed Alarm (3 seconds latching), Delayed Alarm (6 seconds non-latching), Delayed Alarm (6 seconds latching); selectable by internal jumper.
<b>Detector Self-Test:</b>	Automatically performed every 15 seconds.
<b>Relay Outputs:</b>	Alarm, Delayed Alarm, Malfunction
<b>Relay Contact Ratings:</b>	6 amps @ 28 VDC or 300 VAC resistive, 1/8 HP @ 120/240 VAC
<b>Analog Output:</b>	Standard 0 to 20 mA, self-powered 2 mA = Malfunction 4 mA = Ready 12 mA = Alarm (UV detected) 20 mA = Delayed Alarm
<b>Alarm Reset:</b>	Latched alarms are reset by either activating the Test/Reset Input or interrupting power to the unit.
<b>Visual Indicators:</b>	Detector Ready (Green) Malfunction (Yellow) Alarm/Delayed Alarm (Red)
<b>Enclosure Ratings:</b>	Explosion proof; Nema 4X, Class I, Division 1, Groups B, C or D areas or Class II Groups E,F,G EEx dIIB T6 per EN50018 for Groups I, IIB and EN50014
<b>Operating Temperature:</b>	-40 to +85°C, -40 to +185°F
<b>Power Requirements:</b>	20 to 35 Volts DC at 60 mA (typical)

## ORDERING INFORMATION

PART NO.	DESCRIPTION
110-21	Model F110 UV Flame Detector/Controller with 0-20 mA and Relay Outputs, red aluminum housing
110-21-SS	Model F110 UV Flame Detector/Controller with 0-20 mA and Relay Outputs, stainless steel Housing
190-01	Swivel Mount Assembly for use with 3/4 inch conduit
191-01	Swivel Bracket Assembly for non-conduit installations
193-1	Portable Ultraviolet Flame Detector Test Lamp



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