

5002-01 ULTRAVIOLET SELF-CHECKING SCANNER

Product Overview

Description

The **Quanta-Flame Series 5002** is intended for monitoring all gas, oil and coal-fired burners. The control is the basis for industrial or commercial burner management systems using microprocessors, PLC or relay-based hardware. All essential circuits are supervised. The 5002-01 scanner is not an approved flame safeguard controller, so it must be used in conjunction with an approved flame safeguard controller.

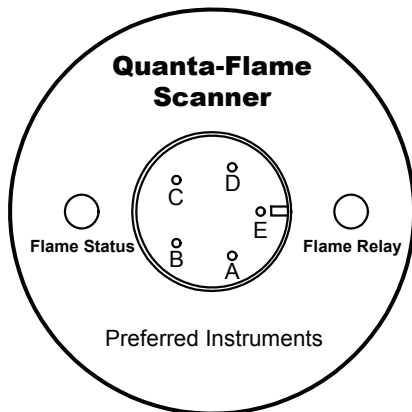
- 5002-01 interfaces with Preferred, Fireye, Honeywell, and PCI flame safeguard controllers. Model numbers ending in “-C” provide contact closure and 4-20 mA outputs to interface with PLC-based and DCS-based flame safeguard systems
- Internal microcomputer controls internal functions as well as supervising the relay contacts to verify they are always operating correctly
- High quality fused silica quartz lens
- Machined alloy housing with seals
- Detectors and signal processor automatically checked every 10 seconds
- Replacement scanner can be installed without disturbing wiring
- No scheduled replacement parts
- Flame relay contacts and load circuit supervised
- Status LEDs
- Flame intensity
- Output on indicator
- Self-check indicator

LED Indicators

A Flame Status LED and Flame Relay LED provide useful diagnostic information on the front of the scanner.

Flame Status LED

The Flame Status LED (FSL) is a dual-color LED that acts as a multifunctional indicator.



Connector view of 5002-01 scanner showing cable pinouts



5002-01 Series Ultraviolet Self-Checking Scanner

When a flame is detected, the FSL will illuminate with a red color. This light will vary in intensity proportional to the level of flame signal (flame strength) detected. Every 10 seconds, the self-checking mechanism will interrupt the light coming from the flame. This is done to verify that the UV sensing element is still functioning properly. When this check is being performed, the FSL will momentarily turn to a yellow color (when flame present) or green color (when flame is not present). Should the UV sensing element fail to function, the scanner will lockout all the outputs to indicate the failure and the FSL will remain green without blinking for one minute.

After one minute, the control will automatically reset itself. The scanner's microcomputer will then continue to check the sensing element every ten seconds. Should the sensing tube be in a permanent “runaway” condition, the scanner will immediately lock out again for another period of one minute.

Flame Relay LED

The Flame Relay LED (FRL) is a single color LED. When a flame of sufficient intensity is detected the 5002-01 scanner will activate the output signal. This output may be any one of the possible output forms described above. While the output is activated, the FRL will illuminate. Should the flame signal fall below the minimum threshold, or should one of the internal circuits or sensing elements tests fail, the output will deactivate, and the FRL will shut off.

Specifications

Mechanical

Length Overall:	7" (177.8 mm)
Diameter:	3.25" (82.5 mm)
Housing:	Machined 5052 Aluminum Alloy
Finish:	Clear Anodized
Sight Tube Entrance:	1" Pipe Thread

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Purge Air Entrance: 3/8" Pipe Thread
Electrical
Supply Voltage: 120 VAC 50/60Hz,
 230 VAC 50/60Hz
 24 VDC
 (depending on model)

Required power: 2 VA
Output Contact Rating: 230 VAC, 1 A

Available Outputs:
 (-C Models) Relay Contact &
 4 to 20 mA

Other models interface with Preferred and other flame safeguard amplifiers. (see wiring examples)

Specifications for 4 to 20 mA output (two-wire current loop)

Span error: 1%
Non-linearity: 0.1%
Supply required to the loop: 12 to 30 VDC

Environmental
Class:
Temperature:

NEMA 4
 (0° F to 140° F).

Optical
Lens Material: Fused Silica
Spectral Sensitivity
Ultraviolet: 180-230 nanometers

Product Certification

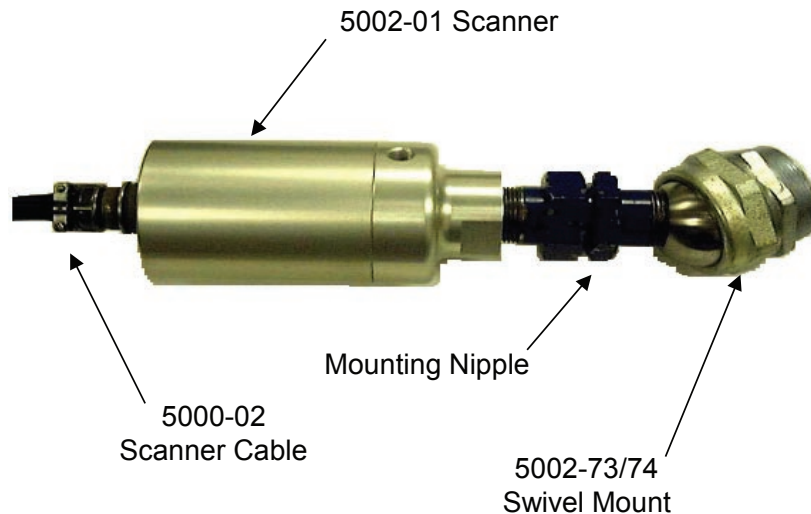
Microcomputer controlled UV Scanner (120VAC) Relay & Flame Amplifier Output FM / UL / CSA / CSAUS

UL file Number: E233069

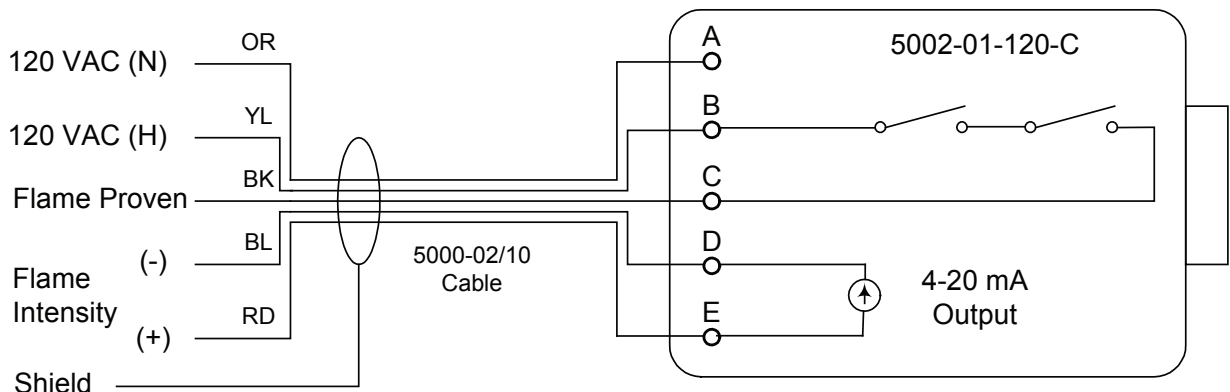
CSA Certification: File No. 204571 –Project Number 1181621 and 1298906 update to add PCI and Eclipse controls. See attached CSA Certificate of Compliance FM Approved Report Number: 3009512 and 3013648 (for use specifically with Eclipse Combustion Inc and Protection Controls Combustion Safeguards)

Applicable Requirements: CSA 0.8-M1986, 199-M89, UL 372, UL1998, FM Class 7610

Note: Flame scanners must be used in conjunction with an approved flame safeguard controller.



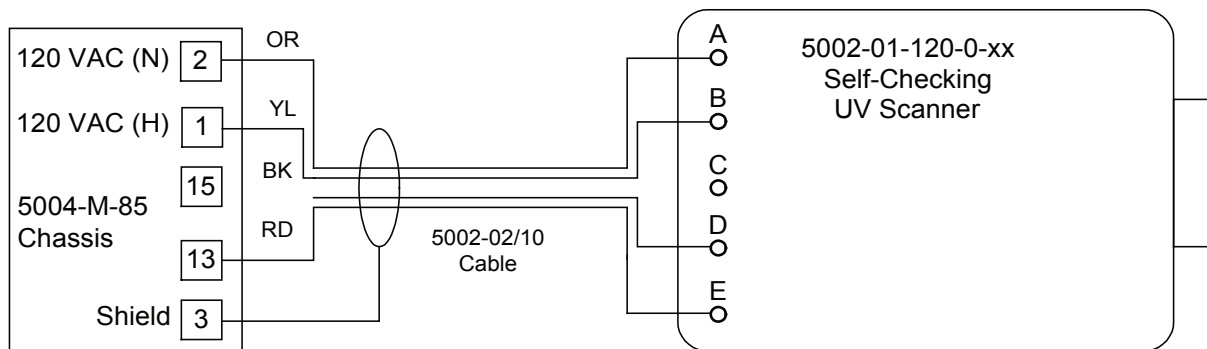
Typical Scanner Mounting



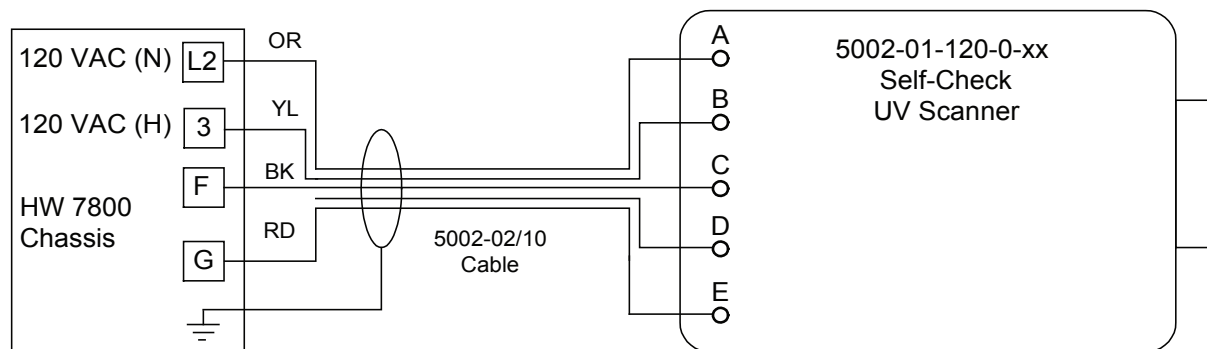
Internal Wiring and Typical Field Wiring of the 5002-01-120-C UV Self-check Scanner with 4-20 mA Output Option

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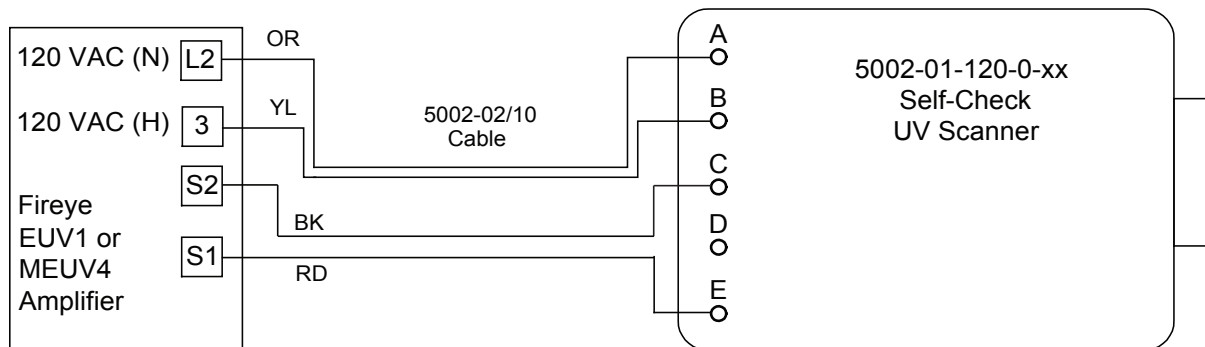
Typical Wiring



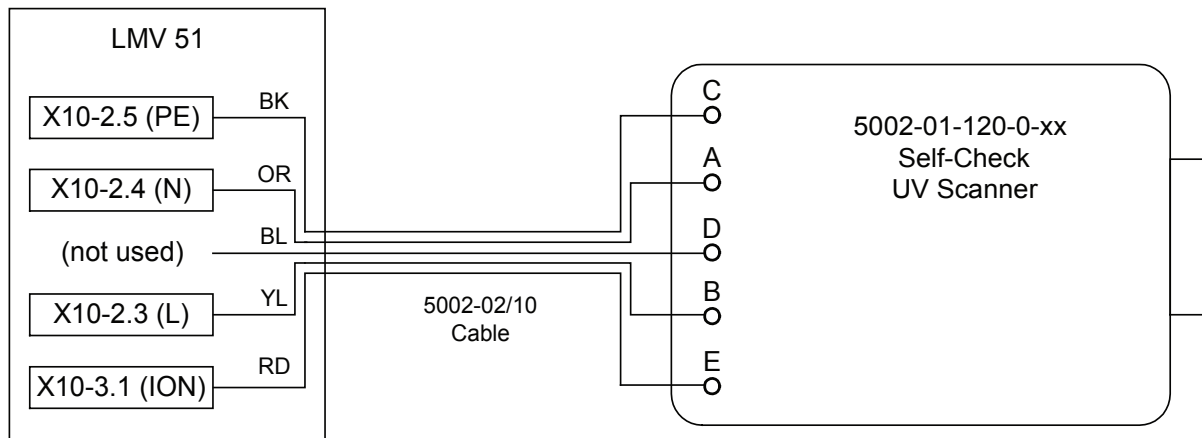
Typical Wiring Schematic--UV Self-check Scanner to Preferred Instruments 5004-M-85 Flame Safeguard Controller



Typical Wiring Schematic--UV Self-check Scanner to HW 7800 Series Flame Safeguard Controller



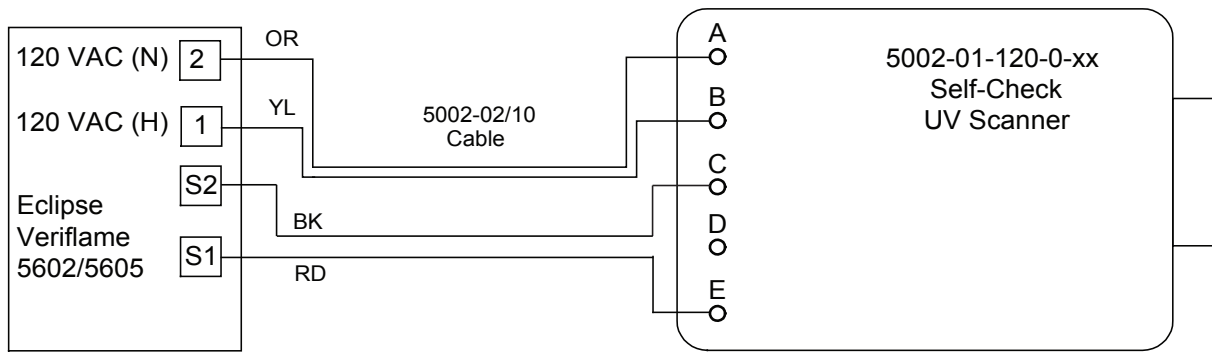
Typical Wiring Schematic--UV Self-check Scanner to Fireye EUV1 or MEUV4 Flame Safeguard Controller



Typical Wiring Schematic--UV Self-check Scanner to Siemens LMV Controllers

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Suggested Specification



Typical Wiring Schematic--UV Self-check Scanner to Eclipse Veriflame Controllers

Suggested Specification:

1. Self-checking UV Scanner

Ultraviolet self-checking flame scanner shall be U.L. listed, FM approved, and CSA certified. Scanner housing shall be made of rugged anodized aluminum, have two status LEDs, and connect by means of a military-style quick disconnect fitting.

2. Physical Description

Scanner shall be made of high strength anodized aluminum and mount by means of industry standard 1" NPTF connection and include:

- 3/8" Purge connection
- 5 Pin military-style quick disconnect cable fitting

3. Electrical Characteristics

Scanner shall be powered by 120 VAC, 230 VAC, or 24 VDC input power. A 120/230 VAC relay contact shall be provided to prove flame while a 4-20 mA output shall correspond to flame signal strength (-C models). Alternatively, the 5002-01-(120 or 240)-0-xx shall interface with most existing flame amplifiers.

4. Manufacturer

Self-checking ultraviolet scanner shall be Model 5002-01 series manufactured by Preferred Utilities of Danbury, CT.